

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

Petitioner

v.

Patent Owner

U.S. Patent No. 12,433,239 B2

Title: PET TOILET

Post-Grant Review No. PGR_____ (Unassigned)

DECLARATION OF JOHN P. ABRAHAM, PH.D.

REGARDING U.S. Patent No. 12,433,239

Ex. 1003

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I, John P. Abraham, declare as follows:

I. INTRODUCTION

1. I am over the age of eighteen (18) and otherwise competent to make this declaration (“Declaration”).

2. I have been retained by counsel for Petitioner to provide expert opinions concerning the patentability of Claims 1, 3, 4, and 6–18 of U.S. Patent No. 12,433,239 (“the ’239 Patent”) in connection with the accompanying Petition for Post-Grant Review.

3. I have prepared this declaration as an expert witness on behalf of the Petitioner. I am being compensated for my services at a rate of \$500 per hour, which does not depend on the outcome of this review proceeding or any of the related proceedings and litigations. In this declaration I give my opinions as to whether Claims 1, 3, 4, and 6–18 of the ’239 Patent are valid. I provide technical bases for these opinions as appropriate.

4. This declaration contains statements of my opinions formed to date and the bases and reasons for those opinions. I may offer additional opinions based on further review of materials in this case, including opinions and/or testimony of other expert witnesses.

5. I have summarized in this section my educational background, career history, publications, and other relevant qualifications. My full *curriculum vitae* is attached as Exhibit 1004 to this declaration.

II. QUALIFICATIONS

A. Educational Background

6. I have obtained a B.S. (1997), a M.S. (1999), and a Ph.D. (2002) in Mechanical Engineering from the University of Minnesota. My educational experience includes the study of mechanical structures including their design, manufacturing, and assembly. The entirety of my educational and professional backgrounds are provided in my resume.

B. Career History

7. Currently, I am a professor of mechanical engineering at the University of St. Thomas, in St. Paul Minnesota. I have been in this position since 2002; I was promoted from Assistant Professor to Associate in 2008 and then to Full Professor in 2013.

8. At the University of St. Thomas, I founded the M.S. degree program in Mechanical Engineering, and I teach courses in that program that relate to mechanical design.

9. I have been an industrial consultant over the past nearly three decades with approximately 50 companies, as listed in my attached CV. I am currently a

Vice President of Research and Development with an energy company (LEMA) that is headquartered in St. Paul, MN.

10. With my industrial experience I have designed multiple physical products or product components, including flanges, slots, fixtures, etc. I also have taught hundreds of graduate and undergraduate students in these areas.

11. In addition to teaching and consulting, I have an active research program with approximately 600 completed works that include peer-reviewed journal papers, conference presentations, books, book chapters, and patents. I also have served and continue to serve as the editor on multiple technical publications. I am a listed inventor on numerous inventions.

12. Over the past ~ 20 years, I have served as an expert witness in numerous IP litigations that involve consumer products, including cases related to mechanical design.

III. SUMMARY OF OPINION

13. All of the opinions contained in this declaration are based on the documents I have reviewed and my professional judgment, as well as my education, experience, and professional knowledge. I am not an attorney and I am not offering any legal opinions in this declaration.

14. In forming my opinions expressed in this declaration, I relied on the '239 patent (Ex. 1001), the prosecution history of the '239 patent (Ex. 1002), the prior art references cited herein, and other exhibits I have cited in this declaration.

15. My opinions are additionally guided by my appreciation and understanding of how a POSITA would have understood the claims of the '239 patent before the effective filing date of the claimed invention.

16. Based on my experience and expertise, it is my opinion that:

17. Ground 1: Claims 1, 6, and 18 of the '239 patent should be found unpatentable based on the understanding a POSITA would have of U.S. Patent Application Publication 2025/0113798 A1 (Zhang) in view of U.S. Patent Application Publication 2024/0260535 A1 (Zhou).

18. Ground 2: Claim 7 of the '239 patent should be found unpatentable based on the understanding a POSITA would have of Zhang in view of Zhou and U.S. Patent. No. 7,779,489 B2 (Finell).

19. Ground 3: Claim 8, 9, and 11 of the '239 patent should be found unpatentable based on the understanding a POSITA would have of Zhang in view of Zhou and U.S. Patent. No. 11,000,007 B2 (Ward).

20. Ground 4: Claims 1, 6, and 18 of the '239 patent should be found unpatentable based on the understanding a POSITA would have of PAWBBY in view of Zhou.

21. Ground 5: Claim 3 of the '239 patent should be found unpatentable based on the understanding a POSITA would have of PAWBBY.

22. ground 6: Claim 4 of the '239 patent should be found unpatentable based on the understanding a POSITA would have of PAWBBY.

23. Ground 7: Claim 3 of the '239 patent should be found unpatentable based on the understanding a POSITA would have of Zhang in view of Chinese Patent No. 219594089 U (Bao).

24. Ground 8: Claim 3 of the '239 patent should be found unpatentable based on the understanding a POSITA would have of Zhang in view of Chinese Patent No. 111412720 A (Hua).

25. Ground 9: Claim 3 of the '239 patent should be found unpatentable based on the understanding a POSITA would have of Zhang in view of U.S. Patent No. 4,172,625 (Swain).

26. Ground 10: Claim 3 of the '239 patent should be found unpatentable based on the understanding a POSITA would have of U.S. Patent No. 3,921,582 (Sedlmeir) in view of Bao.

IV. MATERIAL CONSIDERED

27. In connection with my work on this matter, I have reviewed and considered the following documents:

Exhibit No.	Exhibit
1001	U.S. Patent No. 12,433,239 B2 (the '239 patent)
1002	Prosecution History of the '239 patent
1005	U.S. Pub. No. 2025/0113798 A1 (Zhang)
1006	U.S. Pub. No. 2024/0260535 A1 (Zhou)
1007	U.S. Patent. No. 7,779,489 B2 (Finell)
1008	U.S. Patent. No. 11,000,007 B2 (Ward)
1009	PAWBBY, FCC authorization record (FCC ID 2AZYM-MGCLB001US)
1010	PAWBBY, FCC external photographs-1
1011	PAWBBY, FCC external photographs-2
1012	PAWBBY, FCC external photographs-3
1013	PAWBBY, FCC internal photographs-1
1014	PAWBBY, FCC internal photographs-2
1015	PAWBBY, FCC user manual-1
1016	PAWBBY, FCC user manual-2
1017	PAWBBY, Amazon listing (ASIN B0C4PZ281Z)
1018	Authentication Declaration
1019	CN 219594089 U (Bao) (with certified English translation, 37 C.F.R. § 42.63(b))
1020	CN 111412720 A (Hua) (with certified English translation, 37 C.F.R. § 42.63(b))
1021	U.S. Patent No. 4,172,625 (Swain)
1022	U.S. Patent No. 3,921,582 (Sedlmeir)

28. I also have relied on my academic and professional experience in reaching the opinions expressed in this declaration.

V. RELEVANT LEGAL STANDARD

29. I have been asked to provide my opinion as to whether the Claims 1, 3, 4, and 6–18 of the '239 Patent would have been obvious to a person of ordinary skill in the art (“POSITA”) before the effective filing date of the claimed invention, in view of the prior art.

30. The opinions I am expressing in this Declaration are based on the application of my training and technical knowledge and experience to the evaluation of certain prior art to the '239 patent.

31. I am not an expert in patent law. Attorneys from Vanguard Crest P.C. have provided me with guidance as to the applicable patent law in this matter. The paragraphs below express my understanding of how I must apply current principles related to my analysis.

A. Legal Standard for Prior Art

32. I understand that a patent, published patent application, printed publication, technical standard, book, article, commercial product, public use, sale or offer for sale, or other disclosure must qualify as prior art in order to be relied upon to invalidate a patent claim.

33. I understand that, under current U.S. patent law, a claimed invention may be unpatentable if, before the effective filing date of the claimed invention, the claimed invention was patented, described in a printed publication, in public use, on sale, or otherwise available to the public.

34. I understand that commercial products may qualify as prior art if, before the effective filing date of the claimed invention, they embodied the claimed invention and were publicly used, sold, offered for sale, or otherwise made available to the public. I further understand that documents relating to a commercial product, including product manuals, technical documents, marketing materials, standards, or other publications, may also qualify as prior art or may provide evidence of the product's features, use, sale, or public availability.

35. I understand that certain disclosures made one year or less before the effective filing date of the claimed invention may be subject to statutory exceptions. I further understand that disclosures made more than one year before the effective filing date generally are not subject to that one-year grace period exception.

36. I understand that a U.S. patent, published U.S. patent application, or certain published international patent applications may qualify as prior art if the patent or application names another inventor and was effectively filed before the effective filing date of the claimed invention.

37. I understand that, for a prior art reference or prior art product to anticipate a patent claim, the reference or product must disclose or embody each and every limitation of the claim and must enable a person of ordinary skill in the art to practice the claimed invention without undue experimentation. I also

understand that patents, printed publications, commercial products, public uses, sales, offers for sale, and other prior art may be relied upon in an obviousness analysis, including in combination with other references or the knowledge of a person of ordinary skill in the art.

38. I understand that prior art that qualifies under the patent laws can be used to invalidate a patent claim as anticipated or obvious.

B. Claim Construction

39. I understand that claim construction is the process of determining the meaning of a term or phrase in a patent claim. I understand that, in a post-grant review, the Board construes claims using the same claim construction standard that applies in district court proceedings. I understand that, under that standard, claim terms are given their ordinary and customary meaning as understood by a person of ordinary skill in the art in view of the claims, specification, and prosecution history. I have followed these principles in my analysis throughout this Declaration.

40. I understand that, in construing the claims, I must read the claims in view of the specification and prosecution history. I also understand that I must not import limitations from the specification into the claims. In other words, I must not narrow the scope of a claim term by adding limitations from the specification that have no basis in the claim language.

C. Anticipation

41. I understand that to anticipate a patent claim under 35 U.S.C. § 102, a single item of prior art must disclose each and every element of the claimed invention, either expressly or inherently, to a person of ordinary skill in the art. I understand that prior art may include, for example, a patent, published patent application, printed publication, technical standard, commercial product, public use, sale, offer for sale, or other disclosure that qualifies as prior art. I understand that a prior art commercial product, public use, sale, or offer for sale may anticipate a claim if it embodies or makes available each and every limitation of the claim. I further understand that a disclosure or feature may be inherent if the allegedly missing element is necessarily present, or is the inevitable result of the thing or process that is expressly disclosed, embodied, used, sold, offered for sale, or otherwise made available.

D. Obviousness

42. I understand that a claim is obvious, and therefore unpatentable, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person of ordinary skill in the art. I also understand that an obviousness analysis takes into account the scope and content of the prior art, the differences between the claimed invention and the prior art, and

the level of ordinary skill in the art before the effective filing date of the claimed invention.

43. In determining the scope and content of the prior art, I understand that a reference is considered analogous prior art if it falls within the field of the inventor's endeavor. I also understand that a reference may be analogous prior art if it is reasonably pertinent to the particular problem with which the inventor was involved. A reference is reasonably pertinent if it logically would have commended itself to an inventor's attention in considering the problem. I understand that, if a reference relates to the same problem as the claimed invention, that supports use of the reference as prior art in an obviousness analysis.

44. To assess the differences between the prior art and the claimed invention, I understand that the claimed invention must be considered as a whole. I understand that this analysis asks whether a person of ordinary skill in the art, before the effective filing date of the claimed invention and without using the challenged patent as a roadmap, would have been motivated to modify the prior art or combine prior art teachings to arrive at the claimed invention, with a reasonable expectation of success.

45. I further understand that the law recognizes several rationales for combining prior art references or modifying prior art to show obviousness. These rationales include, for example, combining prior art elements according to known

methods to yield predictable results; substituting one known element for another to obtain predictable results; using a known technique to improve a similar device, method, or product in the same way; applying a known technique to a known device, method, or product that was ready for improvement to yield predictable results; choosing from a finite number of identified, predictable solutions with a reasonable expectation of success; and relying on a teaching, suggestion, or motivation in the prior art that would have led a person of ordinary skill in the art to modify the prior art or combine prior art teachings.

46. I understand that a prior art reference, product, use, sale, offer for sale, or other prior art disclosure may also suggest a limitation of the claims. In that case, even if the prior art does not expressly or inherently disclose the limitation, the limitation may still have been obvious if a person of ordinary skill in the art would have been motivated to modify the prior art to include the limitation with a reasonable expectation of success. For example, a limitation may have been obvious if it involved a simple design choice, the use of a known technique, or selection from a finite number of identified, predictable solutions, and if the modification was consistent with the goals of the prior art.

47. I further understand that the obviousness analysis must be performed from the perspective of a person of ordinary skill in the art before the effective filing date of the claimed invention. This is to avoid using impermissible hindsight.

I understand that the challenged patent must not be used as a roadmap for obviousness. Instead, the claims would have been obvious if, before the effective filing date, a person of ordinary skill in the art would have been motivated to modify the prior art or combine prior art teachings to arrive at the claimed invention and would have had a reasonable expectation of success in doing so.

48. I also understand that when a claim element is construed as a means-plus-function element, the construction includes both the claimed function and the corresponding structure disclosed in the specification for performing that function, and equivalents of that structure. I understand that a prior art reference, product, use, sale, offer for sale, or other prior art disclosure may disclose such a limitation if it discloses the claimed function performed by the corresponding structure disclosed in the specification, or by an equivalent structure. I understand that a structure in the prior art may be considered equivalent if a person of ordinary skill in the art would have considered the differences between the prior art structure and the corresponding structure disclosed in the patent specification to be insubstantial. I further understand that one way of showing insubstantial differences is to show that the prior art structure performs the claimed function in substantially the same way to achieve substantially the same result as the corresponding structure disclosed in the specification.

49. I also understand that an obviousness analysis may consider objective indicia of nonobviousness, sometimes referred to as secondary considerations. These may include, for example, long-felt but unmet need, unexpected results, skepticism, teaching away, commercial success, praise by others, and copying. I understand that there must be a nexus between any alleged objective indicia and the claimed invention.

VI. LEVEL OF ORDINARY SKILL IN THE ART

50. In determining the characteristics of a person of ordinary skill in the art (“POSITA”) before the effective filing date of the claimed invention, I considered several things, including the nature of the problems addressed by the ’239 patent, the types of mechanical structures described in the patent and cited prior art, the sophistication of the technologies and designs involved, and the educational background and experience of persons working in the relevant field. I also considered the level of education and experience that would have been necessary to understand the ’239 patent and the relevant prior art.

51. In my opinion, a POSITA would have had at least a bachelor’s degree in mechanical engineering, industrial design, product design, product engineering, or a closely related field, and at least two to three years of academic or industry experience involving mechanical design, product design, or product development. A person with less formal education but more relevant practical experience, or a

person with more formal education but less practical experience, may also meet this standard. In my opinion, these qualifications would have been sufficient to allow a POSITA to read and understand the '239 patent and the relevant prior art.

VII. THE '239 PATENT

A. Overview

52. The '239 patent is titled “Pet Toilet With a Detachable Fecal Collection Box to a Bottom of a Base.” The patent describes a pet toilet, including an intelligent cat litter box, having a base and a fecal collection box detachably provided on the base. The patent explains that, in existing intelligent cat litter boxes, the fecal collection chamber was integrated with the base and undetachable, which made cleaning inconvenient and increased the product volume during transportation. Ex. 1001 at 1:17-43.

53. The patent describes the alleged solution as a fecal collection box that is detachable from the base. In one embodiment, the base defines a through hole, and the fecal collection box defines a fecal collection chamber in communication with the through hole and configured to collect excrement. Ex. 1001 at 4:11-16. The patent further describes that the fecal collection box may be assembled with the base “in the form of a drawer,” with insertion flanges on the fecal collection box inserted into insertion slots on the base when the fecal collection box is mounted on the base. Ex. 1001 at 4:23-32.

54. The patent also describes a joint structure between the insertion flange and the base. According to the patent, the joint structure includes a first bump and a first clamping groove used together, with the first bump placed in the first clamping groove when the fecal collection box is mounted on the base. Ex. 1001 at 4:45-58. The patent states that this structure limits the fecal collection box, adds pulling friction force, provides an insertion and pulling feeling, and may provide a “click” feeling to remind the user that the fecal collection box is mounted properly. Id.

55. In another embodiment, the patent describes limit protrusions formed by downward protrusions of the base at two sides of the through hole. The patent states that a cross-section of the insertion slot is C-shaped, and that the limit protrusions are located at a side of the insertion slot close to the through hole and arranged separately from the insertion slot. Ex. 1001 at 5:1-10. The patent further states that the limit protrusions cooperate with the insertion slot to limit the fecal collection box and improve mounting stability. Ex. 1001 at 5:10-14.

56. The patent also describes an embodiment in which the fecal collection box includes at least one extension frame and a fixing basin. The extension frame may be sheathed on an outer side of the fixing basin and detachably connected with the fixing basin. Ex. 1001 at 6:22-32. The patent further describes

embodiments with multiple extension frames that are sheathed sequentially and have interference fit between adjacent extension frames. Ex. 1001 at 5:56-64.

B. Prosecution History

57. I have also reviewed the prosecution history of the application that issued as the '239 patent. The application was filed on December 21, 2023, and claims priority to a Chinese application filed on December 14, 2023. Ex. 1001, cover. During prosecution, the Examiner issued a Non-Final Office Action rejecting then-pending claims under 35 U.S.C. §§ 102 and 103 based on prior art including Baxter and Turkalo. Ex. 1002, Non-Final Rejection 02/06/2025 at Pages 2-14. In particular, the Examiner found that Baxter and Turkalo disclosed various features of the claimed pet toilet, including a base, a through hole, a detachable fecal collection box or chamber, and related collection structures. *Id.*

58. In response, the applicant did not substantively dispute the Examiner's findings regarding the general base and detachable collection-box architecture. Ex. 1002, Response to Non-Final Rejection 04/30/2025 at Pages 9-10. Instead, the applicant amended the claims. *Id.* The applicant amended then-pending claim 1 to add the joint structure including a first bump and a first clamping groove. *Id.* The applicant also rewrote certain dependent claims in independent form, including limitations directed to the C-shaped insertion slot and separate limit protrusions, and limitations directed to extension frames and a fixing basin. *Id.*

59. The Examiner then allowed the claims. Ex. 1002, Notice of Allowance 06/20/2025. In the Reasons for Allowance, the Examiner stated that Baxter and Turkalo taught the general base and fecal collection box architecture, including a base, a through hole, and a fecal collection box or chamber configured to collect excrement. *Id.* at Pages 2-5. The Examiner identified the limitations that the prior art allegedly failed to disclose or make obvious. *Id.* Those limitations included: (1) the joint structure comprising a first bump and a first clamping groove, with the first bump placed in the first clamping groove when the fecal collection box is mounted on the base; (2) the configuration in which the base protrudes downward at two sides of the through hole to form limit protrusions, the insertion slot has a C-shaped cross-section, and the limit protrusions are close to the through hole and arranged separately from the insertion slot; and (3) for the claims directed to the extension-frame embodiment, the configuration in which the extension frame comprises a plurality of extension frames sheathed sequentially from inside to outside according to size, with interference fit between adjacent extension frames and the insertion flange located on the outermost extension frame. *Id.*

60. In my opinion, the prosecution history is consistent with my understanding of the '239 patent. The general concept of a pet toilet with a base, a through hole, and a detachable fecal collection box was not treated during

prosecution as the alleged point of novelty. The allowed claims focused on narrower mechanical features added or emphasized during prosecution, including the bump-and-groove joint structure recited in claim 1 and the C-shaped insertion slot with separate limit protrusions recited in claim 3.

VIII. CLAIM CONSTRUCTION

61. I have not been asked to opine on claim construction in this proceeding and express no opinion herein on the proper construction of any claim term. I understand that claim terms are to be given their plain and ordinary meaning, as they would have been understood by a person of ordinary skill in the art at the time of the invention in view of the intrinsic record (patent claims, patent specification, and file history). I have applied the plain and ordinary meaning of the terms of the '239 patent throughout my analysis unless otherwise noted.

A. “limit protrusion”

62. In my opinion, a POSITA would have understood the phrase “limit protrusion” according to its ordinary meaning in the context of the '239 patent to refer to a protruding structure that limits or restricts movement or positioning of the fecal collection box or a corresponding inserted component.

63. This understanding is consistent with the specification. The '239 patent explains that “the base 2 protrudes downward at two sides of the through hole 24 to form limit protrusions 22,” and that “[t]he limit protrusions 22 are used

to cooperate with the insertion slot 21 to limit the fecal collection box 3,” thereby improving mounting stability. Ex. 1001 at 5:11-19.

64. A POSITA would not have understood “limit protrusion” to require a particular shape, size, or manufacturing method. The term identifies a protruding structure by reference to its limiting function in the claimed assembly.

IX. OVERVIEW OF THE REFERENCES

65. The disclosure of the ’239 patent relates to pet toilets, including pet toilets with a base and a fecal collection box detachably provided on the base. The challenged claims generally concern mechanical structures for mounting, guiding, positioning, and removing a fecal collection box relative to a base.

66. Before December 14, 2023, pet toilets and related mechanical product assemblies using removable collection containers, guide structures, slots, flanges, protrusions, stops, and detachable or adjustable receptacles were known. As discussed below, the cited prior art discloses these types of mechanical structures and their use in pet toilets or analogous product assemblies before the effective filing date of the challenged claims.

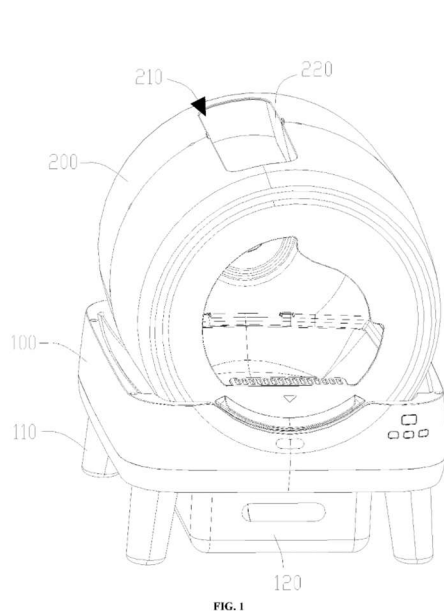
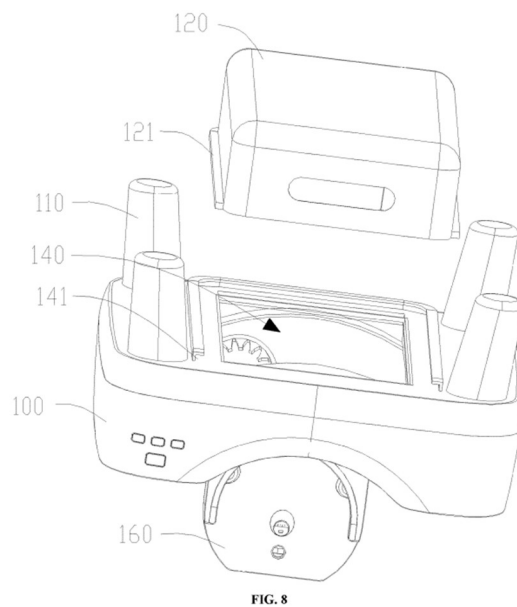
A. Overview of Zhang

67. U.S. Patent Application Publication No. 2025/0113798 to Zhang (“Zhang”) is titled “Pet Toilet.” Zhang discloses a pet toilet having a base and a rotary drum rotatably arranged on the base. Zhang explains that intelligent litter

boxes with a base and rotary drum were known, but that a gap between the rotary drum and the base could allow odor from collected waste to diffuse into the air. Ex. 1005 at [0001]-[0003].

68. As shown in Fig. 1, Zhang discloses a pet toilet including a base 100, support legs 110, a collection basin 120, and a rotary drum 200 arranged on the base. Zhang states that “[a] pet toilet includes a base and a rotary drum rotatably arranged on the base,” and that “[t]he base is provided with a waste chamber for collecting waste and a first opening communicated with the waste chamber.” *Id.* at [0005]. Zhang further discloses that the base is movably provided with a baffle plate at the first opening, where the baffle plate covers the first opening at an initial position and moves with the rotary drum to open the first opening during rotation of the rotary drum. *Id.*

69. As shown in Fig. 8, Zhang also discloses a removable waste collection structure at the bottom of the base. In particular, Zhang teaches that “a bottom of the base is detachably provided with a collection basin, and the waste chamber is located on the collection basin.” *Id.* at [0021]. Zhang further explains that this arrangement makes it “convenient to remove the collection basin” so that a user can “regularly clean waste of a pet conveniently.” *Id.* at [0055].



70. Zhang also discloses corresponding insertion and sliding structures for mounting and removing the collection basin. Zhang teaches that two sides of a top of the collection basin extend outward to form second insertion blocks, and that sliding chutes used with the second insertion blocks are formed in the bottom of the base. *Id.* at [0022]. Zhang further explains that the second insertion blocks are arranged in the sliding chutes so that the collection basin is mounted at the bottom of the base, and that when removal is needed, “the collection basin 120 can be pulled out to facilitate use.” *Id.* at [0056].

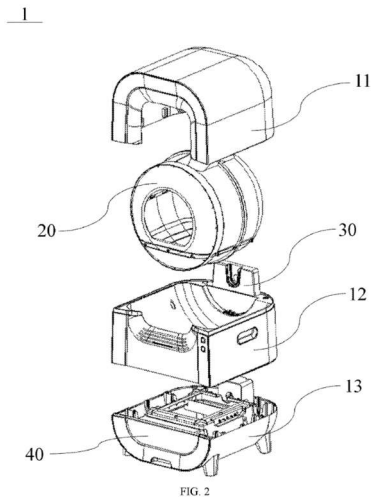
B. Overview of Zhou

71. U.S. Patent Application Publication No. 2024/0260535 to Zhou et al. (“Zhou”) is titled “Cat Litter Box.” Zhou relates to pet supplies, and in particular to a cat litter box. Zhou explains that existing cat litter trays could have complex

structures and be cumbersome to assemble and disassemble, which increased the complexity of cleaning and maintenance. Ex. 1006 [0002]-[0004].

72. As shown in Fig. 2, Zhou discloses a modular cat litter box in which the shell assembly includes a top shell 11, a middle shell 12, and a bottom shell 13 arranged in sequence in a vertical direction, with rotary drum 20 arranged in a mounting cavity formed between the top shell and middle shell. *Id.* at [0006], [0065]. Zhou explains that the top shell is detachably connected to the middle shell, the middle shell is detachably connected to the bottom shell, and the modular structure facilitates assembly, disassembly, cleaning, maintenance, and production efficiency. *Id.* at [0010], [0066].

73. Zhou also discloses a removable excrement collection compartment. Zhou teaches that excrement collection compartment 40 is removably inserted into a front side surface of bottom shell 13 and includes a third opening 41 opposite to a second opening 1311 at the top of bottom shell 13. *Id.* at [0067]. Zhou further explains that excrement collection compartment 40 collects excrement discharged from rotary drum 20 and can be easily cleaned by removing it from bottom shell 13. *Id.*



74. Zhou further discloses a detachable deodorizing assembly mounted to the cat litter box using a projecting resilient structure and corresponding groove. Zhou teaches that deodorizing assembly 50 is detachably connected to bottom shell 13 and is arranged in a mounting box at a rear end of bottom shell 13. *Id.* at [0088]. The mounting box includes a box body 81 and a box cover 82, with deodorizing assembly 50 arranged in a mounting space inside box body 81. *Id.* Zhou further teaches that the box cover can be disconnected from the box body to expose and remove the deodorizing assembly. *Id.*

75. As shown in Figs. 18 and 19, Zhou discloses that deodorizing assembly 50 includes a spray generator 51 having a first box body 511 and a bottom plate 512. Zhou teaches that two sides of bottom plate 512 extend beyond two sides of first box body 511, and that an elastic protrusion 513 is arranged on each extending side of bottom plate 512. *Id.* at [0089]. Zhou also teaches that an L-shaped protrusion 811 is arranged at the bottom of the inner cavity of box body 81,

that a mounting groove is formed between L-shaped protrusion 811 and the bottom surface of box body 81, and that an engaging groove 812 is provided on a surface of L-shaped protrusion 811 facing the bottom surface of the box body. *Id.*

76. Zhou further explains how these structures cooperate during assembly. When deodorizing assembly 50 is fitted with the mounting box, the extending sides of bottom plate 512 are inserted into the mounting groove, and elastic protrusion 513 engages into engaging groove 812, “thereby realizing the positioning and mounting of the deodorizing assembly 50 in the mounting box.” *Id.* at [0089]. Thus, Zhou discloses a known mechanical retention structure in which an elastic protrusion on an inserted component engages a corresponding groove in a receiving structure to position and mount the inserted component.

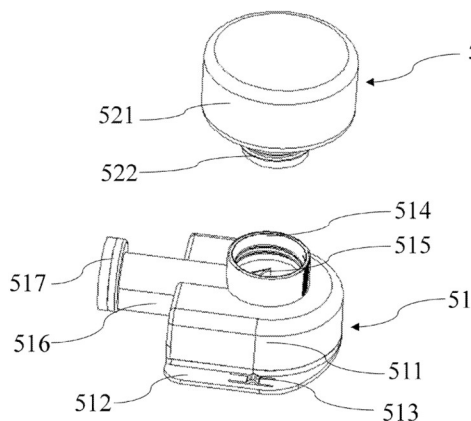


FIG. 18

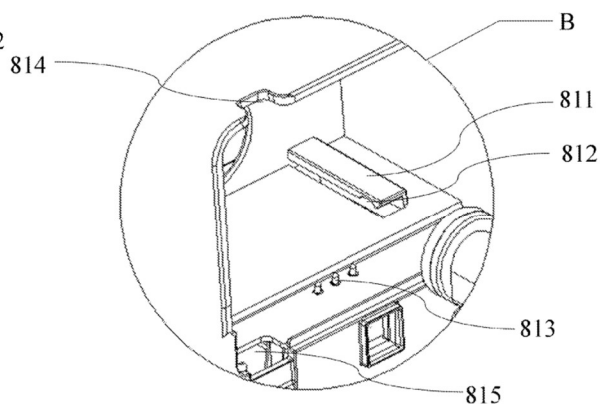
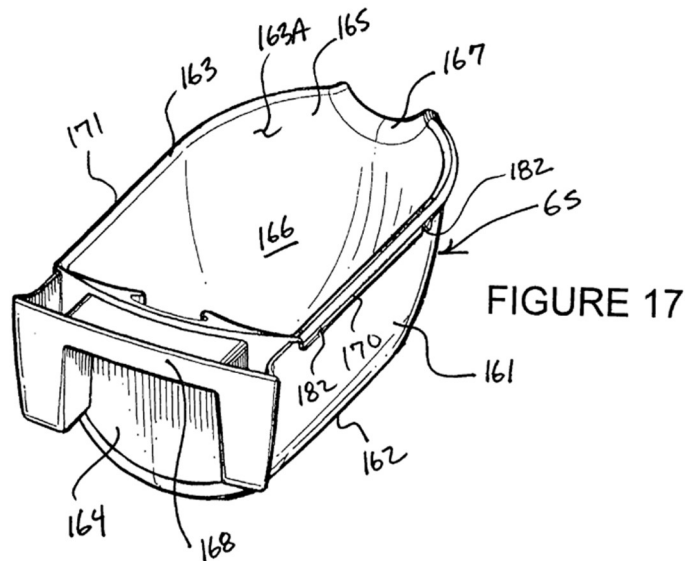


FIG. 19

C. Overview of Finell

77. U.S. Patent No. 7,779,489 to Finell (“Finell”) is titled “Potty Bench With Storage.” Finell relates to potty training devices and, more particularly, to

80. Finell also discloses that basin 65 is removable from base 51. Finell explains that basin 65 is movable relative to basin cradle 110 between an operative position underlying potty seat opening 61 and a removed position through opening 150. *Id.* at 9:48-64. Finell further states that, after basin 65 is removed from base 51, the contents in basin 65 may be poured out and basin 65 cleaned for further use. *Id.*



81. As shown in Fig. 17, Finell discloses that basin 65 includes continuous sidewall 161, closed bottom 162, open top 163A, inner end 164, and outer end 165. These structures form collection chamber 166 for accepting waste material. *Id.* at 9:65-10:3. Finell further discloses that outer end 165 is formed with spout 167, from which contents in chamber 166 can be conveniently poured. *Id.* at 10:3-5.

82. Finell explains the installed orientation of basin 65 relative to base 51. To place basin 65 into basin cradle 110, basin 65 is inserted outer end 165 first through opening 150, and when basin 65 is fully inserted, handle 169 encloses opening 150 and rests generally flush along front end 54 of base 51. *Id.* at 10:21-44. Thus, in the installed position, outer end 165 of basin 65 is positioned away from the front removal opening and toward the rear of the basin cradle.

D. Overview of Ward

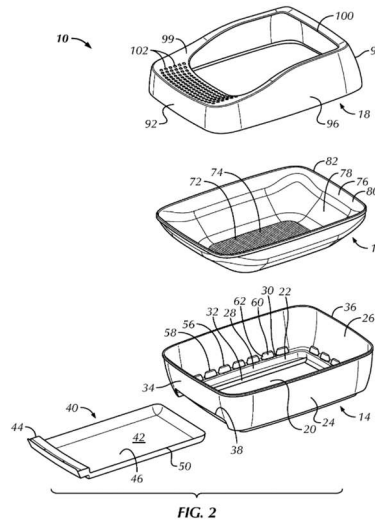
83. U.S. Patent No. 11,000,007 to Ward et al. (“Ward”) is titled “Pet Litter Box.” Ward relates to pet litter boxes and, more particularly, to a pet litter box having enhanced odor control capabilities. Ex. 1008 at Abstract. Ward describes a multi-part litter box structure having a base portion, a middle or grid portion, a top portion, and a removable tray. *Id.*

84. As shown in Fig. 2, Ward discloses pet litter box 10 having housing 12 with base portion 14, grid portion 16, and top portion 18. Ward describes grid portion 16 as “configured to nest within the base portion 14,” and top portion 18 as configured to mesh with the base portion. *Id.* at 2:43-47. Ward also discloses removable tray 40, which slides into base portion 14 and includes basin 42 and handle 44. *Id.* at 2:62-67.

85. Ward’s grid portion 16 includes floor 72 with holes 74 and sidewalls 76. Ward explains that grid portion floor 72 extends to four sidewalls 76, and that

the sidewalls terminate in an outwardly extending flange or lip 82. *Id.* at 3:24-40.

Ward further explains that pet litter is placed on grid portion 16 and is forced toward grid portion floor 72. *Id.* In use, the pet enters through the top opening of the top portion and urinates on the litter positioned on grid portion 16. *Id.* at 4:1-6.



86. As shown in Fig. 5, Ward also discloses the assembled relationship between top portion 18 and grid portion 16. Ward teaches that top portion 18 includes peripheral inner wall 90, which forms peripheral space 98. Peripheral space 98 “receives the lip 82” of grid portion sidewalls 76 to maintain the position of top portion 18 relative to grid portion 16 and base portion 14. *Id.* at 3:45-53. Ward also teaches that top portion 18 has a top wall 99 defining a “top opening 100.” *Id.*

87. Ward further explains that the separate pieces of the pet litter box may be combined in different ways. For example, Ward states that the base portion may

be combined with the grid portion, or that the top portion “may be combined with the grid portion.” *Id.* at 4:42-44. This confirms that Ward’s multi-part litter box structure uses separable or combinable frame and basin structures that may be nested, fitted, or combined to form the litter receiving space.

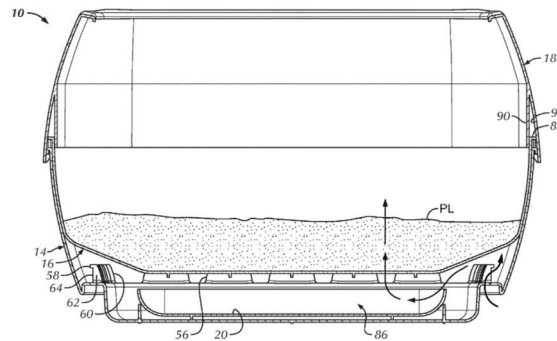


FIG. 5

E. Overview of PAWBBY

88. I have reviewed documents relating to a PAWBBY Smart Self-cleaning Cat Litter Box product, including an FCC authorization record, FCC external photographs, FCC internal photographs, FCC user manual materials, and an Amazon product listing. Exs. 1009-1017. I understand that the retrieval and authenticity of these materials will be addressed separately. I rely on these materials here for my technical understanding of the PAWBBY product features shown and described in the exhibits.

89. The FCC authorization record identifies the product as “PAWBBY Smart Self-cleaning Cat Litter Box,” FCC ID 2AZYM-MGCLB001US, with Beijing Kitten & Puppy Technology Co., Ltd. identified as the applicant. *See e.g.*,

Ex. 1009. The FCC record also identifies the product code as MGCLB001US and reflects a latest application date of May 29, 2023. *Id.* I understand that the authentication declaration for these exhibits states that the FCC record reflects a grant date of May 29, 2023 and that the external photographs, internal photographs, and user manual were available as of November 16, 2023. *See e.g.*, Ex. 1018.

90. FCC authorization record is reproduced below:

2026/7/2 21:10

FCC ID 2AZYM-MGCLB001US - PAWBBY Smart Self-cleaning Cat Litter Box

FCC ID

FCC ID, company, model

Search

[FCC ID / 2AZYM / 2AZYM-MGCLB001US](#)

FCC ID 2AZYM-MGCLB001US

PAWBBY Smart Self-cleaning Cat Litter Box
by Beijing Kitten&Puppy Technology Co., Ltd.
Grantee Code: 2AZYM Product Code: MGCLB001US
Latest application date: 2023-05-29

FCC ID Device Details

FCC ID	2AZYM-MGCLB001US
Mirrors	fcc.id gov fccid.ai report
Grantee Code	2AZYM
Product Code	MGCLB001US
Applicant Business	Beijing Kitten&Puppy Technology Co., Ltd.
Business Address	Room Q-101, Floor 2, Q Area, Anning zhuang Back Street, Haidian District, Beijing 100085, China

<https://fccid.io/2AZYM-MGCLB001US>

1/8

FCC ID

Equipment Class	PAWBBY Smart Self-cleaning Cat Litter Box
Test Firm	TUV Rheinland (Shenzhen) Co., Ltd.
Certified By	Changjiu Ren

Operating Frequencies

Frequency Range	Application Purpose	Final Action Date
2412-2462 MHz	Original Equipment	2023-05-29

Exhibits

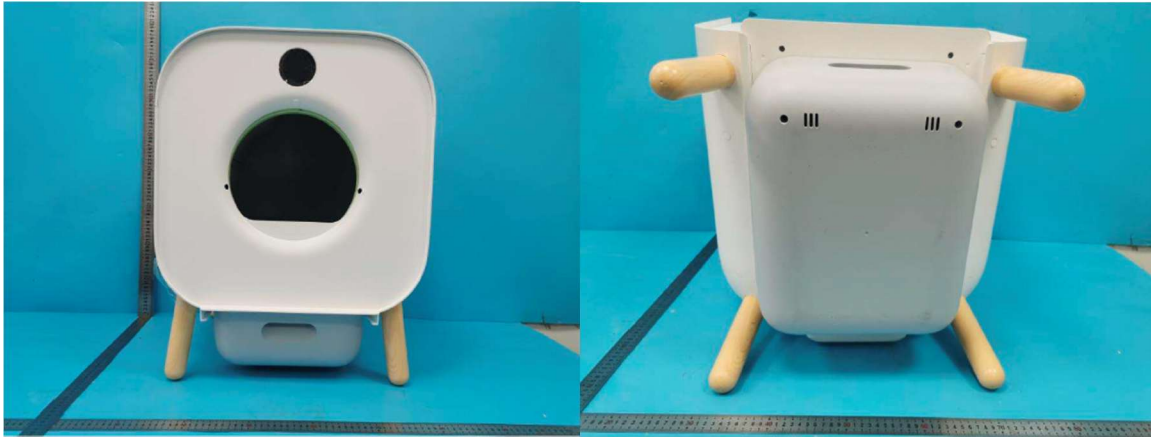
Document	Type	Available	File
User Manual	Users Manual	2023-11-16	PDF 3.7 MB
Internal Photos	Internal Photos	2023-11-16	PDF 1.1 MB
External Photos	External Photos	2023-11-16	PDF 733.5 KB
ID Label and Location	ID Label/Location Info	2023-05-29	PDF 401.8 KB
Test Setup Photos	Test Setup Photos	2023-11-16	PDF 694.6 KB
Test Report_Appendix	Test Report	2023-05-29	PDF 4.2 MB
Test Report_Modular report_BLE	Test Report	2023-05-29	PDF 2.2 MB

<https://fccid.io/2AZYMMGCLB001US>

2/8

91. The FCC external photographs show the external configuration of the PAWBBY smart litter box. The photographs show a housing with a front pet entrance, a lower drawer or waste receptacle positioned below the main housing, and support legs around the lower receptacle area. *See e.g.*, Exs. 1010-1012. The lower drawer or receptacle is visible from the front, rear, and side views, including a front-facing handle or grip feature used for removal. *Id.*

92. Exemplary pictures of PAWBBY from FCC external photographs are reproduced below:



See e.g., Ex. 1011.

93. The FCC internal photographs further show the internal structure of the product. In particular, the internal photographs show the interior of the housing with a large opening through the main body and the lower receptacle region beneath that opening. *See e.g.*, Exs. 1013-1014. These photographs are useful for understanding how waste would pass from the interior of the litter box into the lower collection receptacle and how the lower receptacle is positioned relative to the main housing. *Id.*

94. Exemplary picture of PAWBBY from FCC internal photographs is reproduced below:

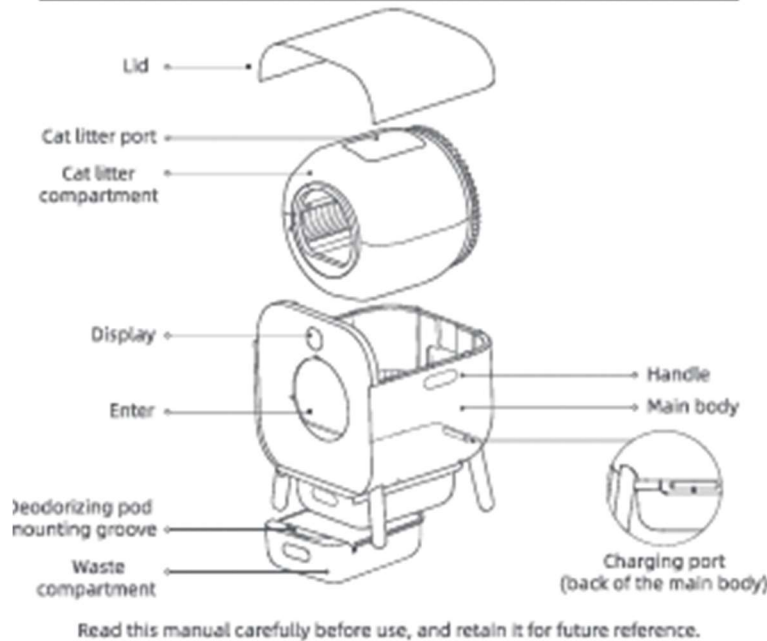


See e.g., Ex. 1014.

95. I also reviewed the PAWBBY user manual materials. *See e.g.*, Exs. 1015-1016. The user manual materials identify the product as the “MGCLB001US PAWBBY Smart Self-cleaning Cat Litter Box” and include product diagrams and operating instructions. *See e.g.*, Ex. 1015. These materials further confirm that the product is a smart self-cleaning cat litter box having a main housing, pet entrance, and removable lower waste collection structure. *Id.*

96. Product Overview of the PAWBBY user manual is reproduced below:

Product Overview



04

See e.g., Exs. 1015-16.

97. I also reviewed the Amazon listing for the PAWBBY product. Ex. 1017. The listing identifies the product as a “PAWBBY Self Cleaning Litter Box” and describes it as an automatic cat litter box with app control and a waste container. *See e.g.*, Ex. 1017. The listing also includes product images showing the same general product configuration: a main housing with a pet entrance and a lower removable waste container. *Id.* I understand that the authentication declaration states that the face of Exhibit 1017 reflects a “Date First Available” of May 9, 2023. *See e.g.*, Ex. 1018.

98. In my opinion, the PAWBBY materials show a commercially available smart litter box with a base or main housing, an opening through which

waste can pass, and a lower removable waste receptacle positioned beneath the housing. The external and internal photographs, user manual materials, and Amazon listing together show the overall product architecture and the removable lower waste-collection arrangement. *See e.g.*, Exs. 1009-1017.

F. Overview of Bao

99. Chinese Patent No. CN219594089U to Bao et al. (“Bao”) is titled “A Drawer With a High Level of Flatness.” Bao relates to drawers, and specifically to a drawer structure designed to improve flatness and sliding stability. Ex. 1019 at [0001]. Bao explains that drawers are movable boxes used to store items and are commonly pushed and pulled through slide rail structures. *Id.* at [0002]-[0003].

100. Bao addresses the problem that, after a drawer stores items for a long period of time, the drawer can sag or tilt, which reduces the flatness of the slide rail and makes sliding less smooth. Bao explains that prolonged heavy loading can cause drawer side panels to tilt, which affects the smooth operation and user experience of the drawer. *Id.* at [0003].

101. As shown in Fig. 1, Bao discloses drawer 1, cabinet body 2, slide rail assembly 3, upper flat plates 4, lower flat plates 5, upper slide bar 6, upper sliding groove 7, lower slide bar 8, lower sliding groove 9, and auxiliary support plate 10. *Id.* at [0016]. Bao teaches that the drawer slides between the upper flat plate and

lower flat plate, with upper slide bar 6 fixed to the bottom of upper flat plate 4 and upper sliding groove 7 provided on the side wall of drawer 1. *Id.* at [0005], [0019].

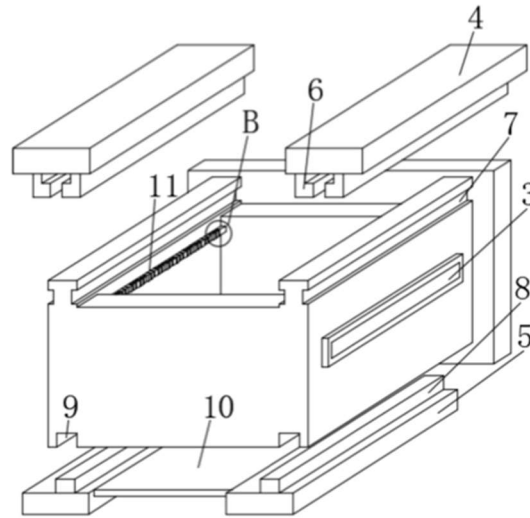


图1

102. As shown in Fig. 3, Bao discloses an upper limiting and sliding structure in which upper slide bar 6 cooperates with upper sliding groove 7. Bao states that upper slide bar 6 and upper sliding groove 7 “fit to slide,” and that upper flat plate 4 prevents tilting of the drawer side panels, improves the flatness of slide rail assembly 3, and improves the smoothness and stability of drawer 1 operation. *Id.* at [0019]. Bao further explains that, during use, the upper part of drawer 1 slides inside upper sliding groove 7 via upper slide bar 6, while lower slide bar 8 slides inside lower sliding groove 9, thereby improving the drawer’s flatness during sliding. *Id.* at [0024].

103. Bao also describes the purpose of the limiting structure. Bao explains that “a limit structure is set” on the drawer so that, after long-term storage of items, “the side panels of the drawer are limited,” preventing the side panels on the slide rail side from tilting, keeping the drawer and slide rails flat, and ensuring stable and smooth pulling and pushing. *Id.* at [0011]

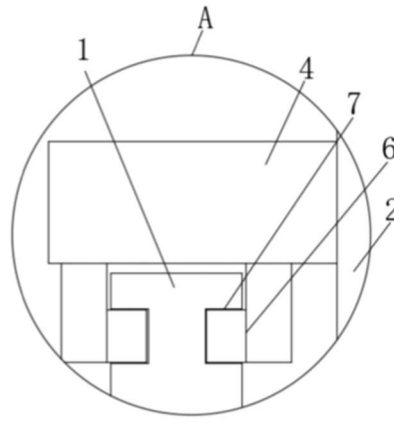


图3

G. Overview of Hua

104. Chinese Patent Application Publication No. CN111412720A to Hua (“Hua”) is titled “A Refrigerator Glass Partition With a Molding Guide Structure.” Hua relates to refrigerator glass partitions, and specifically to a molding guide structure for guiding and stabilizing a refrigerator glass partition during movement. Ex. 1020 at [0001].

105. Hua explains that, in existing processes, a glass panel is manually fed into a mold, which can pinch a worker’s hand, and the glass panel can shake during movement, affecting assembly quality. *Id.* at [0004]-[0005]. Hua addresses this

problem by using guide and positioning structures that stabilize a partition body during movement.

106. Hua discloses a refrigerator glass partition structure including electric cylinder 1, guide seat 6, and partition body 7. *Id.* at [0028]. Hua also discloses guide blocks 22 welded on both sides of the top and bottom outer walls of partition body 7, with frame 21 sleeved on the outer wall of partition body 7 near guide blocks 22. *Id.* at [0029].

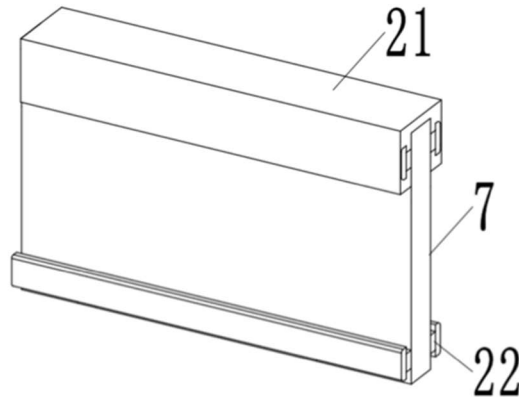


图4

107. Hua further discloses that frame 21 includes sliding groove 23 and positioning grooves 24. Hua states that sliding groove 23 is provided at the center of the outer wall of frame 21 on the side near partition body 7, and that positioning grooves 24 are formed at the centers of the inner walls on both sides of sliding groove 23. *Id.* at [0030]. Hua teaches that partition body 7 and guide block 22 are slidably connected inside sliding groove 23 and positioning grooves 24, respectively. *Id.* Hua further explains that guide block 22 is inserted into

positioning groove 24 to improve the stability of the connection between frame 21 and partition body 7. *Id.*

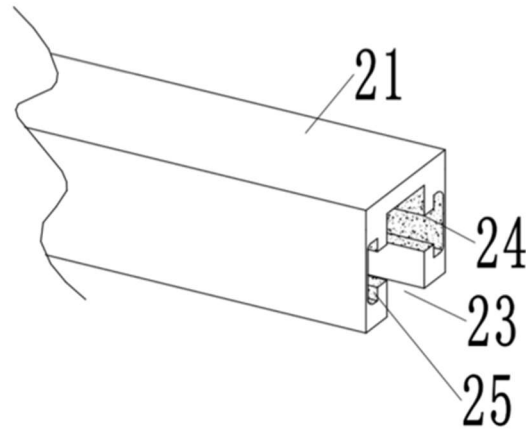


图6

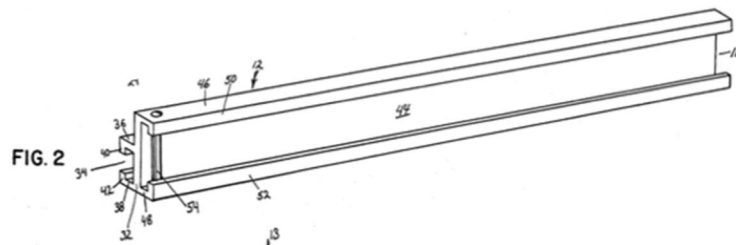
108. As shown in Fig. 6, Hua’s frame 21 includes a sliding groove 23 and positioning groove 24. In my opinion, this structure teaches a known guide-and-positioning arrangement in which a groove receives a sliding component, and a separate positioning groove or protruding frame portion cooperates with the sliding structure to improve stability and positioning.

H. Overview of Swain

109. U.S. Patent No. 4,172,625 to Swain (“Swain”) is titled “Drawer Extenders.” Swain discloses drawer extender assemblies that can be secured within a cabinet or storage unit and that allow a drawer to be withdrawn farther from the cabinet while remaining supported. Ex. 1021 at 1:5-18.

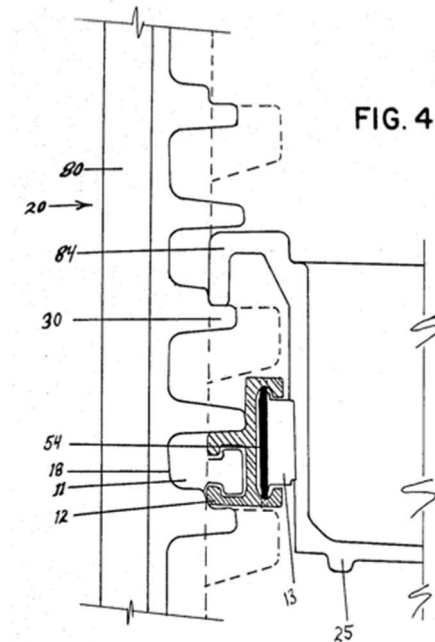
110. Swain explains that, without the disclosed extender assembly, a drawer can be withdrawn only a limited distance from the cabinet. Swain states that the disclosed assembly allows the drawer to be fully withdrawn from the storage unit while still being held in a horizontal position and capable of being replaced into the cabinet without realigning the drawer with the support rails. *Id.* at 1:12-19.

111. Swain discloses a cabinet rail 11, floating rail 12, and drawer slide 13. The cabinet rail is secured to the interior side wall of the cabinet structure. *Id.* at 2:51-63. Swain further discloses a connecting flange 24 extending from cabinet rail 11 to support stationary floating rail guide 26. *Id.* at 3:4-28. Swain explains that floating rail 12 includes a C-shaped channel that slides over stationary floating rail guide 26 and allows floating rail 12 to slide horizontally. *Id.* at 3:28-32.



112. Swain further discloses that floating rail 12 includes two C-channels sharing a common vertical member 32. Swain states that smaller C-channel 34 slideably receives stationary floating rail guide 26, allowing floating rail 12 to

horizontally extend from cabinet structure 20. *Id.* at 3:45-54. Swain also discloses a larger C-channel 44 that receives drawer slide 13. *Id.* at 3:55-4:18.



113. Swain also discloses drawer glides 30 formed on the cabinet structure. Swain explains that drawer glides 30 provide horizontal sliding support surfaces for drawer 25, and that outwardly extending flanges 84 on drawer 25 glide over drawer glides 30. *Id.* at 4:31-37. Swain further explains that, when the drawer extender assembly is used, floating rail 12 slides along stationary floating rail guide 26, and drawer slide 13 slides within larger C-channel 44 while the drawer remains supported in vertical and horizontal positions. *Id.* at 5:19-41.

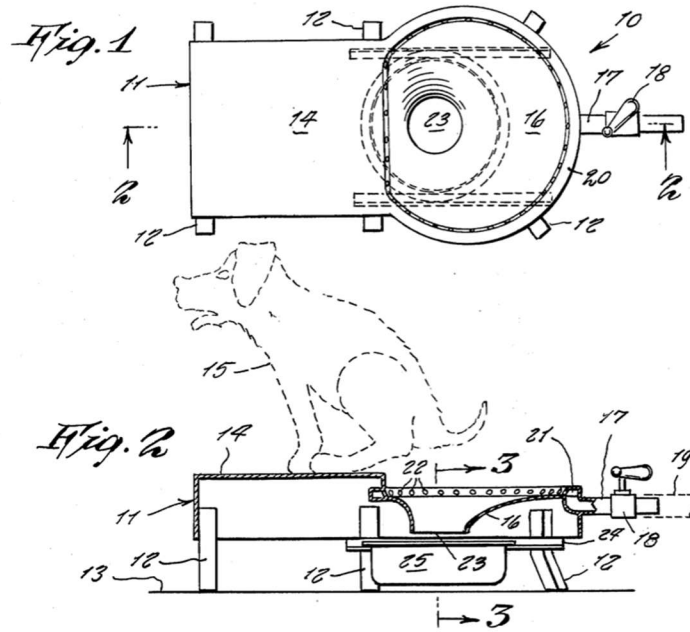
114. Swain also discloses stop structures that limit sliding movement. Swain explains that vertical pins 54 and 56 prevent inadvertent total withdrawal of

floating rail 12 or drawer slide 13. *Id.* at 5:42-66. Thus, Swain teaches a known drawer-slide arrangement using C-shaped channels, guide rails, support glides, and stop structures to guide, support, and limit a sliding member.

I. Overview of Sedlmeir

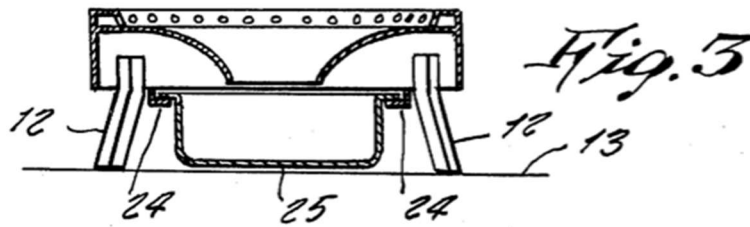
115. U.S. Patent No. 3,921,582 to Sedlmeir (“Sedlmeir”) is titled “Lavatory for Dogs and Other Domesticated Pets.” Sedlmeir discloses a lavatory designed for household pets, including a platform on which the animal sits while defecating into a bowl. Ex. 1022 at Abstract.

116. Sedlmeir explains that pet owners commonly used boxes or pans containing disposable litter, but that such litter needed frequent changing to prevent objectionable odors. Ex. 1022 at 1:9-16. Sedlmeir identifies one object of the invention as providing a home lavatory for household pets, and another object as using water to flush away animal waste to eliminate odors. *Id.* at 1:17-25.



117. As shown in Figs. 1 & 2, Sedlmeir discloses lavatory 10 having a main member 11 mounted on legs 12 and elevated above floor 13. Main member 11 forms a raised platform 14 at one end, on which animal 15 may sit during defecation, and a bowl 16 at the other end, into which feces or urine may fall. *Id.* at 1:49-57.

118. Sedlmeir further discloses that bowl 16 has a water inlet pipe 17 connected to an upper edge of the bowl, and that the upper edge of the bowl includes a peripheral channel or duct 21 communicating with pipe 17. Openings 22 along the duct allow water to flush the bowl surface. *Id.* at 1:58-2:3. Sedlmeir teaches that bowl 16 tapers downwardly to a small offset opening 23. *Id.*



119. Sedlmeir also discloses a removable storage receptacle beneath the bowl opening. Sedlmeir states that “[a] pair of parallel, spaced apart track rails 24 integral with a lower edge of member 11 serve to slidably support a storage receptacle 25 beneath opening 23,” so that the receptacle catches animal waste and is removable for emptying. *Id.* at 2:4-8.

120. Sedlmeir’s claim 1 similarly recites that the lower edge of the main body has “a pair of parallel, spaced apart track rails,” and that the removable receptacle has “a sideward flange around an upper edge” that is slidable on the rails between a position under the bowl bottom opening and an end edge of the main body for removal. *Id.* at claim 1. In my opinion, this disclosure teaches a drawer-type removable waste receptacle supported by rails beneath a waste opening.

X. GROUND 1: CLAIMS 1, 6, AND 18 ARE OBVIOUS OVER ZHANG IN VIEW OF ZHOU

121. In my opinion, claims 1, 6, and 18 of the ’239 patent would have been obvious before the effective filing date of the claimed invention over Zhang in view of Zhou.

122. A POSITA would have been motivated to combine Zhang and Zhou because both references are directed to pet toilets or cat litter boxes and both disclose mechanical structures for mounting and removing components from those devices. Zhang discloses a pet toilet having a removable collection basin 120 mounted to a base 100. Zhang teaches that the collection basin is detachably provided at the bottom of the base, that the waste chamber is located on the collection basin, and that the collection basin can be removed so that a user can clean pet waste. Ex. 1005 at [0055]-[0056]. Zhang also teaches a slide-in interface in which two sides of the collection basin extend outward to form second insertion blocks 122, and sliding chutes 141 are formed in the bottom of the base to receive those second insertion blocks. *Id.* at [0056].

123. Zhou is in the same field and addresses the same general problem of making cat litter box components easier to assemble, disassemble, clean, and maintain. Zhou explains that existing cat litter trays had complex structures and were cumbersome to assemble and disassemble. Ex. 1006 at [0004]. Zhou identifies its objective as solving problems of complex assembly and disassembly. *Id.* at [0005]. Zhou then discloses a modular cat litter box in which component structures are detachably connected and can be effectively modularized to facilitate assembly, disassembly, cleaning, maintenance, and production efficiency. *Id.* at [0065]-[0066].

124. A POSITA improving Zhang's removable collection basin would have understood that the basin should be properly seated, positioned, and retained when fully inserted into the base. Zhang's collection basin is designed to be repeatedly pulled out and reinserted for cleaning. Ex. 1005 at [0055]-[0056]. Zhou teaches a known retention structure for a detachable inserted component: an elastic protrusion 513 on an inserted component engages an engaging groove 812 on a receiving structure to realize positioning and mounting. Ex. 1006 at [0089]. A POSITA would have recognized that Zhou's elastic-protrusion-and-engaging-groove structure could be predictably applied to Zhang's existing insertion-block-and-sliding-chute interface to position and retain Zhang's collection basin when fully inserted.

125. A POSITA also would have had a reasonable expectation of success. The proposed combination would use Zhou's retention feature for its ordinary purpose: positioning and mounting a detachable inserted component. *Id.* at [0089]. Zhang already provides the relevant slide-in interface, namely second insertion blocks 122 and sliding chutes 141. Ex. 1005 at [0056]. Adding Zhou's elastic protrusion and corresponding engaging groove to that interface would have required only routine mechanical design and would not have changed Zhang's basic removable-basin operation. The predictable result would have been a

removable collection basin that remains easy to remove for cleaning but is more positively positioned and retained when fully inserted.

A. Claim 1

1. [1pre] A pet toilet comprising: a base and a fecal collection box detachably provided on the base, the base defines a through hole running through itself from top to bottom, and the fecal collection box defines a fecal collection chamber in communication with the through hole and configured to collect excrement

126. Zhang discloses the pet toilet architecture recited in [1pre]. Zhang describes a pet toilet including base 100 and rotary drum 200. Zhang further discloses that base 100 includes first opening 140 and waste chamber 121, and that first opening 140 communicates with waste chamber 121. Zhang's first opening 140 corresponds to the claimed through hole, and Zhang's waste chamber 121 corresponds to the claimed fecal collection chamber.

127. Zhang states that "the pet toilet includes a base 100, and a rotary drum 200 rotatably arranged on the base 100." Ex. 1005 at [0036]. Zhang further states that "the base 100 is provided with a waste chamber 121 for collecting waste and a first opening 140 communicated with the waste chamber 121." *Id.*

128. Zhang also discloses that the waste chamber is part of a detachable collection basin located at the bottom of the base. Zhang discloses "[i]n an embodiment, referring to FIG. 7 and FIG. 8, a bottom of the base 100 is detachably provided with a collection basin 120, and the waste chamber 121 is located on the

131. Zhang discloses the claimed insertion slots. As discussed above, Zhang's first opening 140 corresponds to the claimed through hole. Zhang discloses sliding chutes 141 formed in the bottom of base 100 and located on two sides of first opening 140. Those sliding chutes receive corresponding insertion structures of the collection basin. In my opinion, Zhang's sliding chutes 141 correspond to the claimed insertion slots.

132. Zhang describes the location of the sliding chutes in direct relation to first opening 140: "Sliding chutes 141 used in conjunction with the second insertion blocks 122 are formed in the bottom of the base 100." Ex. 1005 at [0056]. Zhang then states that "the sliding chutes 141 are located on two sides of the first opening 140." *Id.*

133. As shown in Fig. 8, sliding chutes 141 are formed in the bottom region of base 100 and are positioned on two sides of first opening 140. Because first opening 140 corresponds to the claimed through hole, and sliding chutes 141 correspond to the claimed insertion slots, Zhang discloses that a bottom of the base is provided with insertion slots at two sides of the through hole.

134. Accordingly, Zhang discloses limitation [1a].

3. [1b] two sides of the fecal collection box protrude outward to form insertion flanges; the insertion flanges are inserted in the insertion slots when the box is mounted on the base

135. Zhang discloses the claimed insertion flanges and their insertion into the insertion slots. Zhang's collection basin 120 corresponds to the claimed fecal collection box. Zhang discloses that two sides of the top of collection basin 120 extend outward to form second insertion blocks 122. Zhang further discloses that those second insertion blocks 122 are arranged in sliding chutes 141 when collection basin 120 is mounted at the bottom of base 100.

136. Zhang's disclosure directly maps to the claimed flange and slot relationship: "In an embodiment, two sides of a top of the collection basin 120 outwards extend to form second insertion blocks 122. Sliding chutes 141 used in conjunction with the second insertion blocks 122 are formed in the bottom of the base 100. It should be understood that the sliding chutes 141 are located on two sides of the first opening 140. The second insertion blocks 122 are arranged in the sliding chutes 141, so that the collection basin 120 is mounted at the bottom of the base 100." Ex. 1005 at [0056].

137. In my opinion, Zhang's second insertion blocks 122 correspond to the claimed insertion flanges because they protrude outward from two sides of the collection basin and are inserted into the sliding chutes. Zhang's sliding chutes 141 correspond to the claimed insertion slots because they receive those outwardly protruding insertion blocks. As shown in Fig. 8, this structure mounts collection basin 120 to base 100 in the same manner recited in [1b].

138. Accordingly, Zhang discloses limitation [1b].

4. [1c] between the insertion flange and the base there is provided with a joint structure, the joint structure comprises a first bump and a first clamping groove used in conjunction with the first bump, the first bump is placed in the first clamping groove when the fecal collection box is mounted on the base

139. Zhang discloses the insertion flange to base interface where the claimed joint structure would be provided. As discussed above, Zhang's second insertion blocks 122 correspond to the claimed insertion flanges, and Zhang's sliding chutes 141 are formed in base 100. Zhang teaches that "the second insertion blocks 122 are arranged in the sliding chutes 141, so that the collection basin 120 is mounted at the bottom of the base 100." Ex. 1005 at [0056]. Thus, Zhang discloses an interface between the insertion flanges of the collection basin and the base.

140. To the extent that Zhang does not expressly disclose a first bump and first clamping groove at that interface, in my opinion, Zhou teaches this feature. Zhou discloses a detachable deodorizing assembly 50 mounted in a receiving structure using an elastic protrusion 513 and an engaging groove 812. Zhou first describes the relevant detachable mounting environment: "the cat litter box 1 in this embodiment further includes a deodorizing assembly 50," and "the deodorizing assembly 50 is detachably connected to the bottom shell." Ex. 1006 at [0088].

141. Zhou's inserted component includes bottom plate 512 with laterally extending portions and elastic protrusions 513. The extending portions of bottom plate 512 are analogous to Zhang's outwardly extending insertion blocks because both are projecting side structures of a detachable component that are inserted into a receiving structure.

142. Zhou explains: "As shown in FIG. 18, in this embodiment, the deodorizing assembly 50 includes a spray generator 51 and a deodorizing liquid box 52, and the deodorizing liquid box 52 is detachably connected to the spray generator 51. Specifically, in this embodiment, the spray generator 51 includes a first box body 511 and a bottom plate 512. The first box body 511 and the bottom plate 512 may form an integral structure or may be detachable from each other. A projection area of the first box body 511 on the bottom plate 512 is smaller than a cross-sectional area of the bottom plate 512, two sides of the bottom plate 512 respectively extend beyond two sides of the first box body 511, and an elastic protrusion 513 is arranged on the part of each of the two sides of the bottom plate 512 that extends beyond the respective side of the first box body 511." *Id.* at [0089].

143. Zhou's receiving structure includes a mounting groove and an engaging groove. The mounting groove receives the laterally extending portions of bottom plate 512, and engaging groove 812 receives elastic protrusion 513.

144. Zhou states: “Correspondingly, as shown in FIG. 19, in this embodiment, an L-shaped protrusion 811 is arranged at a bottom of an inner cavity of the box body 81, the mounting groove is formed between the L-shaped protrusion 811 and a bottom surface of the inner cavity of the box body 81, and an engaging groove 812 is further provided on a surface of the L-shaped protrusion 811 facing the bottom surface of the box body.” *Id.* at [0089].

145. Zhou then describes the cooperation between the inserted component and the receiving structure during mounting. “When the deodorizing assembly 50 is fitted with the mounting box, the two sides of the bottom plate 512 that extend beyond the first box body 511 are respectively inserted into the mounting groove formed between the L-shaped protrusion 811 inside the mounting box and the bottom surface of the inner cavity of the box body 81, and the elastic protrusion 513 is engaged into the engaging groove 812, thereby realizing the positioning and mounting of the deodorizing assembly 50 in the mounting box.” *Id.* at [0089].

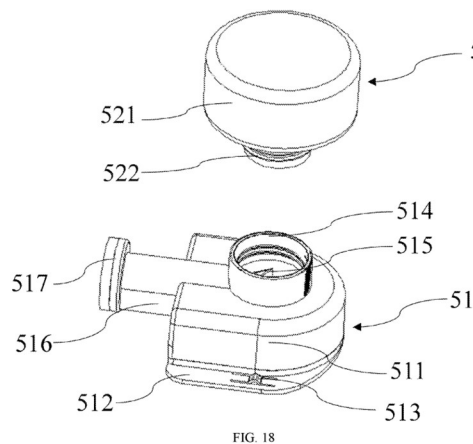


FIG. 18

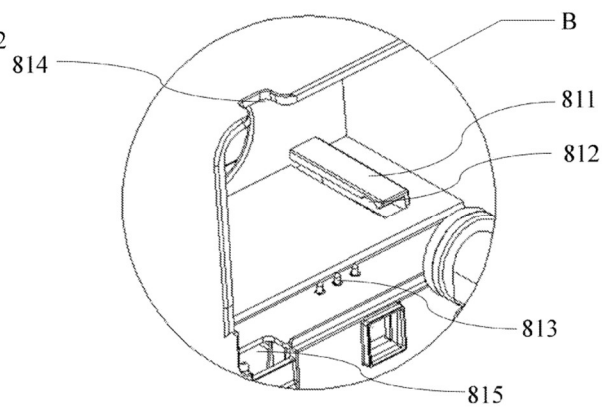


FIG. 19

146. In my opinion, Zhou's elastic protrusion 513 corresponds to the claimed first bump, and Zhou's engaging groove 812 corresponds to the claimed first clamping groove. Zhou teaches that the elastic protrusion and engaging groove are used together, and that the elastic protrusion is placed in the engaging groove when the detachable component is mounted.

147. A POSITA would have had reason to apply Zhou's elastic protrusion and engaging groove to Zhang's insertion-block-and-sliding-chute interface. Zhang already discloses the slide-in interface where the joint structure would be located: second insertion blocks 122 of collection basin 120 are inserted into sliding chutes 141 of base 100. Ex. 1005 at [0056]. Zhou teaches a corresponding retention feature for a detachable inserted component: elastic protrusion 513 engages engaging groove 812 when the component is mounted. Ex. 1006 at [0089].

148. Zhou also states the purpose of that engagement. The elastic protrusion 513 engages the engaging groove 812, "thereby realizing the positioning and mounting" of the detachable component. Ex. 1006 at [0089]. A POSITA would have understood that using the same protrusion-and-groove feature at Zhang's insertion-block-and-sliding-chute interface would help position and retain Zhang's collection basin when fully inserted.

149. A POSITA would also have understood that the elastic nature of Zhou's protrusion would provide resistance as the component is inserted and

feedback when the protrusion seats in the groove. That is the same practical effect sought at Zhang's removable collection basin interface, where the basin is pulled out and reinserted for cleaning. Ex. 1005 at [0055]-[0056]. The modification would add a known retention feature to Zhang's existing slide-in interface and would not change the basic operation of Zhang's collection basin.

150. Accordingly, Zhang in view of Zhou teaches or renders obvious limitation [1c].

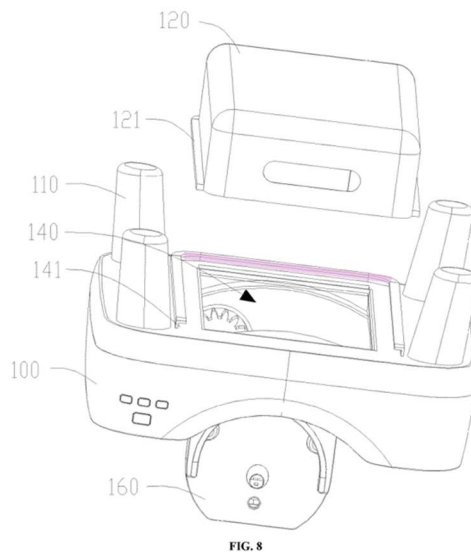
151. For the reasons discussed above for [1pre], [1a], [1b], and [1c], claim 1 would have been obvious over Zhang in view of Zhou.

B. Claim 6. The pet toilet according to claim 1, wherein the base extends downward at a bottom of the insertion slot to form a block flange.

152. Zhang discloses the additional limitation of claim 6. As discussed above, Zhang discloses sliding chutes 141 formed in the bottom of base 100 for receiving second insertion blocks 122 of collection basin 120. Zhang states that “sliding chutes 141 used in conjunction with the second insertion blocks 122 are formed in the bottom of the base 100,” and that “the sliding chutes 141 are located on two sides of the first opening 140.” Ex. 1005 at [0056]. Zhang further states that “the second insertion blocks 122 are arranged in the sliding chutes 141, so that the collection basin 120 is mounted at the bottom of the base 100.” *Id.*

153. As shown in annotated Fig. 8, base 100 includes a downwardly extending structure located at the sliding chute 141. This structure is formed by the base extending downward at the insertion slot region (with pink shading). In my opinion, that downwardly extending structure corresponds to the claimed block flange.

154. Zhang's disclosed mounting arrangement confirms this understanding. Collection basin 120 is mounted by inserting second insertion blocks 122 into sliding chutes 141 and can be pulled out when removal is needed. *Id.* at [0056]. In that slide in mounting arrangement, the downwardly extending structure of base 100 at the sliding chute helps define and limit the mounted position of collection basin 120.



155. To the extent Patent Owner argues that Zhang does not expressly disclose the claimed block flange, the same structure would have been obvious in

view of Zhang. Zhang's collection basin 120 is inserted into and removed from base 100 for cleaning. Ex. 1005 at [0055]-[0056]. A POSITA would have understood that the slide-in mounting structure should include a stop or limiting surface to define the seated position of the collection basin.

156. Providing the downwardly extending structure shown in Fig. 8 at the sliding chute would have been a straightforward way to limit insertion travel and help position collection basin 120 relative to first opening 140 and waste chamber 121. The structure would not interfere with the sliding cooperation between second insertion blocks 122 and sliding chutes 141, but would instead help define the mounted position of the collection basin.

157. Accordingly, Zhang discloses or renders obvious the additional limitation of claim 6.

158. Because Zhang and Zhou teach or render obvious the limitations of claim 1 for the reasons discussed above, claim 6 would have been obvious over Zhang in view of Zhou.

C. Claim 18. The pet toilet according to claim 1, wherein the fecal collection box is provided thereon with a handle groove, and the base is provided with at least three support legs around the fecal collection box.

159. Zhang discloses the support leg portion of this limitation. Zhang's collection basin 120 corresponds to the claimed fecal collection box, and Zhang's

base 100 corresponds to the claimed base. Zhang discloses that support legs 110 are provided at the bottom of base 100 and are located around collection basin 120.

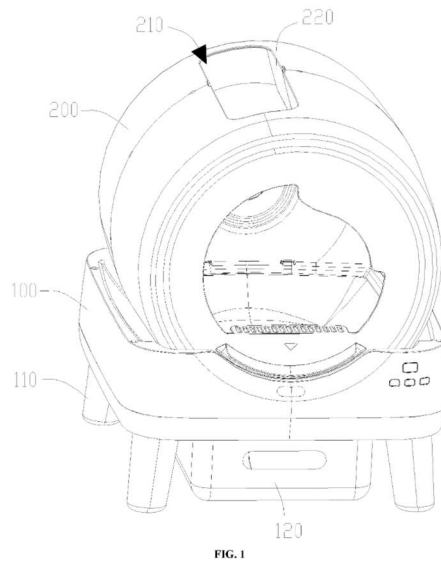
160. Zhang states: “In an embodiment, the bottom of the base 100 is further provided with a plurality of support legs 110 located on a circumferential side of the collection basin 120. A bottom surface of the collection basin 120 is located above bottom surfaces of the support legs 110, which can suspend the collection basin 120, reduce friction and scratches between the collection basin 120 and a placement plane of the pet toilet in this embodiment, and facilitate the removal of the collection basin.” Ex. 1005 at [0057].

161. As shown in Fig. 1, Zhang’s base 100 includes at least three support legs 110 arranged around collection basin 120. In my opinion, Zhang’s support legs 110 correspond to the claimed support legs around the fecal collection box.

162. Zhang also discloses the claimed handle groove. As shown in Fig. 1, collection basin 120 includes a recessed grip structure on its front facing surface. In my opinion, that recessed grip structure corresponds to the claimed handle groove. A POSITA would know that this is consistent with Zhang’s disclosure that collection basin 120 is detachable and removable from the base for cleaning.

163. Zhang states that “a bottom of the base 100 is detachably provided with a collection basin 120,” and that “[i]t is convenient to remove the collection

basin 120.” *Id.* at [0055]. Zhang further states that the second insertion blocks 122 are arranged in sliding chutes 141 so that collection basin 120 is mounted at the bottom of base 100, and that “when it is necessary to remove the collection basin 120, the collection basin 120 can be pulled out to facilitate use.” *Id.* at [0056].



164. In view of Zhang’s disclosure that the collection basin is pulled out for removal, and the recessed grip structure shown on the front of collection basin 120 in Fig. 1, a POSITA would have understood the recessed front feature to be a handle groove used to grasp and pull the collection basin from the base.

165. Accordingly, Zhang discloses the additional limitation of claim 18.

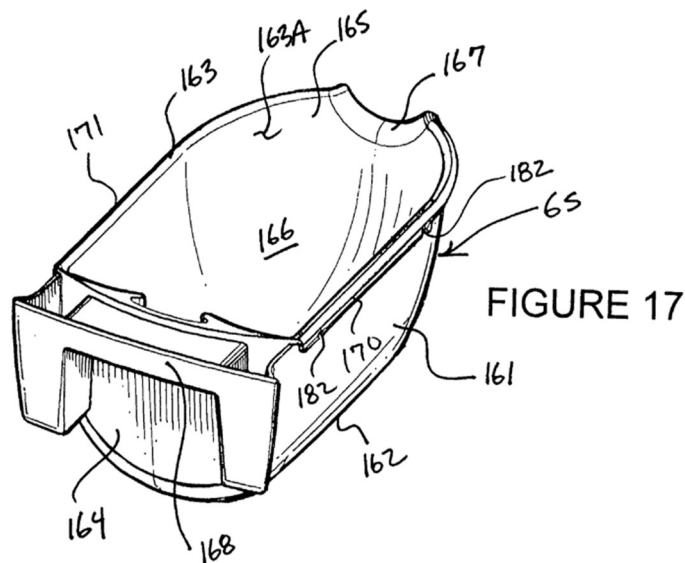
166. Because Zhang and Zhou teach or render obvious the limitations of claim 1 for the reasons discussed above, claim 18 would have been obvious over Zhang in view of Zhou.

XI. GROUND 2: CLAIM 7 IS OBVIOUS OVER ZHANG IN VIEW OF ZHOU AND FINELL

A. Claim 7. The pet toilet according to claim 1, wherein a rear side wall of the fecal collection box defines a first gap in communication with the fecal collection chamber

167. Claim 7 depends from claim 1 and therefore includes all limitations of claim 1. As discussed above in Ground 1, Zhang and Zhou teach or render obvious each limitation of claim 1.

168. To the extent Zhang and Zhou do not expressly disclose this additional limitation, in my opinion, however, Finell teaches providing an opening or spout in an end wall of a removable waste collection basin, where the opening communicates with the collection chamber and allows the contents of the chamber to be poured out.



169. Finell discloses a potty bench 50 having a base 51, potty seat 60, and potty seat opening 61. Ex. 1007 at 4:19-30. Finell further discloses that waste collection basin 65 is carried by base 50 in an operative position underlying potty seat opening 61 to collect waste, including feces and urine, from potty seat opening 61. *Id.* at 4:34-46.

170. Finell also discloses that basin 65 is removable for emptying and cleaning. Finell explains that basin 65 is movable relative to basin cradle 110 between an operative position underlying potty seat opening 61 and a removed position through opening 150. *Id.* at 9:50-56. Finell further states that, after removing basin 65 from base 51, the contents in basin 65 may be poured out and disposed of, and basin 65 may be cleaned for further use. *Id.* at 9:61-64.

171. Finell discloses the structure of basin 65 in Fig. 17. Finell states that basin 65 includes continuous sidewall 161, closed bottom 162, continuous upper edge 163 defining open top 163A, inner end 164, and outer end 165, which together form collection chamber 166 for accepting waste material. *Id.* at 9:65-10:3. Finell further discloses that outer end 165 is formed with spout 167, from which contents in chamber 166 can be conveniently poured. *Id.* at 10:3-5.

172. In my opinion, Finell's basin 65 corresponds to a removable waste collection container, and collection chamber 166 corresponds to a waste collection chamber. Finell's spout 167 corresponds to a gap or opening in communication

with collection chamber 166 because the contents of chamber 166 are poured out through spout 167.

173. Finell also supports mapping outer end 165 to the rear side wall of basin 65 is installed in base 51. Finell explains that, to place basin 65 into basin cradle 110, basin 65 is inserted outer end 165 first through opening 150 and into basin cradle 110. *Id.* at 10:21-44. Finell further explains that, when basin 65 is fully inserted, handle 169 encloses opening 150 and rests generally flush along front end 54 of base 51. *Id.* Thus, in the installed position, outer end 165 is positioned toward the rear of the basin cradle, while handle 169 and inner end 164 are positioned toward the front removal opening. Accordingly, Finell teaches a rear side wall of a removable waste collection basin defining a gap or spout in communication with the basin's collection chamber.

174. In the combined Zhang-Zhou-Finell structure, Zhang's collection basin 120 corresponds to the claimed fecal collection box, and Zhang's waste chamber 121 corresponds to the claimed fecal collection chamber. Applying Finell's spout 167 to Zhang's collection basin would result in a rear side wall of Zhang's collection basin defining a first gap in communication with the waste chamber.

175. A POSITA would have had reason to apply Finell's spout to Zhang's removable collection basin. Zhang teaches that collection basin 120 is detachably

provided at the bottom of base 100, that waste chamber 121 is located on collection basin 120, and that collection basin 120 is removed so that a user can regularly clean pet waste conveniently. Ex. 1005 ¶ [0055]. Zhang further teaches that collection basin 120 can be pulled out to facilitate use. Ex. 1005 ¶ [0056].

176. Finell teaches the same practical benefit for a removable waste collection basin. Finell explains that, after basin 65 is removed from base 51, the contents may be poured out and the basin cleaned. Ex. 1007 at 9:50-54. Finell further provides the specific structure for doing so: outer end 165 is formed with spout 167, from which the contents in collection chamber 166 can be conveniently poured. Ex. 1007 at 10:3-5. A POSITA would have understood that adding a similar spout or gap to Zhang's removable collection basin would make it easier to empty waste or debris from the collection chamber during cleaning.

177. The modification would have been mechanically straightforward. Zhang already discloses a removable collection basin that is pulled out for cleaning. Finell's spout is a simple opening or pouring feature formed in the wall of a removable waste collection basin. Adding such a feature to Zhang's collection basin would not change the basic operation of Zhang's pet toilet or its removable basin. Rather, it would provide an additional path through which waste or debris in the chamber could be discharged after the basin is removed. A POSITA would

have had a reasonable expectation of success because the modification involves a simple basin-wall opening used for its ordinary emptying and cleaning function.

178. Accordingly, Zhang in view of Zhou and Finell teaches or renders obvious the additional limitation of claim 7.

179. Because Zhang and Zhou teach or render obvious the limitations of claim 1 for the reasons discussed above, claim 7 would have been obvious over Zhang in view of Zhou and Finell.

XII. GROUND 3: CLAIM 8, 9, AND 11 ARE OBVIOUS OVER ZHANG IN VIEW OF ZHOU AND WARD

180. In my opinion, claims 8, 9, and 11 of the '239 patent would have been obvious before the effective filing date of the claimed invention over Zhang in view of Zhou and Ward. As discussed above in Ground 1, Zhang and Zhou teach or render obvious each limitation of claim 1. Ward further teaches nested, multi-part litter box structures including a top portion, a grid portion, a base portion, and a removable tray. A POSITA would have had reason to consider Ward when modifying Zhang's collection basin because Ward discloses multi-part structures for supporting litter, defining a pet-use chamber, and maintaining the relative position of fitted litter-box components.

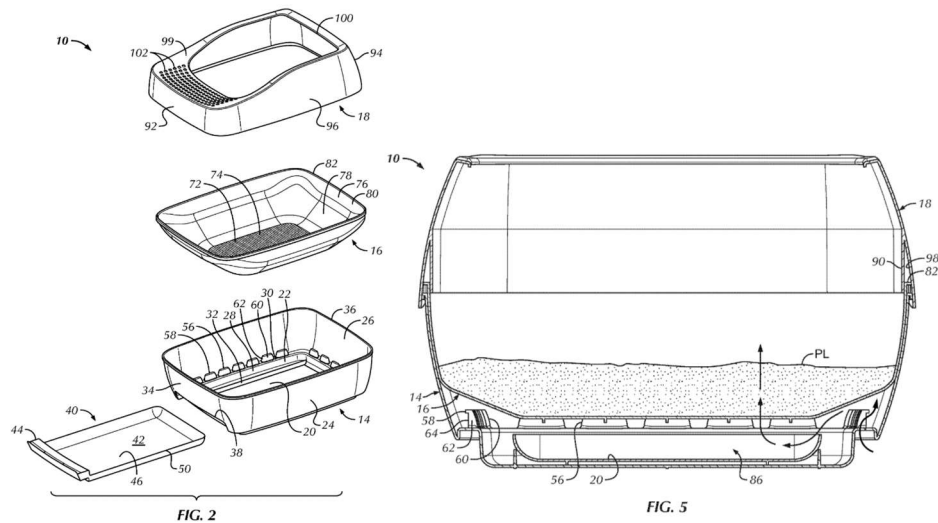
181. Zhang discloses a detachable collection basin 120 used to collect waste from rotary drum 200. Ward discloses a known litter box structure in which

an upper frame-like top portion is fitted over a lower grid/basin structure, with pet litter supported in the lower structure and the upper portion helping define and contain the litter box space. Ex. 1008 at FIG. 1. A POSITA would have understood Ward as teaching a known way to form a litter collection structure from fitted, nested components. Applying that structure to Zhang's collection basin would have been a predictable use of known litter-box component arrangements.

A. Claim 8. The pet toilet according to claim 1, wherein the fecal collection box comprises at least one extension frame and a fixing basin, the at least one extension frame is sheathed on an outer side of the fixing basin and detachably connected with the fixing basin; the at least one extension frame is of a hollow shape, and both a bottom and top thereof are first openings; the fixing basin is of a hollow shape, and a top thereof is a second opening; the fecal collection chamber is surrounded and formed by the at least one extension frame and the fixing basin.

182. Claim 8 depends from claim 1 and therefore includes all limitations of claim 1. As discussed above in Ground 1, Zhang and Zhou teach or render obvious each limitation of claim 1.

183. To the extent Zhang and Zhou do not expressly disclose the multi-part fecal collection box structure recited in claim 8, in my opinion, Ward teaches this limitation. Ward discloses a pet litter box 10 including an enclosure or housing 12 having base portion 14, middle or grid portion 16 configured to nest within base portion 14, and cover or top portion 18 configured to mesh with base portion 14. Ex. 1008 at 2:42-47.



184. Ward further discloses that base portion 14 includes front wall 34, rear wall 26, and side walls 24, which together form the sides of base portion 14 and define base portion top edge 36. *Id.* at 2:55-59. Ward discloses that grid portion 16 includes grid portion floor 72 and sidewalls 76, and that a mass of conventional litter may be positioned on grid portion 16. *Id.* at 3:24-44. Ward also discloses that, if excess urine passes through grid holes 74 in grid portion floor 72, it falls onto urine absorbent pad P positioned within tray 40. *Id.* at 4:4-6.

185. In my opinion, Ward's top portion 18 corresponds to the claimed extension frame. As shown in Figs. 2 and 5, top portion 18 is an upper frame-like structure that fits over the lower litter-supporting structure and helps define and contain the litter box space. Top portion 18 includes front wall 92, rear wall 94, side walls 96, top wall 99, and top opening 100. *Id.* at 3:45-53. In my opinion, top portion 18 is hollow, with an opening at the top for pet access and an open lower

side that receives or fits over the lower structure. Thus, Ward's top portion 18 corresponds to the claimed at least one extension frame having a hollow shape with first openings at both the bottom and top.

186. In my opinion, Ward's grid portion 16 corresponds to the claimed fixing basin. As shown in Fig. 2, grid portion 16 is a basin-like lower structure that supports the cat litter. Ward discloses that grid portion 16 includes floor 72 and sidewalls 76, and that litter is positioned upon grid portion 16. *Id.* at 3:24-44. A POSITA would understand that feces remain within or on grid portion 16, in the litter layer, before being manually removed. Thus, in this mapping, grid portion 16 corresponds to the claimed fixing basin.

187. In my opinion, Ward also teaches that top portion 18 is sheathed on the outer side of grid portion 16. Ward discloses that top portion 18 includes peripheral inner wall 90, which extends from top portion front wall 92, rear wall 94, and side walls 96 to form peripheral space 98. *Id.* at 3:45-53. Ward further discloses that peripheral space 98 receives lip 82 of grid portion sidewalls 76 to maintain the position of top portion 18 relative to grid portion 16 and base portion 14. *Id.* This shows top portion 18 fitted over and around grid portion 16 in the assembled litter box structure.

188. In my opinion, the fecal collection chamber is surrounded and formed by Ward's top portion 18 and grid portion 16. Ward teaches that pet litter is

supported on grid portion 16, and top portion 18 helps define the surrounding pet-use space and prevents litter from being kicked out of the litter box. *Id.* at 3:35-36, 4:44-47. A POSITA would understand that the space defined by top portion 18 and grid portion 16 together corresponds to the fecal collection chamber because feces remain in or on the litter supported by grid portion 16 within that surrounding space before removal.

189. To the extent Ward's grid portion 16 alone is not the claimed fixing basin, Ward also teaches the limitation alternatively. In my opinion, under this alternative mapping, Ward's base portion 14, grid portion 16, and removable tray 40 together correspond to the claimed fixing basin. Ward discloses that grid portion 16 nests with base portion 14, removable tray 40 slides into base portion 14, and these lower components cooperate with top portion 18 to form the litter box structure. *Id.* at 2:42-67. Under this alternative mapping, top portion 18 remains the claimed extension frame, and the lower base/grid/tray assembly corresponds to the claimed fixing basin.

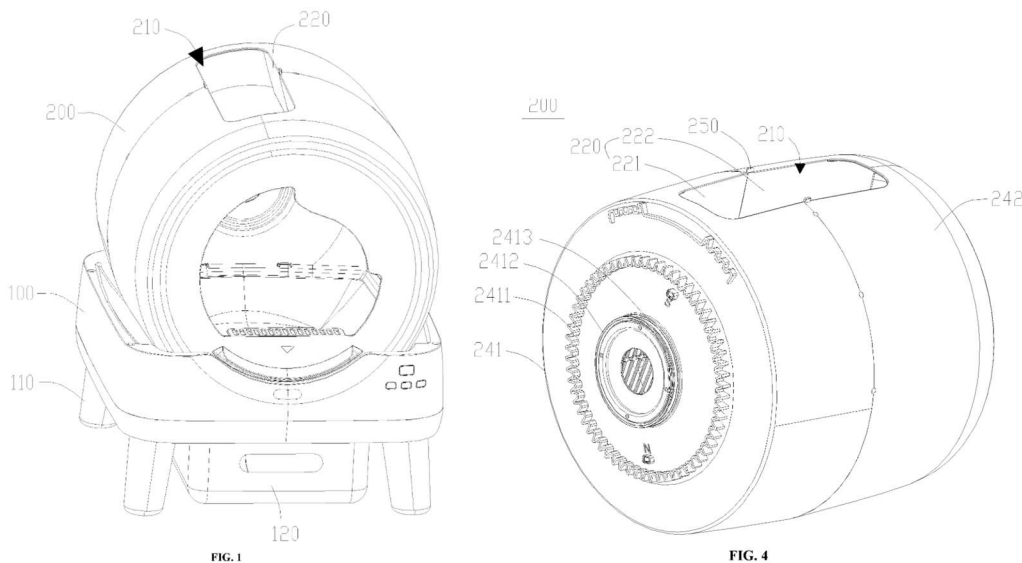
190. Accordingly, in my opinion, Ward teaches the additional limitations of claim 8.

191. Because Zhang and Zhou teach or render obvious the limitations of claim 1 for the reasons discussed above, claim 8 would have been obvious over Zhang in view of Zhou and Ward.

B. Claim 9. The pet toilet according to claim 8, further comprising a roller rotatably provided on the base, the roller defines an entrance/exit used for pets to enter and exit, a width of the at least one extension frame is less than a width of the entrance/exit, and a length of the roller is larger than a length of the at least one extension frame.

192. Claim 9 depends from claim 8 and therefore includes all limitations of claims 1 and 8. As discussed above, Zhang, Zhou, and Ward teach or render obvious those limitations.

193. Zhang discloses a roller rotatably provided on the base. Zhang discloses rotary drum 200 rotatably arranged on base 100. Ex. 1005 at [0005]. Zhang's rotary drum 200 corresponds to the claimed roller. As shown in Zhang's figures, rotary drum 200 includes an opening through which a pet enters and exits. *Id.* at Figs. 1, 4. Thus, Zhang discloses a roller rotatably provided on the base and defining an entrance/exit used for pets to enter and exit.



194. To the extent Zhang, Zhou, and Ward do not expressly disclose the remaining dimensional features of claim 9, “a width of the at least one extension frame is less than a width of the entrance/exit, and a length of the roller is larger than a length of the at least one extension frame,” in my opinion, these dimensional relationships would have been obvious.

195. A POSITA would have understood that, when collection-box components are to be placed into or transported through an opening of the rotary drum, the components must be sized to pass through that opening and fit within the available space. The rotary drum has only a limited number of openings suitable for introducing components, including the pet entrance/exit and any litter-filling or waste-related opening. Once the pet entrance/exit is selected, the extension frame must be narrower than that opening to pass through it.

196. Likewise, the length of the rotary drum must be larger than the length of the extension frame if the extension frame is to fit inside the rotary drum. Selecting dimensions that allow a component to pass through an opening and fit inside a housing is routine mechanical design. A POSITA would have been able to select workable relative dimensions for the extension frame, entrance/exit, and rotary drum using ordinary skill and with a reasonable expectation of success.

197. I understand that, during prosecution, the Examiner reached the same conclusion regarding the dimensional limitations of then-pending claim 11, which

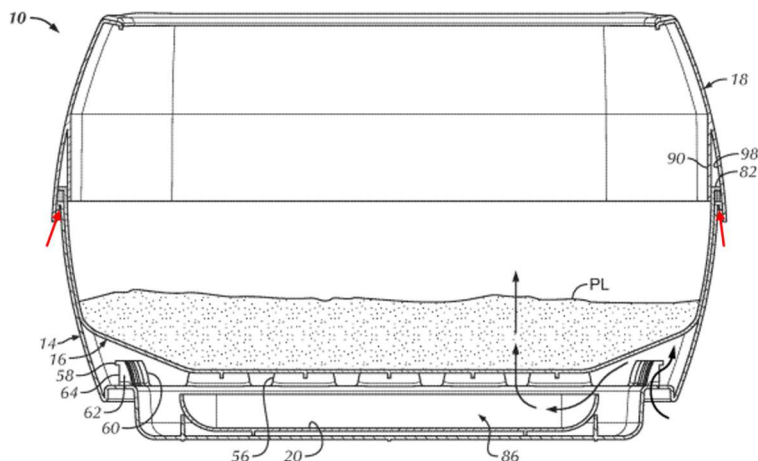
issued as claim 9. Ex. 1002, Non-Final Rejection 02/06/2025 at Pages 2-14. I further understand that Applicant did not substantively rebut that finding in response to the Non-Final Office Action. Ex. 1002, Response to Non-Final Rejection 04/30/2025 at Pages 9-10. My opinion is based on the prior art and the ordinary mechanical design considerations discussed above.

198. Accordingly, claim 9 would have been obvious over Zhang in view of Zhou and Ward.

C. Claim 11. The pet toilet according to claim 8, wherein an inner side wall of each extension frame is provided thereon with a first limit member, an outer side wall of the fixing basin is provided thereon with a second limit member, the first limit member abuts against the second limit member when the fixing basin is assembled with the extension frame.

199. Claim 11 depends from claim 8 and therefore includes all limitations of claims 1 and 8. As discussed above, Zhang, Zhou, and Ward teach or render obvious those limitations.

200. Ward teaches the additional limitation of claim 11. As discussed in claim 8, Ward's top portion 18 corresponds to the claimed extension frame, and Ward's grid portion 16 corresponds to the claimed fixing basin. Ex. 1008 at 3:24-44. Ward discloses a limiting relationship between those components using peripheral inner wall 90, peripheral space 98, and lip 82. *Id.* at 4:45-53.



201. As shown in FIG. 5, Ward discloses that top portion 18 includes peripheral inner wall 90, which extends from the front, rear, and side walls of top portion 18 to form peripheral space 98. *Id.* Ward further discloses that grid portion sidewalls 76 terminate in outwardly extending lip 82. *Id.* When the top portion is assembled with the grid portion, peripheral space 98 receives lip 82 of grid portion sidewalls 76 to maintain the position of top portion 18 relative to grid portion 16 and base portion 14. *Id.*

202. In my opinion, the structure on the inner side of top portion 18 that defines peripheral space 98, including peripheral inner wall 90, corresponds to the claimed first limit member provided on the inner side wall of the extension frame. Ward's lip 82 corresponds to the claimed second limit member provided on the outer side wall of the fixing basin. Lip 82 is provided on the outer side wall of grid portion 16, and the red-arrowed structure is provided on the outer side wall of basin portion 14. As shown in annotated Fig. 5, when top portion 18 is assembled

with grid portion 16 and basin portion 14, the first limit member receives and contacts the second limit member, thereby limiting the relative position of the components. *Id.* at Fig. 5.

203. Ward also teaches this limitation under the alternative mapping discussed above for claim 8. Under that alternative mapping, Ward's top portion 18 remains the claimed extension frame, and Ward's base portion 14, grid portion 16, and removable tray 40 together correspond to the claimed fixing basin. In my opinion, under this alternative mapping, Ward's lip 82 corresponds to the claimed second limit member provided on the outer side wall of the fixing basin. Lip 82 is provided on the outer side wall of grid portion 16, and the red-arrowed structure is provided on the outer side wall of base portion 14. As shown in annotated Fig. 5, when top portion 18 is assembled with grid portion 16 and base portion 14, the first limit member receives and contacts the second limit member, thereby limiting the relative position of the components. *Id.* at Fig. 5.

204. This is consistent with Ward's stated purpose for the lip and space arrangement. Ward explains that peripheral space 98 receives lip 82 to maintain the position of top portion 18 relative to grid portion 16 and base portion 14. *Id.* at 3:45-53. A POSITA would have understood that the contacting or receiving relationship between those structures corresponds to the claimed first limit member

abutting the second limit member when the fixing basin is assembled with the extension frame. Accordingly, Ward teaches the additional limitation of claim 11.

205. Because Zhang and Zhou teach or render obvious the limitations of claim 1, and Ward teaches or renders obvious the limitations of claim 8, claim 11 would have been obvious over Zhang in view of Zhou and Ward.

XIII. GROUND 4: CLAIMS 1, 6, AND 18 ARE OBVIOUS OVER PAWBBY IN VIEW OF ZHOU

206. In my opinion, claims 1, 6, and 18 of the '239 patent would have been obvious before the effective filing date of the claimed invention over the PAWBBY Smart Self-cleaning Cat Litter Box product, as reflected in Exs. 1009-1017, in view of Zhou. I understand that the public availability and authenticity of the PAWBBY materials will be addressed separately. My opinions in this section are based on the technical features shown and described in those materials.

207. PAWBBY discloses a smart self-cleaning cat litter box with a main body, a pet entrance, an internal litter region, and a lower removable waste compartment. Exs. 1009-1017. As discussed below, PAWBBY discloses the pet-toilet structure recited in claim 1, including the base, through hole, detachable fecal collection box, fecal collection chamber, insertion slots, and insertion flanges. Zhou teaches the bump-and-groove joint structure recited in claim 1 and provides a

reason to add that retention structure to PAWBBY's removable waste-compartment interface.

208. A POSITA would have had reason to consider Zhou when evaluating PAWBBY's removable waste compartment. PAWBBY's waste compartment is designed to be removed and reinstalled during ordinary use. *See e.g.*, Ex. 1016. Zhou discloses a detachable component mounted by inserting laterally extending portions into a mounting groove, with an elastic protrusion 513 engaging an engaging groove 812 to position and mount the component. Ex. 1006 at [0089]. Both references concern cat-litter-box structures with removable or detachable components that are inserted into a receiving structure and should be seated when mounted.

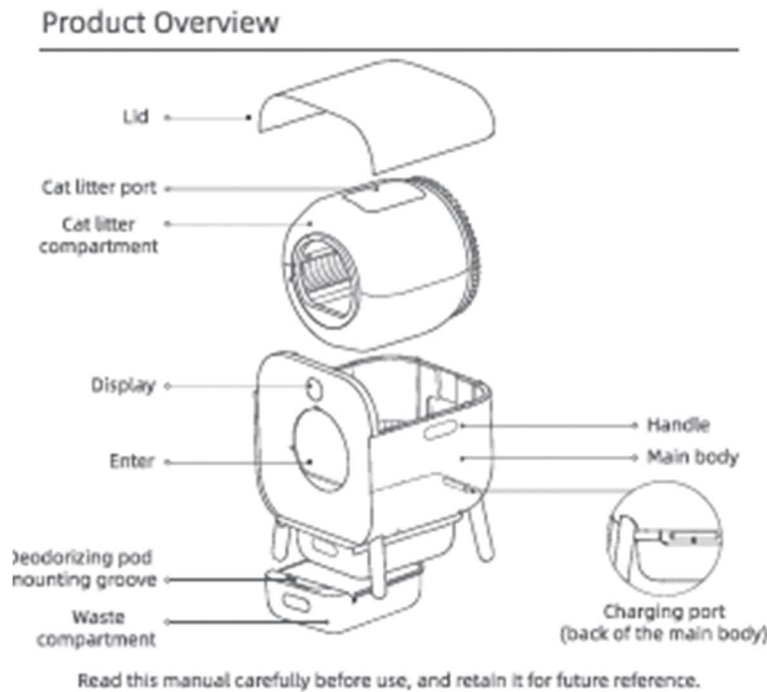
209. A POSITA would have understood that PAWBBY's removable waste compartment should be properly seated and retained when inserted into the main body. Zhou discloses a specific mechanical way to do that: an elastic protrusion engaging a corresponding groove to realize positioning and mounting. Ex. 1006 at [0089]. Applying Zhou's protrusion-and-groove retention feature to PAWBBY's existing insertion interface would have used Zhou's retention structure for the same purpose disclosed in Zhou, without changing PAWBBY's basic removable waste-compartment arrangement.

A. Claim 1

5. [1pre] A pet toilet comprising: a base and a fecal collection box detachably provided on the base, the base defines a through hole running through itself from top to bottom, and the fecal collection box defines a fecal collection chamber in communication with the through hole and configured to collect excrement

210. PAWBBY discloses the pet-toilet architecture recited in [1pre]. The PAWBBY materials identify the product as a “PAWBBY Smart Self-cleaning Cat Litter Box.” *See e.g.*, Exs. 1009, 1015. In my opinion, the PAWBBY smart self-cleaning cat litter box corresponds to the claimed pet toilet.

211. Product Overview of the PAWBBY user manual is reproduced below:



04

See e.g., Exs. 1015-16.

212. As shown in the user manual, PAWBBY includes a main body and a waste compartment. *See e.g.*, Ex. 1016. In my opinion, PAWBBY’s main body

corresponds to the claimed base, and PAWBBY's waste compartment corresponds to the claimed fecal collection box. The user manual instructs the user to place a waste bag in the waste compartment and fix it at the openings on both sides. *Id.* A POSITA would have understood from this instruction and the associated figures that the waste compartment is a removable lower waste collection component.

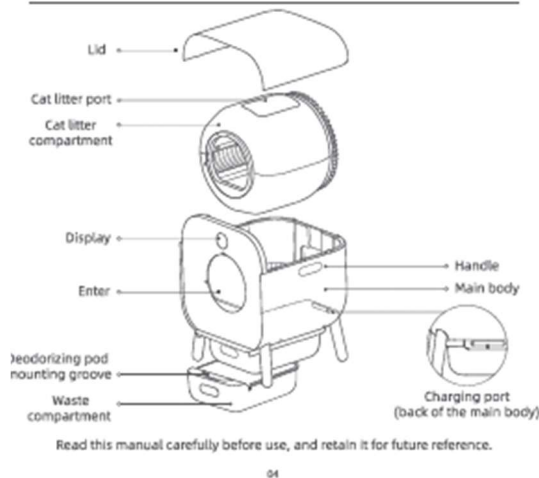
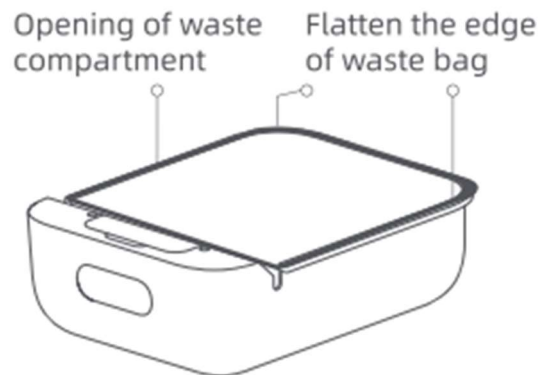
213. Exemplary picture of PAWBBY from FCC internal photographs is reproduced below:



See e.g., Ex. 1014.

214. The PAWBBY internal photographs show the main body with a through opening extending through the body toward the lower waste-compartment region. *Id.* In my opinion, that opening corresponds to the claimed through hole running through the base from top to bottom.

Product Overview



See e.g., Exs. 1015-16.

215. The PAWBBY user manual also shows the waste compartment defining an internal chamber for receiving waste. See e.g., Ex. 1016. In my opinion, that internal chamber corresponds to the claimed fecal collection chamber. A POSITA would have understood that waste from the litter compartment passes through the through opening in the main body into the waste compartment below. Thus, the waste-compartment chamber is in communication with the through hole and is configured to collect excrement.

216. Accordingly, PAWBBY discloses limitation [1pre].

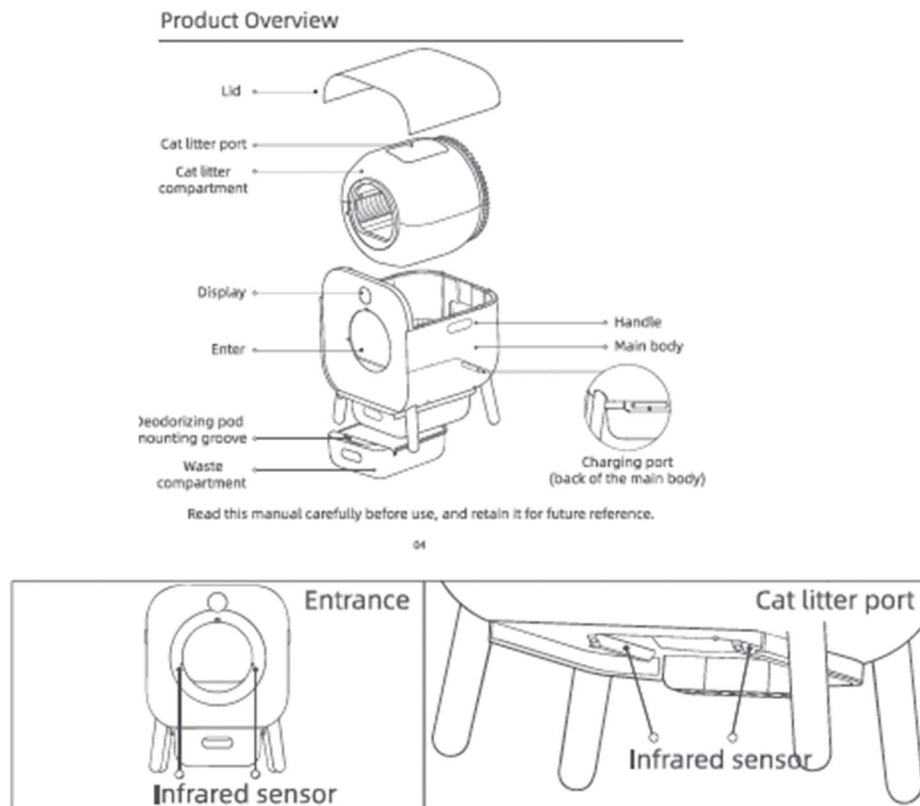
6. [1a] a bottom of the base is provided with insertion slots at two sides of the through hole

217. PAWBBY discloses this limitation. The PAWBBY user manual and internal photographs show corresponding receiving structures at the bottom of the main body on two sides of the through opening. See e.g., Exs. 1014, 1016.

218. Exemplary pictures from PAWBBY user manual and internal photographs are reproduced below:



See e.g., Ex. 1014.



See e.g., Exs. 1015-16.

219. In my opinion, the receiving structures shown at the bottom of the main body correspond to the claimed insertion slots. They are positioned on opposite sides of the through opening and are arranged to receive corresponding protruding structures of the waste compartment.

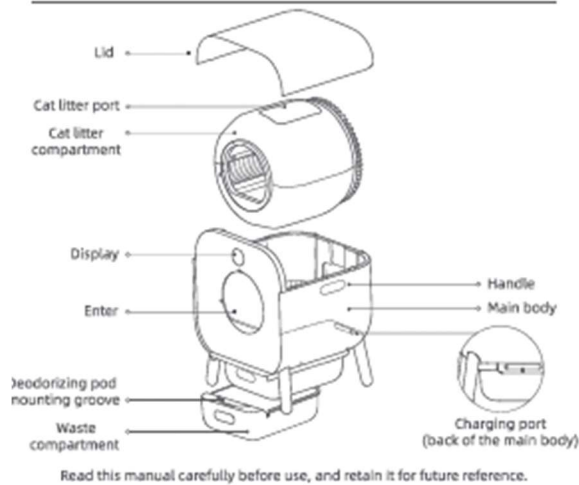
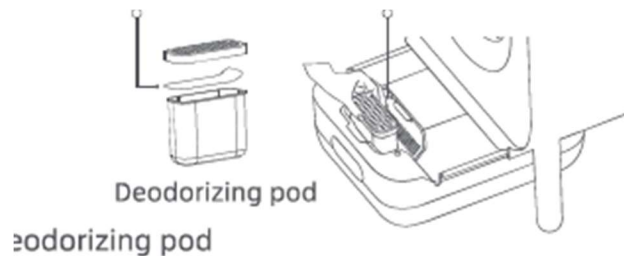
220. Accordingly, PAWBBY discloses limitation [1a].

7. [1b] two sides of the fecal collection box protrude outward to form insertion flanges; the insertion flanges are inserted in the insertion slots when the box is mounted on the base

221. PAWBBY discloses this limitation. The PAWBBY user manual shows the waste compartment having outwardly protruding structures on two sides. *See e.g., Ex. 1016.*

222. Exemplary pictures from PAWBBY user manual are reproduced below:

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See e.g., Exs. 1015-16.

223. In my opinion, those outwardly protruding side structures correspond to the claimed insertion flanges. When the waste compartment is mounted to the main body, those flanges are received in the insertion slots at the bottom of the main body. See e.g., Exs. 1015-16.

224. Accordingly, PAWBBY discloses limitation [1b].

8. [1c] between the insertion flange and the base there is provided with a joint structure, the joint structure comprises a first bump and a first clamping groove used in conjunction with the first bump, the first bump is placed in the first clamping groove when the fecal collection box is mounted on the base

225. PAWBBY discloses the insertion-flange-to-base interface at which the claimed joint structure would be located. As discussed above, PAWBBY's waste compartment includes insertion flanges that are inserted into corresponding insertion slots at the bottom of the main body when the waste compartment is mounted. *See e.g.*, Exs. Ex. 1014, 1016.

226. To the extent that PAWBBY does not expressly disclose the claimed first bump and first clamping groove at that interface, in my opinion, Zhou teaches that missing joint structure. In the analysis below, I refer back to certain opinions I provided above for overlapping claim limitations. Where I state that I rely on or adopt my earlier analysis, I have considered that earlier analysis in connection with this ground as well, and I apply it here for the same reasons unless otherwise noted.

227. As discussed above for limitation [1c] in Ground 1, Zhou discloses a detachable deodorizing assembly 50 mounted in a receiving structure using an elastic protrusion 513 and an engaging groove 812. Ex. 1006 ¶¶ [0088]-[0089].

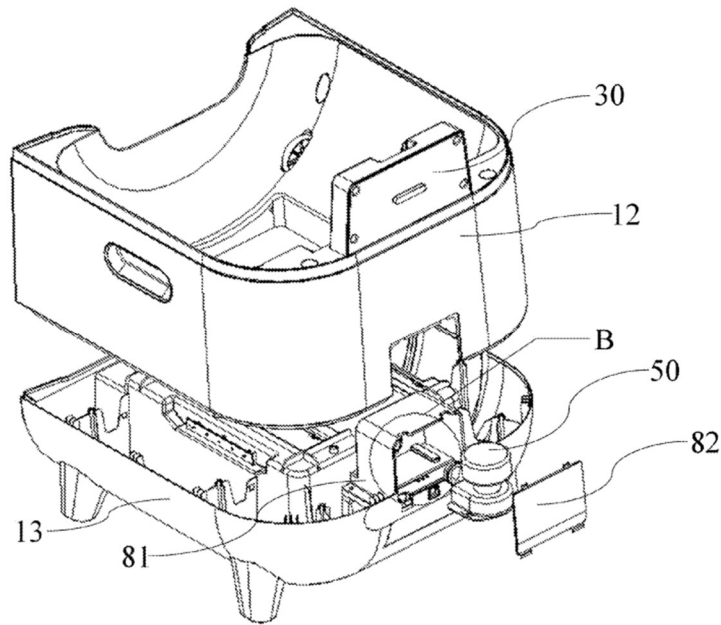


FIG. 17

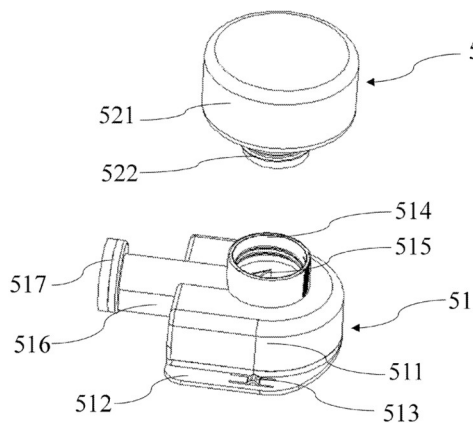


FIG. 18

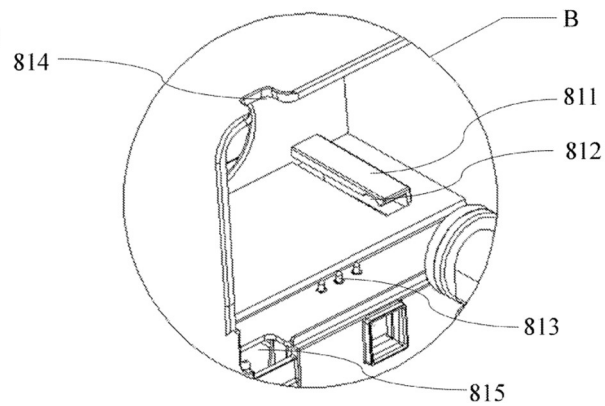


FIG. 19

228. Zhou discloses that deodorizing assembly 50 includes a spray generator 51 having a first box body 511 and bottom plate 512. Two sides of bottom plate 512 extend beyond the first box body, and an elastic protrusion 513 is arranged on each extending side of bottom plate 512. *Id.* at [0089]. Zhou further discloses that a mounting groove is formed in the mounting box and that an engaging groove 812 is provided on the L-shaped protrusion 811. *Id.*

229. Zhou teaches that, when deodorizing assembly 50 is fitted with the mounting box, the extending sides of bottom plate 512 are inserted into the mounting groove, and elastic protrusion 513 engages into engaging groove 812, “thereby realizing the positioning and mounting” of the deodorizing assembly. *Id.* at [0089]. In my opinion, Zhou’s elastic protrusion 513 corresponds to the claimed first bump, and Zhou’s engaging groove 812 corresponds to the claimed first clamping groove.

230. A POSITA would have had reason to apply Zhou’s elastic protrusion and engaging groove to PAWBBY’s waste-compartment insertion interface. PAWBBY’s waste compartment is a removable component that is repeatedly removed and reinstalled. *See e.g.*, Ex. 1016. A POSITA would have understood that such a removable waste compartment should be positively seated and retained when fully inserted into the main body.

231. Zhou provides the specific structure and purpose for doing so. Zhou teaches that an elastic protrusion engages a corresponding engaging groove to realize positioning and mounting of a detachable component. Ex. 1006 ¶ [0089]. A POSITA would have understood that using the same protrusion-and-groove structure at PAWBBY’s insertion-flange-to-base interface would help position and retain the waste compartment when mounted.

232. A POSITA also would have understood that an elastic protrusion seating into a groove would predictably provide insertion resistance and feedback when the protrusion enters the groove. This would assist a user in confirming that PAWBBY's waste compartment had reached its mounted position. The modification would add a known retention feature to PAWBBY's existing slide-in interface and would not change the basic operation of PAWBBY's waste compartment. In my opinion, a POSITA would have had a reasonable expectation of success.

233. Accordingly, PAWBBY in view of Zhou teaches or renders obvious limitation [1c].

234. For the reasons discussed above for [1pre], [1a], [1b], and [1c], claim 1 would have been obvious over PAWBBY in view of Zhou.

B. Claim 6. The pet toilet according to claim 1, wherein the base extends downward at a bottom of the insertion slot to form a block flange.

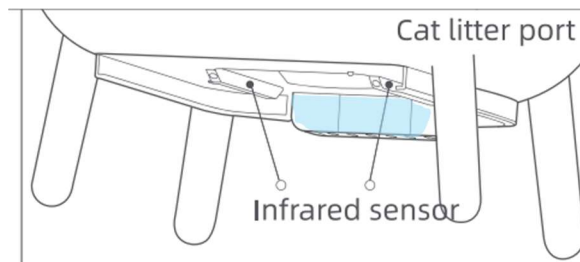
235. Claim 6 depends from claim 1 and therefore includes all limitations of claim 1. As discussed above, PAWBBY and Zhou teach or render obvious each limitation of claim 1.

236. AWBBY discloses this limitation. The PAWBBY user manual and internal photographs show a downwardly extending structure at the lower portion of the main body in the region of the insertion slots. *See e.g.*, Ex. 1014, 1016.

237. Exemplary pictures from PAWBBY user manual and internal photographs are reproduced below:



See e.g., Ex. 1014.



See e.g., Exs. 1015-16.

238. In my opinion, the downwardly extending structure shown in those figures corresponds to the claimed block flange because it is formed by the base extending downward at the bottom of the insertion slot region. This structure helps define the mounted position of the waste compartment relative to the main body.

239. To the extent that PAWBBY does not expressly disclose the claimed block flange, the limitation would have been obvious in view of PAWBBY.

PAWBBY's waste compartment is inserted into and removed from the main body.

See e.g., Ex. 1016. A POSITA would have understood that this slide-in mounting structure should include a stop or limiting surface to define the seated position of the waste compartment.

240. Providing a downwardly extending block flange at the bottom of the insertion slot would have been a straightforward way to limit insertion travel and help position the waste compartment beneath the through opening. The structure would not interfere with the sliding cooperation between the insertion flanges and insertion slots, but would instead help define the mounted position of the waste compartment.

241. Accordingly, PAWBBY discloses or renders obvious the additional limitation of claim 6.

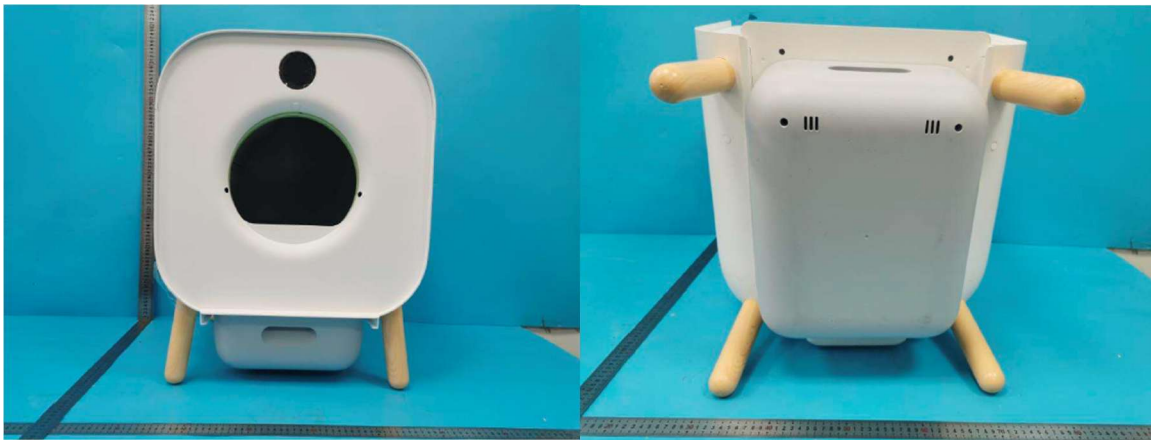
242. Because PAWBBY and Zhou teach or render obvious the limitations of claim 1 for the reasons discussed above, claim 6 would have been obvious over PAWBBY in view of Zhou.

C. Claim 18. The pet toilet according to claim 1, wherein the fecal collection box is provided thereon with a handle groove, and the base is provided with at least three support legs around the fecal collection box.

243. Claim 18 depends from claim 1 and therefore includes all limitations of claim 1. As discussed above, PAWBBY and Zhou teach or render obvious each limitation of claim 1.

244. PAWBBY discloses this limitation. The PAWBBY external photographs show the lower waste compartment with a recessed handle or grip feature. *See e.g.*, Exs. 1011, 1012. In my opinion, that recessed grip feature corresponds to the claimed handle groove.

245. Exemplary pictures of PAWBBY from FCC external photographs are reproduced below:



See e.g., Ex. 1011.

246. The same external photographs show support legs around the lower waste-compartment region. *See e.g.*, Ex. 1011, 1012. In my opinion, PAWBBY's legs correspond to the claimed support legs because they support the main body and are arranged around the lower waste compartment.

247. Accordingly, PAWBBY discloses the additional limitation of claim 18.

248. Because PAWBBY and Zhou teach or render obvious the limitations of claim 1 for the reasons discussed above, claim 18 would have been obvious over PAWBBY in view of Zhou.

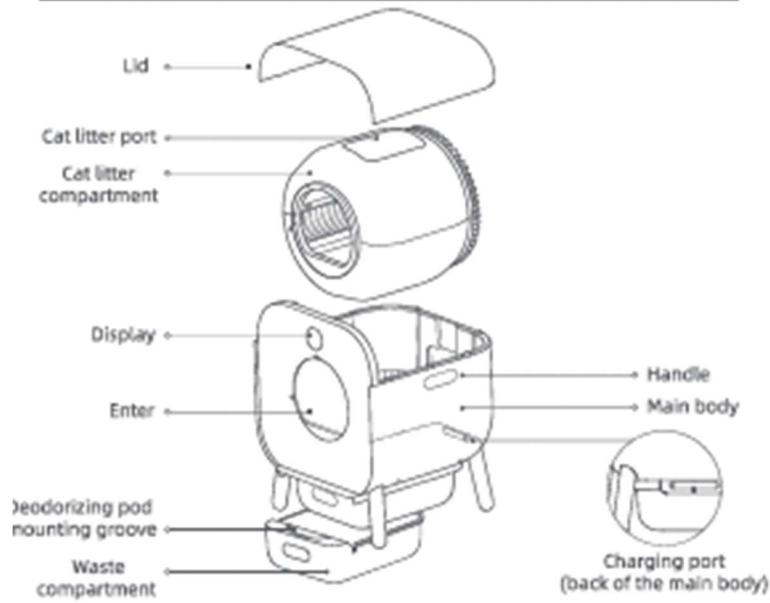
XIV. GROUND 5: CLAIM 3 IS ANTICIPATED BY PAWBBY

249. In my opinion, claim 3 of the '239 patent is disclosed by the PAWBBY Smart Self-cleaning Cat Litter Box product, as reflected in Exs. 1009-1017. I understand that the public availability and authenticity of the PAWBBY materials will be addressed separately. My opinions in this section are based on the technical features shown and described in those materials.

9. [3pre] A pet toilet comprising: a base and a fecal collection box detachably provided on the base, the base defines a through hole running through itself from top to bottom, and the fecal collection box defines a fecal collection chamber in communication with the through hole and configured to collect excrement

250. PAWBBY discloses limitation [3pre] for the same reasons discussed above for limitation [1pre] of claim 1 in Ground 4, which I rely on and adopt here. In particular, PAWBBY discloses a smart self-cleaning cat litter box, which corresponds to the claimed pet toilet. *See e.g.*, Ex. 1009, 1015. PAWBBY includes a main body, which corresponds to the claimed base, and a removable waste compartment, which corresponds to the claimed fecal collection box. *See e.g.*, Ex. 1016.

Product Overview



Read this manual carefully before use, and retain it for future reference.

04

See e.g., Exs. 1015-16.



See e.g., Ex. 1014.

251. As discussed above, the PAWBBY internal photographs show the main body with a through opening extending through the body toward the lower waste-compartment region. *See e.g., Ex. 1014.* In my opinion, that opening

corresponds to the claimed through hole running through the base from top to bottom.

252. PAWBBY also discloses that the waste compartment defines an internal chamber for receiving waste. *See e.g.*, Ex. 1016. A POSITA would have understood that waste from the litter compartment passes through the through opening in the main body into the waste compartment below. Thus, the waste-compartment chamber is in communication with the through hole and is configured to collect excrement.

253. Accordingly, PAWBBY discloses limitation [3pre]

10. [3a] wherein a bottom of the base is provided with insertion slots at two sides of the through hole

254. PAWBBY discloses limitation [3a] for the same reasons discussed above for limitation [1a] of claim 1 in Ground 4, which I rely on and adopt here. The PAWBBY user manual and internal photographs show receiving structures at the bottom of the main body on two sides of the through opening. *See e.g.*, Exs. 1014, 1016. In my opinion, those receiving structures correspond to the claimed insertion slots. They are positioned on opposite sides of the through opening and are arranged to receive corresponding protruding structures of the waste compartment.

255. Accordingly, PAWBBY discloses limitation [3a].

11. [3b] two sides of the fecal collection box protrude outward to form insertion flanges, the insertion flanges are inserted in the insertion slots when the fecal collection box is mounted on the base,

256. PAWBBY discloses limitation [3b] for the same reasons discussed above for limitation [1b] of claim 1 in Ground 4, which I rely on and adopt here. The PAWBBY user manual shows the waste compartment having outwardly protruding structures on two sides. *See e.g.*, Ex. 1016. In my opinion, those outwardly protruding structures correspond to the claimed insertion flanges. When the waste compartment is mounted to the main body, those flanges are received in the insertion slots at the bottom of the main body. *See e.g.*, Exs. 1014, 1016.

257. Accordingly, PAWBBY discloses limitation [3b].

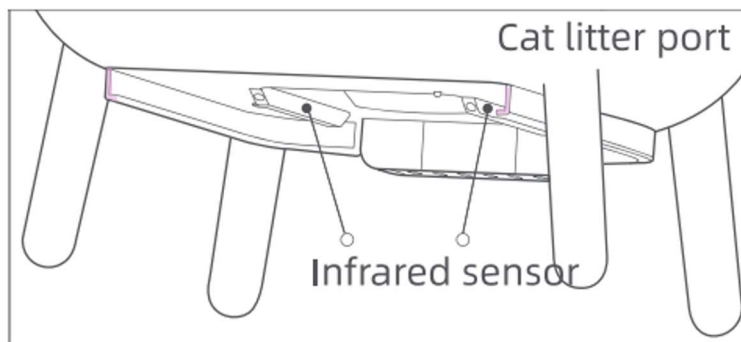
12. [3c] wherein the base protrudes downward at two sides of the through hole to form limit protrusions, a cross-section of the insertion slot is C-shaped, the limit protrusions are located at a side of the insertion slot close to the through hole and are arranged separately from the insertion slot.

258. PAWBBY discloses this limitation. As discussed above, PAWBBY discloses insertion slots at the bottom of the main body on two sides of the through opening. *See e.g.*, Exs. 1014, 1016. The PAWBBY user manual and photographs show that each insertion slot has a generally C-shaped cross-section that receives and guides the insertion flange of the waste compartment. *See e.g.*, Ex. 1011, 1014, 1016.

259. Exemplary pictures from PAWBBY user manual and external photographs are reproduced below:



See e.g., Ex. 1011.



See e.g., Exs. 1015-16.

260. PAWBBY also discloses downward protrusions at two sides of the through opening. The PAWBBY internal photographs show protruding structures formed by the main body extending downward near the insertion slots and on opposite sides of the through opening. *See e.g., Ex. 1014.* These protrusions are located at the side of the insertion slots close to the through opening and are separate from the insertion slots themselves.

261. Exemplary picture from the PAWBBY internal photographs is reproduced below:



See e.g., Ex. 1014.

262. As shown in the annotated photograph from Ex. 1014, protruding structures are located at a side of each insertion slot. These protruding structures are indicated by the red arrows. The two red-arrowed protruding structures are formed by the base protruding downward at the two sides of the through hole, and they are arranged separately from the insertion slots. *See e.g., Ex. 1014.*

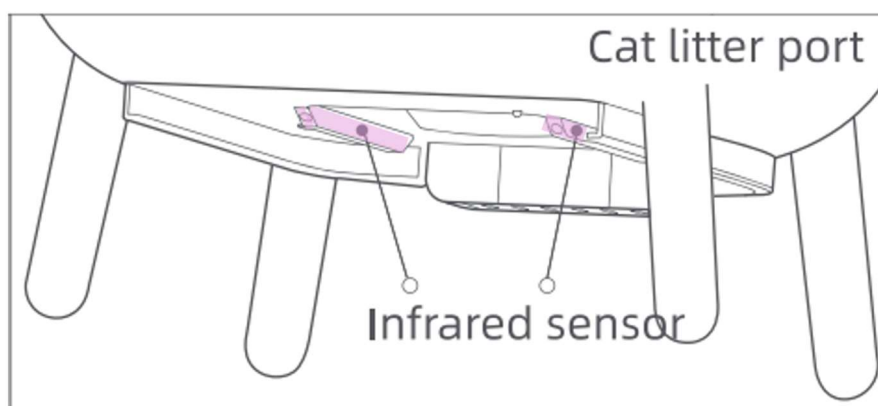
263. A POSITA would understand from the annotated photograph that the lowest points of the red-arrowed protruding structures are slightly higher than the lowest points of the insertion slots, which are indicated by the green arrows. This relative positioning creates a gap between the red-arrowed protruding structures and the green-arrowed insertion slots. When the insertion flange slides inward

from the entrance, the insertion flange enters this gap and continues to slide until it abuts the structure indicated by the blue arrow.

264. In my opinion, the red-arrowed protruding structures limit movement of the insertion flange in the vertical direction. The red-arrowed protruding structures therefore correspond to the claimed limit protrusions. They are located at a side of the insertion slot close to the through hole and are arranged separately from the insertion slot. *Id.*

265. PAWBBY also discloses limitation [3c] under an alternative mapping. The infrared sensor housings shown in the annotated PAWBBY user-manual figure also correspond to the claimed limit protrusions.

266. Exemplary pictures from PAWBBY user manual and external photographs are reproduced below:



See e.g., Exs. 1015-16.

267. As shown in the above figure, the infrared sensor housings are protruding structures formed by the base protruding downward at two sides of the

through hole. They are located near the insertion slots and are arranged separately from the insertion slots.

268. Although PAWBBY does not expressly describe the infrared sensor housings as limit protrusions, a POSITA would understand from their position relative to the insertion slots and insertion flanges that, when the insertion flange slides within the insertion slot, the infrared sensor housings limit movement vertically from above. Thus, under this alternative mapping, the infrared sensor housings also correspond to the claimed limit protrusions. *See e.g.*, Exs. 1015-16.

269. Accordingly, PAWBBY discloses limitation [3c].

270. Because PAWBBY discloses limitations [3pre], [3a], [3b], and [3c], PAWBBY discloses every limitation of claim 3 arranged as recited in the claim.

XV. GROUND 6: CLAIM 4 IS OBVIOUS OVER PAWBBY

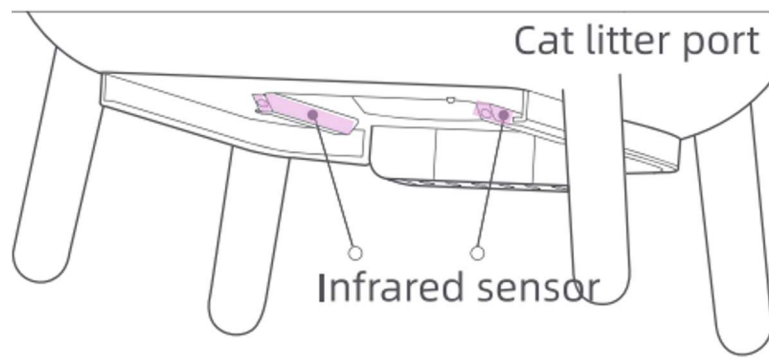
A. Claim 4. The pet toilet according to claim 3, wherein the limit protrusion comprises a first housing provided on the base and a light guide casing connected to the first housing to form a mounting chamber, the mounting chamber is provided therein with a lamp board, the lamp board is provided thereon with a plurality of luminous bodies.

271. Claim 4 depends from claim 3 and therefore includes all limitations of claim 3. As discussed above, PAWBBY discloses each limitation of claim 3.

272. PAWBBY discloses or at least renders obvious the additional limitation of claim 4. As discussed above for claim 3, PAWBBY discloses

downward protrusions near the through opening and insertion-slot region at the bottom of the main body. *See e.g.*, Ex. 1014, 1016. The PAWBBY materials also show sensor or optical components located in this region of the product. *See e.g.*, Ex. 1014, 1016, 1017.

273. Exemplary pictures from PAWBBY user manual and internal photographs are reproduced below:



See e.g., Exs. 1015-16.

274. For this limitation, the infrared/sensor housing structures near the through opening correspond to the claimed limit protrusions, as discussed above for claim 3 and shown in the annotated PAWBBY user-manual figure reproduced above. Claim 4 is also obvious under the red-arrow mapping discussed above for claim 3. Under that mapping, the protruding structures indicated by the red arrows in the annotated internal photograph correspond to the claimed limit protrusions, and PAWBBY also discloses nearby pink-marked infrared/sensor housing structures near the through hole. *See, e.g.*, Ex. 1014; Ex. 1016 at 17. A POSITA would have understood the pink-marked structure to include a housing provided on

the base and a transparent or light-transmitting casing forming a mounting chamber for sensor circuitry. It would have been obvious to integrate that nearby housing structure with the red-arrowed limit protrusion so that a single protrusion performs both the limiting function and the sensor-housing function. It would have been obvious to integrate that nearby housing structure with the red-arrowed limit protrusion so that a single protrusion performs both the limiting function and the sensor-housing function. A POSITA would have had a reasonable expectation of success because the structures are located near each other, near the through hole, insertion-slot region, and waste-compartment insertion path, and their integration would have simplified manufacturing and assembly while preserving both functions.

275. As shown in the annotated user-manual figure, PAWBBY includes two protruding infrared/sensor housing structures positioned at two sides of the through opening and near the waste-compartment insertion path. *See, e.g.*, Exs. 1015-1016. In my opinion, these infrared/sensor housing structures correspond to the claimed limit protrusions. They are formed by portions of the base that protrude downward at two sides of the through hole, are located near the insertion slots, and are arranged separately from the insertion slots.

276. A POSITA would understand that these infrared/LED housing structures limit movement of the waste-compartment insertion flanges from above

when the waste compartment is inserted into the base. In other words, when the insertion flanges slide within the insertion slots, the infrared/LED housing structures are positioned above the insertion path and constrain upward movement of the flanges. Thus, the infrared/LED housing structures perform the claimed limiting function and correspond to the claimed limit protrusions.



See e.g., Ex. 1014.

277. As shown in the annotated internal photograph above, PAWBBY includes a light-transmitting casing and a circuit board positioned within or associated with the housing structure. *See, e.g., Ex. 1014.* In my opinion, the housing structure provided on the base corresponds to the claimed first housing. The light-transmitting casing corresponds to the claimed light guide casing because it is positioned to allow optical signals or light to pass through the casing while protecting the internal components. The space formed between the housing and the casing corresponds to the claimed mounting chamber.

278. PAWBBY's disclosed infrared/sensor structure may be used for sensing rather than visible illumination. However, PAWBBY discloses an existing protruding housing, light-transmitting casing, and mounting chamber in the same region where illumination would be useful. In my opinion, a POSITA seeking to provide lighting in that region would have found it obvious to place a lamp board carrying a plurality of luminous bodies, such as LEDs, inside PAWBBY's existing mounting chamber.

279. This would have been a predictable use of known lighting components in an existing housing. A lamp board carrying multiple LEDs or other light-emitting bodies was a known and simple way to provide illumination in a consumer product. PAWBBY's existing protruding housing and light-transmitting casing would have provided a suitable location for such a lamp board because the housing already defines a protected chamber for electronic or optical components and the casing permits light to pass into the surrounding region. A POSITA would have had a reasonable expectation of success because the modification would involve placing known lighting components in an existing protected housing and using the light-transmitting casing for its ordinary light-passing function.

280. Thus, PAWBBY discloses the claimed limit protrusion, first housing, light guide casing, and mounting chamber, and renders obvious providing a lamp board in the mounting chamber with a plurality of luminous bodies. The same

infrared/sensor housing structures that correspond to the claimed limit protrusions would have provided a suitable housing and mounting chamber for adding the claimed lamp board and luminous bodies.

281. Because PAWBBY discloses the limitations of claim 3 for the reasons discussed above, claim 4 would have been obvious over PAWBBY.

XVI. GROUND 7: CLAIM 3 IS OBVIOUS OVER ZHANG IN VIEW OF BAO

282. In my opinion, claim 3 of the '239 patent would have been obvious before the effective filing date of the claimed invention over Zhang in view of Bao. As discussed below, Zhang discloses the pet toilet structure recited in claim 3, including the base, through hole, detachable collection basin, insertion slots, insertion flanges, and C-shaped insertion slot. Bao teaches a separate limiting structure used with a sliding member and receiving groove to guide, limit, and stabilize sliding movement.

283. A POSITA would have had reason to consider Bao when designing Zhang's basin-to-base mounting interface. Zhang discloses a collection basin 120 that is mounted by inserting second insertion blocks 122 into sliding chutes 141 in base 100. Ex. 1005 at [0056]. Bao discloses a drawer 1 that slides relative to cabinet body 2 and uses upper and lower limiting/sliding structures to stabilize the drawer during sliding. Ex. 1019 at [0005], [0019]-[0020]. Both references address

a mechanical interface in which a movable member slides relative to a receiving structure and is guided or limited during that movement.

284. Bao is reasonably pertinent to the problem addressed by the claimed mounting structure. The '239 patent's claim 3 concerns a removable fecal collection box that slides into a base using insertion slots and insertion flanges, with limit protrusions located near the insertion slots to limit the fecal collection box. Bao addresses a similar mechanical problem for a drawer: maintaining alignment and limiting movement of a sliding box-like member relative to a surrounding cabinet body. Bao states that its limiting structure prevents drawer side panels from tilting, keeps the drawer and slide rails flat, and ensures stable and smooth pulling and pushing. *Id.* at [0011]. A POSITA seeking to improve the stability of Zhang's slide-in collection basin would have considered known guide and limit structures of this kind.

285. In the analysis below, I refer back to certain opinions I provided above for overlapping claim limitations. Where I state that I rely on or adopt my earlier analysis, I have considered that earlier analysis in connection with this ground as well, and I apply it here for the same reasons unless otherwise noted.

A. Claim 3

13. [3pre] A pet toilet comprising: a base and a fecal collection box detachably provided on the base, the base defines a through hole running through itself from top to bottom, and the fecal collection box defines a fecal

collection chamber in communication with the through hole and configured to collect excrement

286. Zhang discloses this limitation for the same reasons discussed above for limitation [1pre] in Ground 1, which I rely on and adopt here. Zhang discloses a pet toilet including base 100 and rotary drum 200 rotatably arranged on base 100. Ex. 1005 at [0036]. Zhang further discloses that base 100 includes waste chamber 121 and first opening 140 communicating with waste chamber 121. *Id.*

287. Zhang also discloses that collection basin 120 is detachably provided at the bottom of base 100 and that waste chamber 121 is located on collection basin 120. Zhang states “[i]n an embodiment, referring to FIG. 7 and FIG. 8, a bottom of the base 100 is detachably provided with a collection basin 120, and the waste chamber 121 is located on the collection basin 120. It is convenient to remove the collection basin 120, and a user can regularly clean waste of a pet conveniently.” *Id.* at [0055].

288. In my opinion, Zhang’s base 100 corresponds to the claimed base, Zhang’s collection basin 120 corresponds to the claimed fecal collection box, Zhang’s first opening 140 corresponds to the claimed through hole, and Zhang’s waste chamber 121 corresponds to the claimed fecal collection chamber.

289. Accordingly, Zhang discloses limitation [3pre].

14. [3a] wherein a bottom of the base is provided with insertion slots at two sides of the through hole

290. Zhang discloses this limitation for the same reasons discussed above for limitation [1a] in Ground 1, which I rely on and adopt here. Zhang discloses sliding chutes 141 formed in the bottom of base 100. Zhang states that “sliding chutes 141 used in conjunction with the second insertion blocks 122 are formed in the bottom of the base 100,” and that “the sliding chutes 141 are located on two sides of the first opening 140.” Ex. 1005 at [0056].

291. In my opinion, Zhang’s sliding chutes 141 correspond to the claimed insertion slots, and Zhang’s first opening 140 corresponds to the claimed through hole.

292. Accordingly, Zhang discloses limitation [3a].

15. [3b] two sides of the fecal collection box protrude outward to form insertion flanges, the insertion flanges are inserted in the insertion slots when the fecal collection box is mounted on the base,

293. Zhang discloses this limitation for the same reasons discussed above for limitation [1b] in Ground 1, which I rely on and adopt here. Zhang discloses that two sides of the top of collection basin 120 extend outward to form second insertion blocks 122. Zhang further discloses that those second insertion blocks are arranged in sliding chutes 141 so that collection basin 120 is mounted at the bottom of base 100.

294. Zhang discloses “[i]n an embodiment, two sides of a top of the collection basin 120 outwards extend to form second insertion blocks 122. Sliding

chutes 141 used in conjunction with the second insertion blocks 122 are formed in the bottom of the base 100. It should be understood that the sliding chutes 141 are located on two sides of the first opening 140. The second insertion blocks 122 are arranged in the sliding chutes 141, so that the collection basin 120 is mounted at the bottom of the base 100.” Ex. 1005 at [0056].

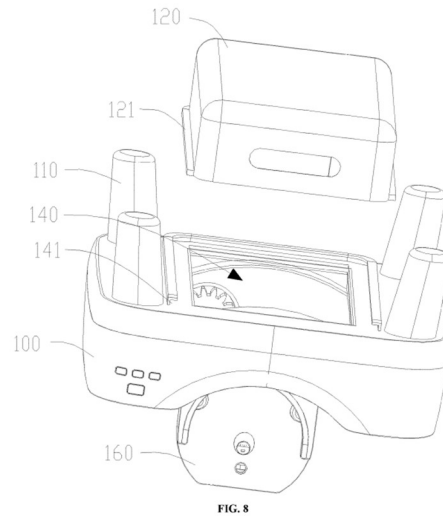
295. In my opinion, Zhang’s second insertion blocks 122 correspond to the claimed insertion flanges, and Zhang’s sliding chutes 141 correspond to the claimed insertion slots.

296. Accordingly, Zhang discloses limitation [3b].

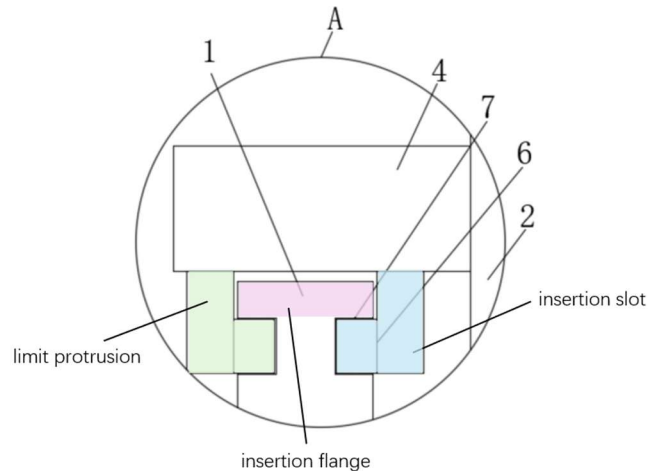
- a. [3c] wherein the base protrudes downward at two sides of the through hole to form limit protrusions, a cross-section of the insertion slot is C-shaped, the limit protrusions are located at a side of the insertion slot close to the through hole and are arranged separately from the insertion slot.

297. As discussed above, Zhang discloses sliding chutes 141 formed in the bottom of base 100 at two sides of first opening 140. Ex. 1005 at [0056]. Zhang also discloses the C-shaped insertion slot portion of [3c] for the same reasons discussed above, which I rely on and adopt here. As shown in Fig. 8 of Zhang, sliding chutes 141 have a generally C-shaped cross-section for receiving second insertion blocks 122 of collection basin 120.

298. In my opinion, Zhang's sliding chutes 141 correspond to the claimed insertion slots, and the cross-sectional shape shown in Fig. 8 corresponds to the claimed C-shaped cross-section.



299. To the extent Zhang does not expressly disclose separate limit protrusions located at a side of the insertion slot close to the through hole and arranged separately from the insertion slot, in my opinion, Bao teaches this feature. Bao discloses drawer 1 and cabinet body 2, with slide rail assemblies 3 provided at opposite positions on the drawer and cabinet body. Bao further discloses upper flat plates 4 and lower flat plates 5, with drawer 1 sliding between them. Ex. 1019 at [0019].



300. As shown in annotated Fig. 4 of Bao, one of the upper slide structures connected to the same upper flat plate 4, colored blue, corresponds to a receiving slot or channel and teaches the claimed insertion slot. Another upper slide structure connected to upper flat plate 4, colored green, corresponds to a protruding guide or limit structure and teaches the claimed limit protrusion. The portion of drawer 1 above upper slide groove 7, colored pink, corresponds to the claimed insertion flange. *Id.* at Fig. 4.

301. In my opinion, Bao's green protruding structure is arranged separately from the blue receiving slot or channel. The green protruding structure cooperates with the blue slot or channel to limit the pink insertion flange and prevent it from escaping the slot in a direction perpendicular to the sliding direction. Bao therefore teaches a limit protrusion arranged separately from an insertion slot and cooperating with the insertion slot to guide and retain a sliding member. *Id.* at Fig. 4.

302. A POSITA would have had reason to apply Bao's separate protruding guide and limit structure to Zhang's collection-basin mounting interface. Zhang already discloses a removable collection basin 120 mounted by sliding second insertion blocks 122 into sliding chutes 141 at the bottom of base 100. Ex. 1005 ¶ [0056]. A POSITA would have understood that Zhang faces the same mechanical problem of guiding and retaining a member that slides into a receiving channel and constraining that member against transverse movement.

303. Confronted with that problem, a POSITA would have looked to known mechanical slide-and-guide structures, including Bao's drawer guide structure, for guidance. Bao teaches a known way to provide guidance and retention by using a limit protrusion, shown in green in annotated Fig. 4, arranged separately from a receiving slot or channel, shown in blue, to limit and retain a sliding member, shown in pink.

304. In applying Bao to Zhang, a POSITA would have provided, beside Zhang's insertion slot, a separate limit protrusion as taught by Bao. Because the limit protrusion must cooperate with Zhang's insertion slot, a POSITA would have located the limit protrusions at a side of the insertion slot close to the through hole. And because Bao's green limit protrusion extends downward from upper flat plate 4, a POSITA would correspondingly have formed the limit protrusions in Zhang by having base 100 protrude downward at the two sides of first opening 140.

305. This modification would have used Bao's known positioning structure for its established purpose: guiding, retaining, and limiting a sliding member. The modification would involve only simple mechanical features and would not change Zhang's basic removable collection-basin structure. A POSITA would have had a reasonable expectation of success because the modification applies known protrusion-and-slot guide structures to Zhang's existing slide-in collection-basin interface.

306. Accordingly, Zhang in view of Bao teaches or renders obvious limitation [3c].

307. Because Zhang discloses limitations [3pre], [3a], and [3b], and because Zhang in view of Bao teaches or renders obvious limitation [3c], claim 3 would have been obvious over Zhang in view of Bao.

XVII. GROUND 8: CLAIM 3 IS OBVIOUS OVER ZHANG IN VIEW OF HUA

308. In my opinion, claim 3 of the '239 patent would have been obvious before the effective filing date of the claimed invention over Zhang in view of Hua. Zhang discloses the pet toilet structure recited in claim 3, including the base, through hole, detachable collection basin, insertion slots, insertion flanges, and C-shaped insertion slot. Hua teaches a guide and positioning structure in which a sliding groove receives a sliding member, and positioning grooves or separate

protruding frame portions cooperate with guide blocks to improve stability of the connection.

309. A POSITA would have had reason to consider Hua when designing Zhang's basin-to-base mounting interface. Zhang discloses a collection basin 120 that is mounted by inserting second insertion blocks 122 into sliding chutes 141 in base 100. Ex. 1005 at [0056]. Hua discloses a partition body 7 that is guided and stabilized relative to a frame 21 by guide blocks 22, sliding groove 23, and positioning grooves 24. Ex. 1020 at [0029]-[0030]. Both references address a mechanical interface in which a movable or insertable member is guided relative to a receiving structure and stabilized during assembly or use.

310. Hua is reasonably pertinent to the problem addressed by the claimed mounting structure. Claim 3 concerns a removable fecal collection box that slides into a base using insertion slots and insertion flanges, with limit protrusions located near the insertion slots to limit the fecal collection box. Hua addresses a similar mechanical problem for a refrigerator glass partition: guiding and stabilizing a panel-like member relative to a receiving frame or guide structure. Hua explains that guide blocks 22 make partition body 7 more stable and secure inside limiting groove 14, make the partition body easier to slide out from guide seat 6, and provide guidance for partition body 7. *Id.* at [0029]. Hua also explains that guide block 22 is inserted into positioning groove 24 to improve the stability of the

connection between frame 21 and partition body 7. *Id.* at [0030]. A POSITA seeking to improve the stability of Zhang's slide-in collection basin would have considered known guide and positioning structures of this kind.

311. In the analysis below, I refer back to certain opinions I provided above for overlapping claim limitations. Where I state that I rely on or adopt my earlier analysis, I have considered that earlier analysis in connection with this ground as well, and I apply it here for the same reasons unless otherwise noted.

A. Claim 3

16. [3pre] A pet toilet comprising: a base and a fecal collection box detachably provided on the base, the base defines a through hole running through itself from top to bottom, and the fecal collection box defines a fecal collection chamber in communication with the through hole and configured to collect excrement

17. [3a] wherein a bottom of the base is provided with insertion slots at two sides of the through hole

18. [3b] two sides of the fecal collection box protrude outward to form insertion flanges, the insertion flanges are inserted in the insertion slots when the fecal collection box is mounted on the base,

312. Zhang discloses limitations [3pre], [3a], and [3b] for the same reasons discussed above for limitations [1pre], [1a], and [1b] in Ground 1, which I rely on and adopt here. In particular, Zhang discloses a pet toilet including base 100 and rotary drum 200 rotatably arranged on base 100. Ex. 1005 at [0036]. Zhang further discloses that base 100 includes waste chamber 121 and first opening 140 communicating with waste chamber 121. *Id.* Zhang also discloses that collection

basin 120 is detachably provided at the bottom of base 100, and that waste chamber 121 is located on collection basin 120. *Id.* at [0055], Figs. 7-8.

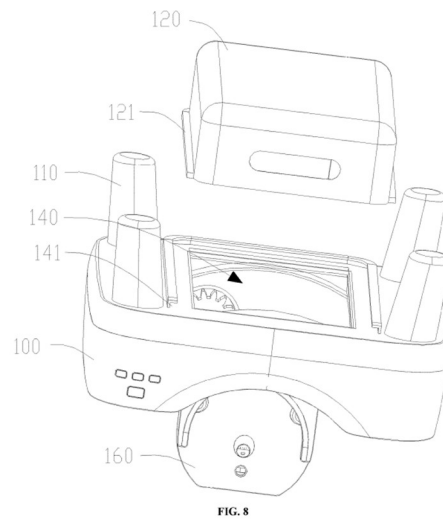
313. Zhang further discloses the claimed insertion slots and insertion flanges. Zhang teaches that two sides of the top of collection basin 120 extend outward to form second insertion blocks 122, and that sliding chutes 141 used with those second insertion blocks are formed in the bottom of base 100 and located on two sides of first opening 140. *Id.* at [0056], Fig. 8. Zhang further teaches that second insertion blocks 122 are arranged in sliding chutes 141 so that collection basin 120 is mounted at the bottom of base 100. *Id.*

314. In my opinion, Zhang's base 100 corresponds to the claimed base, collection basin 120 corresponds to the claimed fecal collection box, first opening 140 corresponds to the claimed through hole, and waste chamber 121 corresponds to the claimed fecal collection chamber. Zhang's sliding chutes 141 correspond to the claimed insertion slots, and Zhang's second insertion blocks 122 correspond to the claimed insertion flanges.

315. Accordingly, Zhang discloses limitations [3pre], [3a], and [3b].

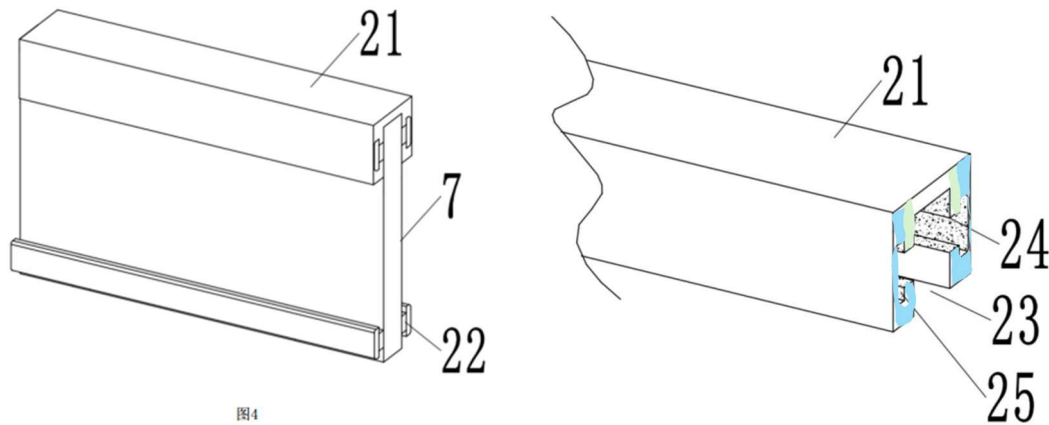
19. [3c] wherein the base protrudes downward at two sides of the through hole to form limit protrusions, a cross-section of the insertion slot is C-shaped, the limit protrusions are located at a side of the insertion slot close to the through hole and are arranged separately from the insertion slot.

316. As discussed above, Zhang discloses sliding chutes 141 formed in the bottom of base 100 at two sides of first opening 140. Ex. 1005 at [0056]. Zhang discloses the C-shaped insertion slot portion of [3c] for the same reasons discussed above, which I rely on and adopt here. As shown in Fig. 8 of Zhang, sliding chutes 141 have a generally C-shaped cross-section for receiving second insertion blocks 122 of collection basin 120. *Id.* at Fig. 8. In my opinion, Zhang's sliding chutes 141 correspond to the claimed insertion slots, and the cross-sectional shape shown in Fig. 8 corresponds to the claimed C-shaped cross-section.



317. To the extent Zhang does not expressly disclose separate limit protrusions located at a side of the insertion slot close to the through hole and arranged separately from the insertion slot, in my opinion, Hua teaches that feature. Hua discloses a guide and positioning arrangement involving frame 21, partition

body 7, guide blocks 22, sliding groove 23, and positioning grooves 24. Ex. 1020 at [0029]-[0030].



318. As shown in annotated Fig. 7 of Hua, the portion of frame 21 colored blue corresponds to a receiving slot or channel for the sliding member and has a generally C-shaped cross-section. The portion of frame 21 colored green is a protruding portion of frame 21 located at a side of the blue receiving slot. The green protruding portion cooperates with the blue receiving slot to guide and limit the guide blocks 22 and to prevent the guide blocks from escaping the slot in a direction perpendicular to the sliding direction. *Id.* at [0029]-[0030].

319. In my opinion, the green portion of Hua's frame 21 teaches a protruding guide or limit structure located at a side of, and cooperating with, a receiving slot. Hua further explains that guide blocks 22 are inserted into positioning grooves 24, which improves the stability of partition body 7 during sliding. *Id.* at [0030]. Hua also explains that the guide blocks make the partition

body stable and secure and make it easier to slide the partition body out. *Id.* at [0035]. Thus, Hua teaches a protruding structure that cooperates with a receiving slot to guide, position, and limit a sliding member.

320. A POSITA would have had reason to apply Hua's protruding guide or limit structure to Zhang's collection-basin mounting interface. Zhang already discloses a removable collection basin 120 mounted by sliding second insertion blocks 122 into sliding chutes 141 at the bottom of base 100. Ex. 1005 at [0056]. A POSITA would have understood that such a slide-in collection basin should be guided and stabilized during insertion and when mounted. Hua teaches a known way to provide that stabilization by using a protruding guide or limit structure, shown in green in annotated Fig. 7, that cooperates with a receiving slot, shown in blue.

321. In applying Hua to Zhang, a POSITA would have formed downward protrusions on Zhang's base 100 beside sliding chutes 141 and close to first opening 140. Because Zhang's sliding chutes 141 are located at two sides of first opening 140, the corresponding limit protrusions would also be located at two sides of first opening 140 and at the side of the sliding chutes close to the first opening. This arrangement is consistent with Hua's green protruding portions being located at a side of the blue receiving slot.

322. This modification would have used Hua's known guide and positioning structure for its ordinary purpose: guiding, positioning, and stabilizing a sliding member. The modification would not change Zhang's basic removable collection-basin structure. Rather, it would add limit protrusions adjacent Zhang's existing C-shaped sliding chutes to further guide and stabilize collection basin 120 when mounted. A POSITA would have had a reasonable expectation of success because the modification involves simple mechanical guide and positioning structures used for their ordinary stabilizing function.

323. Accordingly, Zhang in view of Hua teaches or renders obvious limitation [3c].

324. Because Zhang discloses limitations [3pre], [3a], and [3b], and because Zhang in view of Hua teaches or renders obvious limitation [3c], claim 3 would have been obvious over Zhang in view of Hua.

XVIII. GROUND 9: CLAIM 3 IS OBVIOUS OVER ZHANG IN VIEW OF SWAIN

325. In my opinion, claim 3 of the '239 patent would have been obvious before the effective filing date of the claimed invention over Zhang in view of Swain. As discussed above, Zhang discloses the pet toilet structure recited in claim 3, including the base, through hole, detachable collection basin, insertion slots, insertion flanges, and C-shaped insertion slot. Ex. 1005 ¶¶ [0036], [0055]-[0056],

Figs. 7-8. Swain teaches a guide and support arrangement in which a C-shaped channel slides over a guide rail, and separate support or stop structures guide, support, and limit sliding movement. Ex. 1021 at 3:20-54, 4:31-37, 5:19-66.

326. A POSITA would have had reason to consider Swain when designing Zhang's basin-to-base mounting interface. Zhang discloses a collection basin 120 that is mounted by inserting second insertion blocks 122 into sliding chutes 141 in base 100. Ex. 1005 ¶ [0056]. Swain discloses sliding drawer hardware using C-shaped channels, guide rails, drawer glides, and stop structures to support and limit a sliding drawer relative to a cabinet. Ex. 1021 at 3:20-54, 4:31-37, 5:19-66. Both references address a mechanical interface in which a movable member slides relative to a receiving structure and is guided, supported, or limited during movement.

327. Swain is reasonably pertinent to the problem addressed by the claimed mounting structure. Claim 3 concerns a removable fecal collection box that slides into a base using insertion slots and insertion flanges, with limit protrusions located near the insertion slots to limit the fecal collection box. Swain addresses a similar mechanical problem for drawers: guiding and supporting a sliding member relative to a cabinet structure while maintaining the sliding member in a defined position. Swain states that its extender assembly allows the drawer to be fully withdrawn while still held in a horizontal position and replaced without realigning the drawer

with the support rails. Ex. 1021 at 1:12-19. A POSITA seeking to improve the stability of Zhang's slide-in collection basin would have considered known drawer-slide support and limiting structures of this kind.

328. In the analysis below, I refer back to certain opinions I provided above for overlapping claim limitations. Where I state that I rely on or adopt my earlier analysis, I have considered that earlier analysis in connection with this ground as well, and I apply it here for the same reasons unless otherwise noted.

A. Claim 3

20. [3pre] A pet toilet comprising: a base and a fecal collection box detachably provided on the base, the base defines a through hole running through itself from top to bottom, and the fecal collection box defines a fecal collection chamber in communication with the through hole and configured to collect excrement

21. [3a] wherein a bottom of the base is provided with insertion slots at two sides of the through hole

22. [3b] two sides of the fecal collection box protrude outward to form insertion flanges, the insertion flanges are inserted in the insertion slots when the fecal collection box is mounted on the base,

329. Zhang discloses limitations [3pre], [3a], and [3b] for the same reasons discussed above for limitations [1pre], [1a], and [1b] in Ground 1, which I rely on and adopt here. In particular, Zhang discloses a pet toilet including base 100 and rotary drum 200 rotatably arranged on base 100. Ex. 1005 ¶ [0036]. Zhang further discloses that base 100 includes waste chamber 121 and first opening 140 communicating with waste chamber 121. *Id.* Zhang also discloses that collection

basin 120 is detachably provided at the bottom of base 100, and that waste chamber 121 is located on collection basin 120. *Id.* at [0055], Figs. 7-8.

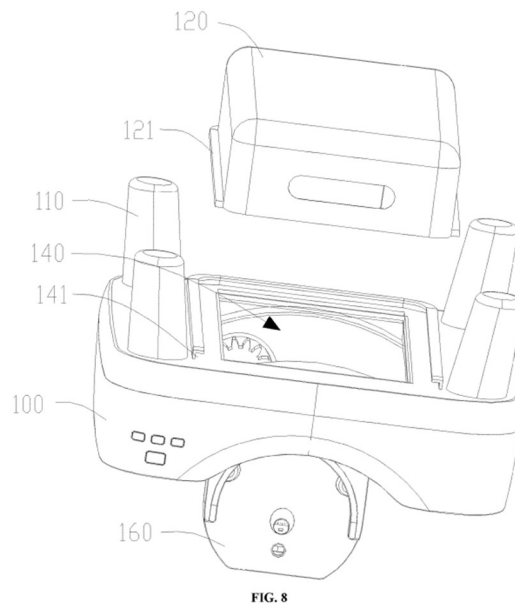
330. Zhang further discloses the claimed insertion slots and insertion flanges. Zhang teaches that two sides of the top of collection basin 120 extend outward to form second insertion blocks 122, and that sliding chutes 141 used with those second insertion blocks are formed in the bottom of base 100 and located on two sides of first opening 140. *Id.* at [0056], Fig. 8. Zhang further teaches that second insertion blocks 122 are arranged in sliding chutes 141 so that collection basin 120 is mounted at the bottom of base 100. *Id.*

331. In my opinion, Zhang's base 100 corresponds to the claimed base, collection basin 120 corresponds to the claimed fecal collection box, first opening 140 corresponds to the claimed through hole, and waste chamber 121 corresponds to the claimed fecal collection chamber. Zhang's sliding chutes 141 correspond to the claimed insertion slots, and Zhang's second insertion blocks 122 correspond to the claimed insertion flanges.

332. Accordingly, Zhang discloses limitations [3pre], [3a], and [3b].

23. [3c] wherein the base protrudes downward at two sides of the through hole to form limit protrusions, a cross-section of the insertion slot is C-shaped, the limit protrusions are located at a side of the insertion slot close to the through hole and are arranged separately from the insertion slot.

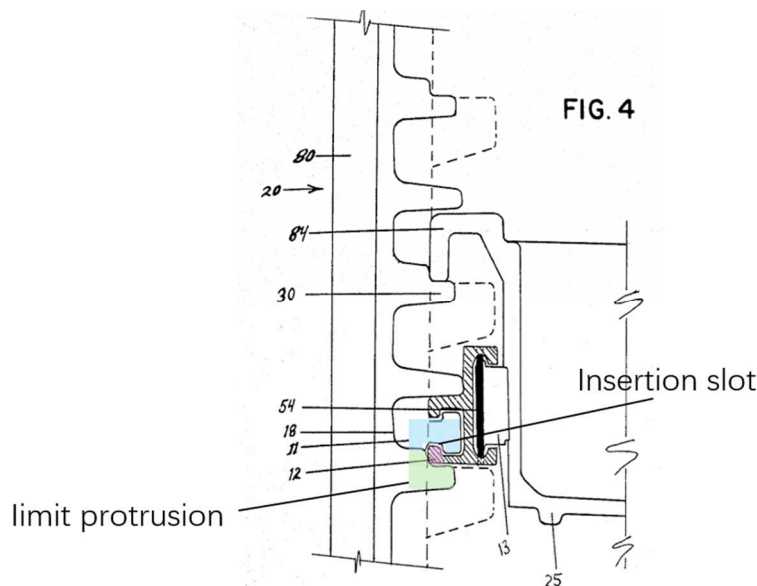
333. As discussed above, Zhang discloses sliding chutes 141 formed in the bottom of base 100 at two sides of first opening 140. Ex. 1005 ¶ [0056]. Zhang discloses the C-shaped insertion slot portion of [3c] for the same reasons discussed above, which I rely on and adopt here. As shown in Fig. 8 of Zhang, sliding chutes 141 have a generally C-shaped cross-section for receiving second insertion blocks 122 of collection basin 120. *Id.* at Fig. 8. In my opinion, Zhang's sliding chutes 141 correspond to the claimed insertion slots, and the cross-sectional shape shown in Fig. 8 corresponds to the claimed C-shaped cross-section.

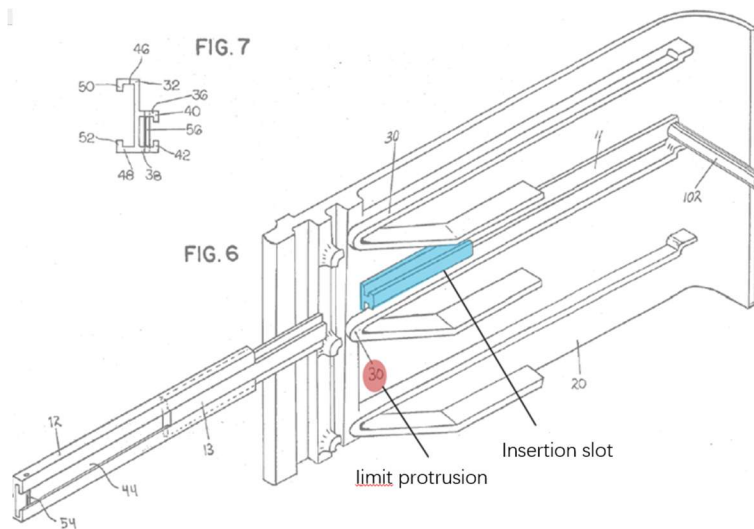


334. To the extent Zhang does not expressly disclose separate limit protrusions located at a side of the insertion slot close to the through hole and arranged separately from the insertion slot, in my opinion, Swain teaches a known guide, support, and limiting arrangement that would have made this feature

obvious. Swain discloses a drawer extender assembly including cabinet rail 11, floating rail 12, and drawer slide 13. Ex. 1021 at 2:51-65. Swain further discloses that connecting flange 24 extends from cabinet rail 11 and supports stationary floating rail guide 26. *Id.* at 3:16-25.

335. Swain teaches C-shaped guide structures used to receive and guide sliding members. Swain states that floating rail 12 includes a C-shaped channel that slides over stationary floating rail guide 26 and allows floating rail 12 to slide horizontally within and out of cabinet structure 20. *Id.* at 3:25-31. Swain further discloses that floating rail 12 comprises two C-channels sharing common vertical member 32, and that smaller C-channel 34 slideably receives stationary floating rail guide 26. *Id.* at 3:45-54.





336. As shown in annotated Figs. 4 and 6, the stationary floating rail guide 26 is marked in blue. The pink-marked portion of floating rail 12 is part of the sliding rail structure that couples with stationary floating rail guide 26. In particular, floating rail 12 includes smaller C-channel 34, which slidably receives stationary floating rail guide 26. *Id.* at 3:45-54. In my opinion, this blue-and-pink interface teaches a C-shaped channel structure that receives and guides a corresponding rail or flange-like member during sliding.

337. The green-marked structure in annotated Figs. 4 and 6 is drawer glide 30. Swain explains that drawer glides 30 provide horizontal sliding support surfaces for drawer 25, and that outwardly extending flanges 84 of drawer 25 glide over drawer glides 30. *Id.* at 4:31-37. In my opinion, the green-marked drawer glide 30 teaches a separate protruding support and limiting structure located beside the sliding rail/channel interface.

338. Swain further explains that, during operation, floating rail 12 slides along stationary floating rail guide 26, and drawer slide 13 slides within larger C-channel 44, while the drawer remains supported in vertical and horizontal positions. *Id.* at 5:29-42. A POSITA would understand from Swain's annotated Figs. 4 and 6 that the green-marked drawer glides 30 cooperate with the sliding rail/channel structures to support and limit the moving drawer assembly. In particular, drawer glides 30 provide support surfaces and constrain movement of the sliding drawer structure relative to the cabinet.

339. A POSITA would have had reason to apply Swain's separate protruding support and limiting structure to Zhang's collection-basin mounting interface. Zhang already discloses a removable collection basin 120 mounted by sliding second insertion blocks 122 into sliding chutes 141 at the bottom of base 100. *Id.* at [0056]. As discussed above, Zhang's sliding chutes 141 provide the claimed C-shaped insertion slots. A POSITA would have understood that such a slide-in collection basin should be guided, supported, and limited during insertion and when mounted.

340. Swain teaches a known way to provide that support and limitation by using a separate protruding glide structure, shown in green in annotated Figs. 4 and 6, adjacent to a sliding rail/channel interface. In applying Swain to Zhang, a POSITA would have formed separate downward protrusions on Zhang's base 100

beside sliding chutes 141 and close to first opening 140. Because Zhang's sliding chutes 141 are located at two sides of first opening 140, the corresponding limit protrusions would also be located at two sides of first opening 140 and at the side of the sliding chutes close to the first opening. The protrusions would be arranged separately from the sliding chutes, consistent with Swain's green-marked drawer glides 30 being separate from the blue-and-pink sliding rail/channel interface.

341. This modification would have used Swain's known guide-and-support structure for its ordinary purpose: supporting, guiding, and limiting a sliding member. The modification would not change Zhang's basic removable collection-basin structure. Rather, it would add separate limit protrusions adjacent Zhang's existing C-shaped sliding chutes to further guide, support, and stabilize collection basin 120 when mounted. A POSITA would have had a reasonable expectation of success because the modification involves simple mechanical support and guide structures used for their ordinary stabilizing function.

342. Accordingly, Zhang in view of Swain teaches or renders obvious limitation [3c].

343. Because Zhang discloses limitations [3pre], [3a], and [3b], and because Zhang in view of Swain teaches or renders obvious limitation [3c], claim 3 would have been obvious over Zhang in view of Swain.

XIX. GROUND 10: CLAIM 3 IS OBVIOUS OVER SEDLMEIR IN VIEW OF BAO

344. In my opinion, claim 3 of the '239 patent would have been obvious before the effective filing date of the claimed invention over Sedlmeir in view of Bao. Sedlmeir is an in-field pet-waste reference that discloses a pet lavatory with a main body, bowl opening, removable lower storage receptacle, track rails, and a sideward flange on the receptacle. Bao teaches a separate guide and limit structure used with a sliding member and receiving groove to guide, limit, and stabilize sliding movement.

345. A POSITA would have had reason to consider Bao when designing Sedlmeir's receptacle-to-main-body mounting interface. Sedlmeir discloses storage receptacle 25 slidably supported beneath bowl opening 23 by track rails 24, with the receptacle removable for emptying. Ex. 1022 at 2:4-8. Bao discloses a drawer 1 that slides relative to cabinet body 2 and uses upper and lower guide and limit structures to stabilize the drawer during sliding. Ex. 1019 ¶¶ [0005], [0019]-[0020]. Both references address a mechanical interface in which a movable receptacle or box-like member slides relative to a receiving structure and is guided or limited during that movement.

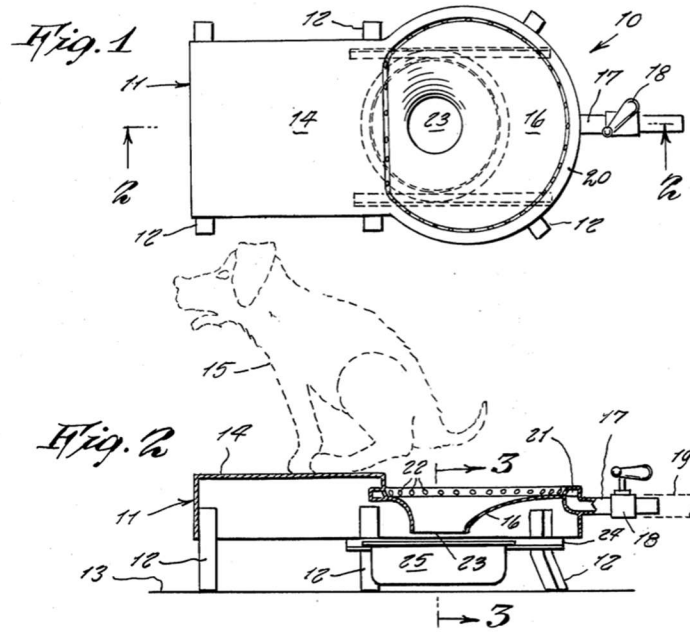
346. Bao is reasonably pertinent to the problem addressed by the claimed mounting structure. Claim 3 concerns a removable fecal collection box that slides

into a base using insertion slots and insertion flanges, with limit protrusions located near the insertion slots to limit the fecal collection box. Sedlmeir likewise uses a removable storage receptacle 25 that slides beneath a pet-waste opening on track rails 24. Ex. 1022 at 2:4-8, Fig. 3. Bao addresses a similar mechanical problem for a drawer: maintaining alignment and limiting movement of a sliding box-like member relative to a surrounding body. Bao explains that its limiting structure prevents drawer side panels from tilting, keeps the drawer and slide rails flat, and ensures stable and smooth pulling and pushing. Ex. 1019 ¶ [0011]. A POSITA seeking to improve the stability of Sedlmeir's removable receptacle would have considered known guide and limit structures of this kind.

A. Claim 3

24. [3pre] A pet toilet comprising: a base and a fecal collection box detachably provided on the base, the base defines a through hole running through itself from top to bottom, and the fecal collection box defines a fecal collection chamber in communication with the through hole and configured to collect excrement

347. Sedlmeir discloses this limitation. Sedlmeir discloses a lavatory 10 for dogs and other domesticated pets. Sedlmeir states that main member 11 is mounted on legs 12 and forms a raised platform 14 at one end, on which animal 15 may sit during defecation, and a bowl 16 at the other end, into which feces or urine may fall. Ex. 1022 at 1:49-57, Figs. 1-2.



348. Sedlmeir further discloses that bowl 16 tapers downwardly to offset opening 23. *Id.* at 2:1-3, Fig. 2. Sedlmeir also discloses storage receptacle 25 beneath opening 23. Specifically, Sedlmeir states that track rails 24 slidably support storage receptacle 25 beneath opening 23 “so that the receptacle can catch animal wastes,” and that the receptacle is removable so it can be emptied. *Id.* at 2:4-8.

349. In my opinion, Sedlmeir’s main member 11, including bowl 16, corresponds to the claimed base. Sedlmeir’s offset opening 23 corresponds to the claimed through hole because it is an opening through the bottom of bowl 16 through which waste passes. Sedlmeir’s storage receptacle 25 corresponds to the claimed fecal collection box, and the interior of storage receptacle 25 corresponds

to the claimed fecal collection chamber. That chamber is in communication with opening 23 and is configured to collect excrement falling through the opening.

350. Accordingly, Sedlmeir discloses limitation [3pre].

25. [3a] wherein a bottom of the base is provided with insertion slots at [3a] wherein a bottom of the base is provided with insertion slots at two sides of the through hole

351. Sedlmeir discloses this limitation. Sedlmeir teaches that “[a] pair of parallel, spaced apart track rails 24 integral with a lower edge of member 11 serve to slidably support a storage receptacle 25 beneath opening 23.” Ex. 1022 at 2:4-8. Sedlmeir’s claim 1 similarly recites “a lower edge of said main body having a pair of parallel, spaced apart track rails.” *Id.* at claim 1.

352. In my opinion, Sedlmeir’s track rails 24 correspond to the claimed insertion slots. As shown in Figs. 2 and 3, track rails 24 are located at the lower edge of main member 11 and support storage receptacle 25 beneath opening 23. Because the rails are arranged on opposite sides of the receptacle and beneath the bowl opening, they correspond to insertion slots at two sides of the through hole.

353. Accordingly, Sedlmeir discloses limitation [3a].

26. [3b] two sides of the fecal collection box protrude outward to form insertion flanges, the insertion flanges are inserted in the insertion slots when the fecal collection box is mounted on the base,

354. Sedlmeir discloses this limitation. Sedlmeir's claim 1 recites "a removable receptacle having a sideward flange around an upper edge" that is slidable on the rails between a position under the bowl bottom opening and an end edge of the main body for removal. Ex. 1022, claim 1. Sedlmeir also discloses that track rails 24 slidably support storage receptacle 25 beneath opening 23, and that storage receptacle 25 is removable so it can be emptied. *Id.* at 2:4-8.

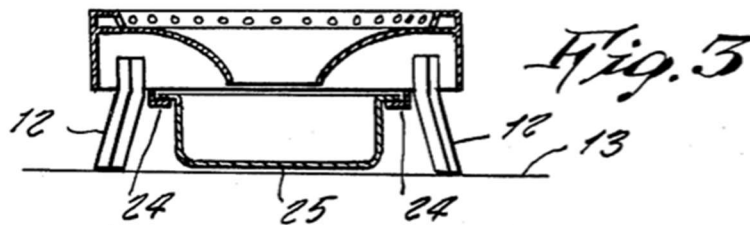
355. In my opinion, the sideward flange around the upper edge of Sedlmeir's storage receptacle 25 corresponds to the claimed insertion flanges. As shown in Figs. 2 and 3, the flange protrudes outward from the receptacle and is received and supported by track rails 24 when the receptacle is mounted beneath opening 23. Sedlmeir therefore discloses the claimed fecal collection box having outwardly protruding insertion flanges inserted in insertion slots when the fecal collection box is mounted on the base.

356. Accordingly, Sedlmeir discloses limitation [3b].

27. [3c] wherein the base protrudes downward at two sides of the through hole to form limit protrusions, a cross-section of the insertion slot is C-shaped, the limit protrusions are located at a side of the insertion slot close to the through hole and are arranged separately from the insertion slot.

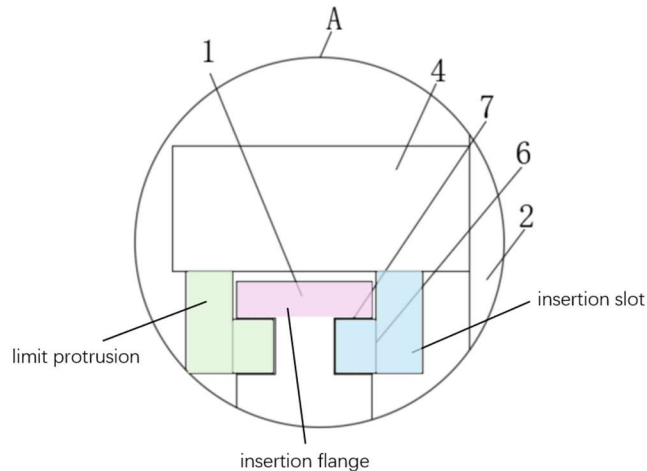
357. Sedlmeir discloses part of this limitation. As discussed above, Sedlmeir discloses track rails 24 integral with the lower edge of main member 11, which slidably support storage receptacle 25 beneath opening 23. Ex. 1022 at 2:4-

8. Sedlmeir's claim 1 also recites a removable receptacle having a sideward flange around an upper edge that is slidable on the rails. *Id.* at claim 1. As shown in the transverse cross-section of Fig. 3, each track rail 24 defines a receiving channel for the sideward flange of receptacle 25. In my opinion, the receiving channel shown in Fig. 3 has a generally C-shaped cross-section for receiving and supporting the receptacle flange.



358. To the extent that Sedlmeir does not expressly disclose separate limit protrusions located at a side of the insertion slot close to the through hole and arranged separately from the insertion slot, in my opinion, Bao teaches that feature. Bao discloses drawer 1 and cabinet body 2, with slide rail assemblies 3 provided at opposite positions on the drawer and cabinet body. Bao further discloses upper flat plates 4 and lower flat plates 5, with drawer 1 sliding between them. Ex. 1019 ¶ [0019].

359. Bao discloses this limitation for the same reasons discussed above for limitations [3c] in Ground 7, which I rely on and adopt here.



360. As shown in Bao’s annotated figure, Bao discloses that upper slide bar 6 is fixed to the bottom of upper flat plate 4, and that upper sliding groove 7 is provided on the side wall of drawer 1. Bao states that drawer 1 is slidably arranged between upper flat plate 4 and lower flat plate 5, that upper slide bar 6 is fixed to the bottom of upper flat plate 4, and that upper slide bar 6 and upper sliding groove 7 “fit to slide.” *Id.* at [0019].

361. Bao further explains the limiting function of this structure. Bao states that the upper flat plate structure prevents tilting of the slide rail side plates of drawer 1, ensures higher flatness of slide rail assembly 3, and improves the smoothness and stability of drawer 1 operation. *Id.* at [0019]. Bao also explains that, during long-term use, drawer 1 uses the limiting structure of upper flat plate 4 to prevent tilting of the slide rail side plate of drawer 1 and ensure flatness. *Id.* at [0024].

362. In my opinion, Bao teaches a separate protruding guide and limit structure used with a sliding groove. Bao's upper slide bar 6 is a protruding structure provided on cabinet-side upper flat plate 4 and arranged separately from drawer-side upper sliding groove 7. Upper slide bar 6 cooperates with upper sliding groove 7 to guide and limit drawer 1 during sliding. As shown in Bao's annotated figure, this protruding structure limits movement of the sliding member in a direction transverse to the sliding direction and helps maintain drawer 1 in the intended sliding path.

363. A POSITA would have been motivated to apply Bao's guide and limit structure to Sedlmeir's receptacle-to-main-body interface. Sedlmeir already discloses a removable storage receptacle 25 that slides beneath bowl opening 23 using track rails 24 and a sideward flange. Ex. 1022 at 2:4-8, claim 1. Bao teaches that a separate protruding limit structure can cooperate with a sliding groove to constrain a sliding member, prevent tilting, and improve smoothness and stability. Ex. 1019 ¶¶ [0011], [0019], [0024]. A POSITA would have recognized Bao's limiting structure as a known way to improve the stability of Sedlmeir's slide-in storage receptacle.

364. In applying Bao to Sedlmeir, a POSITA would have formed separate limit protrusions on the lower portion of Sedlmeir's main member 11 beside track rails 24 so that the protrusions cooperate with the track rails to limit the sideward

flange of receptacle 25. Sedlmeir's receptacle 25 is positioned beneath opening 23 so that it catches animal waste falling through the opening. Ex. 1022 at 2:4-8. A POSITA therefore would have positioned the limit protrusions at the side of the track rails close to opening 23 so that the protrusions assist in retaining and stabilizing receptacle 25 adjacent the waste-receiving opening. And because Bao's protruding limit structure extends downward from upper flat plate 4, a POSITA would have formed the corresponding limit protrusions in Sedlmeir by having main member 11 protrude downward at two sides of the through hole.

365. This modification would have used Bao's known guide and limit structure for the same purpose Bao identifies: limiting a sliding member and improving stable, smooth sliding. Ex. 1019 ¶¶ [0011], [0019]. The modification would not change Sedlmeir's basic slide-in receptacle arrangement. Rather, it would add separate downward protrusions adjacent Sedlmeir's existing track rails to further constrain and stabilize receptacle 25 when mounted. A POSITA would have had a reasonable expectation of success because the modification involves simple mechanical protrusions and grooves used for their ordinary guiding and limiting function.

366. Accordingly, Sedlmeir in view of Bao teaches or renders obvious limitation [3c].

367. Because Sedlmeir discloses limitations [3pre], [3a], and [3b], and because Sedlmeir in view of Bao teaches or renders obvious limitation [3c], claim 3 would have been obvious over Sedlmeir in view of Bao.

XX. § 112 GROUND

368. I have also considered certain antecedent-basis and dependency issues in claims 10 and 12-17 of the '239 patent. I understand that the ultimate legal significance of these issues is for counsel and the Board. From a technical perspective, however, I agree that the claim language presents the antecedent-basis issues discussed below.

A. Claim 10 Lacks Antecedent Basis

369. Claim 10 is an independent claim. It recites a pet toilet comprising “a base and a fecal collection box,” and further recites that “the fecal collection box comprises at least one extension frame and a fixing basin.” Ex. 1001 at claim 10. Claim 10 later recites that “the insertion flange is located on the outermost extension frame.” *Id.*

370. Claim 10 does not previously recite “an insertion flange” or “insertion flanges.” Instead, the term first appears in claim 10 as “the insertion flange.” Because claim 10 is an independent claim, it does not depend from another claim that could supply the missing antecedent basis.

371. In my opinion, this creates an antecedent-basis issue. Reading claim 10 alone, a POSITA would see that the claim refers to “the insertion flange,” but the claim does not first identify what insertion flange is being referenced or how that structure is introduced into the claimed combination. Although a POSITA could review the specification and other claims to understand that the patent elsewhere describes insertion flanges, claim 10 itself does not introduce that structure before referring to it with the definite article “the.”

372. For that reason, I understand that claim 10 may fail to particularly point out and distinctly claim the subject matter of the claim under § 112(b), at least with respect to “the insertion flange.”

B. Claims 12-17 Lack Antecedent Basis

373. Claims 12-17 present a related antecedent-basis and dependency issue. Each of claims 12-17 depends from independent claim 10. Ex. 1001 at claims 12-17. Claim 10 does not recite a “first limit member,” “second limit member,” “first limit flange,” “second limit flange,” “first straight wall,” “second straight wall,” “first limit groove,” or “second limit groove.” *Id.* at claim 10.

374. Those structures are introduced elsewhere in the claim set. Claim 11, which depends from claim 8, recites “a first limit member” and “a second limit member.” Ex. 1001, claim 11. Claim 12 recites additional structures, including a “first limit flange,” “first straight wall,” “first limit groove,” “second limit flange,”

“second straight wall,” and “second limit groove.” *Id.* at claim 12. But claims 12-17 depend from claim 10, not from claim 11, and claims 13-17 do not depend from claim 12.

375. Specifically, claim 12 depends from claim 10 and recites “the first limit member” and “the second limit member,” but neither term is introduced in claim 10. *Id.* at claim 12.

376. Claim 13 depends from claim 10 and recites “the first limit flange,” but claim 10 does not recite a first limit flange, and claim 13 does not depend from claim 12. *Id.* at claim 13.

377. Claim 14 depends from claim 10 and recites “the second limit flange” and “the second straight wall,” but claim 10 does not recite those structures, and claim 14 does not depend from claim 12. *Id.* at claim 14.

378. Claim 15 depends from claim 10 and recites that a fixture block is “located above the first limit member,” but claim 10 does not recite a first limit member, and claim 15 does not depend from claim 11. *Id.* at claim 15.

379. Claim 16 depends from claim 10 and recites “the first limit groove” and “the second limit groove,” but claim 10 does not recite either limit groove, and claim 16 does not depend from claim 12. *Id.* at claim 16.

380. Claim 17 depends from claim 10 and recites “the second limit member,” but claim 10 does not recite a second limit member, and claim 17 does not depend from claim 11. *Id.* at claim 17.

381. In my opinion, these claims therefore refer to structures that are not introduced in their dependency chain. A POSITA could review the specification and other claims and understand that the patent describes limit-member, limit-flange, straight-wall, and limit-groove structures. But the dependency structure of claims 12-17 does not incorporate the claims that introduce those terms. As a result, the claims themselves create uncertainty as to whether claims 12-17 require the structures recited in claim 11, the structures recited in claim 12, some structure described in the specification, or some other structure.

382. For that reason, I understand that claims 12-17 may fail to particularly point out and distinctly claim the subject matter of the claims under § 112(b), at least with respect to the limit-member, limit-flange, straight-wall, and limit-groove terms discussed above.

383. My prior-art opinions above do not depend on resolving these § 112(b) issues. To the extent I analyze claims 10-17 over the prior art, I have applied the claim language according to the meaning a POSITA would most likely understand from the claim language, specification, and drawings.

XXI. PURCHASE AND INSPECTION OF PATENT OWNER'S PRODUCT

384. I also purchased and inspected a product that I understand to be Patent Owner's commercial product. I provide the following factual observations based on my purchase, receipt, opening, and inspection of that product.

385. On or about Jun 24, 2026, I purchased AutoScooper 11 Cat Litter Box and AutoScooper 11 Waste Bags (60 count) from <https://petpivot.com/products/litter-box>. The product I purchased was identified as AutoScooper 11 Cat Litter Box and AutoScooper 11 Waste Bags. I received the product on or about Jun 28, 2026.

386. After receiving the product, I opened the shipping package and inspected the product packaging. The product packaging included a label stating "Made in China." A photograph of the packaging label I observed is reproduced below.



Ex. 1026.

387. The photograph above fairly and accurately depicts the packaging label I observed on the product packaging. Based on my inspection, the packaging for the product I received indicates that the product was made in China.

388. I have not independently investigated the manufacturing location beyond my inspection of the product packaging and label. My testimony on this point is limited to my personal observation of the packaging and the “Made in China” label.

XXII.CONCLUSION

389. In my opinion, the challenged claims of the '239 Patent are unpatentable for the reasons set forth in my original declaration and for the additional reasons set forth above.

390. I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: July 6, 2026



John P. Abraham