UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GUANGZHOU EKO TRADING DEVELOPMENT CO., LTD.
Petitioner,

v.

NINE STARS GROUP (U.S.A.) INC.,
Patent Owner.

Case No. IPR2025-01191

U.S. Patent No. 10,822,165 B2

DECLARATION OF STEVEN C. VISSER

TABLE OF CONTENTS

I, Steven C. Visser, declare as follows:

I. INTRODUCTION

1. I have been retained by Guangzhou EKO Trading Development Co., Ltd. ("EKO") as an independent expert consultant in this proceeding before the United States Patent and Trademark Office ("PTO"). I am not an employee of EKO or any affiliate or subsidiary of EKO.

2. I have been asked to assess and offer certain opinions regarding the subject matter of U.S. Patent No. 10,822,165 B2 ("the '165 patent"), which I refer to herein as the '165 patent.

3. My opinions and the bases for my opinions are set forth below.

4. I am being compensated at my usual consulting rate for my work, plus reimbursement for any reasonable expenses. My compensation is based solely on the amount of time that I devote to activity related to this case and is in no way contingent on the nature of my findings, the presentation of my findings in testimony, or the outcome of this or any other proceeding. I have no other financial interest in this proceeding.

II. EDUCATION BACKGROUND, PROFESSIONAL EXPERIENCE, AND OTHER QUALIFICATIONS

5. My curriculum vitae ("CV") is attached hereto as Attachment A and provides an accurate identification of my background and experience.

6. I received an MFA in Industrial Design in 1988 from the University of Illinois at Urbana-Champaign. I also received a Bachelor of Arts with a major in Fine Art in 1982 from Northwestern College, Orange City, Iowa.

7. I have been involved in the industrial design field for 39 years and have experience in both the practical and academic areas of the industrial design field, which is detailed in my curriculum vitae.

8. I am currently a tenured Full Professor at Purdue University in the Industrial Design Program. I have been teaching at Purdue since 1989. In 1996–97, I served as a Fulbright Professor at the University of Art and Design Helsinki. Before teaching, I worked as an industrial designer at Hari and Associates in Skokie, Illinois.

9. Industrial designers focus on the integration of the functional and psychological requirements of products. We consider the functional needs of both the manufacturing process and the functional needs of the consumer. We consider various manufacturing processes and materials in the design of a product, with the goal of creating a design that can be profitably produced and still fulfill consumer needs. Using the tools of production, we create new products that meet the ever-changing needs of society. At the same time, we design for the psychological requirements of the consumer. We create the interface and aesthetics that help the consumer understand how to use the product as well as appreciate it. One way to

conceptualize what industrial designers do is to compare industrial design to architecture. Architects design buildings and industrial designers design objects to be produced by industry.[1]

10. I have personally designed many products—including consumer and special purpose products—with housings and internal working components.

11. For example, I have specifically designed: (1) a sheet metal housing for a coulter blood analyzer in 1989; (2) the Boilermaker Special V, Purdue Universities mascot in 1992 and rebuilt in 2011 as the Special VII, in use until 2025; (3) a support structure for a chair which receive a design patent in 2002; (4) wardrobe valets for Proman Products LLC in 2005-2006; (5) a MXR programable light designed with sheet metal construction in 2006; and (6) track lighting and pendant lamps for Omega Lighting (now part of Philips Lighting) in 2006-2007.

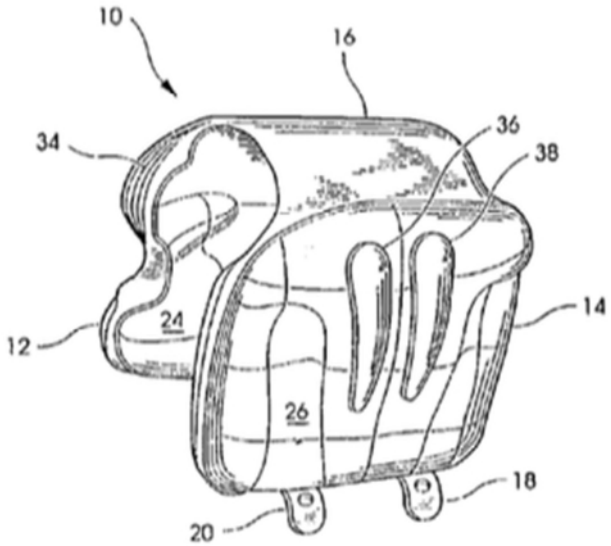
12. More recently, I have designed: a stamped steel vertical channel for BraunAbility for which I received a design patent in 2017; an injection molded hand controller; and a neonatal crib and Kangaroo Mother Care Hospital bed designed for Save The Children in Malawi Africa in 2018-2019.

13. From 1992-1995, I worked on the design, patenting, and production of Compliers fishing pliers. Ashok Midha and I are the inventors of the compliant

[1] Paraphrased from "What is Industrial Design," Industrial Designers Society of America, available at http://www.idsa.org/events/what-id.

pliers, U.S. Patent No. 5,522,290. The production version of Compliers, which is a one-piece design that flexes to grip the hook for fishing.

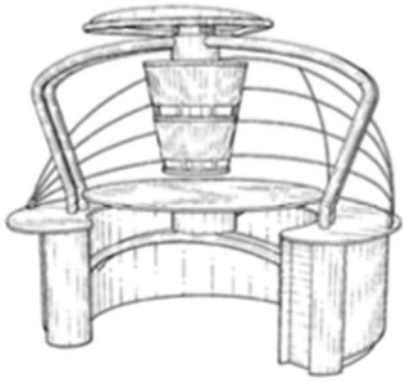
14. In 1996, Bruce Munson and I received a U.S. design patent US5,568,928 for a video game controller. It had flexible straps with a series of holes to attach the controller to exercise equipment. The early prototype brought to me by Bruce Munson was a series of buttons attached with Velcro to the handlebar of exercise equipment.



15. In 1996-1997, I designed a bassinet for the Redmon Company. The bassinet was for babies between birth and 6 months of age. It was made of a plastic and fabric structure that would fold up for storage.

16. In 1997, Kyle Bennet and I received U.S. patent 5,625,931 for the design of a resilient clamp. It was a one-piece plastic construction with soft rubber over-molded portions. It relied upon the resilient flexibility of the plastic to open and to clamp.

17. In 2001, I and a group of students received the US Patent D440,786 for the design of a rotary assembly table. The furniture included an expandable partition that provided protection to divide the rotating table from those around. The design also included a modesty panel under the table.



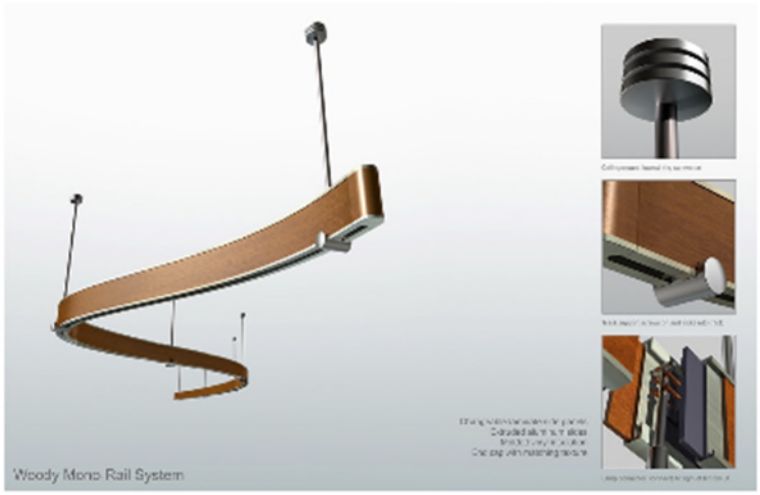
18. In 2002, I received the US Patent D463,925 for a Support Structure for a chair. The design (left below) claimed the ornamental design of the structure of the chair. An associated commercial prototype, known as the Quantum Chair (right below), was produced in 2001. It was designed with a wood, metal and upholstery construction.

19. In 2003, I designed knock-down pedestals for use in the IN design exhibition at the Lafayette Art Museum. The pedestals used a slot and groove construction technique and were used to display products on the top surface in an exhibition.

20. In 2004, I designed the Giwa Gift Box. It was produced with die-cut flexible rubber sheet. It was a selected design in the International Travel Souvenir Design Competition in Korea. The design included flat pieces which could be folded and attached to change from flat into 3-D.

21. In 2006, I assisted in the design of a cell phone for Samsung called *Clip* that rotated open and closed and could clip onto a pocket. It also had a trim piece around the keypad.

22. In 2006-2007, I—along with others—designed Woody, a track lighting that could be flexed to be adjusted various curved shapes, to define the lighting space. The design was created for Omega Lighting from Tupelo, MS.



23. In 2007, I designed Umbrella a pendant lamp for Omega lighting that was made with a creased surface in the fabric that looked like a folded umbrella.

24. In 2015-2016, I co-designed the QLD Wheelchair Lift. The wheelchair lift that was targeted for the European market. The design would dynamically fold in and out of the back of a vehicle. In 2017, the system was awarded four design patents. The design also won a gold award in the A' Design Competition in Italy, and an International Design Award (IDA) gold award in California.

25. In 2018-2019, I designed a neonatal crib for use with premature babies in Malawi Africa. Save the Children sponsored the project. I worked with doctors,

nurses, and engineering students at Purdue and in Malawi to develop a better neonatal crib to encourage more skin-to-skin contact for premature babies.

26. My design work has been recognized nationally and internationally. My designs have received recognition at various international design competitions, including Award of Excellence in the Taiwan International Design Competition, Finalist in the Korean International Travel Souvenir Design Competition, Second Place in Neste Forma Finlandia 3 International Plastic Design Competition, and Silver Winner in Idea95 Industrial Designers Excellence Award, A'Design Gold 2017, and an IDA Gold 2018.

27. My designs have been exhibited both nationally and internationally, including at the Museum of Modern Art in New York, the Chicago Athenaeum: Museum of Architecture and Design, the Cooper Hewitt National Design Museum (Smithsonian) in New York, the Groninger Museum (Netherlands), Veletrzni Palác Prague (Czech Republic), and the Biennale Internationale Design 2000 and 2002, which was sponsored by the Museum of Modern Art in Saint-Étienné (France), KSBDA exhibition in Moscow in 2019.

28. I am a named inventor (with co-inventors) on 12 U.S. patents. My Curriculum Vitae, attached as Exhibit A, lists all publications that I have authored or co-authored in the previous 10 years, as well as the patents on which I am a named inventor.

29. I believe I am qualified to testify as an expert witness with respect to the ’165 patent. Particularly relevant is my experience designing and manufacturing home and consumer products with both plastic and mechanical components such as lights, cribs, plyers, and the like. My role as a professor at Purdue University, where I teach students to design innovative new consumer products, taking into account aesthetics, function, structure, and manufacturing techniques; and my experience both in personally designing and in instructing students in the design and manufacture of products, like the trash cans at issue in this case.

30. As a professor, I introduce design for sheet metal fabrication and injection molded products in the second year. In the junior and senior years, I give students projects in which they can use various manufacturing processes combined. For example, I arranged a junior level project with National Furniture in which the students presented their final designs. They incorporated plastic, wood, metal and soft goods in their designs.

31. I am familiar with the subject matter of this case, and consider myself an expert in, among other things, consumer product design.

III. ASSIGNMENT AND MATERIALS CONSIDERED

32. I have been asked to review the ’165 patent, the ’165 patent’s prosecution history, and certain prior art to the ’165 patent.

33. I have also been asked to review and confirm the accuracy of a comparison of the claims of the ’165 patent to CN 203740427 U to Wang et al. (“Wang”).

34. Next, I have been asked to offer opinions regarding the state of the art at the time the ’165 patent was filed, the background knowledge that would have been possessed by a person having ordinary skill in the art (a “POSITA”), and how that background knowledge bears on the obviousness of certain ‘’165 patent claim limitations.

35. The opinions expressed in this declaration are not exhaustive of opinions I may offer in the future regarding the unpatentability of the claims of the ’165 patent. Therefore, the fact that I do not address a particular point should not be understood to indicate an agreement on my part that any claim complies with the requirements of any applicable patent or other rule.

36. I reserve the right to amend and supplement this declaration in light of additional evidence, arguments, or testimony presented during this IPR or related proceedings on the ’165 patent.

37. In forming the opinions set forth in this declaration, I have considered and relied upon my education, knowledge of the relevant field, knowledge of relevant technical principles, and my experience. I have also reviewed and

considered the ’165 patent (Exhibit 1001), its prosecution history (Exhibits 1002-1003), and the following additional materials:

Exhibit	Description
1005	Certified translation of CN 203740427U to Wang et al. (“Wang)
1007	U.S. Pub. No. 2002/0190615 A1 to Lin (“Lin”)
1008	U.S. Pub. No. 2008/0084647 A1 to Wang et al. (“Wang 647”)
1009	U.S. Pub. No. 2014/0238986 A1 to Crawford et al. (“Crawford”)
1010	WO 2016/040601 A1 to Howard et al. (“Howard”)
1011	U.S. Pub. No. 2009/0194532 A1 to Yang et al. (“Yang”)
1012	WO 02/070849 A1 to Winter (“Winter”)

IV. UNDERSTANDING OF THE LAW

38. I am not an attorney but have been instructed in and applied the law as described in this section.

39. I understand that the first step in comparing an asserted claim to the prior art is for the claim to be properly construed. I address how a person of ordinary skill in the art (POSITA) would have understood the claims of the alleged invention in Section VIII below.

40. I understand that a patent claim is anticipated when a single piece of prior art describes every element of the claimed invention, either expressly or inherently, and arranged in the same way as in the claim.

41. I have been further instructed and understand that a patent claim is unpatentable and invalid as obvious if the subject matter of the claim as a whole would have been obvious to a POSITA of the claimed subject matter as of the time of the invention at issue. I understand that when assessing the obviousness of claimed subject matter, the following factors are evaluated: (1) the scope and content of the prior art; (2) the difference or differences between each claim of the patent and the prior art; and (3) the level of ordinary skill in the art at the time the patent was filed.

42. I understand that claimed subject matter may be obvious in view of more than one item of prior art. I understand, however, that it is not enough to show simply that all the limitations of the claimed subject matter are spread throughout the prior art. Instead, for claimed subject matter to be obvious over multiple references, there must be some reason or motivation for a POSITA to combine the prior art references to arrive at the claimed subject matter.

43. I have been informed that, in seeking to determine whether an invention that is a combination of known elements would have been obvious to a POSITA at the time of the invention, one must consider the references in their entirety to ascertain whether the disclosures in those references render the combination obvious to such a person.

44. I have been informed and understand that, while not required, the prior art references themselves may provide a teaching, suggestion, motivation, or reason to combine, but other times the motivation linking two or more prior art references is common sense to a POSITA at the time of the invention.

45. I understand that a particular combination may be proven obvious by showing that it was obvious to try the combination. I have been informed that, if a technique has been used to improve one device, and a POSITA would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

46. I further understand that an obviousness analysis recognizes that market demand, rather than scientific literature, often drives innovation, and that a motivation to combine references also may be supplied by the direction of the marketplace. For example, when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a POSITA has good reason to pursue the known options within his or her technical grasp because the result is likely the product not of innovation but of ordinary skill and common sense.

47. I have been informed that the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. Thus, where all of the elements of a claim are used in

substantially the same manner, in devices in the same field of endeavor, the claim is likely obvious.

48. Additionally, I understand that a patent is likely to be invalid for obviousness if a POSITA can implement a predictable variation or if there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent's claims. Therefore, when a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one.

49. I further understand that combining embodiments related to each other in a single prior art reference would not ordinarily require a leap of inventiveness.

50. I also understand that a POSITA must have had a reasonable expectation of success when combining references for claimed subject matter to be obvious.

51. I have been informed and I understand that factors referred to as "objective indicia of non-obviousness" or "secondary considerations" are also to be considered when assessing obviousness when such evidence is available. I understand that these factors can include: (1) commercial success; (2) long-felt but unresolved needs; (3) copying of the invention by others in the field; (4) initial expressions of disbelief by experts in the field; (5) failure of others to solve the problem the claimed subject matter solved; and (6) unexpected results.

52. I also understand that evidence of objective indicia of non-obviousness must be commensurate in scope with the claimed subject matter. I further understand that there must be a relationship, sometimes referred to as a "nexus," between any such secondary indicia and the claimed invention.

53. Finally, I have been informed that one cannot use hindsight to determine that an invention was obvious.

54. I provide my opinions in this declaration based on the guidelines set forth above.

V. LEVEL OF SKILL IN THE ART

55. I have been informed and understand that the level of ordinary skill in the relevant art at the time of the invention is relevant to inquiries such as the meaning of claim terms, the meaning of disclosures found in the prior art, and the reasons a POSITA may have for combining references.

56. I have been informed and understand that factors that may be considered in determining the level of ordinary skill include: (1) the education of the inventor; (2) the type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) education level of active workers in the relevant field. I have been further informed and understand that a person of ordinary skill in the art (POSITA) is also a person of ordinary creativity.

57. A POSITA in the field of the ’165 patent would have had a degree in industrial design, industrial engineering, mechanical engineering, or an equivalent field, along with 2 years of consumer product design experience. This POSITA would have been aware of and generally knowledgeable about the types of materials processes and components employed in typical consumer products.

58. Based on my education, training, and professional experience in the field of the claimed invention, as discussed in Section II, I was a person of more than the ordinary level of skill in the art as of September 2016.

59. In forming my opinion, I have drawn on my academic background and professional experience. My opinions herein, however, were formed taking into account the perspective of an ordinarily skilled artisan.

VI. THE ’165 PATENT

A. Effective Filing Date

60. I understand that the ’165 patent was filed January 30, 2018. The patent also identifies itself as a continuation of an earlier September 20, 2016 filing. *See* Ex. 1001, Cover. The patent does not reference any earlier filed applications. Thus, I have considered September 2016 to be the ’165 patent’s effective filing date.

61. My opinions in this declaration were formed from the perspective of a POSITA as of September 2016 including both the knowledge of a POSITA at that time as well as how a POSITA would have understood the prior art.

B. Claims

62. For reference, claims 1-24 of the ’165 patent are reproduced below. Of these, only claim 1 is independent.

> **1**. A waterproof induction container, comprising:
>
> a container body having a storage cavity and a container opening; and
>
> an induction actuated container cover which comprises:
>
> a control housing detachably coupled at said container body at said container opening thereof, wherein said control housing has first and second side concealed compartments formed at a rear portion of said control housing, and a cover opening formed between said first and second side concealed compartments to communicate with said storage cavity of said container body;
>
> a cover unit which comprises a pivot shaft having first and second end portions extended into said first and second side concealed compartments respectively, and a cover panel pivotally mounted to said control housing via said pivot shaft to pivotally move between a closed position that said cover panel covers at said cover opening to enclose said storage cavity and an opened position that said cover panel

exposes said cover opening for communicating with said storage cavity; and

an automatic driving arrangement, which comprises:

a sensor unit mounted at said control housing for detecting a target movement of a user;

an actuation unit concealed in said first side concealed compartment of said control housing in a waterproof manner to operatively link with said sensor unit and to operatively coupled to said pivot shaft, wherein said actuation unit is actuated to move said cover panel via said pivot shaft between said opened and closed positions; and

an element arranged to initially push up said cover panel simultaneously when said cover panel is started to move from said closed position and partially offsetting a weight of said cover panel when said cover panel is started to move from said opened position.

2. The waterproof induction container, as recited in claim **1**, wherein said actuation unit comprises a servo motor supported in said first side concealed compartment of said control housing and a gear transmission unit operatively coupled between said first end portion of said pivot shaft and said servo motor for transmitting a rotational power from said servo motor to said pivot shaft.

3. The waterproof induction container, as recited in claim **2**, wherein said gear transmission unit comprises a gear worm sector affixed at said first end portion of said pivot shaft to operatively coupled with said servo motor.

4. The waterproof induction container, as recited in claim **3**, wherein said gear transmission unit is a decelerating gear unit for controllably lifting up and dropping down said cover panel at a speed determined by gear ratios of said gear transmission unit so as to move said cover panel between said opened and closed positions in a hydraulic manner.

5. The waterproof induction container, as recited in claim **3**, wherein said control housing comprises a lower base frame detachably coupled at said container opening of said container body, and an upper casing sealed and coupled at said lower base frame to define said first and second side concealed compartments therebetween.

6. The waterproof induction container, as recited in claim **3**, wherein said control housing has a trapezoid cross section that a height of said front portion of said control housing is shorter than that of said rear portion thereof to maximize a size of each of said first and second side concealed compartments.

7. The waterproof induction container, as recited in claim **3**, further comprising a power supply unit for

electrically connecting with said automatic driving arrangement, wherein said power supply unit comprises a battery compartment formed within said rear portion of said control housing and a battery compartment cover detachably coupled at a rear wall of said control housing to enclose said battery compartment.

8. The waterproof induction container, as recited in claim **5**, wherein said control housing has a trapezoid cross section that a height of said front portion of said control housing is shorter than that of said rear portion thereof to maximize a size of each of said first and second side concealed compartments.

9. The waterproof induction container, as recited in claim **2**, wherein said means comprises a resilient element concealed in said second side concealed compartment of said control housing and coupled at said second end portion of said pivot shaft to apply an urging force as an initial force towards said cover panel for initially pushing up said cover panel simultaneously when said cover panel is started to move from said closed position and as a weight supporting force for partially offsetting a weight of said cover panel when said cover panel is started to move from said opened position.

10. The induction actuated container cover, as recited in claim **2**, wherein said control housing has a front

concealed compartment defining a slanted front wall, wherein said sensor unit comprises sensor circuit board concealed in said front concealed compartment and a sensor supported at said slanted front wall of said control housing to operatively linked to said sensor circuit board, such that said sensor is located in front of said cover panel to maximize said detecting range of said sensor at said approaching direction for detecting said target movement.

11. The waterproof induction container, as recited in claim **1**, wherein said control housing comprises a lower base frame detachably coupled at said container opening of said container body, and an upper casing sealed and coupled at said lower base frame to define said first and second side concealed compartments therebetween.

12. The waterproof induction container, as recited in claim **11**, wherein said means comprises a resilient element concealed in said second side concealed compartment of said control housing and coupled at said second end portion of said pivot shaft to apply an urging force as an initial force towards said cover panel for initially pushing up said cover panel simultaneously when said cover panel is started to move from said closed position and as a weight supporting force for partially offsetting a weight of said cover panel when said cover panel is started to move from said opened position.

13. The induction actuated container cover, as recited in claim **11**, wherein said control housing has a front concealed compartment defining a slanted front wall, wherein said sensor unit comprises sensor circuit board concealed in said front concealed compartment and a sensor supported at said slanted front wall of said control housing to operatively linked to said sensor circuit board, such that said sensor is located in front of said cover panel to maximize said detecting range of said sensor at said approaching direction for detecting said target movement.

14. The waterproof induction container, as recited in claim **1**, wherein said control housing has a trapezoid cross section that a height of said front portion of said control housing is shorter than that of said rear portion thereof to maximize a size of each of said first and second side concealed compartments.

15. The waterproof induction container, as recited in claim **1**, wherein said means comprises a resilient element concealed in said second side concealed compartment of said control housing and coupled at said second end portion of said pivot shaft to apply an urging force as an initial force towards said cover panel for initially pushing up said cover panel simultaneously when said cover panel is started to move from said closed position and as a weight supporting force for partially offsetting a weight of

said cover panel when said cover panel is started to move from said opened position.

16. The waterproof induction container, as recited in claim **15**, further comprising a power supply unit for electrically connecting with said automatic driving arrangement, wherein said power supply unit comprises a battery compartment formed within said rear portion of said control housing and a battery compartment cover detachably coupled at a rear wall of said control housing to enclose said battery compartment.

17. The waterproof induction container, as recited in claim **1**, wherein said cover panel comprises a shaft sleeve formed along a folding edge thereof, wherein an exposed portion of said pivot shaft between said two end portions thereof is received in said shaft sleeve to conceal said exposed portion of said pivot shaft so as to prevent said pivot shaft from exposing to said container opening of said container body, wherein when said pivot shaft is driven by said actuation unit to rotate, said shaft sleeve is driven by said pivot shaft to rotate, so that said cover panel is pivotally moved between said opened position and said closed position.

18. The waterproof induction container, as recited in claim **17**, wherein said exposed portion of said pivot shaft has a non-circular cross section and said shaft sleeve has a

corresponding non-circular cross section to fit said exposed portion of said pivot shaft, such that said cover panel is pivotally moved between said opened and closed positions along with a rotation of said pivot shaft.

19. The waterproof induction container, as recited in claim **1**, wherein said cover panel comprises a shaft sleeve formed along a folding edge thereof, wherein an exposed portion of said pivot shaft between said two end portions thereof is received in said shaft sleeve to conceal said exposed portion of said pivot shaft so as to prevent said pivot shaft from exposing to said container opening of said container body, wherein when said pivot shaft is driven by said actuation unit to rotate, said shaft sleeve is driven by said pivot shaft to rotate, so that said cover panel is pivotally moved between said opened position and said closed position.

20. The waterproof induction container, as recited in claim **19**, wherein said exposed portion of said pivot shaft has a non-circular cross section and said shaft sleeve has a corresponding non-circular cross section to fit said exposed portion of said pivot shaft, such that said cover panel is pivotally moved between said opened and closed positions along with a rotation of said pivot shaft.

21. The waterproof induction container, as recited in claim **1**, wherein said cover panel comprises a shaft sleeve

formed along a folding edge thereof, wherein an exposed portion of said pivot shaft between said two end portions thereof is received in said shaft sleeve to conceal said exposed portion of said pivot shaft so as to prevent said pivot shaft from exposing to said container opening of said container body, wherein when said pivot shaft is driven by said actuation unit to rotate, said shaft sleeve is driven by said pivot shaft to rotate, so that said cover panel is pivotally moved between said opened position and said closed position.

22. The waterproof induction container, as recited in claim **21**, wherein said exposed portion of said pivot shaft has a non-circular cross section and said shaft sleeve has a corresponding non-circular cross section to fit said exposed portion of said pivot shaft, such that said cover panel is pivotally moved between said opened and closed positions along with a rotation of said pivot shaft.

23. The waterproof induction container, as recited in claim **1**, further comprising a power supply unit for electrically connecting with said automatic driving arrangement, wherein said power supply unit comprises a battery compartment formed within said rear portion of said control housing and a battery compartment cover detachably coupled at a rear wall of said control housing to enclose said battery compartment.

24. The induction actuated container cover, as recited in claim **1**, wherein said control housing has a front concealed compartment defining a slanted front wall, wherein said sensor unit comprises sensor circuit board concealed in said front concealed compartment and a sensor supported at said slanted front wall of said control housing to operatively linked to said sensor circuit board, such that said sensor is located in front of said cover panel to maximize said detecting range of said sensor at said approaching direction for detecting said target movement.

VII. CLAIM CONSTRUCTION

63. I am not a legal expert or an attorney and offer no opinions on the law. I understand that claim construction is a matter of law. However, I have been informed by counsel of the legal standards that apply to claim construction in an *inter partes* review, and I have applied them in forming my opinions. I understand that during an *inter partes* review, the same claim construction standard used in federal district court is applied when addressing the meaning of claim terms.

64. I have been informed that the words of a claim are generally given the ordinary and customary meaning that the term or phrase would have to POSITA at the time of the invention in view of the surrounding claim language, the specification and the file history (collectively, the "intrinsic evidence" or "intrinsic record").

65. I also understand that courts may consider extrinsic evidence, such as expert and inventor testimony, dictionaries, and learned treatises (collectively, the "extrinsic evidence" or the "extrinsic record"), but that such extrinsic evidence should be given less weight than the intrinsic evidence.

66. In my opinion, the terms of the '165 patent's claims do not require further construction and can be afforded their plain and ordinary meaning for purposes of the analysis of the prior art that I am conducting in this declaration.

VIII. UNPATENTABILITY ANALYSIS

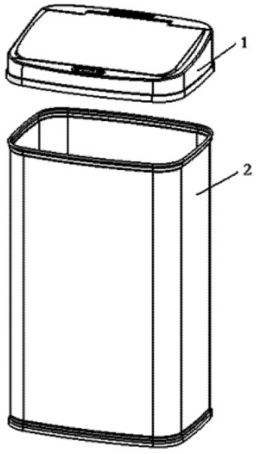
67. For the reasons I explain in greater detail below, it is my opinion that as of the effective filing date of the '165 patent, a POSITA would have considered claims 1-24 to be both (1) anticipated by and (2) obvious over Wang (Ex. 1005).

A. Overview of Wang

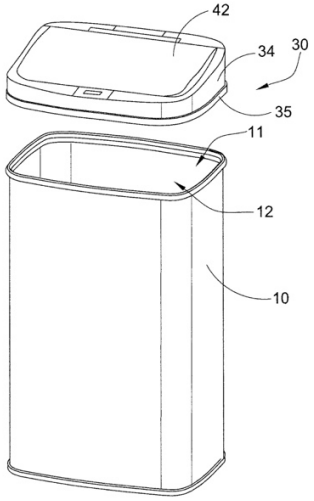
68. Wang (Ex. 1005) indicated on its face that it published July 30. 2014. Wang, Cover. This is more than two years before the '165 patent's September 2016 filing.

69. I have reviewed both Wang and the '165 patent in their entirety. Based on this review, it is my opinion that there are no, meaningful, substantive differences between the two documents.

70. More particularly, as shown below, both Wang and the ’165 patent depict a nearly identical trashcan in their figures. The only difference between the figures is the resolution and the numbered labeling employed:

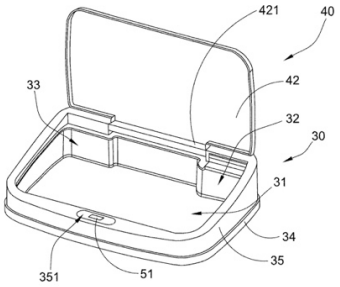


Wang, Fig. 2

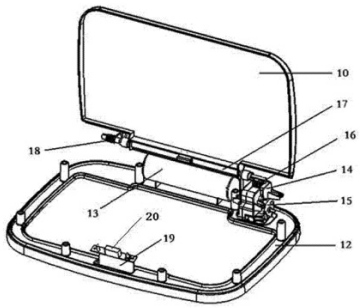


’165 patent, Fig. 1

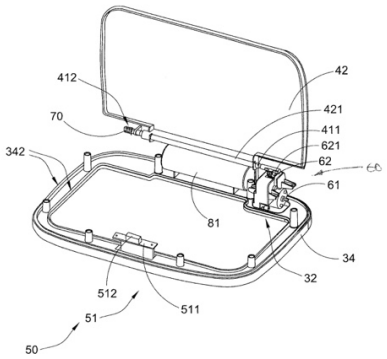
Wang, Fig. 3



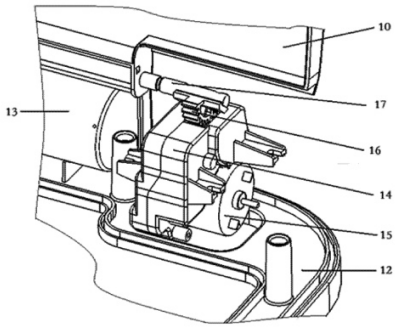
’165 patent, Fig. 2



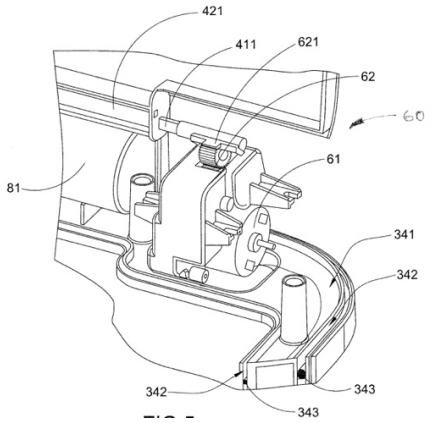
Wang, Fig. 4



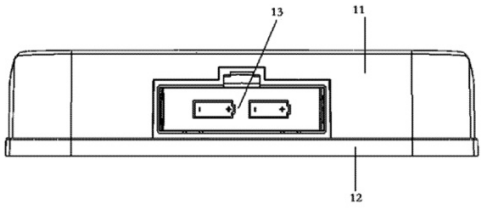
’165 patent, Fig. 3



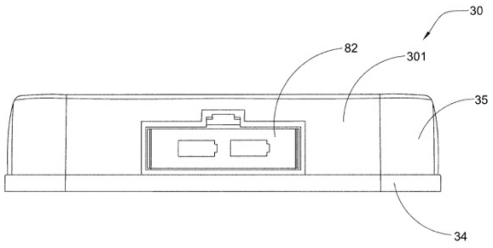
Wang, Fig. 5



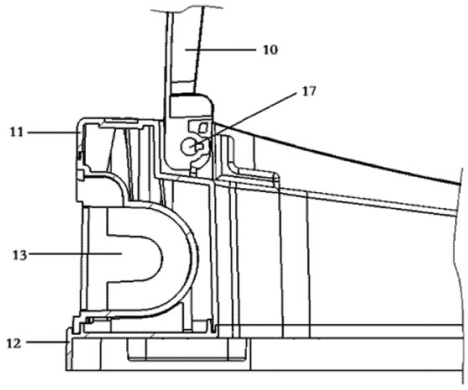
’165 patent, Fig. 5



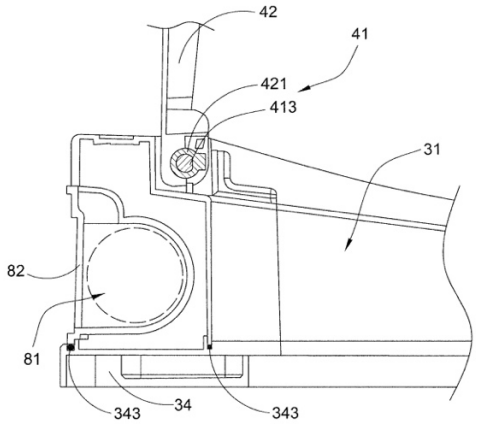
Wang, Fig. 6



’165 patent, Fig. 6



Wang, Fig. 7



’165 patent, Fig. 7

71. While Wang and the ’165 patent do employ slightly different words, any word usage differences does not result in a difference in subject matter. Both Wang and the ’165 patent describe the structure and operation of their respective trashcans in the very same way.

72. For example, Wang explains that it relates generally to the field of “[i]ntelligent [a]utomatic” trashcans. Wang, [0002].

73. Next, Wang’s “trash can” employs a “sensing opening-closing apparatus” that “detect[s]” when a “hand approaches the sensing trash can” and automatically opens/closes the can. Wang, [0018]-[0023]. The trashcan also “has good waterproof, moisture-proof, and corrosion-proof performance” that “greatly improve[s] reliability and service life….” Wang, [0008]. To provide this performance, Wang explains that it “dispose[s]” its “sensing opening-closing apparatus” in an “inner cavity” within its trashcan’s housing. Wang, [0018].

74. The ’165 patent likewise states that it relates to a trashcan with “electrical components” that operate to “detect[] a target movement, such as a movement of the person throwing trash” to “automatically lift up” the can’s “cover panel….” Ex. 1001, 1:48-62.

75. Further, the ’165 patent’s trashcan is structured and functions in the same way as that in Wang. The ’165 patent explains that its trashcan’s “different electrical and mechanical components … are concealed in … concealed compartment[s]” within its trashcan housing to render the trashcan “waterproof” by “prevent[ing] any contamination of the electrical and mechanical components by moisture, corrosive gas, and/or trash residuals.” Ex. 1001, 2:37-43.

B. *Ground 1*: Anticipation by Wang

76. I have been asked to review and assess the following comparison of Wang to the claims of the ’165 patent, which I understand tracks a Ground 1 in EKO’s *inter partes* review petition.

77. I agree with this analysis. Wang does in fact describe the entirety of the ’165 patent’s claimed subject matter, arranged in the same way as the claims, for the reasons outlined in the paragraphs below.

1. Claim 1

[1-p] “1. A waterproof induction container, comprising:”

78. To the extent this preamble language is limiting, it is disclosed by Wang. Wang explains that it relates to a “waterproof sensing trash can.” Wang,

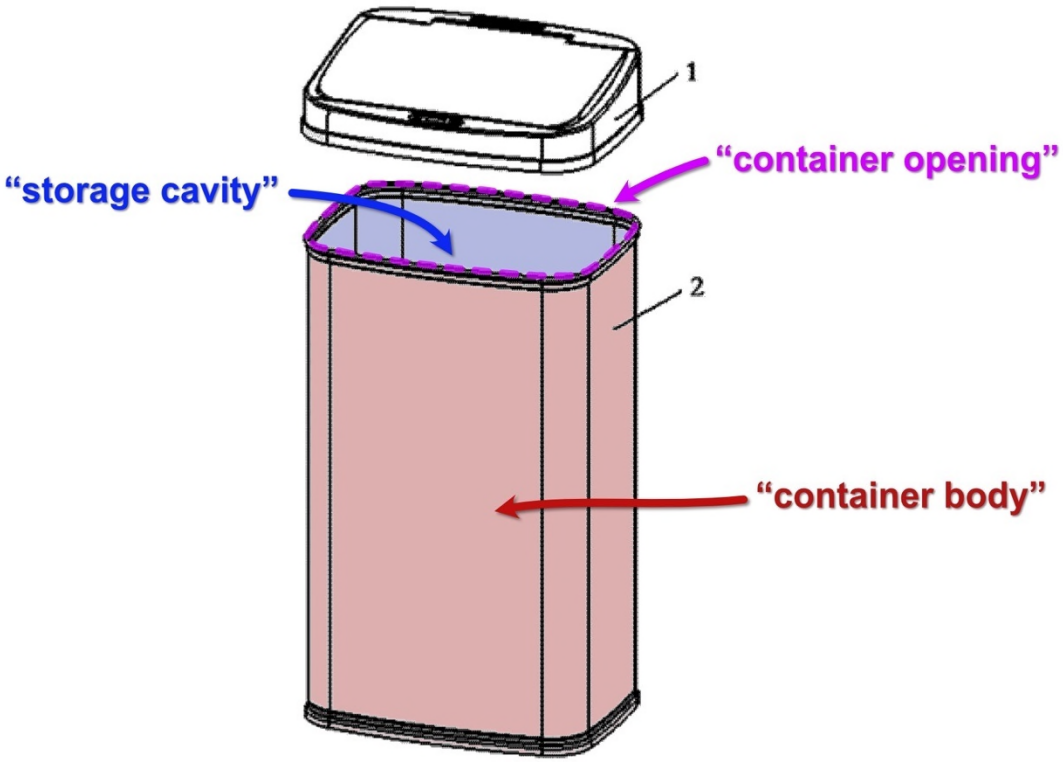
Title, Abstract, [0001]. A trashcan is a ***"container."*** Next, Wang's trashcan is specifically designed to "isolate" its opening/closing components from splashing "water" and "moisture and corrosive gases" released by garbage stored in the can. Wang, [0002]-[0003]; *see also* Wang, [0008] (explaining that Wang's trashcan "has good waterproof, moisture-proof, and corrosion-proof performance during use"). Thus, Wang's trashcan is ***"waterproof."***

79. Wang also explains that its trashcan includes a "sensing opening-closing apparatus" that "comprises a sensor, a circuit board, a battery box, a motor, and a transmission mechanism." Wang, [0004]. "When a hand approaches the sensing trash can, the sensor … sends a signal" causing the "can cover" to be "driven to open." Wang, [0023]. The same components also operate to close the trashcan cover. *See* Wang, [0020]. The '165 patent explains that an ***"induction container"*** includes "electrical and mechanical components" that operate to "lift up the cover" of the can when "movement of [a] person throwing trash" is detected. Ex. 1001, 1:28-30, 1:48-62. This is exactly what Wang discloses: a trashcan that automatically opens (and then closes) when a hand is detected nearby. *See* Wang, [0005] (noting that Wang's electrical and mechanical components operate to "drive the can cover to open and close"), [0020], [0023] (similar).

[1-1] "a container body having a storage cavity and a container opening; and"

80. Wang's trashcan includes these components. According to Wang, its "waterproof sensing trash can" includes a "lower can body 2." Wang, [0018]. Like all trash cans, "garbage" is meant to be "put into the trash can." Wang, [0002]. Thus, the trashcan includes a "garbage storage portion." Wang, [0008]; *see also* Wang, [0018] (similarly referencing a "garbage storage space); [0020] (similar).

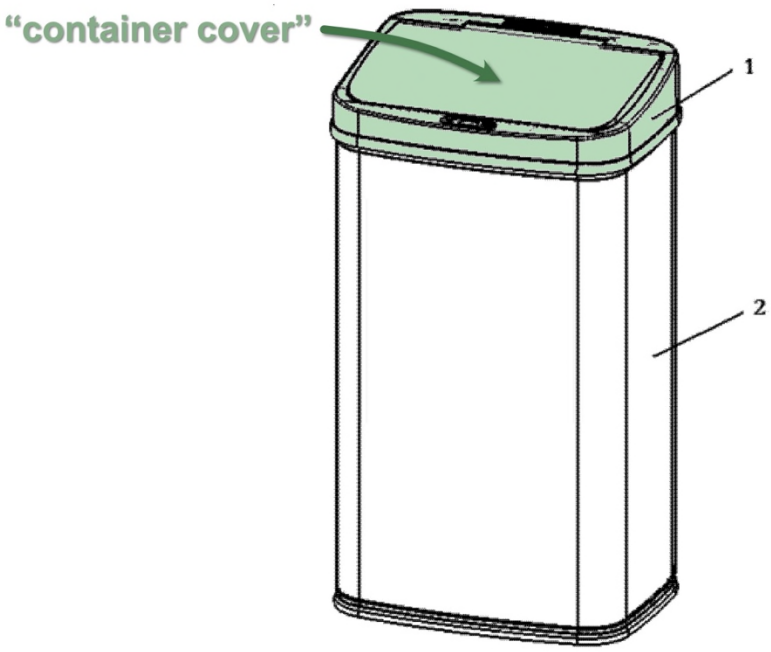
81. This is all depicted in Figure 2. As shown, Wang's trashcan includes a ***"container body"*** (lower can body 2). The interior of body 2 includes a ***"storage cavity"*** (Wang's garbage storage space). And this storage space is accessible via a ***"container opening"*** (the depicted opening at the top of body 2):



Wang, Fig. 2 (annotated).

[1-2] "an induction actuated container cover which comprises:"

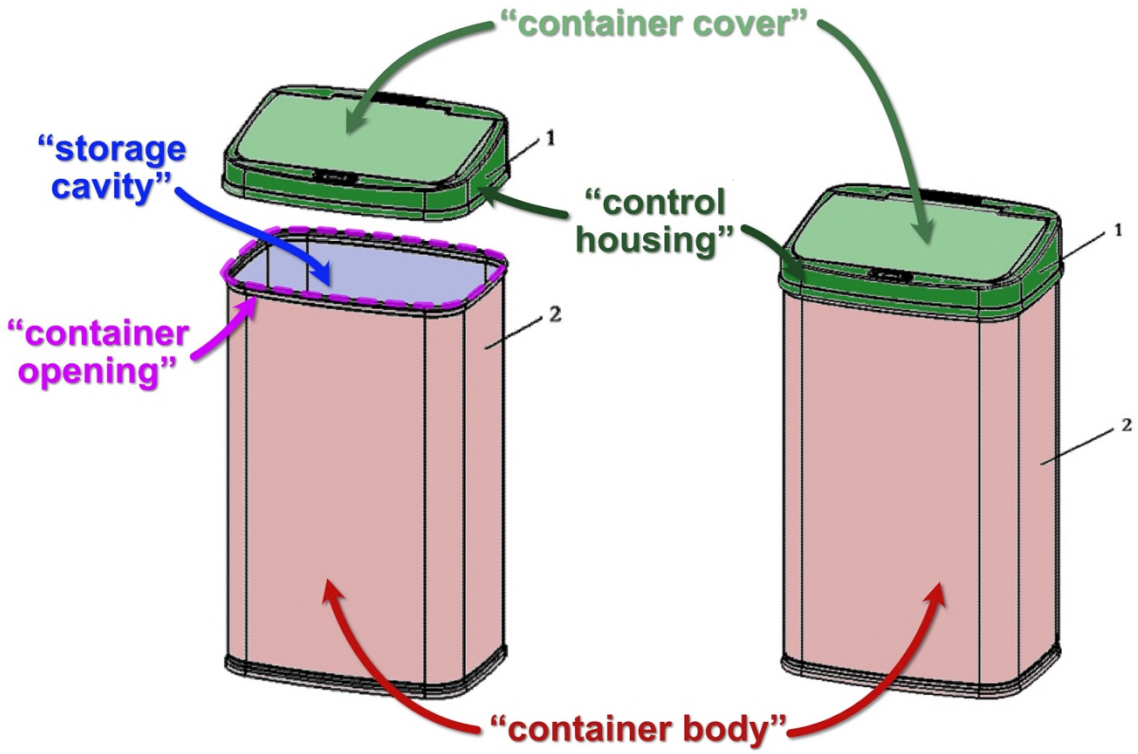
82. According to Wang, its trashcan includes an "upper can body 1." Wang, [0018]. This upper body has an "annular middle body seat 12" (which "buckle[s]" or attaches to the "lower can body 2") and an "annular covering housing 11." Wang, [0018]. The "annular covering housing 11" includes a "can cover 10" that is controlled by an "opening-closing apparatus." Wang, [0018]. Again, Wang's trashcan includes electrical and mechanical components that allow it to "open and close" when "a hand approaches the sensing trash can." Wang, [0020], [0023]. Thus, Wang includes the claimed ***"container cover"*** (upper can body 1) that is ***"induction actuated"*** (the electrical and mechanical components open the cover upon detection of a hand). Wang's ***"container cover"*** is shown in Figure 1 below:



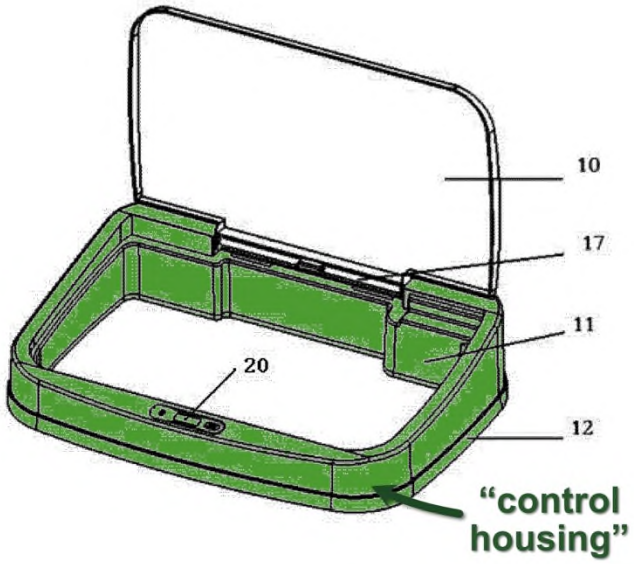
Wang, Fig. 1 (annotated).

[1-2-A] "a control housing detachably coupled at said container body at said container opening thereof, wherein said control housing has first and second side concealed compartments formed at a rear portion of said control housing, and a cover opening formed between said first and second side concealed compartments to communicate with said storage cavity of said container body;"

83. Again, Wang's trashcan includes a "upper can body 1." Wang, [0018]. This "body 1" includes an "annular middle body seat 12" that is "buckled on" a "lower can body 2." Wang, [0018]. The body 1 also includes an "annular covering housing 11" that is "buckled on the middle body seat 12." *Id.* The trashcan's "opening-closing apparatuses" are all located within the "annular covering housing 11." Wang, [0018]. The housing 11 and attached middle body seat 12 together form Wang's "***control housing.***" As shown below, this ***"control housing"*** is ***"detachably coupled"*** (it can be removed from or attached to) to the end of Wang's ***"container body"*** (the lower can body 2) that includes a ***"container opening"*** (the top opening of body 2):

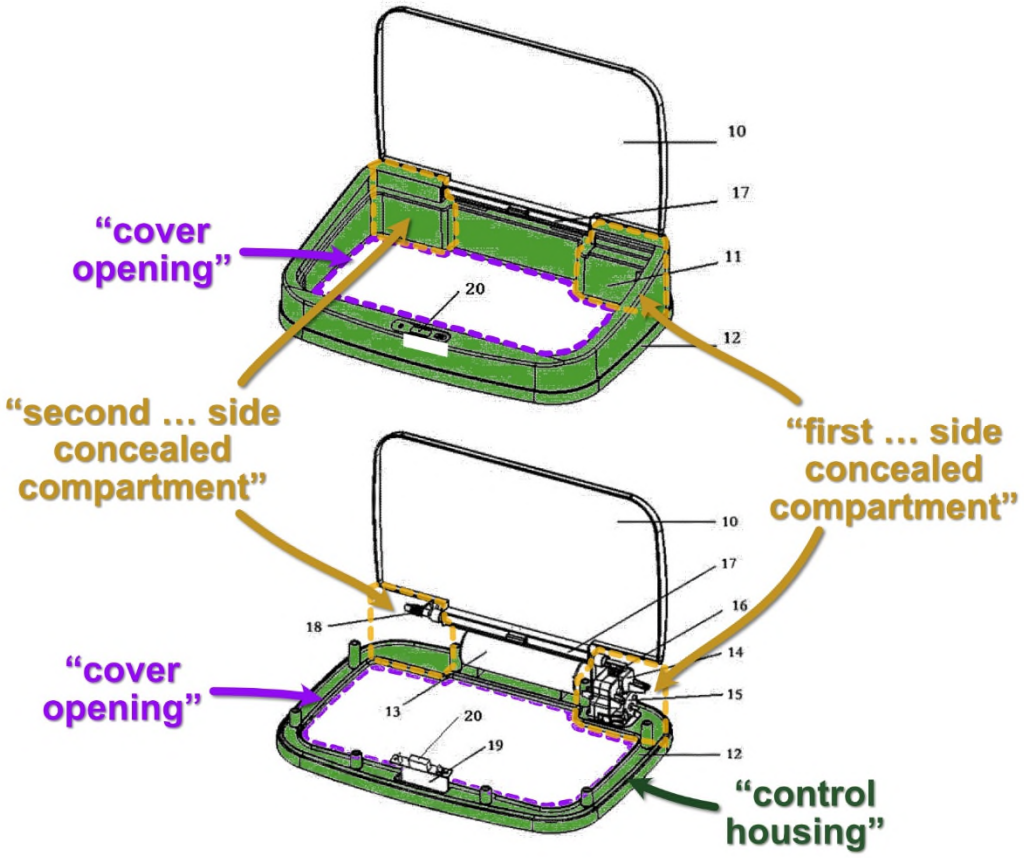


Wang, Figs. 1, 2 (annotated). Figure 3 also shows this ***"control housing"***:



Wang, Fig. 3 (annotated).

84. Next, Wang's ***"control housing"*** includes the required ***"first and second side concealed compartments formed at a rear portion of said control housing."*** Wang explains that its "annular covering housing 11" includes multiple "inner cavities." Wang, [0018]; *see also* Abstract (similarly referencing "inner cavities of the annular covering housing"); [0004] (similar). The location of these cavities are shown in Figures 3 and 4. Figure 3 shows the entirety of Wang's upper can body, including the "annular covering housing 11" and "annular middle body seat 12." Wang, [0011]. Figure 4 shows the upper can body with the "annular covering housing removed." Wang, [0012]. Because the covering housing is removed in Figure 4, the interior space is visible. As shown, there are two ***"side concealed compartments"*** (Wang's inner cavities) located at the ***"rear portion"*** (the rear sides near the opening/closing cover)) of the ***"control housing"*** (the upper can body). Further, a ***"cover opening"*** (an annular opening that communicates with the interior of the trashcan) is located between these cavities:

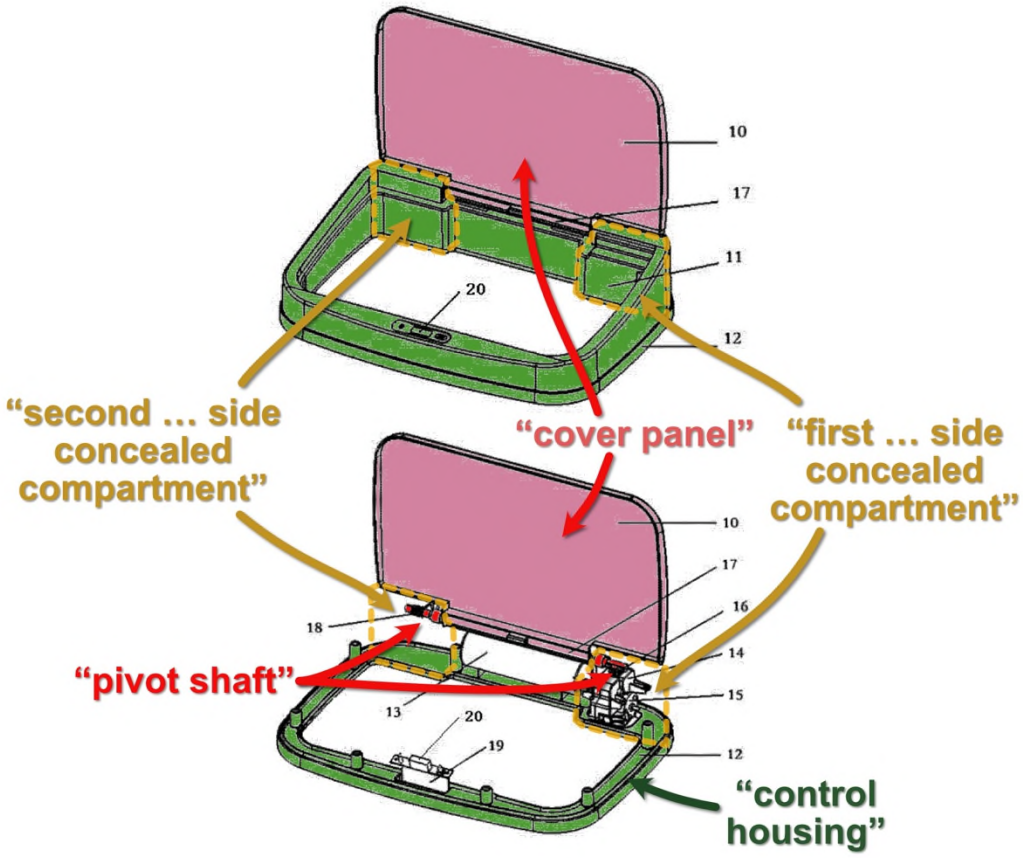


Id., Figs. 3, 4 (annotated).

[1-2-B] "a cover unit which comprises a pivot shaft having first and second end portions extended into said first and second side concealed compartments respectively, and a cover panel pivotally mounted to said control housing via said pivot shaft to pivotally move between a closed position that said cover panel covers at said cover opening to enclose said storage cavity and an opened position that said cover panel exposes said cover opening for communicating with said storage cavity; and"

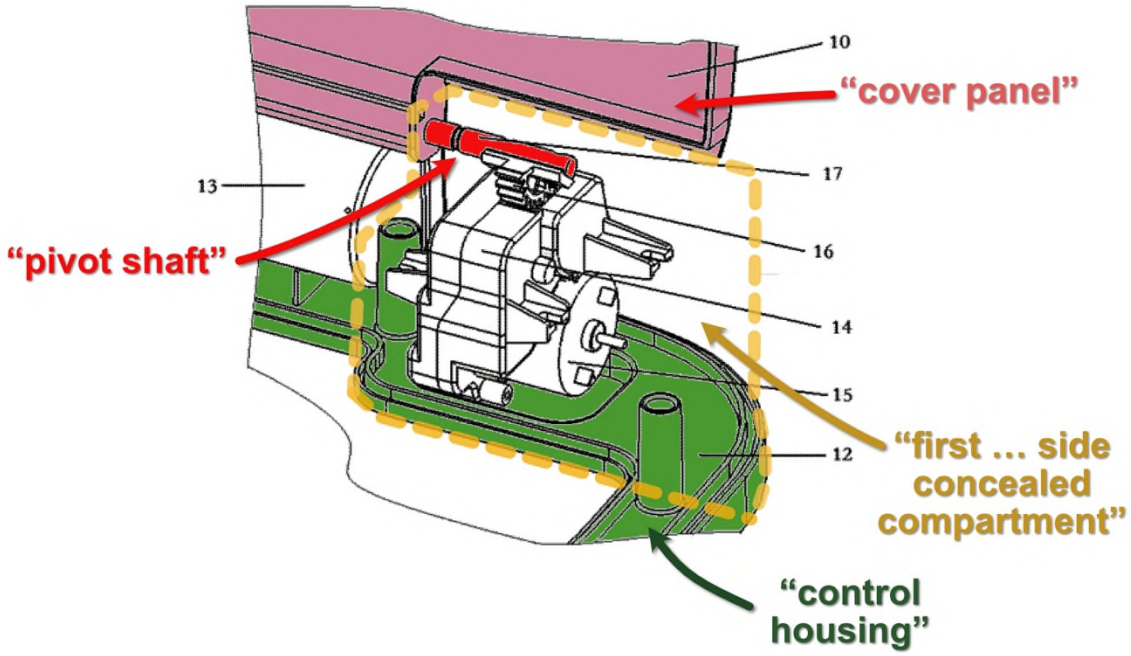
85. Wang includes the claimed ***"cover unit."*** In particular, a "can cover 10 is hinged to the annular covering housing 11 … using a rotating shaft 17 fixedly connected under the can cover 10." Wang, [0018]. Per Wang, "the two ends of the rotating shaft 17 extend into inner cavities of the annular covering housing 11."

Wang, [0018]; *see also* Abstract (similarly explaining that the cover's "shaft" "extend[s]" "into inner cavities of the annular cover housing"); [0004] (same). This is depicted below in Figures 3 and 4. The trashcan includes a ***"cover panel"*** (can cover 10). A ***"pivot shaft"*** (rotating shaft 17, only the two ends of which are visible) is located at one end of this cover and extends into the trashcan's ***"side sealed compartment[s]"*** (the two depicted ends of shaft 17 extend into the inner cavities within housing 11):

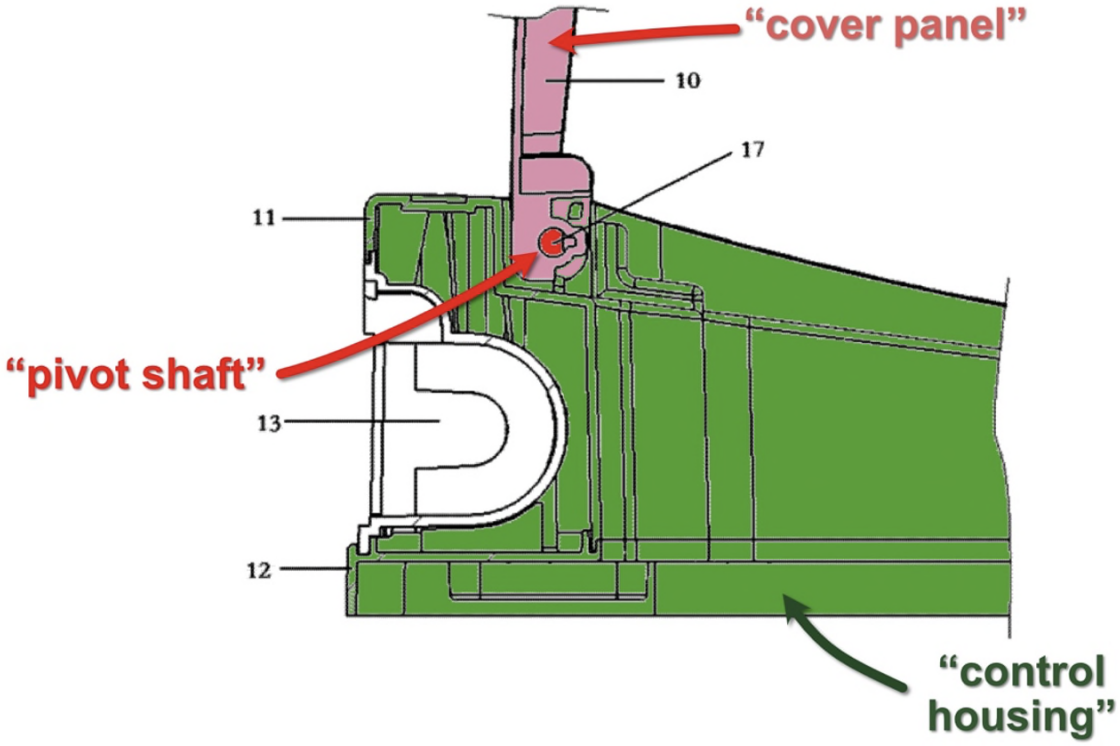


Wang, Figs. 3, 4 (annotated). Figure 5 provides a zoomed in view of one side of this structure. Wang, [0013]. As shown, the ***"pivot shaft"*** (rotating shaft 17) at the end

of the ***"cover panel"*** (cover 10) extends into the "***first … side concealed compartment"*** (the inner cavity):



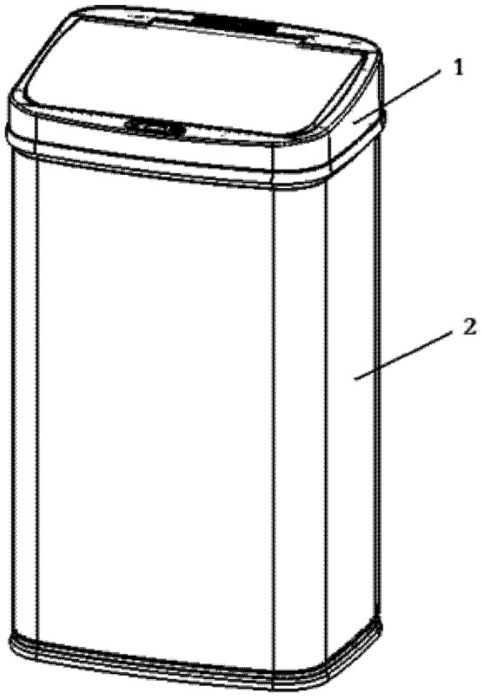
Wang, Fig. 5 (annotated). Figure 7 provides a "partial sectional view." Wang, [0015]. As shown, the "rotating shaft 17" is "fixedly connected under the can cover 10" because it has a portion that is fixed under the mid portion of the cover. Wang, [0018]; *see also* Wang, [0004].



Id., Fig. 7 (annotated).

86. Wang's trashcan also operates in the way this limitation requires. According to Wang, its "can cover 10" is "fixedly connected" to a "rotating shaft 17" that extends into its "cover housing 11." Wang, [0018]; *see also* Abstract (similarly discussing a "rotating shaft"); Wang, [0004]. This causes the "can cover" to be "hinged to the annular covering housing" via the attached "rotating shaft." Wang, [0004]. The shaft is driven by a rotating "motor" to "open and close" the "can cover 10." Wang, [0020]; *see* Wang, [0023] (similarly noting that a "motor" allows the cover to be "driven to open"). Thus, Wang's ***"cover panel"*** (can cover 10) is ***"pivotally mounted to said control housing via said pivot shaft"*** (the cover

10 is fixed to rotating shaft 17) ***"to pivotally move"*** between a ***"closed position"*** and an ***"opened position"*** that opens/closes the container's ***"storage cavity"*** (the rotating shaft is driven by a rotating motor to open/close the cover to allow trash to be thrown into the container). Figure 1 to the left below shows the ***"cover panel"*** in the ***"closed position."*** Figure 3 to the right below shows the ***"cover panel"*** in the ***"open position"***:



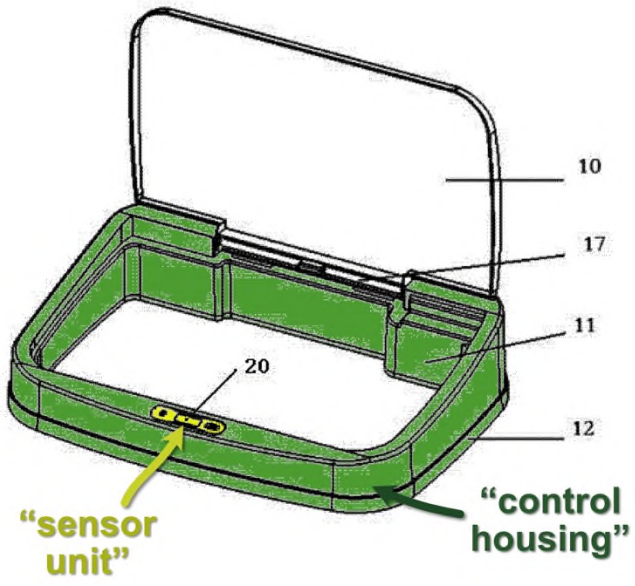
Wang, Figs. 1, 3. As shown, the cover is hinged at its back (where rotating shaft 17 is located) and pivots around this point when opening/closing.

[1-2-C] "an automatic driving arrangement, which comprises:"

87. Wang explains that its trashcan includes various "sensing opening-closing apparatuses" within the "annular covering housing 11." Wang, [0018]. This allows the trashcan to automatically open (and then close) "[w]hen a hand approaches the sensing trash can." Wang, [0023]. These apparatuses are collectively the claimed ***"automatic driving arrangement."***

[1-2-C-1] "a sensor unit mounted at said control housing for detecting a target movement of a user;"

88. According to Wang, its trashcan's "sensing opening-closing apparatus" includes, among other things, "a sensor 20…" Wang, [0018]; *see also* Abstract, [004]. This "sensor 20 is disposed on a front side of the middle body seat 12" of Wang's upper can body. Wang, [0019]. A "mounting hole" allows the "sensor … to extend out" of the "annular covering housing." *Id.*, [0006]. Thus, "[w]hen a hand approaches the sensing trash can, the sensor 20 sends" a "detecting" "signal." Wang, [0023]. So, Wang includes the claimed ***"sensor unit"*** (sensor 20). This sensor is ***"mounted at said control housing"*** (it is attached to the middle body seat) and operates to ***"detect a target movement of a user"*** (it detects a nearby hand). The sensor 20 is shown in Figure 3 below:



Wang, Fig. 3 (annotated).

[1-2-C-2] "an actuation unit concealed in said first side concealed compartment of said control housing in a waterproof manner to operatively link with said sensor unit and to operatively coupled to said pivot shaft, wherein said actuation unit is actuated to move said cover panel via said pivot shaft between said opened and closed positions; and;"

89. Next, Wang explains that the "sensing opening-closing apparatus" includes a "motor 15" and "transmission mechanism." Wang, [0018]. The "motor" is "transmission-connected to" a "sector gear" 16[2] mounted on the "rotating shaft 17." Wang, [0018] The motor operates to "drive[]" the "can cover 10 … open" once a signal from "sensor 20" is detected. Wang, [0023]. These components are

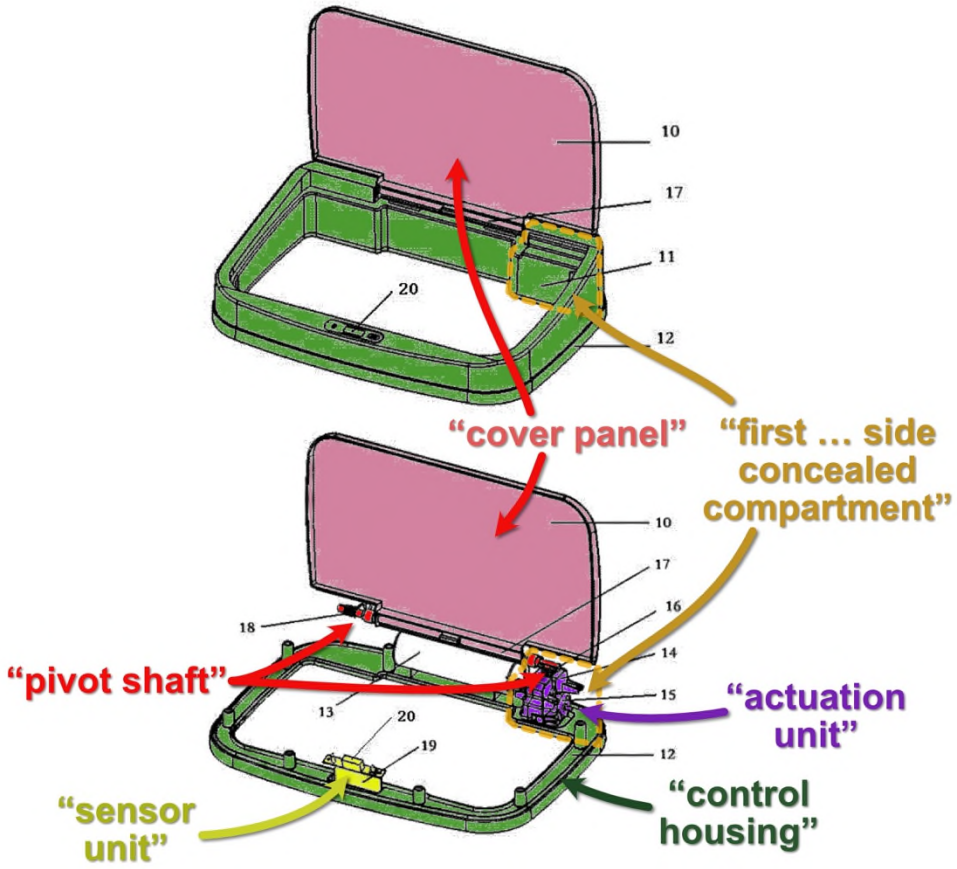
[2] Wang refers to sector gear 6 in paragraphs [0018] and [0020], and sector gear 16 in paragraphs [0016], and [0021]. Use of 6 rather than 16 is an obvious typographic error since the figures do not have a labeled item 6 and the item 16 in figures 4 and 5 is consistent with the description of both sector gear 6 and sector gear 16.

all "disposed in an inner cavity formed between the middle body seat 12 and the annular cover housing 11" such that they are "wrapped in the annular covering housing 11." Wang, [0018]; *see also* Wang, [0004] (similarly referencing an "opening-closing apparatus" within the "annular cover housing"). This allows the components to be "isolated from the garbage storage space" and provides "[t]he sensing opening-closing apparatus" with "good waterproof, moisture-proof, and corrosion-proof performance, thereby greatly improving reliability and … service life of the sensing trash can." Wang, [0018]. Relatedly, Wang notes that the can's "transmission component, … power supply component, and … control component are all wrapped in isolation space, and are completely isolated from a garbage storage portion of the trash can" allowing for "good waterproof, moisture-proof, and corrosion-proof performance during use[.]" Wang, [0008].

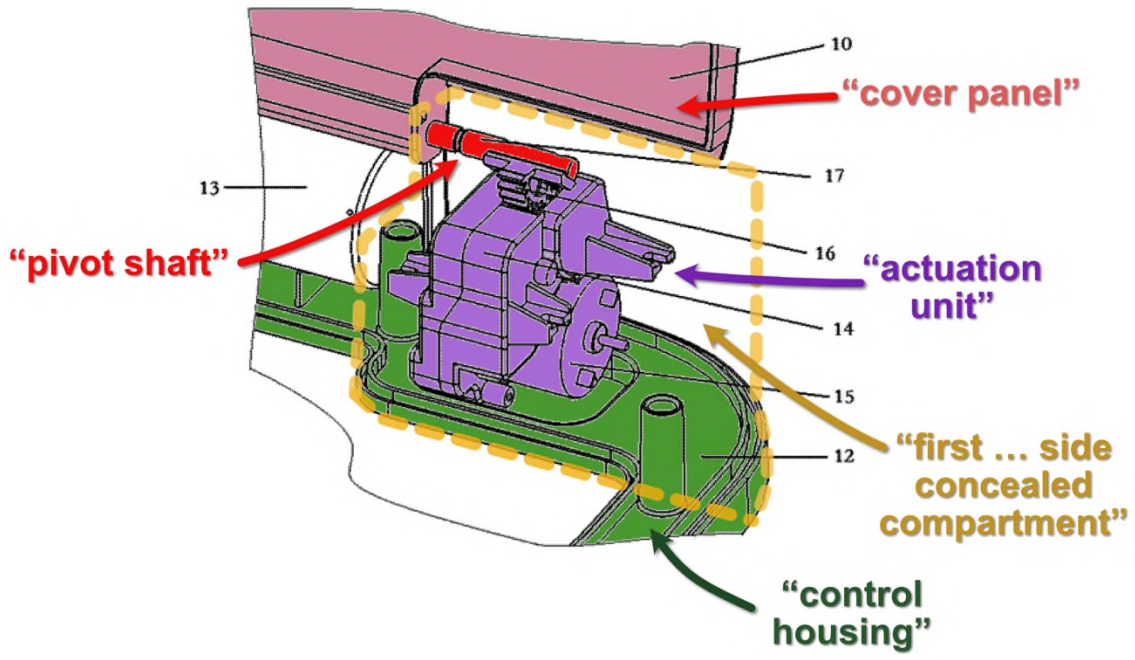
90. So, in sum, Wang includes the claimed ***"actuation unit"*** (its motor 15, transmission mechanism, and sector gear 16). This unit is ***"concealed in said first side concealed compartment of said control housing in a waterproof manner"*** (it is located within annular covering housing 11's inner cavity such that it is protected from water/moisture exposure). And it is ***"operatively linked with said sensor unit"*** (motor 15 operates in response to sensor 20), ***"operatively coupled to said pivot shaft"*** (it drives the shaft via sector gear 6), and ***"is actuated to move said cover***

panel via said pivot shaft between said opened and closed positions" (the motor drives can cover 10 open when a hand is detected).

91. These components, and their location within Wang's upper can body, are shown in Figures 3 and 4 below:



Wang, Figs. 3, 4 (annotated). Figure 5 also provides a more detailed view of Wang's ***"actuation unit"*** (the motor 15, transmission mechanism, and sector gear 16 that drive shaft 17 to open cover 10) within the ***"first … side concealed compartment"*** (the inner cavity in annular covering housing 11):



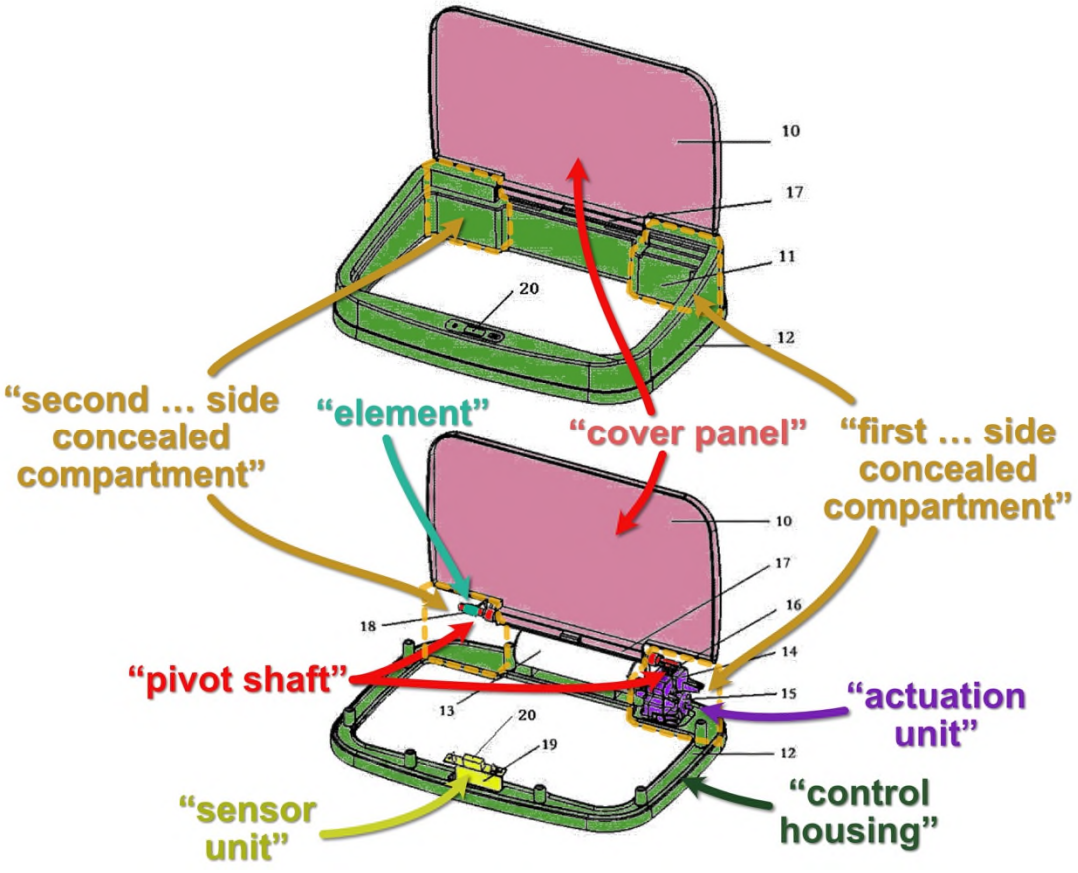
Wang, Fig. 5 (annotated).

[1-2-C-3] "an element arranged to initially push up said cover panel simultaneously when said cover panel is started to move from said closed position and partially offsetting a weight of said cover panel when said cover panel is started to move from said opened position."

92. Wang includes the claimed ***"element."*** In particular, Wang explains that a "torsion spring 18" is "deposed at the other end of the rotating shaft 17" opposite the "opening-closing apparatus." Wang, [0022]; Wang, [0007] (similarly referencing presence of a "torsion spring"). The spring operates to "offset some of the gravity of the can cover 10, so that the motor 15 can open the can cover 10 with a relatively small power." Wang, [0022]. This in turn "sav[es] electricity and prolong[s] a service life of the motor." It also "reduce[s]" "an impact between the

can cover 10 and the annular covering housing 11" "when the can cover 10 is closed." Wang, [0022].

93. The spring 18 is the claimed ***"element arranged to initially push up said cover panel" "partially offsetting a weight of said cover panel"*** (the spring 10 offsets some of the effects of gravity, allowing cover 10 to be more easily moved). The spring's location within the inner cavity of annular covering housing 11 is shown in Figures 3 and 4 below:



Wang, Figs. 3, 4 (annotated).

2. Claim 2

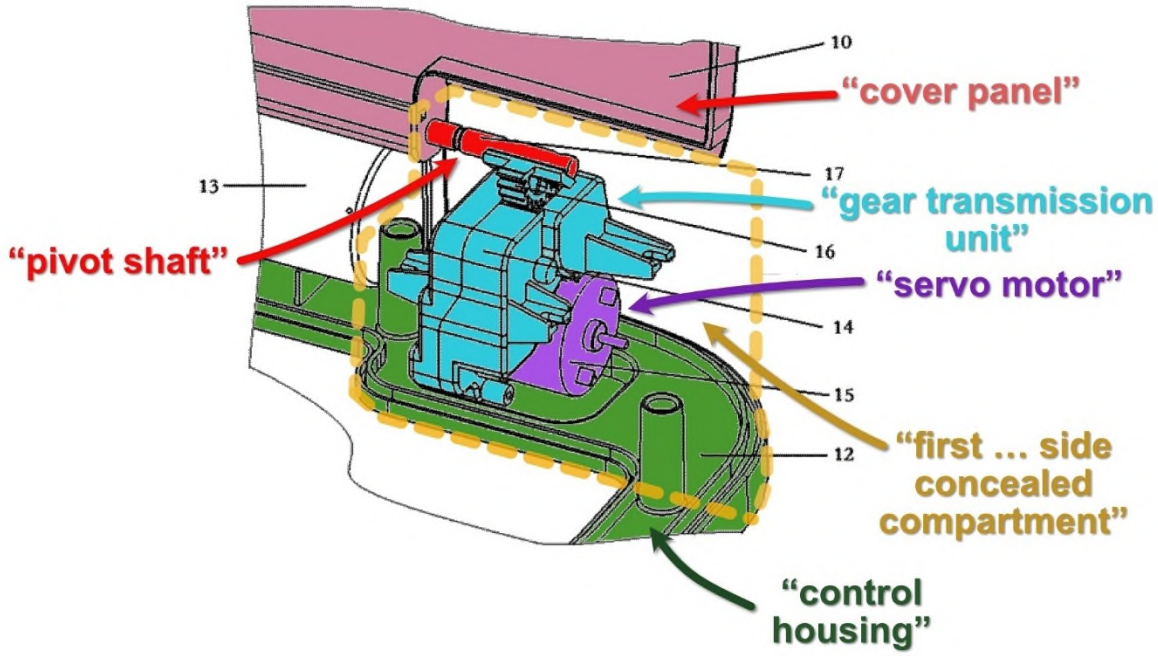
94. Claim 2 depends on claim 1 and further requires:

"wherein said actuation unit comprises a servo motor supported in said first side concealed compartment of said control housing and a gear transmission unit operatively coupled between said first end portion of said pivot shaft and said servo motor for transmitting a rotational power from said servo motor to said pivot shaft."

95. Wang explains that its trashcan includes both a "motor 15" and "transmission mechanism" located within the "inner cavity formed between the middle body seat 12 and the annular covering housing 11." Wang, [0018]; *see also* Wang, [0020] (noting that the "motor 15 is disposed on an inner rear side of the annular covering housing"). The motor is "transmission-connected to the sector gear" 16 attached to the end of shaft 17 "by using the transmission mechanism." Wang, [0018]; *see also* Wang, [0004] (similarly noting that the "motor is transmission-connected to the sector gear" via "the transmission mechanism"). The "transmission mechanism" is a "gear transmission" that allows for "stable transmission, reliable operation, high transmission efficiency, small space occupied," and "a long service life." Wang, [0021]. The "motor 15" "rotate[s]" to "drive[] … open" the cover via the transmission mechanism 14, sector gear 16, and rotating shaft 17. Wang, [0020]-[0023].

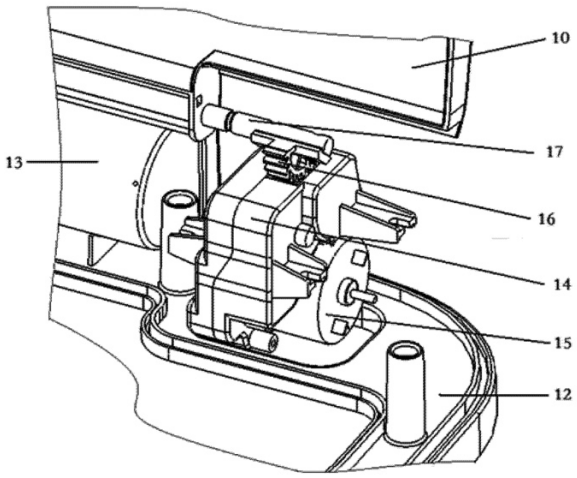
96. So, in sum, Wang includes an ***"actuation unit"*** with a ***"motor"*** (the motor 15) and "gear transmission unit" (the gear transmission and sector gear 16). These components are ***"supported in said first side concealed compartment"*** (they are all located within the inner cavity in annular covering housing 11). And the

"gear transmission unit" is ***"operatively coupled between said first end portion of said pivot shaft and said serve motor"*** to ***"transmit[] … rotational power"*** from the motor to the shaft (the motor's power is transmitted to the shaft 17 via the gear transmission and sector gear 6.) These components—and their location in Wang's housing 11—are shown in Figure 5 below:



Id., Fig. 5 (annotated).

97. While Wang does not label its motor 15 as a ***"servo"*** motor, this is the type of motor it employs. Figures 5 of Wang and the '165 patent are reproduced below. As shown, both employ structurally indistinguishable motors (labeled 15 in Wang and 61 in the '165 patent):



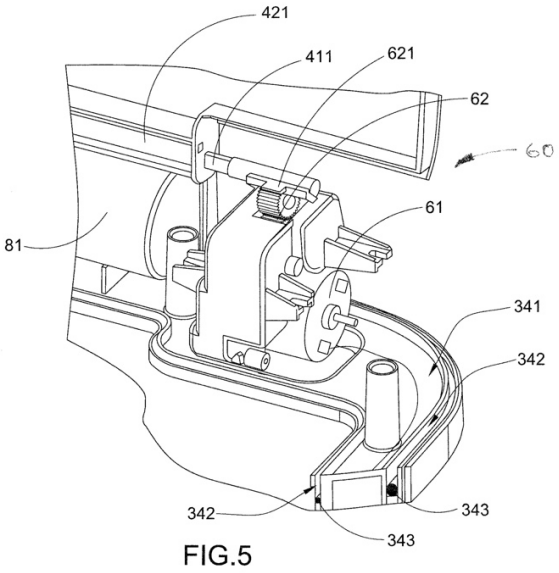


FIG.5

Wang, Fig. 5 **’165 patent, Fig. 5**

The ’165 patent labels this motor—which is present in identical form in Wang—as a “servo motor 61.” Ex. 1001, 7:6-12. Moreover, not only do Wang and the ’165 patent depict the use of the same motor, but they also describe the operation of this motor in the same way. Wang’s “motor 15” “rotate[s]” to “drive[] … open” the trashcan cover. Wang, [0020], [0023]. The motor’s rotation is passed to shaft 17 via a “gear” “transmission mechanism.” *Id*., [0018], [0020]. The ’165 patent similarly explains that its “motor 61” generates “rotational power” that is “transmitted through … gear transmission unit 72” to a “pivot shaft 62” for purposes of “mov[ing]” a “cover panel” to an “opened position.” Ex. 1001, 7:13-23. Given these similarities in form and function, Wang plainly employs the same type of “servo motor” used by the ’165 patent in its example and required by the claims.

3. Claim 3

98. Claim 3 depends on claim 2 and further requires:

"wherein said gear transmission unit comprises a gear worm sector affixed at said first end portion of said pivot shaft to operatively coupled with said servo motor."

99. The '165 patent explains that its Figure 5 depicts "a gear worm sector 621 affixed at the first end portion 411 of the pivot shaft 41 to operatively coupled with the servo motor 61 via a gear seat." Ex. 1001, 7:38-41. This component is highlighted below:

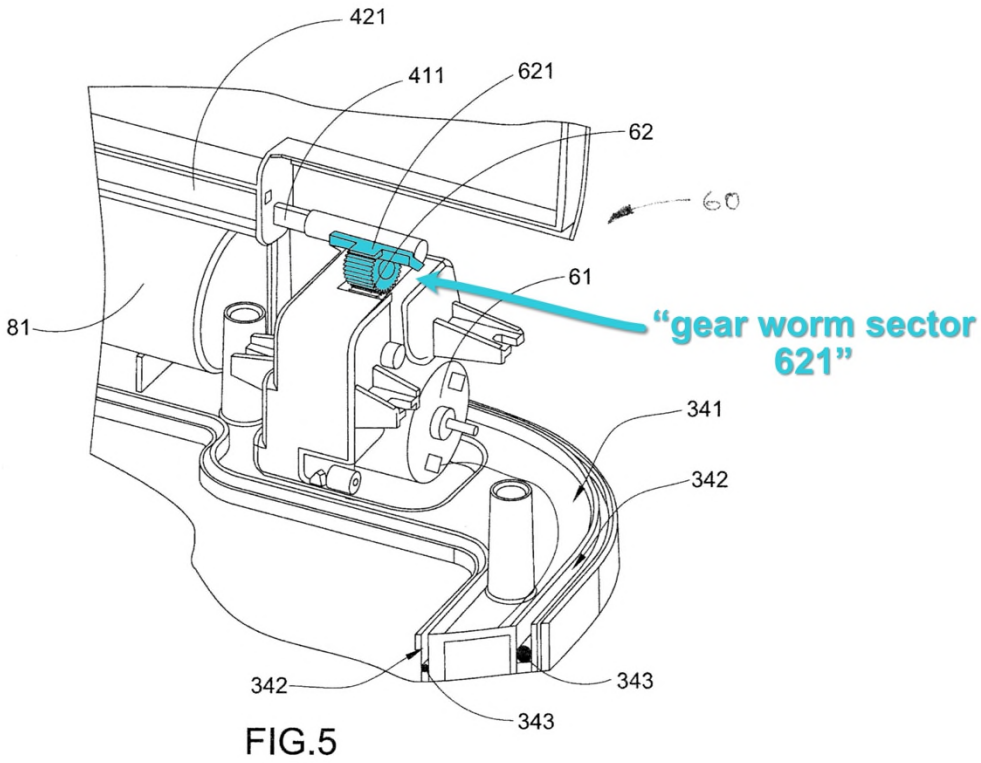
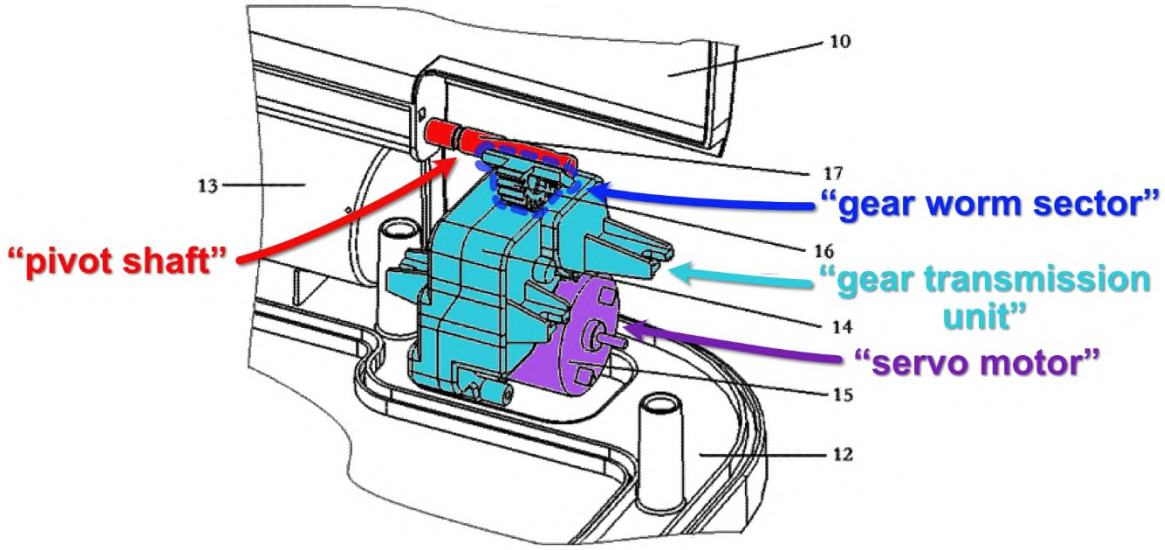


Exhibit 1001 Fig. 5 (annotated).

100. Wang includes the same component. A "sector gear" 16 is "fixedly connected" to "one end of the rotating shaft 17." Wang, [0018]; *see also* Wang,

[0004] (similarly referencing a "sector gear"). The "motor 15" is "transmission-connected" to this "sector gear [1]6" via a "transmission mechanism" allowing it to rotate the shaft and open the trashcan. Wang, [0018], [0021]-[0023]. Sector gear 16 is thus the claimed ***"gear worm sector."*** As shown, it is ***"affixed at said first end portion of said pivot shaft"*** (the depicted end of rotating shaft 17) ***"to operatively coupled with said servo motor"*** (the motor 15):



Wang, Fig. 5 (annotated).

4. Claim 4

101. Claim 4 depends on claim 3 and further requires:

"wherein said gear transmission unit is a decelerating gear unit for controllably lifting up and dropping down said cover panel at a speed determined by gear ratios of said gear transmission unit so as to move said cover panel between said opened and closed positions in a hydraulic manner."

102. Wang explains that its "transmission mechanism" includes "a gear reducer 14." Wang, [0021]. "[A] primary gear of the reducer 14 is transmission-

connected to the motor 15" while the "final gear of the reducer 14" is "transmission-connected" to the "sector gear 16." Wang, [0021]. The reducer allows for "stable transmission" of movement from the motor to the rotating shaft (and attached trashcan cover) and allows for "reliable operation" and "high transmission efficiency." *Id.* It also operates to "reduce[] a speed" of the "can cover 10" as it is "driven to open" by the motor. Wang, [0021], [0023].

103. This is exactly what this limitation requires. Wang includes a ***"decelerating gear unit for controllably lifting up and dropping down said cover panel"*** (a reducer 14 that reduces the motor speed when opening/closing the cover). The unit moves the cover ***"at a speed determined by gear ratios"*** (the reducer 14 includes multiple gears, including a primary and final gear, to reduce the motor's rotational speed applied to the shaft/cover). And the unit allows the cover to open/close in a ***"hydraulic manner"*** (by reducing the motor speed applied to the shaft and cover, the reducer 14 allows for more stable and reliable cover opening/closing operation).

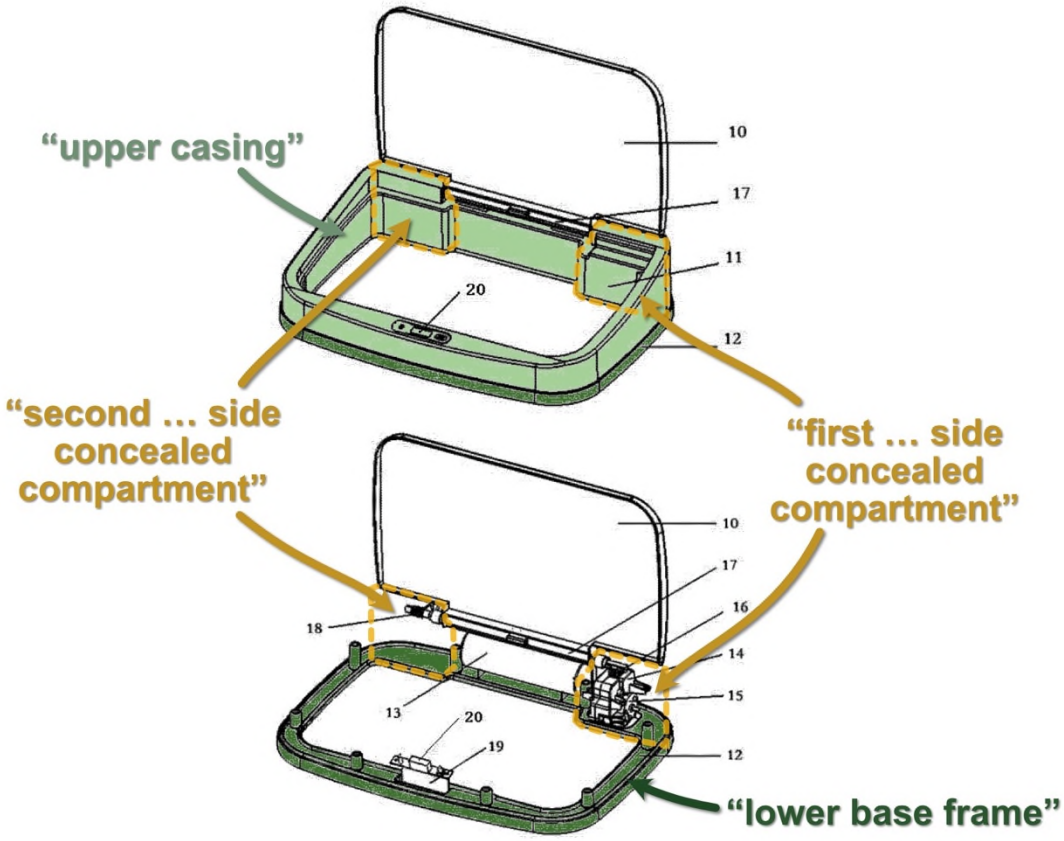
5. Claims 5 and 11

104. Claims 5 and 11 respectively depend on claims 3 and 1. Both further require:

"wherein said control housing comprises a lower base frame detachably coupled at said container opening of said container body, and an upper casing sealed and

coupled at said lower base frame to define said first and second side concealed compartments therebetween."

105. Wang explains that its "upper can body 1" "includes an annular middle body seat 12" that is "buckled on a lower can body 2" along with an "annular covering housing 11" that is "buckled on the middle body seat 12." Wang, [0018]; *see also* Wang, [0004] (similarly referencing the "body seat" and "annular covering housing"). The "annular covering housing 11" includes an internal "inner cavity" that holds the "sensing opening-closing apparatus" in a "waterproof, moisture-proof, and corrosion-proof" manner. Wang, [0018]. Thus, the trashcan includes both a ***"lower base frame detachably coupled at said container opening"*** (the middle body seat 12) and ***"an upper casing sealed and coupled at said lower base frame"*** (the waterproofing annular covering housing 11). These components ***"define first and second side concealed compartments therebetween"*** (the inner cavities within housing 11). This is all shown in Figures 3 and 4 below:



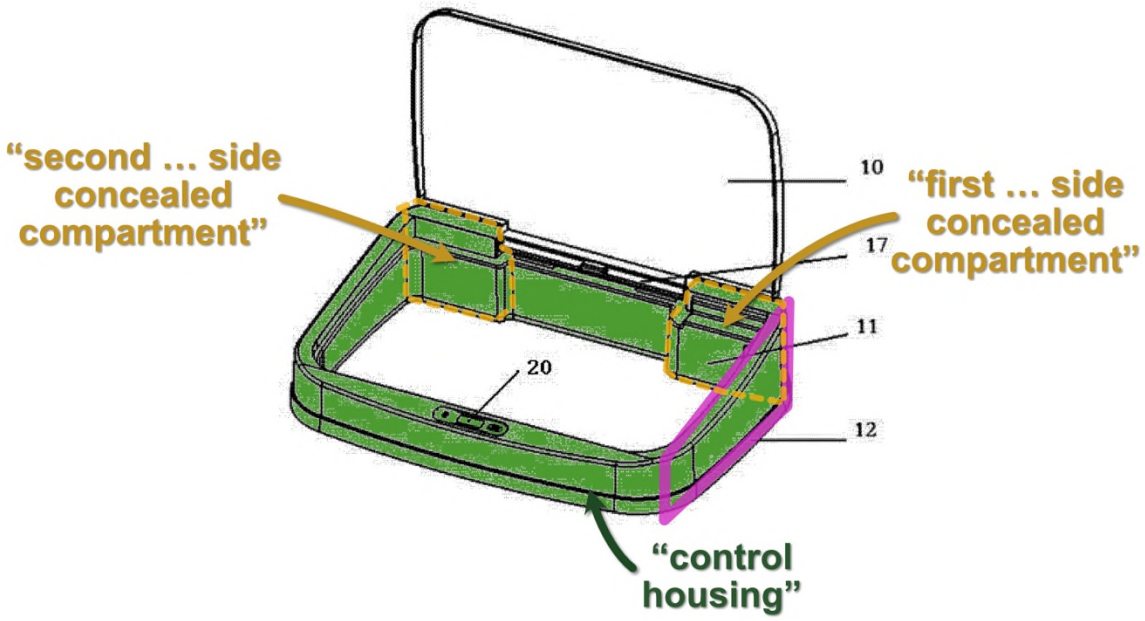
Wang, Figs. 3, 4 (annotated).

6. Claims 6, 8, and 14

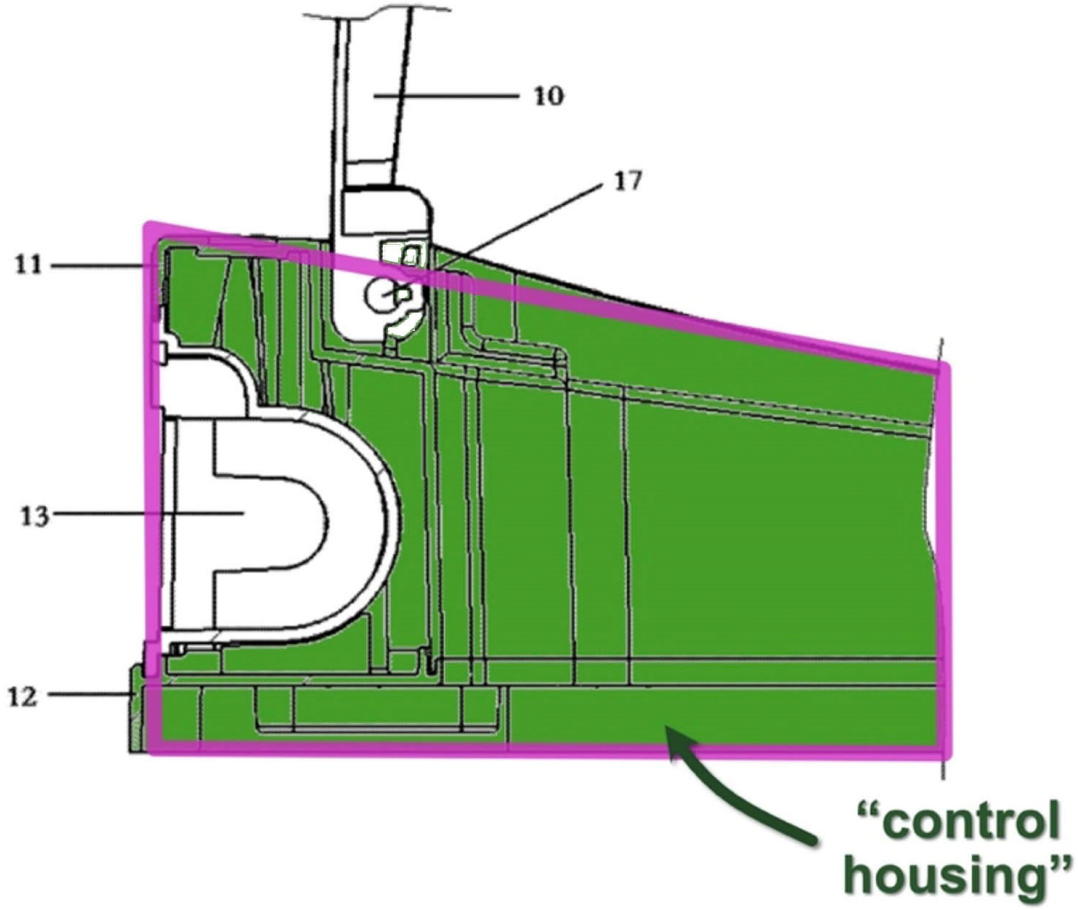
106. Claims 6, 8, and 14 respectively depend on claims 3, 5, and 1. They all further require:

"wherein said control housing has a trapezoid cross section that a height of said front portion of said control housing is shorter than that of said rear portion thereof to maximize a size of each of said first and second side concealed compartments."

107. As shown in Figures 3 and 7 below, Wang's ***"control housing"*** (its upper can body 1 and associated housing 11 and seat 12) has a ***"trapezoid cross section"*** with ***"front portion"*** with a ***"height"*** that is ***"shorter"*** than the ***"rear portion"***:



Wang, Fig. 3 (annotated).



Wang, Fig. 7 (annotated). Further, because Wang's ***"concealed compartments"*** (the inner cavities in annular covering housing 11) are located at the rear portion of its body 2, this cross-sectional shape operates to ***"maximize a size of each of"*** these ***"compartments."***

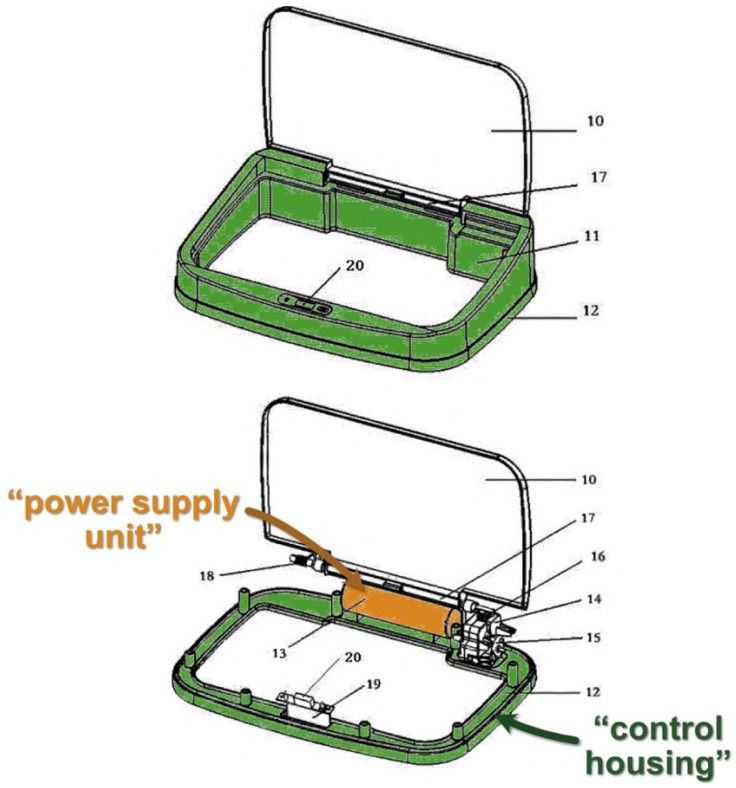
7. Claims 7, 16, and 23

108. Claims 7, 16, and 23 respectively depend on claims 3, 15, and 1. They all further require:

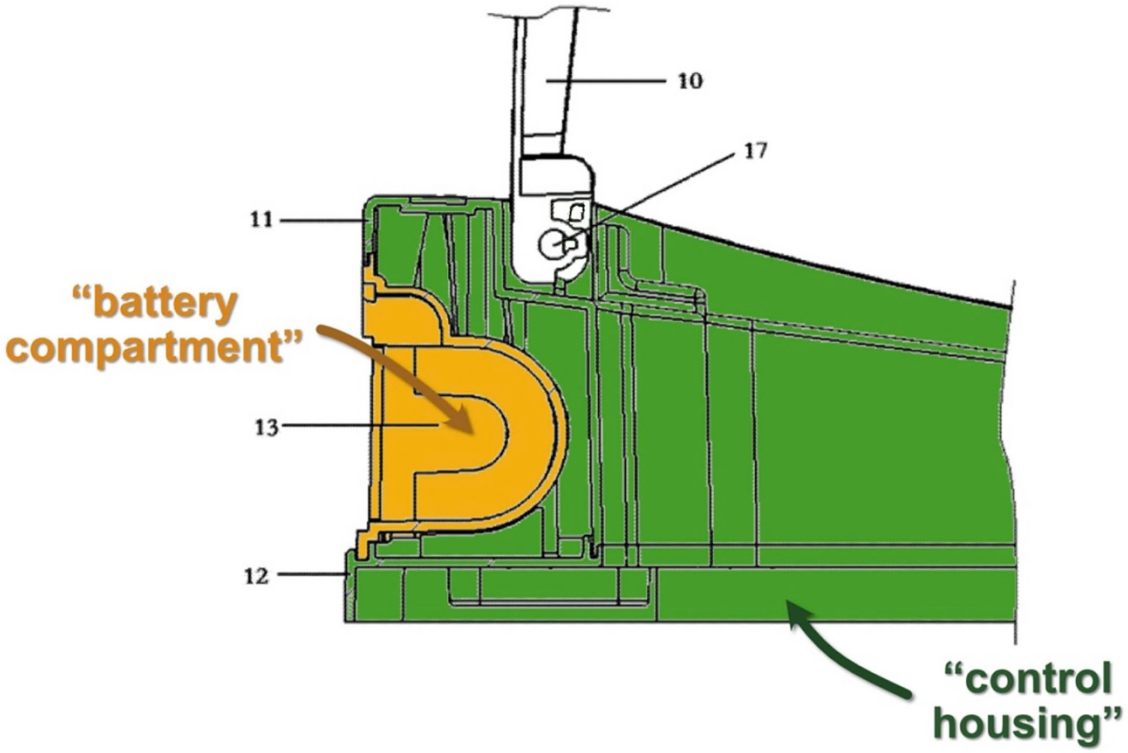
"further comprising a power supply unit for electrically connecting with said automatic driving arrangement, wherein said power supply unit comprises a battery compartment formed within said rear portion of said control housing and a battery compartment cover detachably coupled at a rear wall of said control housing to enclose said battery compartment."

109. According to Wang, its trashcan includes a "battery box 13" that is "electrically connected to" a "circuit board 19" for purposes of supplying power to the motor. Wang, [0018], [0020]. The box includes "metal electrodes" that contact "a battery." Wang, [0020]. The "battery box" also includes an "opening" that "is disposed on a rear side surface of the annular covering housing, away from the garbage storage space." Wang, [0020]. Location of the opening here prevents "moisture and corrosive gases in the trash can from penetrating into the battery box 13" when open. Wang, [0020]. As shown in Figure 6, this opening is closed with a battery box cover. *See* Wang, Fig. 6.

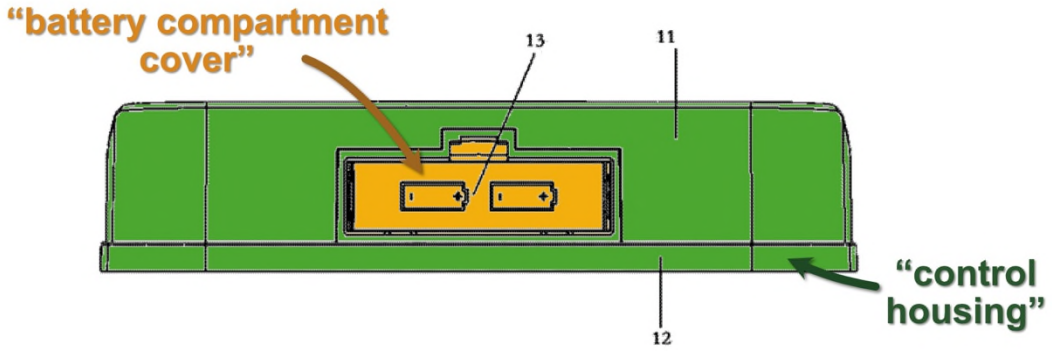
110. In view of this disclosure, Wang includes the claimed ***"power supply unit for electrically connecting with said automatic driving arrangement"*** (the battery box 13 and a battery it contains). This box includes a ***"compartment"*** (the inside of the box) and a ***"battery compartment cover"*** (the opening cover) located at a ***"rear wall of said control housing"*** (the rear side surface of the housing 11). This compartment is shown in Figures 3, 5, and 7.



Wang, Figs. 3, 4 (annotated).



Wang, Fig. 7 (annotated). And, as shown in Figure 6, the compartment's opening employs a standard ***"detachably coupled"*** (*i.e.*, removable) ***"cover"*** that can be removed/opened to replace the two batteries stored inside:



Wang, Fig. 6 (annotated).

8. Claims 9, 12, and 15

111. Claims 9, 12, and 15 respectively depend on claims 2, 11, and 1. They all further require:

"wherein said means comprises a resilient element concealed in said second side concealed compartment of said control housing and coupled at said second end portion of said pivot shaft to apply an urging force as an initial force towards said cover panel for initially pushing up said cover panel simultaneously when said cover panel is started to move from said closed position and as a weight supporting force for partially offsetting a weight of said cover panel when said cover panel is started to move from said opened position."

112. Wang includes the claimed ***"resilient element"*** for the same reasons explained in connection with the final ***"element"*** limitation of claim 1: its trashcan includes a "torsion spring 18" that "offset[s] some of the gravity of the can cover 10" allowing the motor to more easily open the trashcan. Wang, [0022]; *see also supra* discussion of limitation [1-2-C-3].

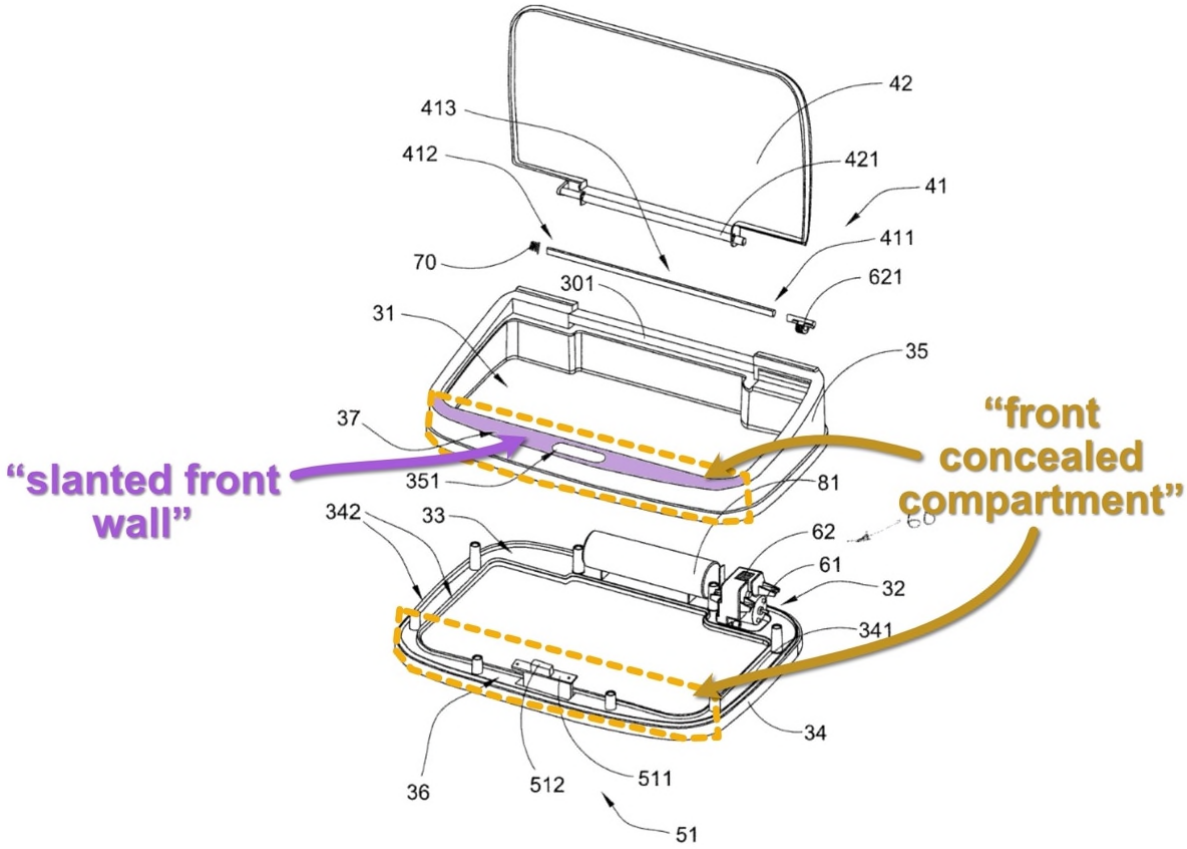
9. Claims 10, 13, and 24

113. Claims 10, 13, and 24 respectively depend on claims 2, 11, and 1. They all further require:

"wherein said control housing has a front concealed compartment defining a slanted front wall, wherein said sensor unit comprises sensor circuit board concealed in said front concealed compartment and a sensor supported at said slanted front wall of said control housing to operatively linked to said sensor circuit board, such that said sensor is located in front of said cover panel to maximize said detecting range of said sensor at said approaching direction for detecting said target movement."

114. This claim limitation references a ***"front concealed compartment"*** with a ***"slanted front wall"*** where a ***"sensor"*** is ***"supported."*** The '165 patent

explains that Figure 4 includes an example of one such "slanted front wall 37" that "support[s]" a "sensor 512." Ex. 1001, 6:55-63. This "slanted front wall 37" is annotated below:

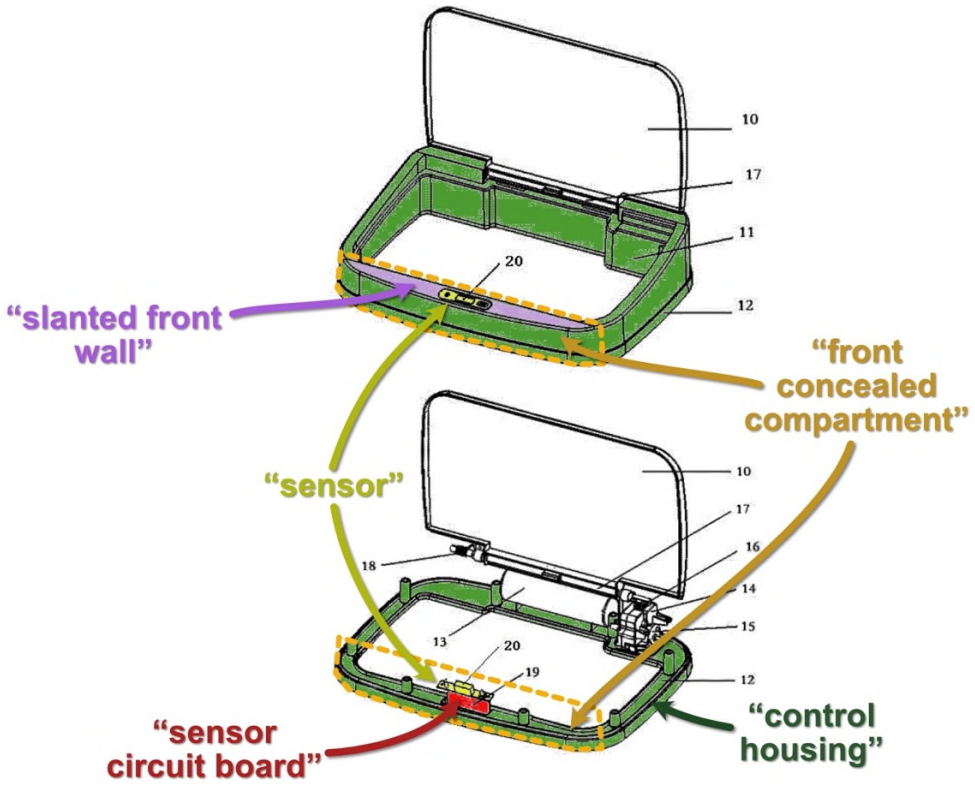


Wang, Fig. 4 (annotated).

115. Wang discloses a trashcan with the very same structure. Again, according to Wang there are "inner cavities" between its "annular covering housing 11" and "middle body seat 12." Wang, [0018]; *see also* Wang, [0004]. A "sensor 20" is "disposed on a front side of the middle body seat 12." Wang, [0019]. A "circuit board 19 is disposed under the sensor…." Wang, [0019]. "A mounting hole … allow[s] the sensor 20 … to extend out" of the top of the "annular covering

housing 11…." Wang, [0019]. Both the "sensor 20" and "circuit board 19" are "embedded in the mounting hole" such that they are located in the cavity formed below the housing 11 but nonetheless "protrude upward" out of the cavity. Wang, [0019].; *see also* Wang, [0005]-[0006] (similarly discussing the location of the "sensor" and "circuit board").

116. Thus, Wang's trashcan includes a ***"front concealed compartment"*** (the portion of the inner cavity between housing 11 and body seat 12 at the trashcan front). Because the back of Wang's housing 11 is taller than its front, the ***"front concealed compartment"*** has the same ***"slanted front wall"*** as the '165 patent. A ***"sensor unit"*** (the sensor 20 and circuit board 19) with a ***"sensor circuit board"*** (board 19) is ***"concealed in said front concealed compartment"*** and ***"supported at said slanted front wall"*** (the sensor is mounted in and protrudes out of hole in the slanted top of the housing 11). This is shown in Figures 3 and 4 below:



Wang, Figs. 3, 4 (annotated).

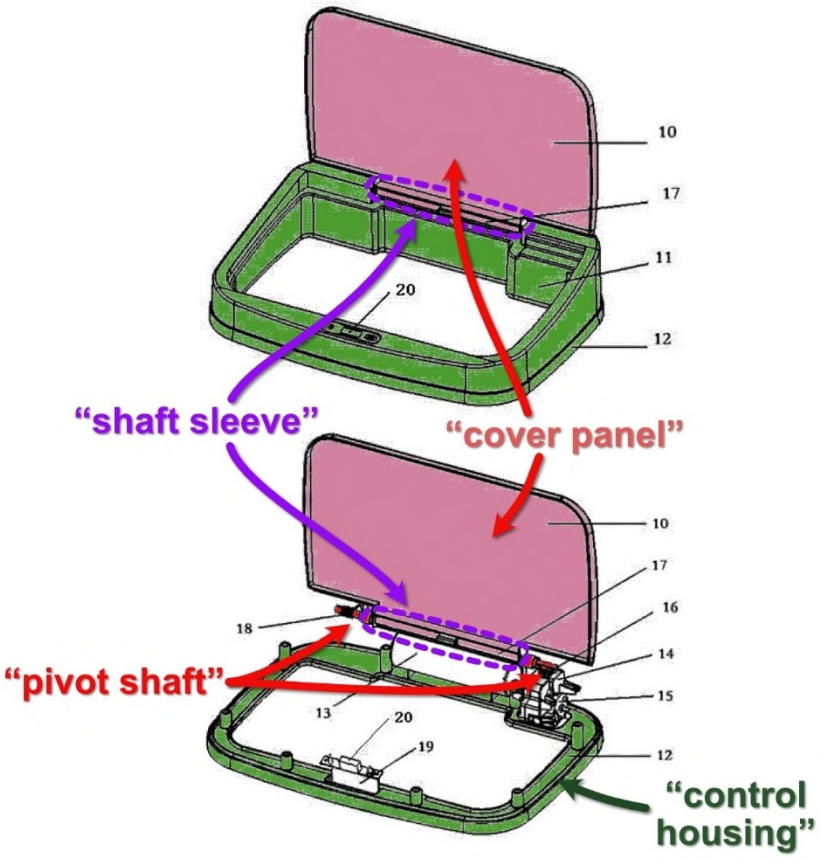
117. Next, Wang explains that during trashcan operation, "sensor 20 sends a signal" to "circuit board 19" when "a hand approaches the sensing trash can." Wang, [0023]. Thus, Wang's ***"sensor"*** (sensor 20) is ***"operatively linked to said sensor circuit board, such that said sensor is located in front of said cover panel to maximize said detecting range of said sensor at said approaching direction for detecting said target movement"*** (due to its location at the trashcan front, the sensor will send a signal to circuit board 19 when a hand approaches this can's front area).

10. Claim 17, 19, and 21

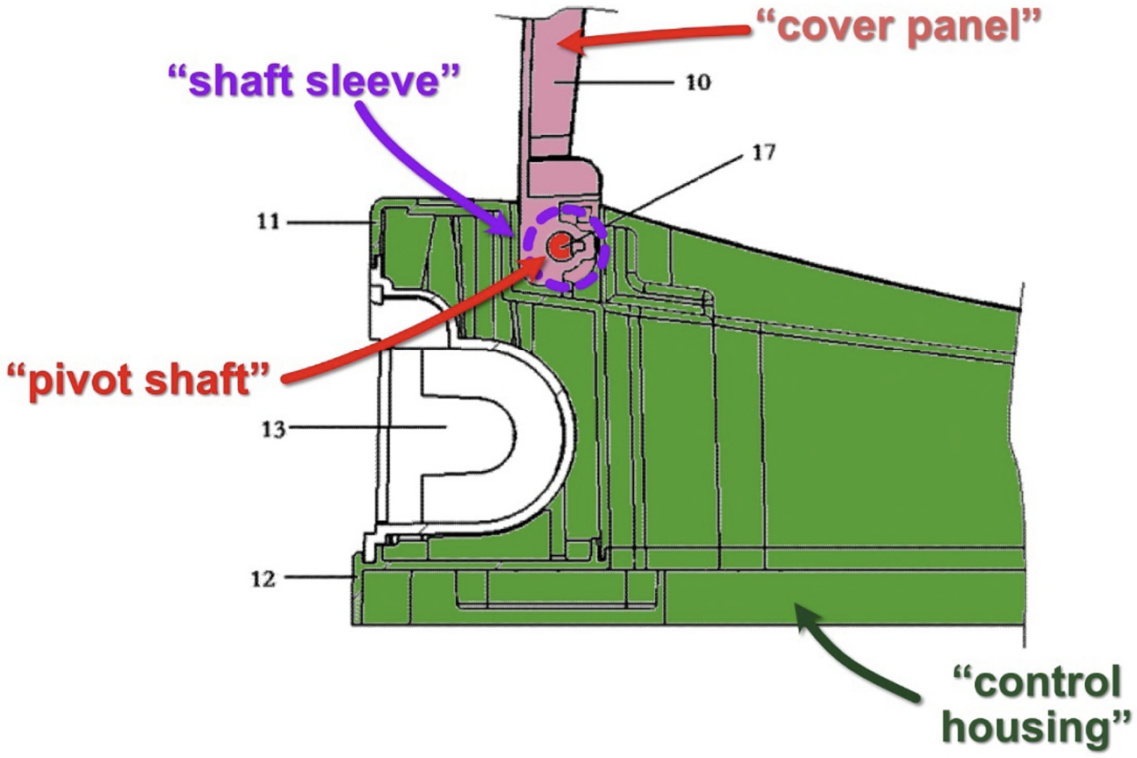
118. Claims 17, 19, and 21 all depend on claim 1 and further require:

"wherein said cover panel comprises a shaft sleeve formed along a folding edge thereof, wherein an exposed portion of said pivot shaft between said two end portions thereof is received in said shaft sleeve to conceal said exposed portion of said pivot shaft so as to prevent said pivot shaft from exposing to said container opening of said container body, wherein when said pivot shaft is driven by said actuation unit to rotate, said shaft sleeve is driven by said pivot shaft to rotate, so that said cover panel is pivotally moved between said opened position and said closed position."

119. According to Wang, its "rotating shaft 17" is "fixedly connected under the can cover 10." Wang, [0018]. As shown in Figures 3 and 4, the bottom end of Wang's cover 10 includes an integrated sleeve-like structure through which the shaft 17 passes. This sleeve-like structure protects the portion of the shaft 17 that does not extend into Wang's inner cavities from the trashcan interior:



Id., Figs. 3, 4 (annotated). Figure 7 provides a "partial sectional view." Wang, [0015]. This figure also shows rotating shaft 17 passing through the sleeve-like structure at the bottom of Wang's cover 10:



Wang, Fig. 7 (annotated). This structure causes Wang's cover 10 to open when the "rotating shaft 17" is driven by motor 15. *Id.*, [0020], [0023].

120. In sum, Wang includes the claimed ***"shaft sleeve"*** (the sleeve-like structure at the end of its cover 10). This sleeve is located at the ***"folding edge"*** of Wang's can cover (the end that rotates to open/close the cover). The ***"pivot shaft … is received in said shaft sleeve"*** to protect it from the ***"opening of said container body"*** (the shaft 17 passes through the sleeve-like structure and is not exposed to

garbage). Further, ***"when said pivot shaft is driven by said actuation unit to rotate, said shaft sleeve is driven by said pivot shaft to rotate, so that said cover panel is pivotally moved between said opened position and said closed position"*** (because Wang's shaft 17 is located within the sleeve-like structure, and because this sleeve-like structure is integrated into Wang's cover 10, the shaft, sleeve-like structure, and cover 10 will all rotate together when Wang's cover is driven open/closed by the motor 15).

11. Claims 18, 20, and 22

121. Claims 18, 20, and 22 respectively depend on claims 17, 19, and 21. They all further require:

"wherein said exposed portion of said pivot shaft has a non-circular cross section and said shaft sleeve has a corresponding non-circular cross section to fit said exposed portion of said pivot shaft, such that said cover panel is pivotally moved between said opened and closed positions along with a rotation of said pivot shaft."

122. As shown in Figure 7 both Wang's "pivot shaft (rotating shaft 17) and its ***"shaft sleeve"*** (the sleeve-like structure at the end of cover 10) have a ***"non-circular cross section."*** *See* Wang, Fig. 7. Further, as discussed above in connection with claim 17, these structures allow Wang's cover to be ***"pivotally moved"*** between ***"opened and closed positions"*** when the shaft is rotated by motor 15. Wang, [0004]. [0020], [0023]; *see also supra* discussion of claims 17, 19, 21. Moreover, because both the shaft and cover rotate together, their ***"non-circular cross section[s]"*** are ***"corresponding."*** *See* Wang, [0004]. [0020], [0023]

C. *Ground 2*: Obviousness Over Wang

123. As explained above when discussing Ground 1, I agree that Wang discloses all required limitations of and thus anticipates claims 1-24 of the ’165 patent.

124. In my opinion, Wang also renders the claims obvious. There are no meaningful, substantive distinctions between Wang and the ’165 patent: both disclose the same trashcan with the same structure, features, and functionality. Indeed, both Wang and ’165 not only describe the same trashcan, but also depict the same trashcan in their figures.

125. I recognize that there are a handful of minor differences in the language used by the ’165 patent and Wang. None of these language differences are meaningful when it comes to the claims: Wang describes exactly what the ’165 patent’s claims require.

126. I have been asked to assess and offer opinions regarding certain of the ’165 patent’s claim limitations.

127. In doing so, I have assessed the ’165 patent and Wang’s disclosure. I have also considered the background knowledge that would have informed a POSITA’s understanding of Wang’s teachings.

1. "[A]utomatic" "driving arrangement" (claim 1)

128. Claim 1 references a trashcan with an ***"automatic" "driving arrangement."***

129. In my opinion, a POSITA would have readily understood that Wang's trashcan includes this type of automatic drive to open/close its cover.

130. Wang begins by explaining that it is meant to improve upon another existing "[i]ntelligent [a]utomatic [f]lip [g]arbage [c]an." Wang, [0002].

131. Because Wang is seeking to improve on existing, automatic opening trashcans, a POSITA would have understood that Wang's can is similarly meant to be automatic. It would make no sense for Wang to eliminate this key feature of the art it is seeking to improve.

132. Moreover, the structure and described function of Wang's trashcan confirms that it is ***"automatic."***

133. Wang repeatedly explains that it is a "sensing trash can." Wang, Abstract, [0001], [0004], [0008], [0018].

134. Further, according to Wang, during operation the trashcan "detect[s]" when "a hand approaches the sensing trash can" and trigger the "can cover 10 … to open." Wang, [0023].

135. When a hand is detected, the can is driven open with a motor without further user intervention. Wang, [0023].

136. This reference to hand detection, and then the automatic driving of the cover open with a motor in response to this sensing (without further user intervention), shows that Wang's trashcan includes the very type of ***"automatic" "driving arrangement"*** the claims here reference.

2. "[P]ivotally mov[ing]" cover (claim 1)

137. Claim 1 also references a "***pivotally moving"*** cover.

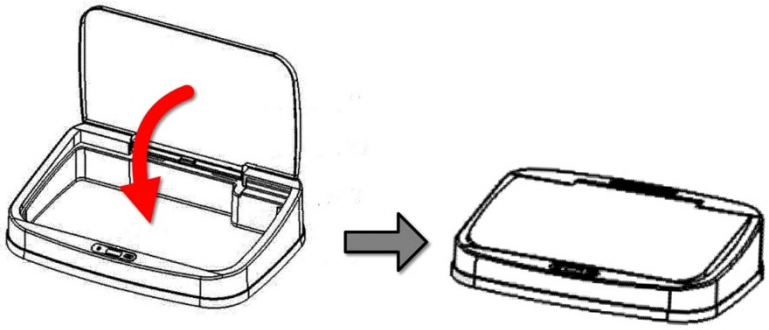
138. Wang does not use the word "pivot." Regardless, it describes its trashcan cover movement in a way that makes clear that the cover does in fact pivot.

139. More particular, Wang explains that its trashcan includes a "rotating shaft fixedly connected under the can cover." Wang, [0004].

140. This "rotating shaft" causes the can cover to be "hinged to the annular covering housing." *Id.*; *see also* Wang, [0018] (similarly referencing a "hinged" "can cover 10").

141. In my opinion, a POSITA would have understood that by describing its cover as "hinged" and the associated shaft as "rotating," Wang is referring to a cover that pivots (or rotates) along with rotating shaft 17 and along that shaft's longitudinal axis for purposes of opening and/or closing the cover. For instance, a "hinged" door pivots around the point where the hinge attaches to the door frame. Likewise, Wang's "hinged" cover will pivot around the point where the cover is attached to the trashcan (*i.e.*, the portion of the trashcan housing the rotating shaft).

142. An example demonstrative showing this cover pivoting operation is provided below:



Wang, [0018]; *see also* Wang, Figs. 2, 3 (modified showing the upper portion only and annotated). As shown, the cover is hinged (and thus pivots) at its back edge.

143. A POSITA would also have recognized that this is a standard trashcan cover operation: trashcan covers are routinely designed to pivot around an axis when opening (as Wang's cover does in the demonstrative images shown above).

3. "[S]ervo motor" (claim 2)

144. Claim 2 references a ***"servo motor."***

145. In my opinion, to the extent Wang does not already disclose such a motor (in my opinion it does, given the identity of Wang's motor to that in the '165 patent itself), a POSITA would have considered it highly obvious to use a servo motor with Wang.

146. To begin, at the time the ’165 patent was filed, servo motors were not only known and available but were routinely used as part of mechanisms that open/close the lid of a waste receptacle.

147. This is exemplified by numerous prior art references I have reviewed:

- Ex. 1007: discusses a “garbage-box” that employs a “servo motor” to “drive a transmission shaft” to open a trashcan “door” at [0008].
- Ex. 1008: discusses use of an “electric driving unit …, such as a servo motor” to provide “rotational power” needed to “controllably lift[] up” a container “cover panel” at [0056].
- Ex. 1009: discusses a “waste receptacle” that uses a “servo motor to drive an “automatically operable lid” at [0008].
- Ex. 1010: discusses a “trashcan system 10” with a “lid 45” opened using an “electromechanical actuating device such as a servo motor” at [48].

148. Given the availability and routine use of servo motors to control the opening / closing of container covers (including trashcan covers), a POSITA would have considered it highly obvious to employ a servo motor when implementing Wang.

149. Similarly, a POSITA would have considered use of a servo motor—as opposed to some other type of motor—to be nothing more than a routine, obvious design choice. Servo motors were plainly known, routinely used, and thus would have been one of the primary motor options considered by a POSITA when implementing Wang.

150. Next, not only were servo motors available, but a POSITA would have recognized that use such a motor would have (1) improved Wang's trashcan and (2) been more appropriate for use with Wang's trashcan than any other motor. This also would have served as a motivation to use a servo motor with Wang.

151. In particular, unlike other types of motors, servo motors provide precise, repeatable motion.

152. This is achieved via use of a built-in feedback device, which allows the servo motor to provide excellent operational accuracy and repeatability over time.

153. The feedback device allows a servo motor to produce the same positional movement despite changes in operating conditions such as increased friction.

154. A POSITA would have recognized that this type of operation would have been highly beneficial to a trashcan.

155. By using a servo motor, it would be ensured that Wang's cover opens (and closes) by the same predictable amount every time.

156. If another type of motor were used (like an induction motor), this type of precise control would not be possible and the cover could move different amounts each time the motor is activated. This could lead to trashcan cover damage, inadequate opening, or inadequate closing.

157. A servo motor would also be able to address the impacts of component wear, accumulated dirt or debris, or obstructions around the cover area of Wang's trashcan. Any of these factors could all impact the amount of force needed to open/close the cover: wear could make the motor, gear transmission, or other moving components less efficient. Dirt or debris (including that attached to the cover itself) could interfere with movement or increase the amount of force needed to open the cover. Cover obstructions could cause a similar effect. Use of a servo motor would better allow Wang's trashcan to account for these types of changes while ensuring continued proper operation.

158. Moreover, a POSITA also would have recognized that use of a servo motor would have rendered Wang's trashcan more energy efficient.

159. Some types of motors—like stepper motors—employ idle or dwell currents when not in operation leading to higher power usage.

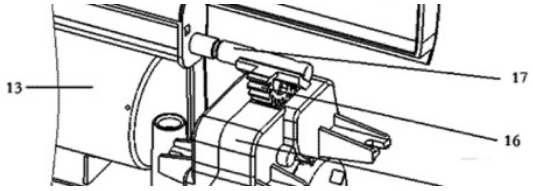
160. Servo motors only use current when in operation resulting in reduced power usage and increased efficiency.

161. Because Wang's trashcan employs battery power, a POSITA would have considered it highly desirable to employ a more energy efficient servo motor as opposed to another type of motor that consumes more power.

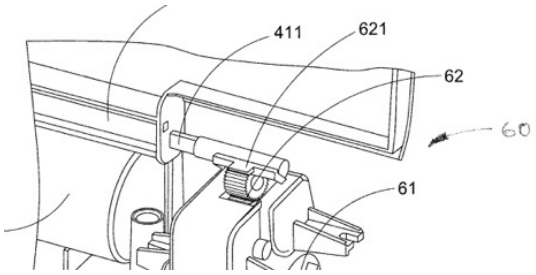
4. "[G]ear worm sector" (claim 3)

162. Claim 3 requires use of a ***"gear worm sector."***

163. To begin, I note that Wang depicts use of the same type of gear sector and transmission as the '165 patent. *Compare* items 62 and 621 in Fig. 5 of the '165 patent *with* items 14 and 16 in Figure 5 of Wang below:



Wang, Fig. 5 (cropped)



'165 patent, Fig. 5 (cropped)

164. In the event it is determined that Wang's gear is not a "gear worm sector", in my opinion a POSITA would nonetheless have considered it obvious to employ this type of gear with Wang.

165. Wang's trashcan employs gears to transmit the rotational power generated by its motor to its rotating shaft 17 and on to an attached can cover 10. According to Wang, it includes both a "sector gear 6" and a "gear transmission" which is "gear reducer 14." Wang, [0018], [0021].

166. Wang does not impose any limitations on the type of gear sector to be used in its trashcan: it is open to the use of any gear sector that is able to transmit the motion of its motor to its cover.

167. Because of this, a POSITA would have considered the various, known types of gears that were generally available for use when implementing Wang.

168. "Worm" gear sectors were one such known type of gear. This type of gear was not only known, but was in routine use long before the '165 patent was filed.

169. Showing this, numerous prior art references I have reviewed employ "worm" gears as part of the transmission mechanism that drives open the cover of a trashcan:

- Ex. 1011: references a "trash can" that includes a "motor gear" and a "rotary lifting gear" which is a segment gear that lifts the lid. See Figure 4. An "actuator or motor" that opens lid via a "motor gear" that "can be, for example, a worm gear" at [0043-0044], [0081].
- Ex. 1012: references a container with a "motor" that "rotates a worm gear" to open the container's "lid" at 6. See also Figure 2 The worm gear engages the "teeth' of "an arcuate edge of a quadrant" which is a gear worm segment at 6.

170. In my opinion, this would have motivated a POSITA to consider use such a gear with Wang. Not only were "worm" gear sectors one known type of gear available in a designer's toolkit, but this type of gear was specifically known to be usable as part of a trashcan opening mechanism. Worm gears have the advantage of being self-locking without draining the battery. This would be useful for holding the lid open without requiring battery power to hold the lid open.

171. Moreover, a POSITA would have considered use of a worm sector gear, as opposed to some other type of gear, to amount to nothing more than a routine, obvious design choice.

172. A worm gear sector achieves the same result as any other gear: it transmits rotational force from one structure to another. Examples of worm gear sets (just with a full worm wheel gear interfacing with the worm rather than a sector as the claim here requires) are shown below:

173. A POSITA would have considered use of this type of gear to be particularly beneficial to Wang. As the prior art suggested, and a POSITA would

have known a ***worm gear*** could be used to move a ***gear sector*** for activating a trash can lid. As shown, because one of the gears is formed around a rotating shaft (instead of as a separate, disk-shaped gear), the worm gear set saves space. A POSITA would have recognized that this allows greater design flexibility: the required gears would be more easily fit within the inner confines of Wang's trashcan cover housing.

5. "[H]ydraulic" cover movement (claim 4)

174. Claim 4 references "***hydraulic"*** cover movement.

175. Wang does not use the word "hydraulic." I note that Wang does, however, explain that its trashcan includes a gear "transmission mechanism" that operates to "reduce[] a speed" of the "can cover 10" and ensure that the cover opens/closes in way that is "stable," "reliable," and "efficien[t]." Wang, [0021], [0023].

176. Another patent publication naming one of the same inventors as the '165 patent explains that a trashcan's cover can be considered to be driven "hydraulically" when there is a "generation of decelerating and torque enhancing force in a stable and controllable manner." Ex. 1008, [0056].

177. In my opinion, this is how a POSITA would have understood Wang to operate.

178. Wang explains that its "transmission mechanism" operates to (1) reduce the rotational speed of the motor before it is applied to the rotating shaft 17 and cover 10, and (2) simultaneously increase the applied torque.

179. To achieve this rotational speed reduction and torque increase, Wang employs a "gear reducer 14" with differently sized "primary" and "final" "gear[s]" Wang, [0021].

180. The practical effect of applying this type of speed reducing geared transmission with differently sized gears is to decrease rotational speed while simultaneously increasing torque.

181. So, in sum, the '165 patent uses the term "hydraulic" to refer to a cover with controlled, slow opening achieved by the use of a geared cover transmission. Wang employs this same type of geared transmission to achieve the same cover opening effect.

182. Moreover, a POSITA would have recognized that the desired cover speed and torque—and thus the degree of ***"hydraulically driven"*** operation—would be obtained by appropriately sizing the reducer's various gears.

183. Different gear ratios would have resulted in different cover speeds relative to the motor's rotational speed.

6. "[D]etachably coupled" "battery compartment cover" (claim 7, 16, 23)

184. Claims 7, 16, and 23 all reference a ***"detachably coupled" "battery compartment cover."***

185. Wang obviously includes such a detachably coupled cover.

186. Wang includes a "battery box 13" that supplies power to its sensing opening-closing apparatus. Wang, [0020].

187. Wang also depicts its "battery box 13" as having standard detachable cover for purposes of covering the box (and the batteries it contains) during normal operation. *See id.*, Fig. 6

188. Wang's battery box 13 is also intended to house batteries. Wang, [0020]. Showing this, Figure 6 of Wang includes a graphical depiction of batteries on the battery box cover. This is a universally used indicator to users showing the location where batteries are stored. *See id.*, Fig. 6.

189. Wang also notes that this battery box includes an "opening" (*see id.*, [0020]) that is covered with a cover (*see id.*, Fig. 6).

190. A POSITA would have understood that this cover must be detachably coupled from the battery compartment. Otherwise, it would be impossible to access the interior of the battery box for purposes of replacing the batteries. Further, when not detached, the cover must be coupled to the housing for purposes of keeping the

batteries in place and protecting them from outside forces (that could dislodge the batteries, or otherwise cause damage to or problems with the trashcan).

191. As batteries do not last forever, a POSITA would have understood that Wang's battery box cover is removable (like all battery box covers) so that the batteries in the box can be removed when they are no longer providing adequate power.

192. Indeed, facilitating easy replacement (and secure storage and electrical connection with) batteries is one of the primary purposes of a battery compartment. Battery compartments are routinely designed with detachable covers because this not only provides the necessary access to the compartment for purposes of changing the batteries, but makes this change easier to accomplish while at the same time keeping the batteries secure while the trashcan is in use.

193. Consistent with this, the box cover depicted in Wang's Figure 6 is shown as including a small compliant tab-like structure at its top.

194. A POSITA would have understood that this tab-like structure acts as a spring to keep the cover in place when the trashcan is in use, and can be depressed when needed to free the cover from the battery box for purposes to access the batteries stored within. *See* Wang, Fig. 6.

195. A ***removable*** battery cover is consistent with Wang's Figure 7 which shows the battery box with the cover removed.

7. "[C]orresponding" "non-circular cross section[s]" (claim 18, 20, 22)

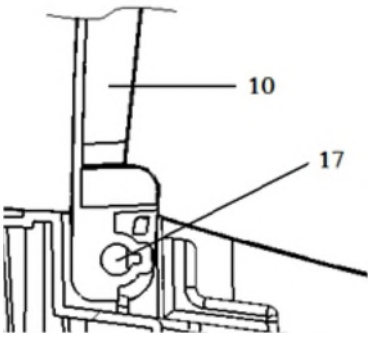
196. Claims 18, 20, and 22 all require that the claimed ***"pivot shaft"*** and ***"shaft sleeve"*** associated with the can cover have ***"corresponding" "non-circular cross section[s]."***

197. To the extent it is determined that this limitation somehow requires that the shaft and sleeve have identical (or near identical cross sections), this would have been obvious to one of ordinary skill in the art.

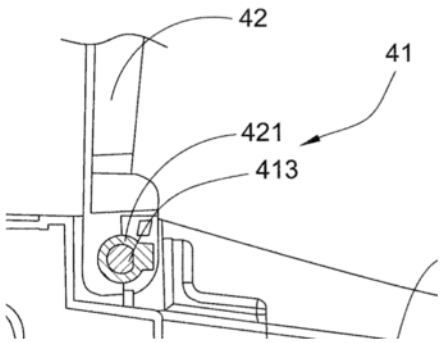
198. Wang's trashcan is designed such that the rotating shaft 17 and cover 10 rotate together as a single unit. *See* Wang, [0018]-[0023].

199. A POSITA would have understood that designing the shaft and the point of attachment between the shaft and cover to have identical (or near identical) cross sections would have minimized any slipping when the shaft rotates to open the cover better ensuring proper trashcan opening operation.

200. As can be seen in Wang's figure 7 the rotating shaft 17 has a D-shape that is non-circular and very similar to the D-shape disclosed in the '165 patent.



Wang, Fig. 7 (cropped)



’165 patent, Fig. 7 (cropped)

D. Secondary Considerations of Non-Obviousness

201. Based on my review of the ’165 patent’s prosecution history, I note that no secondary considerations of non-obviousness were identified in connection with the patent’s claims.

202. I am not separately aware of any evidence of commercial success, skepticism, failure of others, industry praise, unexpected results, or the like. Instead, as discussed above, it is my opinion that the subject matter embraced by the ’165 patent’s claims was known in the art and would have been expected to function as a working automatic trashcan.

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willfully false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1101 of Title 18 of the United States Code.

Date: June 30, 2025

Location: Oulu Finland

Signature: 

Steven C. Visser

ATTACHMENT A

Curriculum Vitae

Steve Visser
2472 Gala Court
West Lafayette, IN 47907
svisser@purdue.edu
765-494-2295 office
765-491-9633 cell

Education

1988 — University of Illinois at Champaign-Urbana
MFA in Industrial Design

1982 — Northwestern College
BA in Fine Arts, Sculpture

Academic Appointments

2006-Present — Professor
Industrial Design
Patti and Rusty Rueff School of Design, Art and Performance
Purdue University

1996-2006 — Associate Professor
Industrial Design
Patti and Rusty Rueff School of Visual and Performing Arts
Purdue University

1990-1996 — Assistant Professor
Industrial Design
Department of Visual and Performing Arts
Purdue University

1989-1990 — Visiting Assistant Professor
Industrial Design
Department of Creative Arts
Purdue University

1986-1988 — Teaching Assistant
University of Illinois at Champaign-Urbana

Professional Positions

1990-Present — Steve Visser Design
Industrial Design Consultant
West Lafayette, IN

2005-2014 — DesigNapkin
Co-Founder
West Lafayette, IN

1988-1989 — Hari and Associates
Industrial Designer
Skokie, IL

Awards and Honors

2019-2022 Distinguished Professor (2019-2022)
School of Art and Design, Wuhan University of Technology, Wuhan, China

2021 DAC World's Leading Designers
Worlds 7th Best Designer in 2021
Leading Expert in Differently Abled and Senior's Assistance Design

2019 2019 KSBDA World Culture and Shaping Invitational Exhibition
The Best Award (see Design Competitions and Exhibitions)

2018 Appliance Design: Excellence in Design Award
Gold Prize (see Design Competitions and Exhibitions)

2017 A'Design Award & Competition
Gold Award (see Design Competitions and Exhibitions)

2015 SAI Faculty Fellow
Domus Academy, Milan, Italy (see Fellowships and Residencies)

2014 Associate Fellow
American Academy in Rome, Rome, Italy (see Fellowships and Residencies)

2007 Honorary Professor
Nanjing University of Science and Technology, Nanjing, China

2005 Regional Competition: Indiana Venture Idol
Winner: Coolest Idea (see Design Competitions and Exhibitions)

2004 National Design Competition: ID Magazine
Honorable Mention (see Design Competitions and Exhibitions)

2003 Taiwan International Design Competition
Award of Excellence (see Design Competitions and Exhibitions)

2003 International Eyewear Design Competition: Opus Design Award
Award Winner (see Design Competitions and Exhibitions) Japan

1999 Malaysian Polytechnic Curriculum Development Project
Politeknik Johor Bahru, Pasir Gudang, Malaysia (see Grants)

1997 Fulbright Scholar
University of Art & Design Helsinki, Helsinki, Finland (see Fellowships and Residencies)

1995 National Design Competition: Idea95 Industrial Designers Excellence Award
Silver Winner (see Design Competitions and Exhibitions)

1993 Neste Forma Finlandia 3 International Plastic Design Competition
2nd Place (see Design Competitions and Exhibitions) Finland

Membership

1992-Present Industrial Designers Society of America (IDSA)

Design Competitions and Exhibitions

2024 Reflections of 7 Continents
Two-Person Exhibition
Patti and Rusty Rueff Gallery
Purdue University
West Lafayette, IN
August 19-30, 2024
Designer: Steve Visser
Iceberg Coffee Table
Two-Stones Floor Lamp
Driftwood Sea Serpent
7 Continent Posters

2021 Red Dot Award
Finalist
4110 entries from 49 countries
Design Concept 2021
Category: Bathroom and Hygiene
July 4
Pompeii Washbasin

2020 Faculty Exhibition
Rueff School of Design, Art and Performance
Rueff Gallery, Purdue University
August 24- September 18,, 2020
Industrial Designer: Steve Visser
Root Coffee Table
Root Sofa Table

2019 2019 KSBDA World Culture and Shaping Invitational Exhibition
The Best Award (top 10 out of 395 works)
Kosygin State University of Russia
Moscow, Russia
August 20-30, 2019
Industrial Designer: Steve Visser
Herculano Coffee Table

2018 Convergence Art & Design International
Best Creativity Award
Professional Exhibition
Shaoxing, China
November 15-18
Industrial Designer: Steve Visser
Herculano Coffee Table

2018 Appliance Design: Excellence in Design Award
Gold Prize 2018
Medical Equipment and Devices Category
Troy, MI
June 1
Industrial Designers: Steve Visser, Max Cao
Engineers: Rob Bettcher, Justin Kline
BraunAbility Q Series Wheelchair Lift
Published online
https://www.appliancedesign.com/articles/95865-autoadapt-q-series-mobile-access-lift

2018 11th Annual IDA Awards Competition
Gold Award
1st place in Design for Society / Design for Elders
Thousands of entries from 95 countries
Los Angeles, CA
May 22
Industrial Designers: Steve Visser, Max Cao
Engineers: Rob Bettcher, Justin Kline
BraunAbility Q Series Wheelchair Lift
Published in
IDA Design Awards 2017, page 209

2018 A'Design Award & Competition
Bronze A'Design Award
Furniture, Decorative Items and Homeware Design Category
Milan, Italy
April 15
Industrial Designer: Steve Visser
Herculano Coffee Table
Published in
https://competition.adesignaward.com/design.php?ID=58604
A'Design Award & Competition Award Winning Designs 2017-2018, Page 1082

2017-2018 A'Design Award & Competition
Golden A'Design Award in Differently Abled and Seniors' Assistance Design Category
Golden awards given to the top 3%
Milan, Italy
April 15
Industrial Designers: Steve Visser, Max Cao
Engineers: Rob Bettcher, Justin Kline
BraunAbility Q Series Wheelchair Lift
Published in
A'Design Award Winning Entries 2016-2017 Award Winning Product Design. 160.

Traveling Exhibition: *A'Design Award Winning Entries 2016-2017*

Italy	MOOD Museum of Design, Como	June 6-26, 2017
India	Festival of Architecture and Interior Designing, Mumbai	September 22-23, 2017
Hungary	Budapest Projekt Galéria, Budapest	October 8-31, 2017
China	International Industrial Design Fair, Shezhen	November 5-7, 2017
China	Utopa International Design Exhibition, ZhuZhou City	December 26, 2017-March 20, 2018

2017 SOFA Exhibit
Co-lead group of 10 students who developed exhibit for *Connect* at the Sculptural Object Functional Art and Design Expo at Navy Pier
2017 Connect Winner
Chicago, IL
November 2-5
Nature or Nurture: A 3D Printed Space

2016 Juror
1st Greater China Smart Home Appliances Design Competition
Hong Kong
November 4

2016 Juror
Appliance Design Excellence in Design Competition
Troy, MI

2016 Juror
International Housewares Association Student Design Competition
Chicago, IL

January 13-14

2015 One-Person Design Exhibition
Domus Academy/NABA
Milan, Italy
July 21-August 4
Inspirations from Ancient Rome

2013 Invitational International Design Exhibition
4th International Innovation Design and Education Forum Exhibition
Nanjing, China
September 18-19
Exclamation Stacking Chair
Published in
Cross-Disciplinary and Integration: Portfolio of "Nanjing Innovation" International Universities' Design Exhibition. Pages 20-24

2012-2013 Juror
Appliance Design Excellence in Design Competition
Troy, MI

2012 Invitational International Exhibition
Groovy Stuff Booth
International Casual Furniture and Accessories Market
The Merchandise Mart
Chicago, IL
September 20-23, 2012
Apple^2 Pedestal Table

2012 Juror
Nanjing Innovation Design Competition
Nanjing, China
August 13-14

2011 Poster Session
Mudd Design Workshop
Claremont, CA
May 28-30
Design for Relieving: Home-based Healthcare Products
Primary Author: Cheryl Qian
Poster Layout and Co-Author: Steve Visser

2009 Invitational International Design Summit and Exhibition
Nanjing, China
October 25-26
StoneStalk Bench

2009 Juried National Exhibition
BECA Gallery "Next" exhibition
New Orleans, LA
February 5-28
Woodstalk Bench

2007 Invitational International Design Summit and Exhibition
Nanjing, China
November 7-8
Astro Lounge Chair

2006 Juried Exhibition at the Industrial Designers Society of America
National Education Conference
Austin, TX
September 17-20
Astro Lounge Chair

2005 Juried Exhibition at the Industrial Designers Society of America
National Education Conference
Washington, D.C.
August 21-23
Giwa: Build-it-yourself Souvenir
BLU Network: Borrow Lend Unite
Safety Stove: for South Africa
Flip: Invertible Organizer

2005 International Travel Souvenir Design Competition
Selected Design (about 630 entries from 39 countries, 142 selected)
Ministries of: Culture & Tourism, Commerce, Industry & Energy,
Korean Association of Industrial Design, ICSID
Kintex Exposition Center
Gyeonggi, South Korea
April 14-17
Giwa: Build-it-yourself Souvenir
Published in
International Travel Souvenir Design Competition 2005 Korea
(Seoul, South Korea: Gyeonggi Tourism Organization), 41

2005 Satellite Salone International Invitational Design Exhibition
(Only two schools from the USA were in invited to exhibit in the Satelite Sallone,
Purdue University and Pratt Institute)
Milan Furniture Fair
Milan, Italy
April 13-18
Giwa: Build-it-yourself Souvenir
Safety Stove: for South Africa

2004 50th Annual International Design Competition: I.D. Magazine
Honorable Mention (over 2000 entries/ 159 selected)
New York, NY
July
Design Team: Steve Visser and Scott Shim
BLU Network: Borrow Lend Unite
Published in
I.D. Magazine 50th Annual Design Review
Volume 52, number 5, (July 2004): 184

2004 International Aluminum Extrusion Competition
Selected for Exhibition (109 entries from 9 countries/ 36 selected)
ET Foundation
International Aluminum Extrusion Seminar and Exposition
Orlando, FL
May 18-21
Design Team: Scott Shim and Steve Visser
Birdie Aluminum Extrusion Concept

2003 International Eyewear Design Competition: Opus Design Award 2003
Award Winner (1771 entries from 62 counties/ 313 winners)
Eyetec Co., Ltd.
Tokyo, Japan
December 1
Design Team: Steve Visser and Scott Shim
Shades Eyewear

2003 Taiwan International Design Competition: Creating a Digital Culture Design
Award of Excellence (356 entries from 25 countries/ 20 selected)
Taiwan Design Center
Taiwan Industrial Development Bureau
Taipei, Taiwan
November 8-30
Design Team: Steve Visser and Scott Shim
BLU Network: Borrow Lend Unite
Published in
Taiwan Design Center, *2003 Taiwan Creative Design Expo* (Taipei, Taiwan: Taiwan Industrial Development Bureau), 115.

2002 Invitational Exhibition at the Biennale Internationale Design 2002
Museum of Modern Art, Saint-Étienné
Saint-Étienné, France
November 16-24
Civil Interactive Play Table

2001-2002 29th Annual National Juried Toys Designed by Artists Exhibition
Decorative Arts Museum
Arkansas Art Center
Little Rock, AR
November 22, 2001-January 6, 2002
Principal Designer: Steve Visser
Designer: Nicolé Visser
Herman the Dino

2001-2002 National Furniture Design Competition: The Chair Show 4
Selected Design (234 entries, 45 selected)
Southern Highland Craft Guild
Asheville, NC
Quantum Armchair

Traveling Exhibition: The Chair Show 4

Asheville, NC	Folk Art Center	September 30, 2001-January 13, 2002
Wausaw, WI	L. Y. W. Art Museum	February 2-April 7
Greenville, NC	Wellington Gray Gallery	June 6-September 21

Published in
David McFadden, *The Chair Show 4* (Asheville, NC: Southern Highland), 44.

2001 International Eyewear Design Competition: Opus Design Award 2001
Award Winner (1639 entries from 30 countries/ 138 award winners)
(The only winner from the USA)
Eyetec Co., Ltd.
Tokyo, Japan
September 13-14
Egypt Eyewear

2001 Herman Miller Office-Supply Creation National Competition
Honorable Mention
Herman Miller
www.hermanmillerred.com
Zeeland, MI
Principal Designer: Steve Visser
Designer: Nicolé Visser
Herman the Dino

2000 Biennale Internationale Design 2000 Invitational Exhibition
Museum of Modern Art, Saint-Étienné
Saint Étienné, France
October 7-15
Egypt Eyewear
Demi Fruit Bowl

2000 2000 Objects for the New Millennium Juried Exhibition
Gallery 91
New York, NY
July-September
Forest Eyewear

2000 Mid-States Crafts Regional Juried Exhibition
Evansville, IN
January-March
Forest Eyewear

1998-1999 Unlimited by Design National Invitational Exhibition
Cooper Hewitt National Design Museum (Smithsonian)
New York, NY
November 17, 1998-March 21, 1999
Principal Designer: Steve Visser
Engineer: Ashok Midha
Compliers® Flexural Fishing Pliers

1995-1997 Mutant Materials in Contemporary Design International Invitational Exhibition
Museum of Modern Art
New York, NY
May 24-August 22
Principal Designer: Steve Visser
Design Team: Miro Tasic and Brian McGreevy
Engineer: Ashok Midha
Compliant Fishing Pliers
Published in
Paola Antonelli, *Mutant Materials in Contemporary Design Exhibition Bulletin* (New York: Museum of Modern Art), 6.

Traveling Exhibition: Mutant Materials

Netherlands	Groninger Museum, Groninger	September 13-December 7, 1997
Czech Republic	Veletrzni Palác, Prague	May 15-August 17, 1997

1996-1997 Innovations for Living/Industrial Design Excellence Awards 1989-1995
National Invitational Exhibition
Brook Steven's Gallery at Milwaukee Institute of Design
Milwaukee, WI
October 18, 1996-August 23, 1997
Design Team: Kyle Bennett and Steve Visser
Kudo Crafters Clamp

1995-1996 National Design Competition: Good Design Award Exhibition
Selected Design (500 entries/ 120 selected)
The Chicago Athenaeum: Museum of Architecture and Design
Chicago, IL
October 24, 1995-January 13, 1996
Principal Designer: Steve Visser
Design Team: Don Herring, Dan Julian and Don Woods
ExerTron™ Video Game Controller

1995-1996 National Design Competition: Good Design Award
Good Design Award (Nearly 500 entries/ 80 selected)
The Chicago Athenaeum: Museum of Architecture and Design
Chicago, IL
October 24, 1995-January 13, 1996
Principal Designer: Steve Visser
Engineer: Ashok Midha
Compliers® Flexural Fishing Pliers

1995 Idea95: National Design Competition
Silver Winner for New Product Concepts (766 entries/ 56 selected)
Industrial Designers Excellence Award
IDSA National Conference
Santa Fe, NM
September 13-16
Design Team: Kyle Bennett and Steve Visser
Kudo Crafters Clamp
Published in
Innovation: Journal of the Industrial Designers Society of America, 14, no. 4, (Fall 1995): 207.
Cited in
Business Week (June 7, 1993): 102.

1995 Permanent Collection
The Chicago Athenaeum: Museum of Architecture and Design
Chicago, IL
Principal Designer: Steve Visser
Engineer: Ashok Midha
Compliers® Flexural Fishing Pliers

1994 94 Nagaoka International Design Competition
Selected Design (615 entries from 40 nations/ 57 selected)
Shinanogawa Technopolis
Nagaoka City, Japan
October 21-23
Design Team: Bennett Kyle and Visser Steve
Kudo Crafters Clamp
Published in
Interior Exterior International Design Competition 9 (Nagaoka, Japan: Shinanogawa Technopolis), 59

1994 Permanent Collection
Museum Die Neue Sammlung (Invitational)
Industrial Design Collection
Munich, Germany
Principal Designer: Steve Visser
Design Team: Miro Tasic and Brian McGreevy
Engineer: Ashok Midha
Compliant Fishing Pliers

1993 Idea93: National Design Competition
Silver Winner, for New Product Concepts (678 entries/ 26 selected)
Industrial Designers Excellence Award
IDSA National Conference
Atlanta, GA
August 11-14
Principal Designer: Steve Visser
Designers: Miro Tasic and Brian McGreevy
Engineer: Ashok Midha
Compliant Fishing Pliers
Published in
Innovation: Journal of the Industrial Designers Society of America 12, no. 4 (Fall 1993): 125.
Cited in
Business Week (June 7, 1993): 78.

1993 Neste Forma Finlandia: International Plastics Design Competition 3
Second Prize $18,000 (576 entries from 36 countries/ 2nd)
Neste Corporation
Espoo, Finland
Principal Designer: Steve Visser
Design Team: Miro Tasic and Brian McGreevy
Engineer: Ashok Midha
Compliant Fishing Pliers

Traveling Exhibition: Neste Forma Finlandia 3

Finland	Tapiola, Espoo	April 19-25
Sweden	Svenska Måssan in Gothenburg	May 10-15
France	Parc de la Villette, Paris	June 7-13
Germany	Rhein Ruhr Center, Mulheim-Ruhr	June 21-27
Belgium	Zuiderdokken, Antwerp	September 20-26
Italy	Milan	October 4-10
Portugal	Espinho, near Oporto	October 20-26
UK	National Exhibition Center, Birmingham	November 7-11

Published in
David Vickery, *Neste Forma Finlandia International Plastic Design Competition 3* (Helsinki: Abbeygate), 12

1992 Architectonics: Regional Juried Exhibition
Performing Arts Center
Fort Wayne, IN
October 22-November 20
Nurkka Corner Floor Lamp

1984 Solo Exhibition of Recent Sculptures
Concordia College
Seward, NE

Patents

2019 Soft Tissue Therapy Tool
Issued July 16
Design Patent Number D854,178
Inventors: Michael C. Cochard and Steven C. Visser

2018 Vehicle Lift Platform Hand Switch
Issued September 4
Design Patent Number D827,586
Inventors: Robert E. Bettcher, Justin M. Kline, Austin Metzger, Steven Visser, Yingxiao Cao

2017 Vertical Channel Vehicle Lift Arm
Issued October 31
Design Patent Number D801,619
Inventors: Robert E. Bettcher, Justin M. Kline, Steven Visser, Yingxiao Cao

2017 Closed Vehicle Lift Arm
Issued October 10
Design Patent Number D799,776
Inventors: Robert E. Bettcher, Justin M. Kline, Steven Visser, Yingxiao Cao

2017 Vehicle Lift Platform
Issued September 12
Design Patent Number D797,396
Inventors: Robert E. Bettcher, Justin M. Kline, Steven Visser, Yingxiao Cao

2002 Support Structure for a Chair
Issued October 8
Design Patent Number D463,925
Inventor: Steve Visser

2001 Rotary Assembly Table
Issued April 24
Design Patent Number D440,786
Inventors: Steve Visser, Sang-Gyeun Ahn, Laura Drake, Haolong Ma, Seung-Jo Park

1997 Resilient Clamp
Issued May 6
Patent Number 5,625,931
Inventors: Steve Visser and Kyle Bennett

1997 Video Game Controller
Issued August 19
Design Patent Number D382,604
Inventor: Steve Visser

1996 Compliant Pliers
Issued June 4
Patent Number 5,522,290
Inventors: Ashok Midha and Steve Visser

1996 Video Game Controller
Issued November 12
Design Patent Number D375,531
Inventor: Steve Visser

1996 Video Game Controller
Issued October 29
Patent Number 5,568,928
Inventors: Bruce Munson and Steve Visser

Designs Reproduced in Publications

2019 Steve Visser, “Herculano” Coffee Table
Published in
2019 KSBDA Purdue International Invitational Exhibition
July 26, (West Lafayette, IN USA), 24-25

2018 Steve Visser, “Herculano” Coffee Table
Published in
2018 CADI Convergence Art & Design International
November 11, 2018 (Shaoxing, China), 90

2013 Steve Visser, “Exclamation” Chair
Published in
Cross-Disciplinary and Integration: Portfolio of “Nanjing Innovation” International Universities’ Design Exhibition
July 25, 2013 (Nanjing, China), 20-21

2009 Steve Visser, “StoneStalk” Pedestal
Published in
Portfolio of ’09 International Universities Design
09 国际校际设计作品展组委会
南京理工大学设计艺术系 2009 年 9 月 10 日 (Nanjing, China) 8-9

2008 Steve Visser and Scott Shim, Timex Season and profile of DesigNapkin design firm
Published in
Charlotte and Peter Fiell, *Design Now*
(London: Taschen Publishing) 118-123

2004 Steve Visser and Scott Shim "BLU Network: Borrow Lend Unite"
Published in
Design (Taipei, Taiwan)
Vol.114 (December/January): 71

2002 Steve Visser, "Quantum Armchair"
Published in
American Style Magazine
(Winter 2001-2002): 16

2001 Steve Visser, "Ateria Reliquary"
Published in
Luisa Collina and Giuliano Simonelli, Eds.
Designing Designers: Training Strategies for the Third Millennium
(Milan, Italy: Politecnico di Milano), 73

1997 Steve Visser and Kyle Bennett, "Kudo Crafters Clamp"
Published in
George Covington and Bruce Hannah, *Access by Design*
(New York: Van Nostrand Reinhold), 201

1996 Steve Visser and Kyle Bennett, "Kudo Crafters Clamp"
Published in
Universal Design Excellence Project
(Takoma Park, MD: Universal Designers and Consultants, Inc. in cooperation with The National Endowment for the Arts and the National Building Museum) slides.

1996 Steve Visser, and Ashok Midha, "Compliers™ Flexural Fishing Pliers"
Published in
Design Report (Hamburg, Germany)
(January/February 1996)

1995 Steve Visser, and Ashok Midha, "Compliers™ Flexural Fishing Pliers"
Published in
Plastics
(May 1995): 7

1994 Steve Visser, Miro Tasic, and Ashok Midha, "Compliant Fishing Pliers"
Published in
Taka Sihvola, Mikko, *Design in Finland 1994*
(Helsinki: The Finnish Foreign Trade Association), 60

1994 Steve Visser, Miro Tasic, and Ashok Midha, "Compliant Fishing Pliers"
Published in
Innovation: Award-Winning Industrial Design
(Glen Cove, NY: PBC International, Inc.), 82

1993 Steve Visser, Miro Tasic, and Ashok Midha, "Compliant Fishing Pliers"
Published in
Paola Antonelli, *Mutant Materials in Contemporary Design*
(New York: Museum of Modern Art and Rizzoli Press), 35

1993 Steve Visser, Miro Tasic, and Ashok Midha, “Compliant Fishing Pliers”
Published in
Design (London) 534 (June 1993): 8
Form Function Finlandia (Helsinki) no. 2 (June 1993): 91
K Plastic & Kautscherl Zeikey (Germany) (May 1993): 10
Plastverarbeiter (Heidelberg, Germany) 44 no. 5 (1993): 73
Form (Zurich, Germany) no. 143 (1993): 129
Design in Kunststoff (Germany) no. 44 (1993): 72-74
Domus (Milan, Italy) no. 752 (September 1993): 80-81
Kunstof Magazine (Doetinchem, Netherlands) no. 5 (May 1993): 32
Machine Design (July 9, 1993): 12

Industrial Design Activities

2024 Iceberg Coffee Table (furniture design)
Steve Visser Design
West Lafayette, IN

2023-2024 Two-Stones Floor Lamp (product design)
Steve Visser Design
West Lafayette, IN

2023 Foot operated Trash Can (patent design around)
Volume Distributors
Los Angeles, CA
Design Director: Steve Visser
Design Team: William Huth, David Marchese

2022 Polar Ice Coffee Table (furniture design)
Steve Visser Design
West Lafayette, IN

2021 Pompeii Washbasin (fixture design)
Steve Visser Design
West Lafayette, IN

2020 Root Coffee Table (furniture design)
Root Coffee Table (furniture design)
Steve Visser Design
West Lafayette, IN

2018-2019 Neonatal Crib (medical design)
Save The Children
Blantre, Malawi (Africa)
Design Director: Steve Visser
Design Team: Qiuying Joyce Xu, Lauren Para, Daniel Madrinan-Chiquito,
Engineering Team: Yuehwern Yih, Sidi Deng, Maxwell Silla, Francis Masi
Medical Team: Bina Valsangkar, Queen Dube, Nenani Chisema

2018-2019 Kangaroo Mother Care Hospital Bed (furniture design)
Save The Children
Blantre, Malawi (Africa)
Design Director: Steve Visser
Design Team: Dewey Yu, Daniel Madrinan-Chiquito,
Engineering Team: Yuehwern Yih, Maxwell Silla, Francis Masi
Medical Team: Bina Valsangkar, Queen Dube, Nenani Chisema

2018 Walnut and Cast Pewter Inlay Coffee Bar (furniture design and development)
Revolution Community Church
Logansport, IN
Design Director: Steve Visser
Design Team: David Marchese and Keith Williams

2017 Herculaneum Coffee Table II (furniture design)
Steve Visser Design
West Lafayette, IN

2017 Truss Arch (public space design)
City of West Lafayette
West Lafayette, IN

2016 Fuzion Mini (product design)
FASTR, Inc.
Indianapolis, IN

2015-2016 Herculaneum Coffee Table (furniture design)
Steve Visser Design
West Lafayette, IN

2015 River Desk and Silver Apple^2 Pedestal (furniture design and development)
Steve Visser Design
West Lafayette, IN

2015 Hand Pendant (product design)
Braun-Ability
Winamac, IN
Design Team: Steve Visser and Yingxiao Cao

2015 QLD Wheelchair Lift (product design)
Design Team: Steve Visser and Yingxiao Cao
Braun-Ability
Winamac, IN

2014 Tablet Case with Light (patent design around)
Amazon.com
Cupertino CA

2014 Balance Stool, Egg Bowls, Umbrella Birdfeeder, and Button Clock (product design)
Association of Craft Producers
Kathmandu, Nepal

2014 3 Horned Trivet, Copper Candle Holder (product design)
Design Team: Sari Visser and Steve Visser
Association of Craft Producers
Kathmandu, Nepal

2011-2014 Mini Massage Tool (product design)
Soft Tissue Therapy Tools, Inc.
Indianapolis, IN

2013 K-Cup Storage Drawer (alternative product design)
MSA Product Inc.
Nyack, NY

2013 Circle Chair (furniture design and development)
DesigNapkin
West Lafayette, IN

2012 Exclamation Chair (concept development)
DesigNapkin
West Lafayette, IN

2012 Justsayah (concept development)
Personal Health Video Camera
DesigNapkin
West Lafayette, IN
Design Team: Steve Visser and Victor Chen

2011-12 Apple^2 table line (furniture design and development)
DesigNapkin
West Lafayette, IN

2011 Video Game Controller (patent design around)
Datel, Inc.
Staffordshire, United Kingdom

2009-2010 Fuzion ST3 (product design and development)
Soft Tissue Therapy Tools, Inc.
Indianapolis, IN

2008-2009 StoneStalk and Woodstalk (furniture design and development)
DesigNapkin
West Lafayette, IN

2007 Pendant Lighting Design, Origins 212 Collection (product design)
Omega Lighting
Tupelo, MS
Principal Design: Steve Visser and Scott Shim

2006-2007 Track Lighting Design (product design)
Omega Lighting
Tupelo, MS
Principal Design: Steve Visser and Scott Shim
Design Team: Milan Jovanovic,

2006-2007 Bike Seat Design (product design)
David Porter
Kansas City, MO
Principal Design: Scott Shim and Steve Visser

2006 Cell Phone Design (product design)
Samsung Electronics
Sacramento, CA
Principal Design: Scott Shim and Steve Visser

2006 MXR programmable light (product design)
Apollo Design Technology, Inc.
Ft. Wayne, IN
Principal Design: Scott Shim and Steve Visser

2005-2006 Portable Electronics (product design)
Klipsch Audio Corp.
Indianapolis, IN
Principal Design: Steve Visser and Scott Shim
Design Team: Nick Poteracki, Milan Jovanovic, Faraz Shah and Scott Collins

2005-2006 Wardrobe Valet (product design)
Proman Products, LLC.
Loves Park, IL
Principal Design: Scott Shim and Steve Visser

2005 Identity Mouth Guard (product design)
Reliance, Inc.
Taipei, Taiwan
Principal Designers: Scott Shim and Steve Visser
Design Team: Nick Poteracki, Colt Stander, Bria Helgerson, Jason Boyer, and Brian Beaver

2005 USB Drive (concept design)
Filadex, Inc.
West Lafayette, IN

2004-2005 Contact Lens Travel Case (product design)
Reliance, Inc.
Taipei, Taiwan

2004 Sanitary Toilet Care System (product design)
Dr. Seok-Jin Kim
Indianapolis, IN
Principal Designer: Steve Visser
Design Team: Milan Jovanovic and Alex Cantoni

2003 Shades (eye wear design)
Opus Award
Eyetec Co., Ltd.
Tokyo, Japan
Design Team: Scott Shim and Steve Visser

2003 BLU Borrow Lend Unite (concept design)
Creating a Digital Culture
Taipei, Taiwan

2001-2002 Civil Interactive Play Table (furniture design)
Imagination Station
West Lafayette, IN

2001 Knock-Down Stool (concept development)
Matt Striebel
Bloomington, IN
Principal Designer: Steve Visser
Design Team: Laura Drake and Kyungsook Song

2001 Interactive Trolley Exhibit (exhibit design)
Imagination Station/CityBus
West Lafayette, IN
Principal Designer: Steve Visser
Design Team: Nathaniel Grady, Michael Lah and Kiley Reed

2001 Quantum Armchair (furniture design)
Patent assigned to Purdue Research Foundation
West Lafayette, IN

1999-2000 Fiber Optic Cross (design/ build commission)
St. Thomas Aquinas Church
West Lafayette, IN

1999 Wooden Decorative Products (product design)
Reliance, Inc.
Taipei, Taiwan
Principal Designer: Steve Visser
Design Team: Braden Smith and Haolong Ma

1999 Self-Watering Flowerpots (concept design)
Reliance, Inc.
Taipei, Taiwan

1998 Faucet Design (product design)
Delta Faucet
Indianapolis, IN
Principal Designer: Judd Lord
Design Team: Steve Visser and Loren Hill

1997 Forest Eye Wear (product design)
Fulbright Project
UIAH
Helsinki, Finland

1995-1996 Portable Bassinet (product design)
Redmon, Inc.
Peru, IN
Principal Designer: Steve Visser
Design Team: Don Herring, Don Woods and Dan Julian

1993-1995 Compliers® Flexural Fishing Pliers (product design)
Compliers, Inc.
West Lafayette, IN
Principal Designer: Steve Visser
Engineer: Ashok Midha

1994 Stenfors Temperature Control System (product design)
Stenfors, OY
Oulu, Finland
Principal Designer: Steve Visser
Design Team: Kyle Bennett and Don Woods

1994 Computer Interface Device (product graphics)
Interserve, Inc.
Rockford, IL

1994-1995 ExerTron™ Video Game Controller (product design)
ExerTron, Inc.
Muncie, IN
Principal Designer: Steve Visser
Design Team: Don Herring and Scott Jost

1994 Tele-Talker™ (product design)
Amuze Technologies
Indianapolis, IN
Principal Designer: Steve Visser
Design Assistant: Braden Smith

1994 Kudo Crafters Clamp (product design)
Fiskars, Inc.
Madison, WI
Design Team: Kyle Bennett and Steve Visser

1993 Mini Printer (concept design)
Quixale America, Inc.
NPC Limited
Taipei, Taiwan
Principal Designer: Chao-Hsi Wu
Design Team: Steve Visser and Brian McGreevy

1993 ZARD printer sharing system (concept design)
Power Print Systems
Rossville, IN
Principal Designer: Steve Visser
Design Team: David Winn and Brian McGreevy

1992 Boilermaker Special V (vehicle design)
Purdue University Mascot
Design in service from 1992-2025

1992 Trim Line Vending Machine (concept design)
Standard Changemakers, Inc.
Indianapolis, IN

1992 Display Case (furniture design commission)
Elastic Mechanism Lab
Mechanical Engineering Building
Purdue University

1992 River Valley Evangelical Free Church (logo design)
West Lafayette, IN

1991 Tricorder Radio Frequency Meter (product design)
Trilithic, Inc.
Indianapolis, IN
Principal Designer: Steve Visser
Design Assistant: Braden Smith

1991 Water Soluble Packaging System (concept development)
Great Lakes Chemical
West Lafayette, IN
Principal Designer: Steve Visser
Design Assistant: Richard Johnson

1991 ECG Analyzer (product graphics)
Vetronics, Inc.
Lafayette, IN

1990 KG Software (logo design)
Micro Data Base Systems, Inc.
Lafayette, IN

1989 Ansco Vision AL 35mm camera (product design)
Haking, Inc.
Hong Kong
Principal Designer: Hari Matsuda
Design Assistant: Steve Visser

1989 Whistler 750 radar detector (product design)
Whistler, Inc.
Westford, MA
Principal Designer: Hari Matsuda
Design Assistant: Steve Visser

1989 Shure Beta 58 wireless microphone (design detailing)
Shure Brothers, Inc.
Chicago, IL

1989 Whistler 2se radar detector (product graphics)
Whistler, Inc.
Westford, MA

1989 Point of purchase poster (graphic design)
Ansco, Inc.
Glen View, IL

1989 Coulter blood analyzer (product design)
Coulter, Inc.
Miami, FL
Principal Designer: Robert Coons
Design Assistant: Steve Visser

1989 Ansco Vision Gift Pack (package design)
Ansco, Inc.
Glen View, IL
Principal Designer: Hari Matsuda
Design Team: Peter Langmar and Steve Visser

1988 Top Flight Video Game Clam Pack (package design)
Konomi, Inc.
Chicago, IL
Principal Designer: Hari Matsuda
Design Assistant: Steve Visser

Expert Witnessing

2024 Amazon vs. Nokia Technologies
Sheppard Mullin Richter & Hampton LLP
Menlo Park, CA
- Give declaration in IPR2024-00799, June 30, 2024
- Give declaration in IPR2024-00798, June 28, 2024

2023-2024 Fiskars vs. Woodland Tools (expert witness, design patents)
K&L Gates LLP
Los Angeles, CA
- Give deposition on infringement and validity, August 6, 2024
- Rebuttal expert report on validity, January 12, 2024

2023-2024 Volume Distributors Inc. vs. Simplehuman (expert witness, utility patent)
Russ, August & Kabat
Los Angeles, CA
- Declaration in IPR2024-00050, October 16, 2023
- Declaration on Claim Construction, August 24, 2023

2020-2024 Samuel Stamping Technologies vs. Therma-Tru Corp. (expert witness, design patent)
Vorys, Sater, Seymour and Pease, LLP
Cleveland, OH

- Testify at trial on claim construction on §112 Issue, February 22, 2024
- Review and analyze validity contentions, October 2022
- Declaration regarding claim construction brief, February 18, 2021
- Prepare rebuttal expert report on §112 issue, December 15, 2020

2018-2024 J.R. Simplot vs. McCain Foods USA, Inc. (expert witness, design patents)
Jones Day
Cleveland, Ohio

- Testify at trial on infringement, validity, and invalidity, August 21-22, 2024
- Prepare supplemental expert report on validity, July 19, 2024
- Prepare supplemental expert report on invalidity (obviousness), July 1, 2024
- Give deposition on invalidity, validity, infringement and non-infringement, September 29, 2021
- Prepare rebuttal expert report on invalidity, August 20, 2021
- Prepare rebuttal expert report on infringement, August 21, 2021
- Prepare expert report on infringement, July 9, 2021
- Prepare expert report on invalidity, July 9, 2021

2023 Fiskars vs. Woodland Tools (expert witness, design patents)
Quarles & Bradly LLP
Chicago, IL

- Expert report on infringement, November 2, 2023

2023 Simplehuman vs. Volume Distributors Inc. (expert witness, utility patents)
Russ, August & Kabat
Los Angeles, CA

- Declaration on claim construction, August 24, 2023

2023 Shenzhenshi Borunxin Wujin You Xian Gong Si vs. The Partnerships (expert witness, design patent)
Mayer Brown LLP
Washington D.C.

- Declaration on infringement, May 16, 2023

2022-2023 Molo Design Ltd. vs. Chanel Inc. Canada (expert witness, utility patent)
Gowling WLG LLP.
Ottawa Canada

- Testify at trial, Montreal Canada, June 8-9, 2023
- Supplemental report on validity, May 24, 2023
- Prepare expert report on infringement, May 10, 2023
- Prepare expert report on validity, March 20, 2023

2022 Hasbro Inc. vs. GelBlasters et. al. (expert witness, utility patents)
Fish & Richardson P. C.
Boston, MA

- Review and analyze infringement contentions, August- October 2022

2021-2023 Sure Fit Home Products LLC vs. Maytex Mills (expert witness, design patents)
Goldberg Cohen LLP
New York, NY.

- Submit expert report on infringement, November 21, 2022
- Review claim construction

2021 Gunner Kennels vs. Luck Duck (expert witness, utility patents)
Banner & Witcoff, Ltd.
Washington DC/ Chicago IL

- Work on expert report on validity, November-December 2021
- Submit expert report on infringement, November 5, 2021

2021 Greenfield vs. Mold-Rite Plastics LLC (expert witness, design patents)
Bond, Schoeneck & King PLLC
Syracuse, NY.

- Prepare Preliminary Opinions on Infringement/Validity, August 2021

2019-2021 RTC Industries, Inc. vs. Fasteners For Retail, Inc. (expert witness, utility patent)
Banner & Witcoff, LTD
Washington, DC/ Chicago, IL

- Completed deposition as expert, May 5, 2020
- Declaration in IPR2019-00994, January 28, 2020
- Declaration in IPR2019-00994, August 8, 2019

2019-2020 Gamevice, Inc. vs. Nintendo Co. Ltd. (expert witness, utility patents)
Quinn Emanuel Trial Lawyers, and LTL Attorneys, LLP
Los Angeles, CA

- Prepare declaration regarding Daubert motion, April 6, 2020
- Give deposition on invalidity, February 18, 2020
- Give deposition on non-infringement, February 17, 2020
- Prepare rebuttal expert report on non-infringement, February 6, 2020
- Prepare expert report on invalidity, December 20, 2019
- Declaration regarding claim construction, March 12, 2019

2019-2020 Pavo Solutions, LLC. vs. Kingston Technology (expert witness, utility patent)
Russ, August & Kabat
Los Angeles, CA

- Testified at trial on infringement, Santa Ana, CA, March 3 & 4, 2020
- Testified at trial on validity, Santa Ana, CA, March 11, 2020
- Declaration regarding Daubert motion, August 2, 2019
- Completed deposition as expert witness, June 4, 2019
- Prepare expert report on validity, April 5, 2019
- Prepare expert report on infringement, March 8, 2019

2018 Honeywell vs. Aprilaire (expert witness, design patent)
Kirkland and Ellis, LLP
Washington, DC

- Completed deposition as expert, December 11, 2018
- Gave declaration in summary judgment motion, December 4, 2018
- Prepare expert report on validity, September 27, 2018
- Prepared expert report on infringement, August 20, 2018

2018 J.R. Simplot vs. McCain Foods, Ltd. (expert witness, design patent)
Norton Rose Fulbright Canada, LLP
Toronto, Canada

- Review design patents, October 2018

2017 C&S Marketing vs. GoPro (expert witness, design patent)
Kilpatrick Townsend & Stockton, LLP
San Francisco, CA

- Prepare declaration on invalidity, May 21, 2017
- Prepare expert report on invalidity, February 10, 2017
- Prepare expert report of non-infringement, March 31, 2017

2017 Nordock, Inc. vs. Systems, Inc. (expert witness, design patent)
Sokol Law Office
Milwaukee, WI

- Prepare supplemental declarations for summary motion, September 14, 2017
- Prepare declaration for summary motion, August 24, 2017

2017 Gamon vs. Campbell Soup (expert witness, utility, and design patents)
Reed Smith, LLP
Philadelphia, PA

- Completed deposition as expert, Indianapolis, IN, November 10, 2017
- Prepare declarations on invalidity 111', D646', and D645', October 13, 2017

2015-2017 Luv N' Care vs. Sauvinex (expert witness, contract dispute)
Banner & Witcoff, Ltd.
Washington, DC

- Completed deposition as expert, Lafayette, IN, August 25, 2017
- Prepare rebuttal expert report on copying, June 21, 2017
- Completed deposition as expert, Lafayette, IN, September 4, 2015
- Prepared expert report on copying, June 18, 2015

2016 Gamon vs. Campbell Soup (expert witness, utility patents)
Cozen O'Connor
New York, NY

- Prepared declarations on invalidity 111' and 326', October 14, 2016

2016 IGT vs. Aristocrat Technologies (expert witness, design patent)
Covington and Burling, LLP
Washington, DC

- Prepared declaration on invalidity, March 15, 2016

2015-2016 Sonos vs. Denon (expert witness, design patent)
Lee Sullivan Shea & Smith, LLP
Chicago, IL

- Prepare declaration on validity, October 26, 2016
- Prepare declaration on claim construction, September 9, 2016

2015-2016 Sonos vs. Denon (expert witness, design patent)
KPPB, LLP
Anaheim, CA

- Prepare supplemental declaration on validity, September 29, 2016
- Prepared declaration on validity, March 30, 2016
- Completed informal interview with USPTO, Alexandria, VA, February 13, 2016

2015 CATR vs. Kingston Electronics (expert witness, utility patent)
Renaissance IP Law Group, LLP
Portland, OR

- Completed deposition as expert, Lafayette, IN, September 21, 2015
- Prepared declaration on validity, July 16, 2015

2014-2015 Cablz vs. Chums (expert witness, utility patent)
Stoel Rives, LLP
Salt Lake, UT

- Prepare declaration on invalidity, January 22, 2015
- Completed deposition as expert, Dallas, TX, August 15, 2014
- Prepared declaration on invalidity, August 1, 2014
- Prepared rebuttal report on invalidity, August 1, 2014
- Prepared report on invalidity, May 26, 2014

2013-2014 PNY vs. Phison Electronics (expert witness, utility patent)
Fish and Richardson, PC
Dallas, TX

- Completed deposition as expert, Dallas, TX, July 23, 2014
- Prepare declaration on validity, July 8, 2014

2013-2014 M-Edge vs. Amazon (expert witness, utility patent)
Alston and Bird, LLP
Washington, DC

- Completed deposition as expert, Chicago, IL, April 10, 2014
- Prepared report on non-infringement, March 7, 2014
- Prepared report on invalidity, January 30, 2014

2012-2013 MSA vs. Nifty Home Products (expert witness, design patent)
Gibson & Dernier, LLP
Woodbridge, NJ

- Completed deposition as expert, Woodbridge, NJ, May 8, 2013
- Prepared report on infringement, March 15, 2013

2012-2013 Frito-Lay vs. Medallion Foods, Inc. (expert witness, trademark)
Baker Botts, LLP
Dallas, TX

- Testified at trial, Sherman, TX, February 15, 2013
- Completed deposition as expert, Dallas, TX, November 20, 2012
- Prepared report on trademark, October 8, 2012

2012-2013 Nordock, Inc. vs. Systems, Inc. (expert witness, design patent)
Sokol Law Office
Milwaukee, WI

- Testified at jury trial, Milwaukee, WI, March 19 & 25, 2013
- Testified in claim construction hearing, Milwaukee, WI, January 30, 2013
- Gave declaration in summary judgment motion, November 5, 2012
- Prepared rebuttal report, July 20, 2012
- Prepared report on infringement/validity, June 20, 2012

2012 Sofpool, LLC vs. Kmart and Big Lots (expert witness, design patent)
Troutman Sanders, LLP
Irvine, CA

- Gave declaration in summary judgment motion, October 29, 2012
- Gave declaration in claim construction hearing, June 18, 2012
- Prepared report on infringement, March 2, 2012
- Prepared report on validity, February 10, 2012

2010-2011 Spellbound vs. Pacific Handy Cutter/Stanley Black & Decker (expert witness, utility patents)
Miller Canfield
Chicago, IL

- Prepared rebuttal second supplemental report, October 11, 2011
- Gave declaration on statement of facts, September 26, 2011
- Gave declaration in support of summary judgment, August 5, 2011
- Prepared second supplemental report, August 5, 2011
- Gave declaration in support of summary judgment, February 7, 2011
- Prepared rebuttal expert report, February 14, 2011
- Prepared supplemental expert report, December 29, 2010
- Gave declaration on infringement and validity, December 17, 2010
- Prepared expert report, December 7, 2010

2010-2011 Microsoft vs. Datel, Inc. (expert witness, design patents)
Howard, Rice, Nemerovski, Canady, Falk & Rabkin, PC
San Francisco, CA

- Completed deposition as expert, June 8, 2011
- Prepared rebuttal report, May 27, 2011
- Prepared expert report, April 11, 2011
- Worked on ITC expert report, June-August 2010

2010 Magnadyne vs. Best Buy/EverWin (expert witness, design patent)
Troutman Sanders, LLP
Irvine, CA

- Completed deposition as expert, Detroit, MI, June 3, 2010
- Prepared supplemental expert report on invalidity, May 19, 2010
- Prepare declaration, April 12, 2010
- Prepared expert report on invalidity, March 24, 2010

2009 Plastipak (expert witness, design patent)
Dykema Gossett, LLP
Chicago, IL

- Provided opinion on patent infringement, September 2009

2008 Trover Group, Inc. vs. Diebold (expert witness, design patent)
Thompson & Knight, LLP
Dallas, TX

- Prepared preliminary reports on invalidity and non-infringement, September–November 2008

2008 Hanamint Corp. vs. Home Casual (expert witness, design patent)
Fabyanske, Westra, Hart & Thomson, P.A.
Minneapolis, MN

- Completed deposition on expert report, July 10, 2008
- Prepared supplemental expert report on invalidity, April 30, 2008
- Prepare expert report on invalidity, March 28, 2008

2007-2008 Sofpool, LLC vs. Intex Recreational Corp. (expert witness, design patents)
Baker & Daniels, LLP
Indianapolis, IN

- Testified in jury trial as a design expert, Marshall, TX, April 15, 2008
- Prepared expert report on non-infringement March 7, 2008
- Gave declaration for Markman hearing February 19, 2008
- Prepared expert report on invalidity, February 18, 2008

2006-2007 Calphalon vs. Meyer (expert witness, design patent)
Dykema Gossett, LLP
Chicago, IL

- Testified in jury trial as a design expert, June 12, 2007
- Completed deposition on expert report, Chicago, IL, May 9, 2006
- Prepared expert report for Meyer Inc. in a design patent dispute, April 22, 2006

2006 Zuna Corporation vs. Atico, Walgreen & Target (expert witness, utility patent)
Wiley Rein & Fielding, LLP
Washington, D.C.

- Reviewed patents, claim construction and manufactured products in view of a utility patent owned by Zuna Corporation, February-March

2005-2006 Fisher-Price vs. Evenflo (expert witness, utility patent)
Milbank, Tweed, Hadley & McCloy, LLP
Washington, D.C.

- Testified in preliminary injunction hearing as a design expert, May 24, 2006
- Completed deposition on the expert report, Buffalo, NY, December 22, 2005
- Prepared expert report on infringement, October 11, 2005

2005 Fabio Perini S.p.A. vs. Chan Li Machinery Co. Ltd. (expert witness, utility patent)
Baker & McKenzie, LLP
Washington, D.C.

- Worked as non-testifying expert in an International Trade Regulation & Customs case involving an Italian manufacturer and a Taiwanese Manufacturer. October-December
- Created visual images to help explain the issues involved in the case.
- Created claim charts for US patents 5,979,818 and Re 35,729

2003-2004 Fisher-Price vs. Graco (expert witness, utility patent)
Milbank, Tweed, Hadley & McCloy, LLP
Washington, D.C.

- Assisted in preparation for Markman hearing, Philadelphia, PA, March 2004
- Testified in Preliminary Injunction hearing, Philadelphia, PA, November 2003
- Prepared a preliminary report for a lawsuit between Fisher-Price and Graco, Inc. concerning a product that Graco, Inc. produces and patent 6,520,862 that Fisher-Price owns, July-September 2003

2001-2003 Fisher-Price vs. Safety 1st (expert witness, utility and design patents)
Milbank, Tweed, Hadley & McCloy, LLP
Washington, D.C.

- Testified in a trial concerning seven products and on four patents in dispute, Wilmington, DE, January 14-15, 2003
- Gave declaration for court on claim construction, March 28, 2002
- Prepared expert report on five products that Safety 1st produces and five patents that Fisher-Price owns, January 15, 2002

2001 Stein Industries vs. Display Specialties (expert witness, design patent)
Fish & Richardson, PC
Minneapolis, MN

- Reviewed patent history and depositions in the case, July-August 2001

2001 The Kong Company vs. Mann Design (expert witness, utility patent)
Fish & Richardson, PC
Minneapolis, MN

- Gave opinions on definition of claim language in patent 6,129,053 and visual comparisons with design patent 388,559, March, 2001

2000 3-M vs. Cabot (expert witness, utility, and design patents)
Fish & Richardson, PC
Minneapolis, MN

- Completed deposition, Indianapolis, IN, September 2000
- Gave declaration, April 2000
- Prepared expert report, March 21, 2000

International Fellowships and Residencies

2022-2023 Purdue Sabbatical: Design Process from the Real World
Selected for full year sabbatical with the support of the College of Liberal Arts at Purdue University. The project involved interviewing designers from around the world about the design processes they use. Interviews were conducted in 6 continents with industrial designers working on a variety of products.
Buenos Aires Argentina, Sydney Australia, Prague Czech Republic, Helsinki Finland, Budapest Hungary, Turin Italy, Rabat Morocco, Bangkok Thailand, and Providence RI and Santa Barbara, CA.
July 2022-May 2023

2015 SAI Faculty Fellow
Selected for four-week residency at Domus Academy in Milan. The project was focused on industrial design inspiration from Etruscan objects.
Milan, Italy
July 19-August 14

2014 Designer in Residence
Served as a designer in residency at the Association of Craft Producers in Nepal. The project was focused on designing crafts for fair trade industry.
Kathmandu, Nepal
September 1-October 22

2014 American Academy in Rome Associate Fellow
Selected for four-week residency at the American Academy in Rome. The project was focused on industrial design inspiration from 1st Century Rome.
Rome, Italy
April 28-May 24

2013 International Workshop
Organized and team-taught 48 students during an intensive 48-hour design challenge with student in China.
Nanjing, China
September 20-22

2002 Study Abroad Program
Taught British Style course at Oxford University.
Oxford, UK
June 30-August 4

2000 International Faculty Exchange
Taught at the University of Lapland for six weeks; included a Product Design course for international students from several countries within Europe, and an Advanced Research and Design course with a group of Finnish students designing a robot for domestic yard work.
Rovaniemi, Finland
April 1-May15

1999 Malaysian Polytechnic Curriculum Development Project Phase II
One of 16 professors that consulted for the Malaysian Ministry of Education, by assisting with the development and implementation of a new curriculum at Politeknik Johor Bahru, Pasir Gudang, Malaysia. The grant included support for one month in the USA and one month in Malaysia. Funding was provided through the World Bank.
Johor Bahru, Pasir Gudang, Malaysia
July and September 1999

1996-1997 Fulbright Scholar
Won a scholarship to teach and research at the University of Art and Design Helsinki. Teaching included courses in Industrial Design, Materials and Processes and Compliant Mechanisms. Research focused on creative endeavors with computer aided industrial design.
Helsinki, Finland
August 1996-August 1997

Lectures

2023 Design Briefs: From the Real World
IDSA Education Symposium
New York, NY
August 25
Selected exclusively for publication
https://www.idsa.org/education-paper/design-briefs/

2022 The Good the Bad and the Ugly
University of Illinois at Champaign/Urbana
Champaign IL
March 3

2021 MFA Guest Critique
University of Illinois at Champaign/Urbana
Champaign IL
December 10

2020 Order in a Chaotic World: Gestalt Theory and Design Perception
Universidad del Norte
Bogotá, Columbia (Virtual due to COVID)
September 30

2019 NSF Workshop for Engineering Design and Systems Engineering
Discussion Leader “The Future of Work” Breakout Session
West Lafayette, IN
October 7

2019 Employing Design Perception to Drive Product Creation
Huazhong University of Science & Technology
Wuhan, China
March 12

2019 Design Perception, How We See Products
Design Education Symposium
Lecture at Wuhan University of Science and Technology
Wuhan, China
March 11

2017 The Entrepreneurial Designer: Design Focused Entrepreneurship, Product Design, and
Business Models
Design innovation & Entrepreneurship Forum
Busan, South Korea
December 14

2016 Panelist: Industrial Design Education Symposium
National Conference IDSA
Detroit, MI
August 17

2015 Domus Academy
Perception: How We Identify Great Design
Milan, Italy
July 28

2013 Keynote Lecture at the 4th International Innovation Design Education Forum
Perceiving Design: Design Perceived
Nanjing, China
September 19

2013 Breaking the Rules of Visual Perception
Steve Visser and Cheryl Qian
IDSA National Education Symposium
Chicago, IL
August 21
Published online:
www.idsa.org/sites/default/files/Visser Paper_Breaking_the_rules_of_Visual_Perception.pdf

2013 Beyond the Computer Screen: Applying Information Visualization in Product Design
Cheryl Qian, Steve Visser and Victor Chen
IDSA National Education Symposium
Chicago, IL
August 21
Published online:
www.idsa.org/sites/default/files/Qian-Paper_BeyondTheComputerScreen.pdf

2012 What You Can Get From 48 Hours: The Future of Design Leadership
Steve Visser, Cheryl Qian and Victor Chen
IDSA National Education Symposium
Boston, MA
August 15
Published online:
http://www.idsa.org/what-you-can-get-48-hours-future-design-leadership

2011 A Collaborative Effort: Integrating Interaction Design Evaluation Into Product Design Process
Cheryl Qian and Steve Visser
Eastman IDSA National Education Conference
New Orleans, LA
September 14
Published online:
www.idsa.org/sites/default/files/ACollaborativeEffortIXDEvaluation.pdf

2011 Keynote Lecture at the International Innovation Design & Education Forum
Integrating Interaction Design and Industrial Design
Nanjing, China
August 15

2011 Integrating User Experience Research Into Industrial Design Education: Interaction Design Program at Purdue
Cheryl Qian, Steve Visser and Victor Chen
National Collegiate Inventors and Innovators Alliance Conference
Washington, DC
March 25
Published online:
http://nciia.org/sites/default/files/u7/Qian.pdf

2010 Interaction Design at Purdue University
Cheryl Qian and Steve Visser
Eastman IDSA National Education Conference
Portland, OR
August 5

2010 The Interactive Face of Design
Cheryl Qian, Petronio Bendito and Steve Visser
Faces of Design, IDSA Mideast Conference
Grand Rapids, MI
May 1

2009 Panelist: Industrial Design Education
Midwest District Conference IDSA
Minneapolis, MN
April 4

2007 Keynote Lecture at the ICHEM Conference
How to Effectively Incorporate Corporate Sponsored Projects and Design Competition into Design Curriculum
Wuxi, China
November 6

2007 Keynote Lecture at International Nanjing Forum of Industrial Design Education
How to Effectively Incorporate Corporate Sponsored Projects and Design Competition into Design Curriculum
Nanjing, China
November 8

2006 Workshop Co-Leader with Jim O'Grady from Calgary Canada
National Collegiate Inventors and Innovators Alliance conference
Portland, OR
March 23

2005 Panel Leader: Design Competitions and Tenure
Eastman IDSA National Education Conference
Washington, D.C.
August 22

2005 Entrepreneurship in Industrial Design: A Case Study
Kookmin University
Seoul, South Korea
April 19

2005 Entrepreneurship in Industrial Design Lecture and Workshop
Seoul National University
Seoul, South Korea
April 18

2004 Panelist: Industry Sponsored Student Research Models
Eastman IDSA National Education Conference
Art Center
Pasadena, CA
October 24-26

2003 Strategies: Corporate vs. Entrepreneurial Design
Notre Dame University
Notre Dame, IN
November 4

2001 Entrepreneurship/Corporate Sponsorship: Purdue's Two-Sided Gold Coin
International Convention of University Courses in Industrial Design:
Milan International Furniture Fair
Milan, Italy
April 7-8
Published in:
Designing Designers. Training Strategies for the Third Millennium
p. 69-74

2001 Seminar on Entrepreneurial Design
IDSA Midwest District Conference: Designing the Experience
Chicago, IL
March 23

2001 Entrepreneurship/Corporate Sponsorship: Purdue's Two-Sided Gold Coin
Published in:
IDSA Design Education Proceedings
p. 405-412

2000 Design in the USA
University of Lapland
Rovaniemi, Finland
April 18

1999 Finding Opportunities
Seminar: Designing In the New Millennium
Politeknik Johor Bahru
Pasir Gudang, Malaysia
July 24

1999 Brainstorming Workshop
IDSA Midwest District Conference: The Creative Culture
Madison, WI
April 9

1998 Compliance: Utilizing Plastic's Flexible and Rigid Characteristics.
In IDSA Design Education Proceedings: Why Design?
Long Beach, CA
September 22-24, CD ROM

1997 Entrepreneurial Design Center: Blurring the Boundaries Between Design Education, Business and Manufacturing
Co-Authored: Steve Visser and Tom Gatis
Published in:
IDSA Design Education Proceedings
Washington, D.C.
June 23-25, CD ROM

1997 Compliant Mechanism Workshop
Two-week workshop for 20 students at The University of Lapland
Rovaniemi, Finland
April 28-May 7

1997 American Design & Compliers® Design Process
To 40 students at the University of Lapland
Rovaniemi, Finland
May 6

1997 East Meets West: The Design Cultures of Asia and America
Joint lecture with Professor Lee of South Korea
Approximately 150 students and faculty attended
University of Art and Design
Helsinki, Finland
January 15

1996 Machine Age Design in America
To Industrial Design Freshmen
University of Art and Design Helsinki
Helsinki, Finland
December 12

1996 An Introduction to Industrial Design
To 40 students at the Tampere Polytechnic
Tampere, Finland
November 5

1996 Venturing In Industrial Design
American Voices conference
Turku, Finland
October 10

1996 Venturing Organizations, a Case Study
To 70 Industrial Design/Business Management students
University of Art and Design Helsinki
Helsinki, Finland
September 12

1996 The Design Process for Compliers®
To Industrial Design Freshmen
University of Art and Design Helsinki
Helsinki, Finland
December 5

1995 Entrepreneurs: A Natural Resource in Short Supply and Educating Design Students in the Art of Venturing
IDSA Design Education Conference
Santa Fe, NM
September 13-16

1994 Inventionalism: Designers Reject Expressionistic Pleasures of the 80's and Replace Them with an Adoration for Innovation
Co-Authored; Steve Visser and John Peasley
Dearborn, MI
August 16-18
Published in:
IDSA Design Education Conference Proceedings: Design Futures
p. 133-139

1994 Compliant Mechanisms: Materials and Processes
Lecture and mini workshop
University of Michigan
Ann Arbor, MI
March 8

1993 Drawing Workshop
Taught a three-day workshop on design drawing techniques to twelve students from Helsingin Taideteolloinen Korkeakoulu (University of Art and Design Helsinki)
Helsinki, Finland
April 20-22

1993 Plastic Design
Helsingin Taideteolloinen Korkeakoulu (University of Art and Design Helsinki)
Helsinki, Finland
April 22

1993 Parallel Design at Purdue: Mechanical Engineering and Industrial Design Team-Up.
Co-Authored; Steve Visser and Ashok Midha
Georgia Institute of Technology
Atlanta, GA
August 10-12
Published in:
IDSA Design Education Conference Proceedings
p. 245-249

1991 Industrial Design Process and Education
Rovaniemi Institute of Industrial Arts and Handicrafts
Rovaniemi, Finland
December 18

1991 Industrial Design Process and Education
Helsingin Taideteolloinen Korkeakoulu (University of Art and Design Helsinki)
Helsinki, Finland
December 17

1991 What is Industrial Design?
Lecture including a three-screen multi-media presentation developed by students in A&D 355 Presentation Techniques
Purdue University
October 29

1990 Art Education vs. Design Education
University of California
San Bernardino, CA
April 10

Major Professor Master's in Industrial Design

2021 Jae Chae
2020 Keith Williams and Daniel F. Mandrinan Chiquito
2019 Xiao Ma
2018 Yingxiao Max Cao
2016 Amie Barnes, Wilson Zhang and Hongmin Jin
2015 Angie Wang
2013 Zoey Feng and Robert Sibley
2011 Di Wu
2010 Xi Chen, Sara Rockwell and Larry Fenske
2009 Hao Hua

Grants/Corporate Sponsorship

2023 Petlibro.com
Organized a design project for pet accessories and expansion for cat trees
Los Angeles, CA

2022 Nerf
Directed a design project working with Hasbro to explore concepts focused on "Nerf for all".
Providence, RI

2020 KMC Lounge, for Neonatal Care
Create Grant
Spring 2020 (delayed due to COVID)
Malawi Africa

2019 LumiSource, LLC
Organized a design project for the design of lamps for millenniums.
Chicago, IL

2018-2019 Save the Children
Co-PI for a project to reduce infant mortality by integrating family-centered kangaroo mother (KMC) care into health systems. Designed and developed smart furniture for use in neonatal and KMC facilities in resource limited countries
Malawi, Africa

2015-2016 Hasbro, Inc.
Co-led student interdisciplinary design project working with major toy manufacturer to explore concepts focused on solar powered and mechanical toys.
Providence, RI

2015 BraunAbility (3 Co-PI's)
Co-PI for the BraunAbility Queensland project. It was a project to re-design a wheelchair lift for the European Market. The team of three professors and three RA's worked together for 12 months to improve the design of a wheelchair lift by reducing the weight, reducing noise and improving the visual design of the lift.
Winamac, IN

2015 Evonik
Organized a 48-hour intensive design project. The goal was to develop new ways to promote Evonik plastics to Industrial Designers.
Lafayette, IN

2014 Kimberly Clark Professional
Co-Organized student design project working with major safety manufacturer to explore concepts focused on the clean-room gowns.
Atlanta, GA

2014 Hasbro, Inc.
Directed a student design project to explore toy concepts focused on Play-Doh.
Providence, RI

2013 GE Appliance
Organized graduate student design project working with major appliance manufacturer to explore concepts focused on the laundry.
Louisville, KY

2013 National Furniture
Arranged corporate sponsored project exploring office stool designs for the Junior Industrial Design Students. Worked with Glen Fuller who taught the class.
Jasper, IN

2013 HON Furniture
Arranged 48-2-Design workshop for 96 industrial design students. The project was to design furniture for the office storage accessories.
Muscatine, IA

2013 Hasbro, Inc.
Arranged student design project working with major toy manufacturer to explore toy concepts focused on preschool children.
Providence, RI

2012 Caterpillar
Arranged Corporate sponsored project for senior industrial design students. The project was to explore how Caterpillar could expand its brand.
Peoria, IL

2012 Weber Grill
Arranged 48-2-Design workshop for 50 industrial design students. The project was to design products to improve the grilling experience.
Chicago, IL

2011 National Furniture
Arranged corporate sponsored project exploring occasional table designs for the Junior Industrial Design Students. Worked with Victor Chen who taught the A&D 305 class. Three of the students where hired to bring their designs to production. The production designs were introduced at Neocon 2012.
Jasper, IN

2010 GE Healthcare
Arranged multi-course project exploring home monitoring of patients with: multiple sclerosis, cerebral palsy, arthritis, and Parkinson's.
Milwaukee, WI

2010 The Hon Company
Arranged 48-2-Design workshop for 50 industrial design students. The project was to design furniture for the future of education.
Muscatine, IA

2010 Hasbro, Inc.
Led student design project working with major toy manufacturer to explore toy concepts focused on the Stretch Armstrong movie.
Providence, RI

2009 DePuy, Inc. a Johnson & Johnson Company
Arranged sponsored project with DePuy, Inc. for the juniors. This project focused on designing for the Paralympics.
Warsaw, IN

2009 MCS Frames
Arranged sponsored project focusing on future frame trends.
Chicago, IL

2008 Whirlpool interaction Design
Grant to develop new interaction design area within industrial design at Purdue University.
Benton Harbor, MI

2007 Rolodex (Newell Rubbermaid)
Managed students design project sponsored by office-supply manufacturer, researched millennia's organizational needs
and helped identify new market opportunities for the company.
Chicago, IL

2007 Radio Flyer
Led student design project sponsored by toy manufacturer to create future concept for ride-on toys.
Chicago, IL

2004 Whirlpool Corp.
Organized student design project exploring new concepts for refrigeration storage. This innovative intensive project spanned two weekends and included 32 students creating 256 concepts within 48 hours.
Benton Harbor, MI

2001 Hill-Rom
Led Packaderm Project: design project sponsored by a major manufacturer of hospital beds and equipment. The project was to design a safer and more efficient method of transporting equipment and patients in the hospital environment.
Batesville, IN

2001 Campbell Hausfeld
Led power paint equipment research and design project. Student project to explore what women want in power paint equipment.
Nashville, TN

2000 International Programs Global Initiative
Initiated an exchange program with the University of Lapland and Purdue University.
Rovaniemi, Finland

1999 Dr. Martens Shoes
Organized a corporate sponsored project for the junior level Industrial Design students. The project included a five-day trip to New York provided by Dr. Martens for all participating students and faculty. The students also had a chance to work with professional designers, marketers, and executives from Dr. Martens.
New York, NY

1999 Samsung Corporation
Campus liaison for the Prometheus Design Competition.
Seoul, South Korea

1995 Purdue Research Foundation
Summer Faculty Grant
Computer Design of Complex Compliant Mechanisms