

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DYSON TECHNOLOGY LIMITED AND DYSON, INC.,

Petitioners,

v.

OMACHRON INTELLECTUAL PROPERTY INC.,

Patent Owner.

DECLARATION OF ROBERT GIACHETTI

REGARDING

U.S. Patent No. 10,568,477

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I. INTRODUCTION

1. My name is Robert Giachetti. I have been retained by Dyson Technology Limited and Dyson, Inc. (collectively “Dyson” or “Petitioners”) as an independent expert in this proceeding.
2. I understand Dyson is challenging the validity of claims 1-20 of U.S. Patent No. 10,568,477 (the “’477 Patent”) in this petition for *inter partes* review (“IPR”). I refer to these as the “Challenged Claims.”
3. I have been asked to consider whether certain references invalidate the Challenged Claims.
4. I am a salaried employee of Fusion Engineering, LLC. Fusion Engineering is being compensated for my time in connection with this matter at the consulting rate of \$410 per hour. My compensation is not affected by the content of my opinions, testimony, or the outcome of this matter.
5. The prior art references on which my opinions are based are:
 - U.S. Patent Publication No. US 2017/0079489 (“Dimbylow”)
 - U.S. Patent No. 8,201,453 (“Howes”)
 - U.S. Patent No. 2,477,685 (“Brown”)
 - International Publication No. WO 02/067753 (“Vuijk”)
 - Canadian Patent Publication No. CA 161428 (“Robinson”)
 - U.S. Patent No. 1,156,235 (“Kirby”)
 - French Patent No. 497,856 (“Lux”)
 - U.K. Patent Application Publication No. GB283,179 (“IPVG”)

- U.S. Patent No. 2,149,135 (“Eriksson-Jons”)
 - French Patent No. 1,094,603 (“MartelliereFR”)
 - Certified English translation of French Patent No. 1,094,603 (“Martelliere”)
 - Ex. D-4 Plaintiffs’ Infringement Contentions in *SharkNinja Operating LLC v. Dyson, Inc.*, No. 1:23-cv-12372 (D. Mass.)
 - Ex. B-4 to Plaintiffs’ Infringement Contentions in *SharkNinja Operating LLC v. Dyson, Inc.*, No. 1:23-cv-12372 (D. Mass.)
6. In my opinion, the Challenged Claims are invalid based on the following:
- The combination of Dimbylow and Howes renders claims 1-7, 12, and 14-15 obvious.
 - Brown alone renders claims 1-20 obvious.
 - The combination of Brown and Vuijk renders claims 1-20 obvious.

II. BACKGROUND AND QUALIFICATIONS

7. I am a Licensed Professional Engineer in Illinois and Oklahoma, with over 20 years of experience in mechanical engineering. My experience in machinery and mechanisms spans numerous industries; I have worked directly designing mechanical systems and machinery, and I have consulted on the operation of machinery in various fields, including consumer products, commercial products, and industrial products.
8. I am employed by Fusion Engineering, LLC, where I have worked since November of 2020. Fusion is an engineering firm that provides multidisciplinary engineering consulting services.

9. I am currently the Director of Mechanical Engineering at Fusion. In this role, I am responsible for providing engineering consulting services in mechanical engineering, coordinating client outreach, coordinating marketing materials, and recruiting.
10. I am currently a Member of ASTM (American Society for Testing and Materials) and ASME (American Society of Mechanical Engineers) where I sit on several committees, including the Power Transmission Gearing Committee (ASME), which looks at transferring movement with belts and gears. I am also on ASTM's F15 Consumer Product Committee, which handles matters such as consumer product safety guidelines. I am also a member of the ICPHSO (International Consumer Products Health & Safety Organization) group, and attend ICPHSO conferences, which cover health and safety issues relevant to consumer products.
11. I hold a Bachelor's, Master's, and Ph.D. degree in Mechanical Engineering. I have Minors in Physics (as an undergraduate) and Mechanics and Aeronautics (as a graduate student). I have taught courses in Physics, Mechanical Engineering, and Biomechanics across three universities.
12. I have been recognized as an expert in mechanical power transmission equipment, and I serve on the American Society of Mechanical Engineers

(ASME) Power Transmission and Gearing Committee. I have also participated, by invitation, in the National Council of Examiners for Engineering and Surveying (NCEES) Mechanical Professional Activities and Knowledge Studies (PAKS) committee. This committee reviews and evaluates the problems and problem types that appear on the Mechanical Engineering Professional Engineering exam for licensure as a Professional Engineer.

13. For the past 30 years, I have been involved in the area of machine design and applications of machine design. These machines and products have ranged from children's mattresses to garden hoses, pressure cookers, electronic tire/raft inflators, and industrial equipment including conveyors.
14. In approximately 1993-1994, I was a part of a team that developed and built a functioning autonomous, battery-powered vacuum cleaner. This design and development project involved analyzing the layout and inclusion of various vacuum-cleaner components, such as surface agitators, air filtration units, motors, fluid flow paths, batteries, and other electronic and mechanical components.
15. From 2003-2008, I was employed by the University of Wisconsin-Madison's Biomechanics laboratory in the Department of Kinesiology, where I was also a teaching assistant in biomechanics. While there, my

research responsibilities included designing equipment with ergonomic handles for efficient use. While teaching biomechanics at the University of Wisconsin-Madison, I regularly instructed on the proper use of canes, crutches, and arm crutches in relationship to biomechanical principles, taking into consideration user ergonomics.

16. From 2008-2020, I was employed by Exponent, Inc., where I worked as a Senior Managing Engineer. At Exponent, I worked on various mechanical engineering projects that frequently related to consumer product design, machinery design, product and machinery performance, and human interaction with consumer products and industrial equipment.
17. In approximately 2010-2013, I conducted an engineering analysis of vacuum cleaner products. In particular, I single-handedly developed tests to assess the dust-collection efficacy of various physical-media filters used in bagless, cyclonic vacuum cleaners. My work on this project included product tear-downs to analyze the efficacy and safety of these vacuum cleaners and their filters. I also developed a protocol for nationwide in-home testing of vacuum cleaner filtration system efficacy across climates, as well as a protocol for analyzing the materials collected by the vacuum cleaners and their filters. This analysis considered, among other things, the size of particulates that were collected by vacuum cleaner cyclones and

filters.

18. In approximately 2010-2014, I conducted an analysis of collets—a pipe and tube connection device—under dynamic fluid pressurization conditions. After initial and traditional methods of testing the collets, which included X-Rays and geometric measurements, failed to identify the source of collet failure, I developed novel tests intended to mimic real-world conditions. These novel tests involved a hydro-static test and a dynamic test. The hydro-static test involved exposing the collets to extended periods of pressurized conditions. The dynamic test involved development of a computer-controlled manifold system that could selectively pressurize, de-pressurize, and drain collets in various sequences to determine the difference in performance. The novel tests I developed successfully determined the root cause of the collet failures.
19. In approximately 2012-2017, I performed a wholistic safety and efficacy analysis of various consumer vacuum-sealer products. In particular, I conducted tear-down analyses, reviewed the vacuum-sealers' performance for safety and functionality considerations, analyzed the function and operation of vacuum pumps, analyzed fluid flow paths, and analyzed the operation of small valves. I further worked with an electrical engineer to review the safety of the products' internal electronics.

20. Since approximately 2013 to the present, I have used principles of biomechanics, as well as principles of physics, to analyze the effect on a user or nearby operator of pressure cookers that failed, ejecting hot liquid. This work involved analyses of, among other things, forces that are applied to pressure cookers, the physics involved in the operation of pressure cookers, and biomechanical principles.
21. In approximately 2013-2016, I used industry testing methods and developed and designed novel experiments and testing related to fluid flow analysis for a consumer garden hose. The analysis involved testing the hose's strength, durability, environmental performance (temperature and UV exposure), and material selection in connection with user operation. I further designed computer-controlled pressurization and de-pressurization systems for these garden hoses. The system was initially powered pneumatically with compressed air driven through a manifold in conjunction with a tank of water. When scaled, the system involved two parallel pumps that pressurized two groups of manifolds using computer-controlled valves in series to pressurize and de-pressurize expandable garden hoses. Developing this system involved, among other things, selecting the appropriate fluid power components and optimizing fluid flow paths.

22. In approximately 2015, I applied my biomechanical background to the use of cane handles, which involved assessing the amount of force to be applied to the handle and developing a handle that could both support that amount of force reliably and house a battery for novel electronics that were embedded in the cane.
23. In approximately 2015-2017, I investigated various properties of a garden hose ball valve. I worked as a part of a team to investigate valve properties, including materials, geometry, and seal selection. We further investigated fluid flow through the valve to ensure that the flow was optimized by analyzing valve shape with the Bernoulli equation.
24. In approximately 2016, I conducted an analysis of a cordless, handheld consumer leaf blower. In particular, I analyzed the functioning, operation, and failure of blower motors and fans in relation to the direction of fluid flow within a consumer leaf blower. This analysis concerned, among other things, consideration of fluid flow and mechanical design of leaf blowers, specifically regarding fan blade failure and its potential impact on the consumer-operator.
25. In approximately 2017-2018, I conducted an efficacy analysis of hand grips for ergonomic handheld hose nozzles. This analysis included a review of handheld nozzles in the marketplace that were advertised as

ergonomic, as well as biomechanically modelling postures expected to be associated with the ergonomic handheld nozzles. To biomechanically model these handheld nozzles, I used a program called 3DSSPP, which models, among other things, human balance and effort levels. This program can be used calculate human joint torque based on operator input, which I used (and continue to use) to analyze the ergonomics of holding various handles, including handles for household consumer products.

26. I further used 3DSSPP to model biomechanics for use in household consumer products and industrial products. For example, in my paper, *Analytical Model for Estimating Knee Loads During Ladder Climbing*, published in the 2013 edition of the ASME International Mechanical Engineering Congress Exposition, I discussed how force output at the hands based on arm posture influences the forces within the knee joint. At a high level, this involved analyzing the ergonomics of how posture influences likely force output of limbs, particularly in connection with household consumer products, specifically ladders.
27. In approximately 2018-2020, I analyzed the operation of computer-controlled blowers, manifolds, valves, and sensors in consumer air mattresses. In particular, the analysis concerned the ability to control and maintain constant air pressure within air mattresses at particular pressure

set points. This analysis concerned, among other things, fluid dynamics, fluid flow, fluid path selection, and changes in pressure.

28. In 2021, I published a paper, *Characterization of the Release of Heated and Pressurized Water from a Pressure Cooker*, in the Journal of Burns. In this paper, I analyzed and described how fluid is ejected from a pressure cooker as a result of a flash boil event. In this analysis, I considered the operation of an exemplary household pressure cooker, analyzing fluid dynamics resulting from the trade-off between volume of liquid and pressure on fluid dynamics and its effect on consumer-users.
29. I have provided my full background in the curriculum vitae that is attached as Exhibit 1003.

III. DOCUMENTS AND MATERIALS CONSIDERED

30. In forming the opinions expressed in this Declaration, I relied upon my education, training, knowledge, and experience in the relevant field of the art, as well as information pertaining to the documents described below.
31. In preparing this Declaration, I have reviewed the '477 patent and its file history, as well as the Dimbylow, Howes, Brown, and Vuijk prior art references on which my opinions are based. Other references and documents that I have reviewed are mentioned below. These references and documents reflect the state of the relevant art at the time of the alleged

invention and the background knowledge of a POSA.

32. I have also reviewed the Patent Owner (“PO”)’s infringement contentions served in the related litigation, *SharkNinja Operating LLC v. Dyson, Inc.*, No. 1:23-cv-12372 (D. Mass.) (the “Litigation”).

IV. LEGAL PRINCIPLES

33. Dyson’s counsel has informed me of certain legal standards. I have applied these understandings in my analysis as detailed below. I am not an attorney and offer no legal opinions.
34. I have been informed and understand that a patent claim is invalid if it is obvious, and that obviousness requires that the claim be obvious from the perspective of a person of ordinary skill in the relevant art at the time of the alleged invention. I have been informed and understand that a claim may be obvious in view of a single prior art reference, or may be obvious in view of a combination of two or more prior art references.
35. I have been informed and understand that the level of ordinary skill in the art may be determined by considering such factors as the education level of those working in the field, the sophistication of the technology, the types of problems encountered in the art, the prior art solutions to those problems, and the speed at which innovations are made. I have been informed and understand that not all of these factors need be considered

and that one or more of these factors may control.

36. I have been informed and understand that an obviousness analysis is based on several factors, including the scope and content of the prior art, what differences, if any, existed between the alleged invention and the prior art, and the level of ordinary skill in the pertinent art at the time of the alleged invention.
37. I have been informed and understand that to determine whether a claim is obvious, it is appropriate to consider, among other factors:
38. (1) whether the teachings of the prior art references disclose known concepts combined in familiar ways, and when combined, would yield predictable results; (2) whether a person of ordinary skill in the art could implement a predictable variation, and would see the benefit of doing so; (3) whether the claimed elements represent one of a limited number of known design choices, and would have a reasonable expectation of success by those skilled in the art; (4) whether a person of ordinary skill would have recognized a reason to combine known elements in the manner described in the claim; (5) whether there is some teaching or suggestion in the prior art to make the modification or combination of elements claimed in the patent; and (6) whether the innovation applies a known technique that had been used to improve a similar device or method in a similar way.

39. I further have been informed and understand that while it may be helpful to identify a reason for this combination, common sense should guide and no rigid requirement of finding a teaching, suggestion, or motivation to combine is required.
40. I further have been informed and understand that certain factors called secondary considerations may be considered in evaluating the obviousness of a claim. I understand that such secondary considerations include, among other things, commercial success of the alleged invention, skepticism of those having ordinary skill in the art at the time of the alleged invention, unexpected results of the alleged invention, any long-felt but unsolved need in the art that was satisfied by the alleged invention, the failure of others to make the alleged invention, praise of the alleged invention by those having ordinary skill in the art, and copying of the alleged invention by others in the field. I have been informed and understand that there must be a nexus—a connection—between any such secondary considerations and the alleged invention. I also have been informed and understand that contemporaneous and independent invention by others is a secondary consideration tending to show obviousness.
41. I have been informed and understand that a prior art reference may expressly or inherently describe a limitation of a claim. I have been

informed and understand that if the prior art necessarily includes or functions in accordance with a claim's limitation, then the prior art inherently discloses that limitation. I have been informed and understand that to establish inherency, the evidence must make clear that the missing descriptive matter is necessarily present in the item of prior art and that it would be so recognized by persons of ordinary skill in the art.

V. PERSON OF ORDINARY SKILL IN THE ART

42. In my opinion, a Person of Ordinary Skill in the Art ("POSA") in the subject matter of the '477 patent would have had a bachelor's degree in mechanical engineering or a similar field and 2-3 years of experience in machine design, including machines that include fluid dynamics or fluid paths, such as vacuum cleaners. Additional education could offset less experience and vice versa, and a POSA could have also obtained similar knowledge and experience through other means.

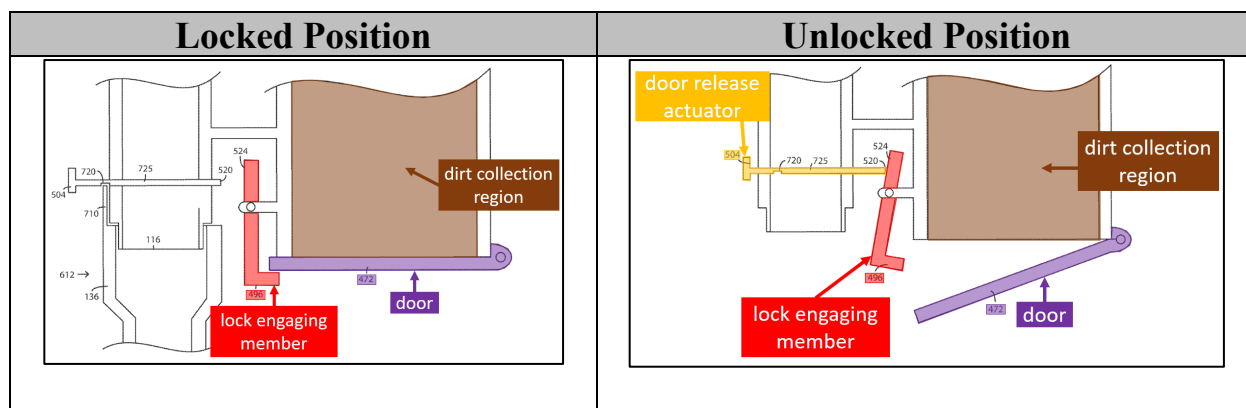
43. I have been a POSA since at least 2003. The opinions I am offering are from the perspective of a POSA at the time of the alleged invention. For the purposes of my opinions below, I have been asked to assume that the relevant time frame is the relevant priority date for the Challenged Claims.

VI. TECHNOLOGY BACKGROUND

44. The Challenged Claims are directed to hand vacuum cleaners having a

dirty air inlet and an air treatment member that includes a dirt collection region and an openable door that is “inhibited from opening” “[w]hen an accessory is connected to the dirty air inlet.” *See* Ex. 1001, Abstract, Fig. 1.

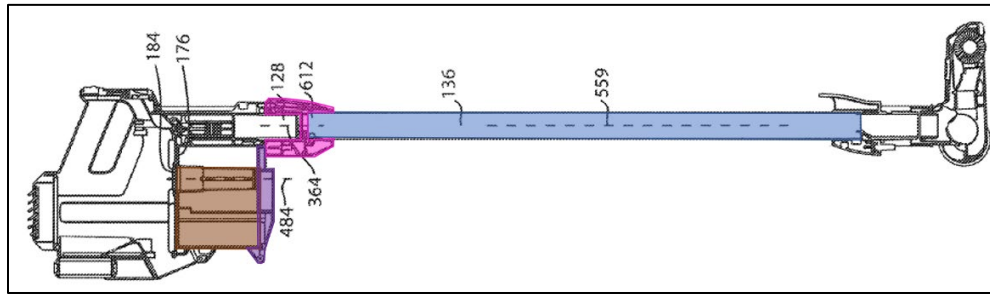
45. The '477 Patent describes and claims different ways of purportedly accomplishing this objective. One way involves a door lock with “**lock engaging member**”—e.g., a tab—to hold the “**dirt collection region**” “**door**” in a closed position, and a “**door release actuator**”—e.g., a button connected to a push-rod—that a user presses to move the **lock engaging member**, thereby opening the door, as shown in the annotated figures below:



Ex. 1001, 35:23-29, Figs. 33-34; *see also id.*, claim 1.

46. Another way is an **accessory** (“**wand 136**”) with “a **collar 702** which is sized to overl[e]” and “abut[]” a portion of the **openable door**,” “thereby inhibiting or preventing the openable door from opening when the **wand**

is connected,” as shown in the annotated figure below:



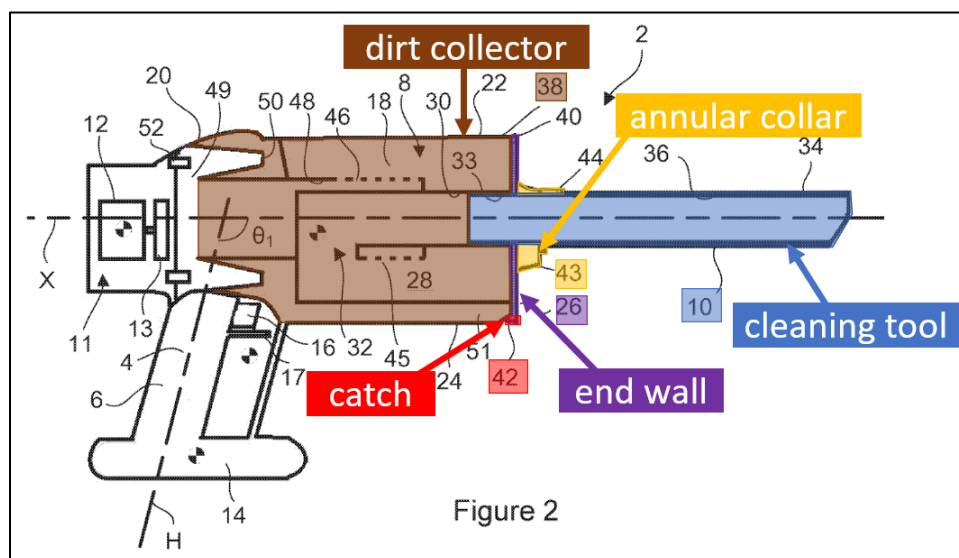
Ex. 1001, 36:33-47, Fig. 5A.

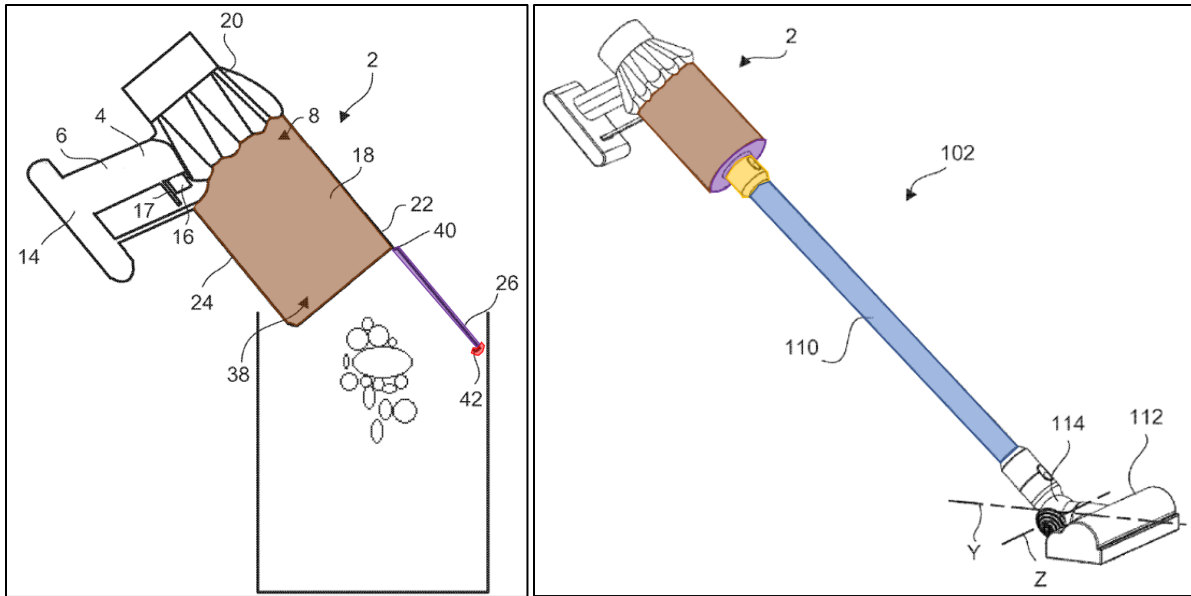
47. According to the '477 Patent, this “prevent[s] a user from inadvertently opening the dirt collection region” during use, as “the presence of a connected accessory may indicate that it is more likely that the surface cleaning apparatus is being used to clean a surface.” Ex. 1001, 12:42-13:3.
48. In my opinion, the '477 Patent’s described purpose of preventing the inadvertent opening of a vacuum cleaner’s dust collection chamber’s openable door while the cleaner is in use is not something that was new at the time of the '477 Patent’s alleged invention. Nor are the '477 Patent’s described and claimed mechanisms for purportedly accomplishing this objective new or inventive.
49. I have reviewed PO’s infringement contentions in the related litigation. Patent Owner (“PO”) accuses Dyson hand/stick vacuums of infringing claims 1-7, 12, and 14-15 of the '477Patent, as shown in the image below:



Ex. 1016, 2.

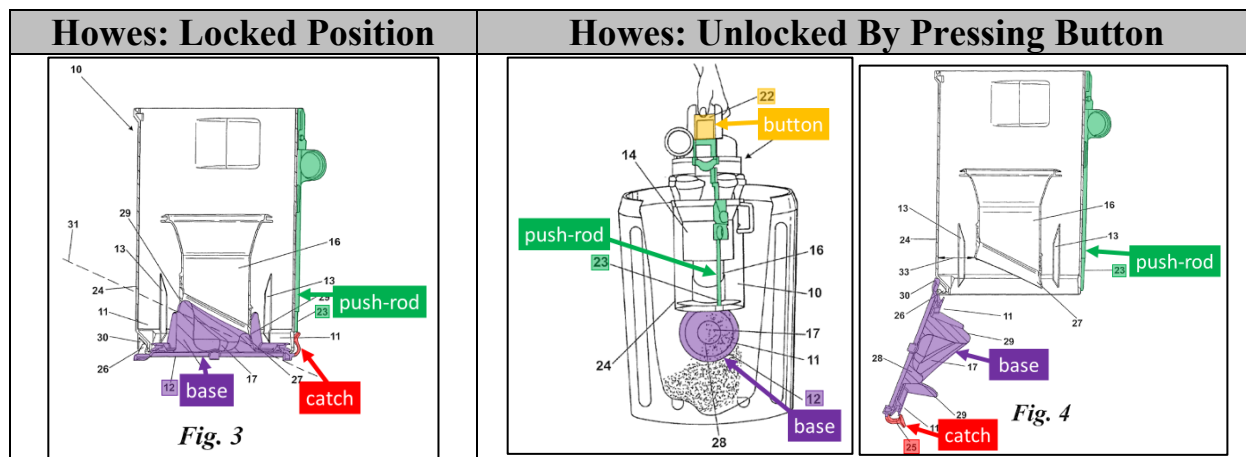
50. However, six months before the '477 Patent's earliest claimed priority date, Dyson filed for its own related patent, US 2017/0079489 ("Dimbylow"), which is prior art and teaches a cleaner with an openable "end wall" that "is held in a closed position by a user-operable **catch 42**," and a connectable "**cleaning tool 10**" with "an **annular collar 43** that abuts the **end wall 26** [of the **dirt collector 38**] thereby holding the **end wall 26** in the closed position" to "prevent accidental opening of the **end wall 26** while the **cleaning tool 10** is attached," as shown in the annotated figures below:





Ex. 1005 ¶37, Fig. 6, Figs. 2, 6, 8.

51. Further, in my opinion, other Dyson prior art, such as U.S. Patent No. 8,021,453 (“Howes”) teaches a nearly identical bin-locking configuration to Dimbylow, but with a door release actuator.
52. Like Dimbylow, Howes is a prior art Dyson patent that teaches “a separating unit” for a cyclonic vacuum cleaner with a pivot-open dirt collection chamber door (a “base”) that is held in place by a “catch” that is be released “[i]n order to empty the separator unit.” Ex. 1006, Abstract, 3:64-67, 4:1-10. However, whereas in Dimbylow, a user releases the door “catch” manually, Ex. 1005 ¶37, Howes teaches using a door release actuator: a user presses a “button” that is “linked to” a “push-rod” on a side of the dust bin that “is urged against” and releases the “catch,” opening the “base,” as shown in the annotated figures below:



Ex. 1006, Abstract, 4:2-10, Figs. 2b-4.

53. I have also reviewed the file history of the '477 Patent. While Dimbylow was before the United States Patent and Trademark Office during prosecution, Howes was not.

54. In my opinion, as set forth in more detail below, these references, and the others described herein, invalidate every Challenged Claim of the '477 Patent.

VII. BACKGROUND OF THE '477 PATENT

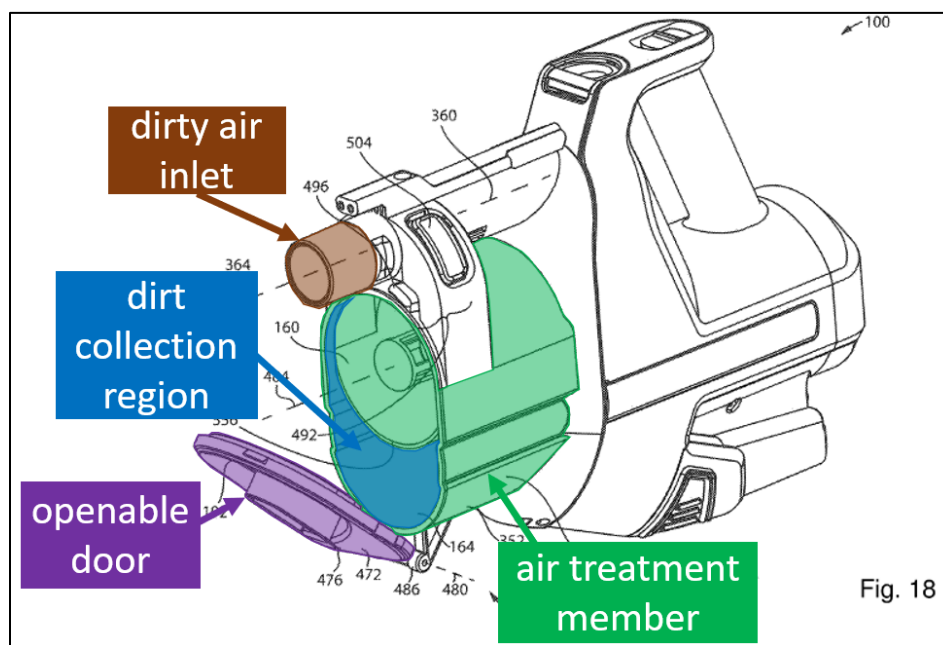
55. The '477 Patent is titled "Surface Cleaning Apparatus." Ex. 1001, Title. The '477 Patent states that it issued on February 25, 2020 from U.S. Patent Application No. 15/685,962, filed on August 24, 2017, which claims to be a continuation-in-part of application No. 15/095,714, filed on April 11, 2016. Ex. 1001, Cover.

A. Summary of the '477 Patent's Specification

56. The '477 patent states that it "relates to surface cleaning apparatus[es],"

and in particular to a “surface cleaning apparatus [that] comprises a portable surface cleaning apparatus, such as a hand vacuum cleaner or a pod.” Ex. 1001, 1:13-16.

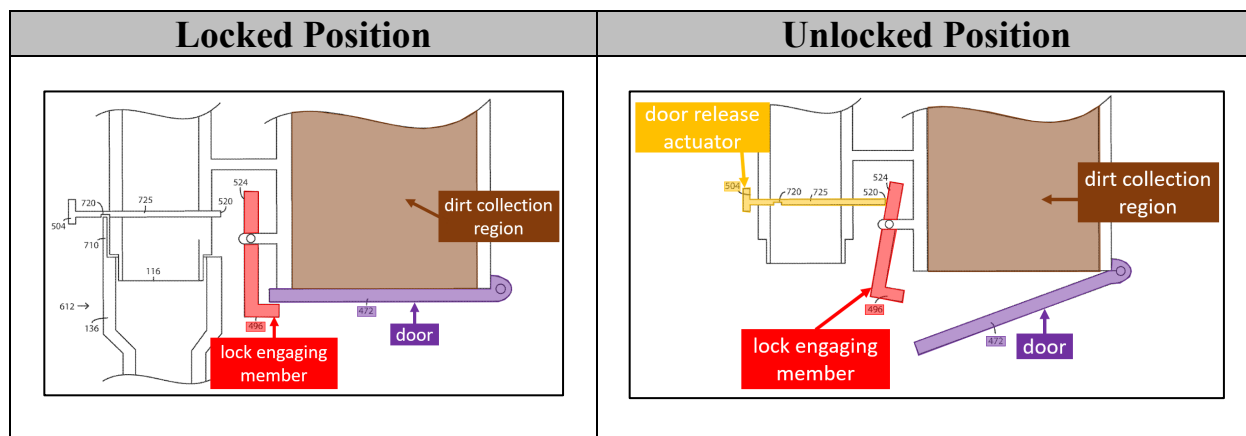
57. The '477 Patent's specification describes a vacuum cleaner that has “a **dirty air inlet** and an **air treatment member**,” which “includes a **dirt collection region** having an **openable door**” that is “inhibited from opening” “[w]hen an accessory is connected to the **dirty air inlet**,” as shown in the annotated figure below:



Ex. 1001, Abstract, Fig. 18.

58. The '477 Patent's vacuum's **openable door** has a “lock” with a “**lock engaging member**” (e.g. a tab) that holds the “**door**” in a closed position, and a “**door release actuator**” (e.g., a button with a push-rod) that a user

presses to move the **lock engaging member**, opening the door:



Ex. 1001, 35:23-29, Figs. 33-34; *see also id.*, claim 1.

59. According to the '477 Patent, this “prevent[s] a user from inadvertently opening the dirt collection region” during use, as “the presence of a connected accessory may indicate that it is more likely that the surface cleaning apparatus is being used to clean a surface.” Ex. 1001, 12:42-13:3.
60. The '477 patent specification includes 41 columns of descriptions of various embodiments, and 38 figures purportedly depicting these embodiments.

B. Prosecution History of the '477 Patent

61. I have reviewed the prosecution history of the '477 Patent. The following is my understanding:
62. During prosecution, the Examiner found that “citation by [A]pplicant of a large number of prior art references, without pointing out how each reference is material to the examination of the application, can act to

obscure any pertinent information by burying the information in a mass of document[s], rather than to clearly bring the information to the [E]xaminer's attention." Ex. 1004, 2488 (collecting cases and citing MPEP 2004). The Examiner then asked the Applicant to "highlight those documents which ... are known to be of significance." *Id.* PO did not do so. *See id.*, 2558-71.

63. During prosecution, the Examiner found that Dimbylow teaches claim elements [1pre] through [1c] and essentially all of [1d], except for the "door release actuator" limitation.
64. During prosecution, PO's then-pending claim 1, shown below, contained identical elements to elements [1pre] through [1c] of issued claim 1:

CLAIMS:	
1.	A surface cleaning apparatus comprising:
(a)	an air flow path from a dirty air inlet to a clean air outlet and including a suction motor;
(b)	an air treatment member comprising a dirt collection region having an openable door; and,
(c)	an accessory removably connectable to the dirty air inlet wherein, when the accessory is connected to the dirty air inlet, the openable door is inhibited from opening.

Ex. 1004, 89.

65. The Examiner rejected then-pending claim 1 as anticipated by Dimbylow. *Id.*, 2487-91. That is, the Examiner found that Dimbylow teaches all of issued claim 1, elements [1pre] through [1c].

66. Further, then-pending claims 14 and 21 contained essentially all of the subject matter of issued claim [1d], except the claimed “door release actuator,” as shown:

Then-Pending Claim 14	Then-Pending Claim 21	Issued Claim 1, Element [1d]
The surface cleaning apparatus of claim 1 further comprising: an openable door lock wherein the openable door is moveable to an open position when the openable door lock is moved to an open position and wherein the openable door lock is inhibited from moving to the open position when the accessory is connected to the dirty air inlet.	The surface cleaning apparatus of claim 20 wherein the lock deactivation member includes a moveable portion which moves along a path from a first position when the lock engaging member is in the engaged position to a second position when the lock engaging member is in the disengaged position, the moveable portion has an abutment surface and the blocking portion is positioned in the path of the abutment surface when the accessory is connected to the dirty air inlet.	(d) an openable door lock comprising a lock engaging member and a door release actuator drivingly connected to the lock engaging member , the lock engaging member moveable between an engaged position in which the lock engaging member secures the openable door in a closed position and a disengaged position in which the openable door is openable wherein the lock engaging member is inhibited from moving to the disengaged position when the accessory is connected to the dirty air inlet.

Id., 90-92; Ex. 1001, Claim 1.

67. The Examiner likewise rejected then-pending claims 14 and 21 as anticipated by Dimbylow. Ex. 1004, 89, 2487-91. Thus, the Examiner found that Dimbylow teaches nearly all of issued claim 1—essentially

everything except the “door release actuator.” PO never disputed that Dimbylow teaches these limitations, and I agree with the Examiner that Dimbylow teaches each of the limitations in then-pending claims 14 and 21.

68. In the same Office Action, the Examiner found that then-pending dependent claim 8—which requires a door release actuator—“would be allowable if rewritten in independent form including all of the limitations of the base claim” (i.e., then-pending claim 1). Ex. 1004, 89-90, 2489-90. PO then rewrote claim 8 in independent form, which issued as claim 1. *Id.*, 2559-60, 2564, 2580.
69. The Examiner’s Reasons for Allowance for claim 1 (and its dependent claims 2-12) stated that the “prior art of record” did not anticipate or render obvious element [1d]—which recites the “door release actuator”—in combination with the rest of the limitations in claim 1. *Id.*, 2580.
70. Issued claim 14 is substantially the same as issued claim 1, but does not require “the openable door [be] inhibited from opening” “when the accessory is connected to the dirty air inlet,” and instead requires the accessory be removably connectable “in air flow communication with” the dirty air inlet. *Compare* Ex. 1001, Limitation [1c] *with* Limitations [14c], [14f]. In my opinion Dimbylow’s accessory is in airflow communication

with the dirty air inlet, and thus the Examiner's findings with respect to issued claim 1 apply equally to issued claim 14.

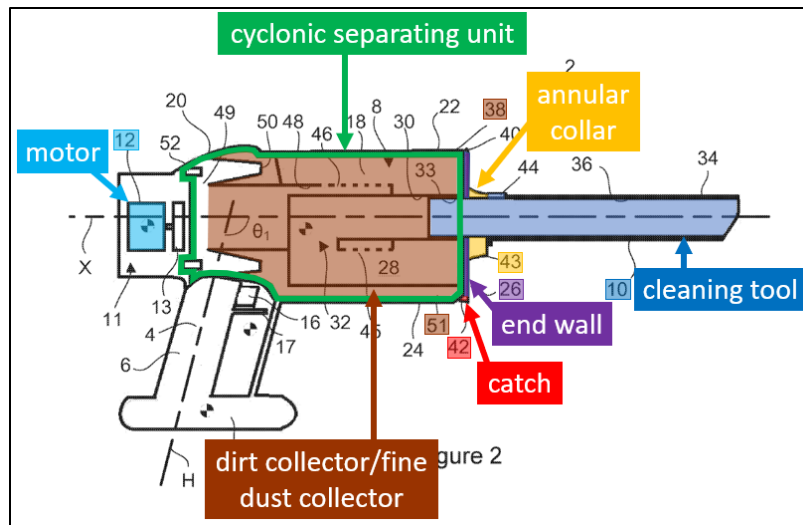
C. Priority Date of the Challenged Claims

71. For the purposes of my analysis, I have been instructed to apply and have applied a priority date of April 11, 2016 for the Challenged Claims.

VIII. BACKGROUND OF THE PRIOR ART

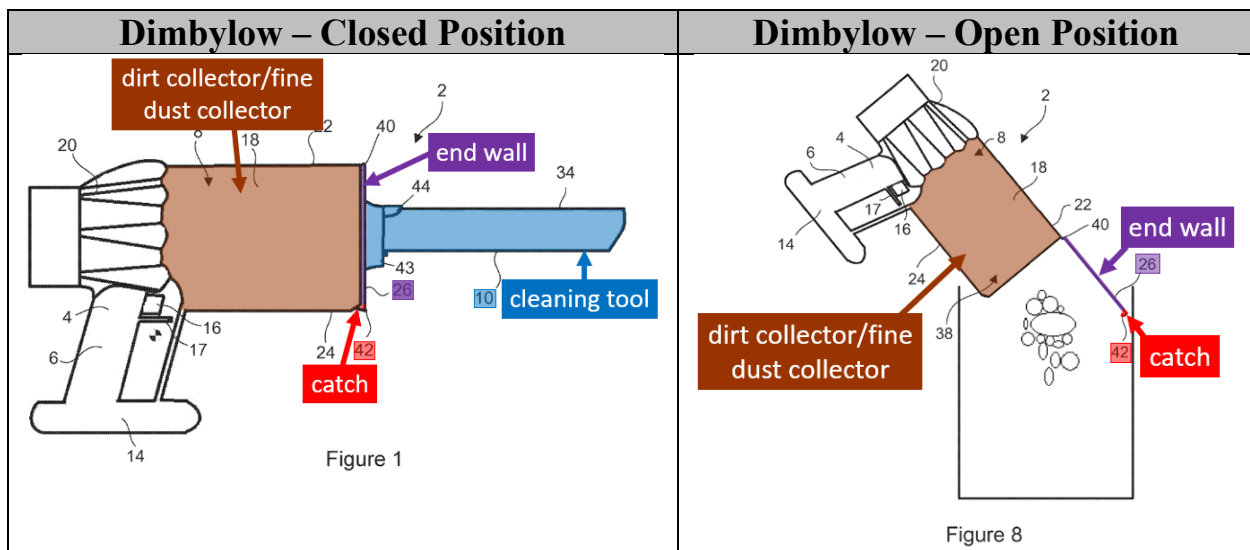
A. Dimbylow

72. Dimbylow is a Dyson U.S. patent publication from 2017. Ex. 1005, Cover. Dimbylow describes a “handheld vacuum cleaner that is particularly suitable for cleaning confined spaces.” *Id.* ¶8. These styles of handheld vacuum cleaner are sometimes referred to as a hand/stick vacuum cleaner. Dimbylow teaches that its vacuum cleaner has a “**cyclonic separating unit 8**” with a “**dirt collector 38/fine dust collector 51**,” a “**cleaning tool 10**” with an “**annular collar 43** that abuts the **end wall 26**,” which “is held in a closed position by a user-operable **catch 42**,” and a “**motor 12**” as shown in the annotated figure below:



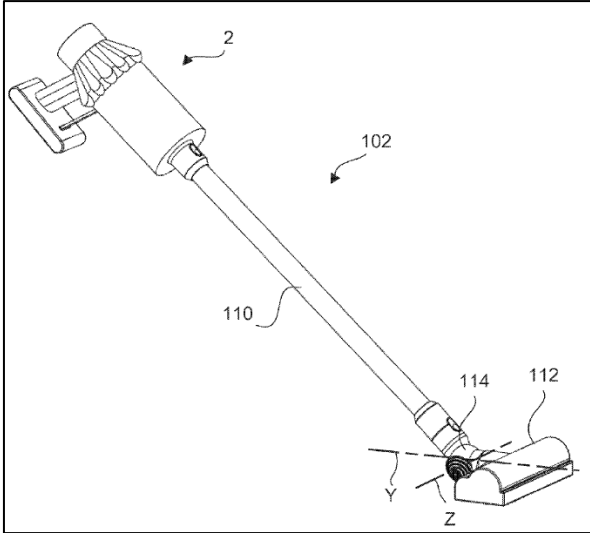
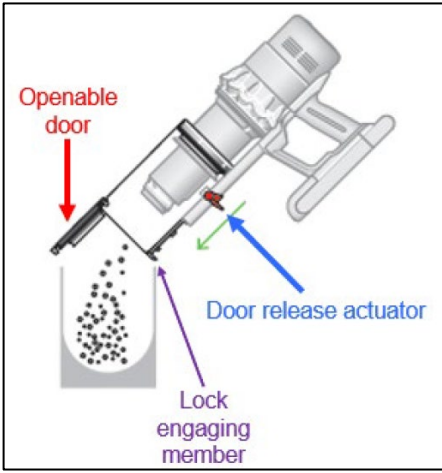
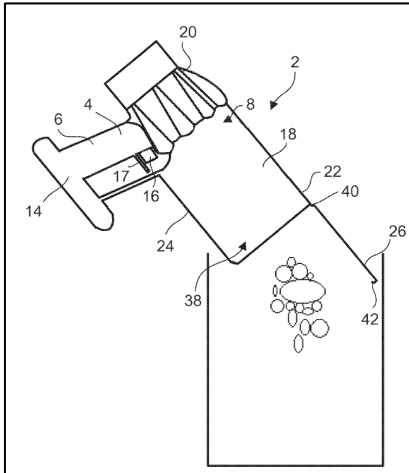
Id. ¶¶31, 37, 48, Fig. 2.

73. Dimbylow teaches how to empty its vacuum cleaner’s “**dirt collector 38/fine dust collector 51.**” To do this, “the user first disconnects the **cleaning tool 10,**” then “release[s]” “**catch 42**” “and the **end wall 26** [is] pivoted from its closed position into its open position” as shown in the annotated figures below:



Ex. 1005 ¶48, Figs. 1, 8.

74. In the co-pending litigation, PO accuses products that resemble the Dimbylow patent's configuration of infringing claims 1-7, 12, and 14-15, as shown in the images below:

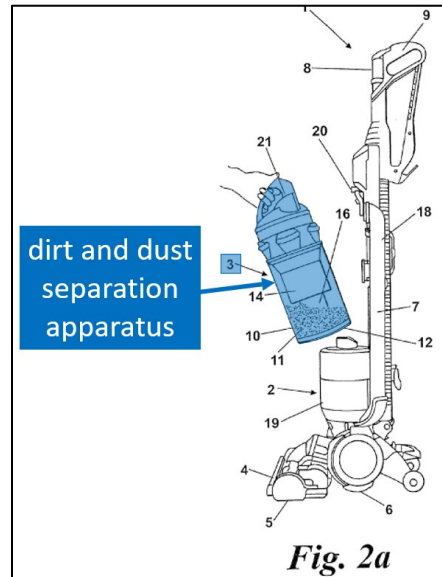
Accused Products	Dimbylow
	
	

Ex. 1016, 2; Ex. 1018 (A-4), 14 (annotations PO's).

B. Howes

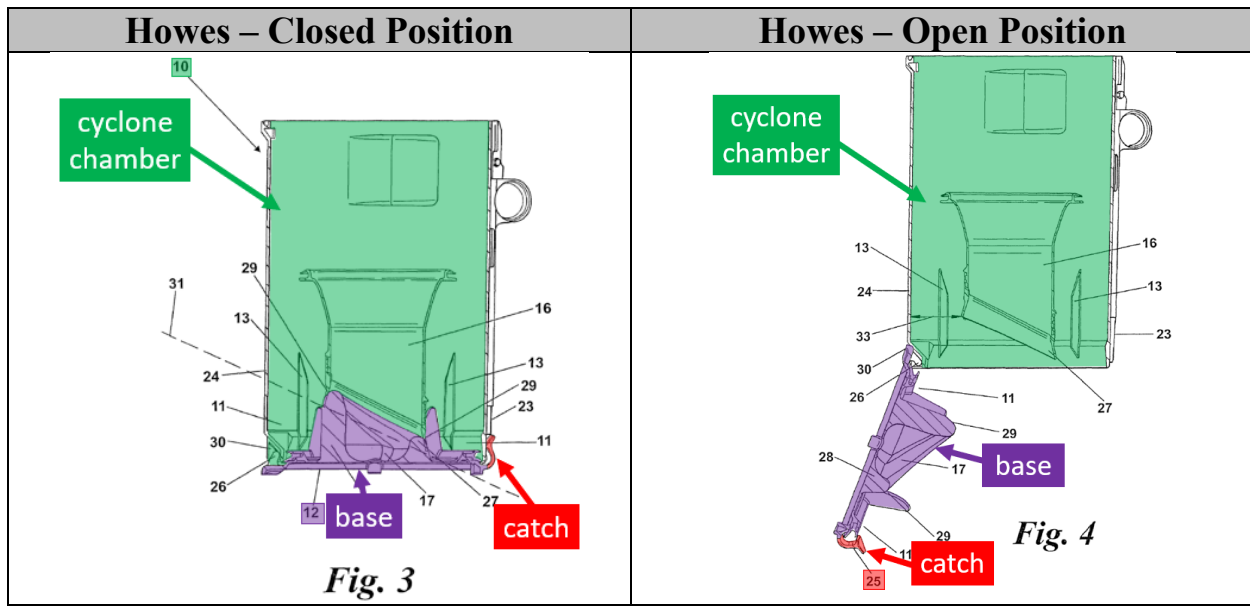
75. Howes is a Dyson patent from 2011. Ex. 1006, Cover. Howes teaches a

detachable “**dirt and dust separation apparatus 3**” as shown in the annotated figure below:



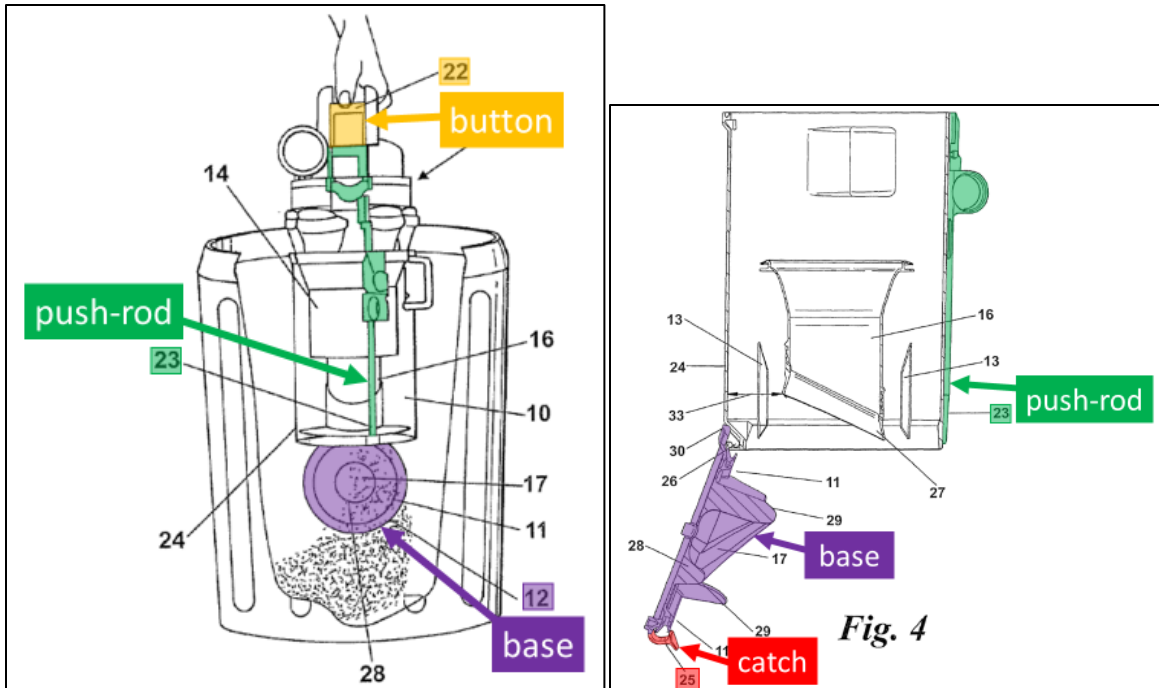
Ex. 1006, 3:3-5, Fig. 2a.

76. Like Dimbylow, Howes teaches that its separation apparatus has a “**base 12** ... attached to the **cyclone chamber 10** by means of a **hinge 26** to allow pivotal movement of the **base 12** between the open and closed positions” as shown in the annotated figures below:



Ex. 1006, 4:11-13, Figs. 3-4.

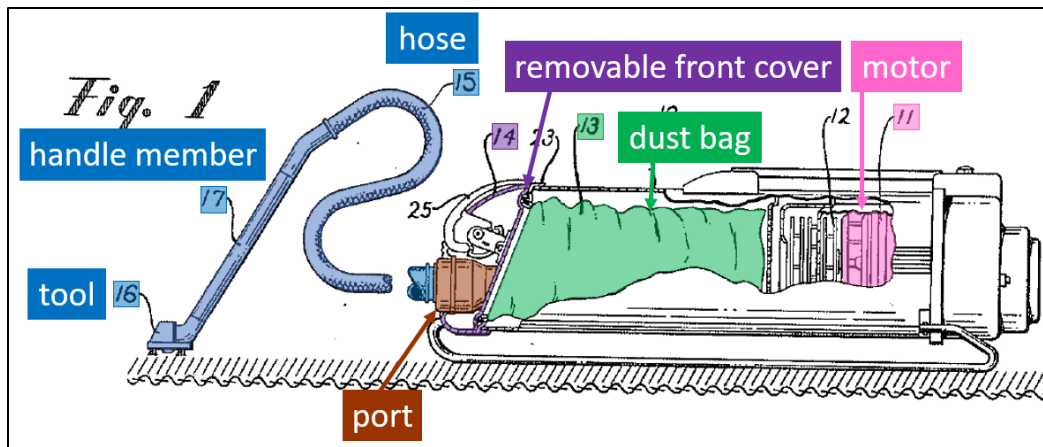
77. While, in my opinion, Howes and Dimbylow both use an identical or nearly identical “**catch**” to secure and open the chamber door, Howes differs from Dimbylow in that it teaches a more convenient and hygienic way to release the catch and open the door: “[T]he user presses the **button 22**,” such that the “**push-rod 23** is urged against [the] **catch 25**” and the “**base 12** ... move[s] into the open position,” as shown in the annotated figures below:



Ex. 1006, 4:2-10, Figs. 2b, 4.

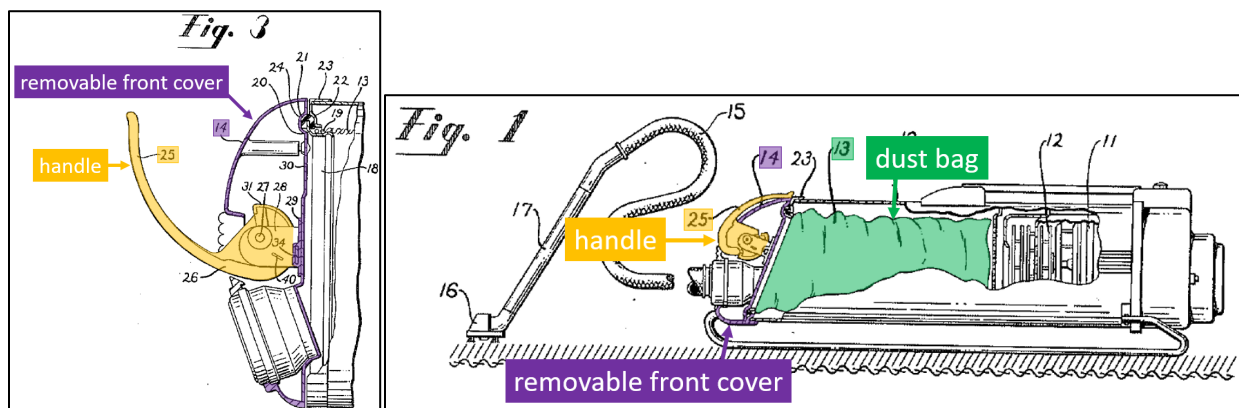
B. Brown

78. Brown is a U.S. patent from 1949. Ex. 1007, Cover. Brown teaches a “vacuum cleaner” with a “simple and efficient” “cover and cover latching means.” *Id.*, Title, 1:4-11. Brown’s vacuum includes a “motor 11,” a “dust bag 13,” a “removable front cover 14,” and an accessory (“hose 15,” “handle member 17,” and “cleaning tool 16”) removably connected to a “port” as shown in the annotated figure below:



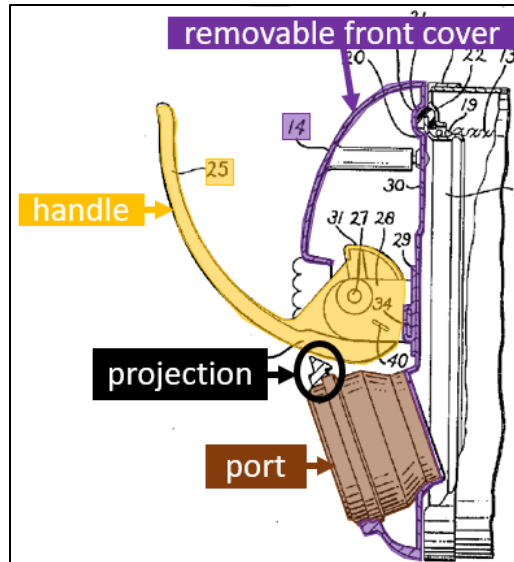
Id., 2:20-22, 1:40-46, 2:7-22, Fig. 1.

79. Brown teaches that its vacuum cleaner has a “**handle 25**” that the user “grasp[s] and move[s] about” “when it is desired to remove the **cover**,” thereby “permit[ting] access to remove **dust bag 13** to empty it” as shown in the annotated figures below:



Ex. 1007, 2:14-17, 3:24-32, Figs. 3, 1.

80. Brown’s “**port**” contains a **projection** that, as illustrated, provides resistance against “**handle**” movement, and opening Brown’s “**cover**” requires bending Brown’s “**port**,” as shown in the annotated figure below:

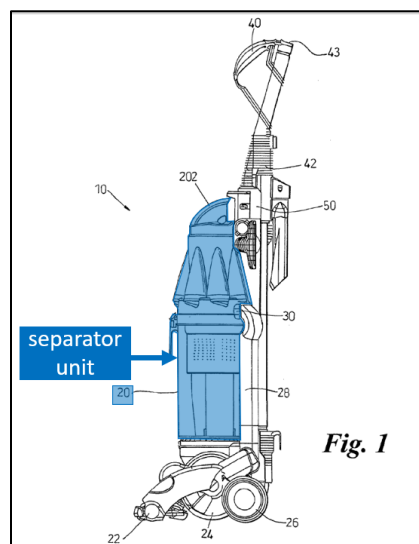


Ex. 1007, Fig. 3.

C. Vuijk

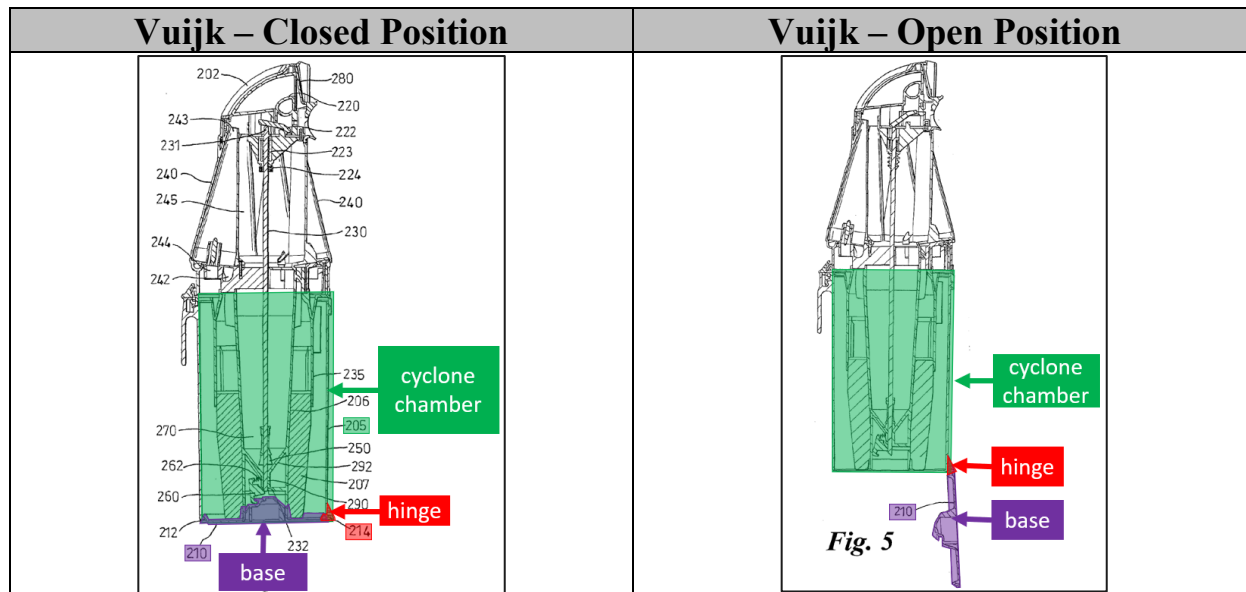
81. Vuijk is a Dyson PCT patent publication from 2002. Ex. 1008, Cover.

Vuijk teaches a detachable “**separator unit 20**” for a vacuum cleaner, as shown in the annotated figure below:



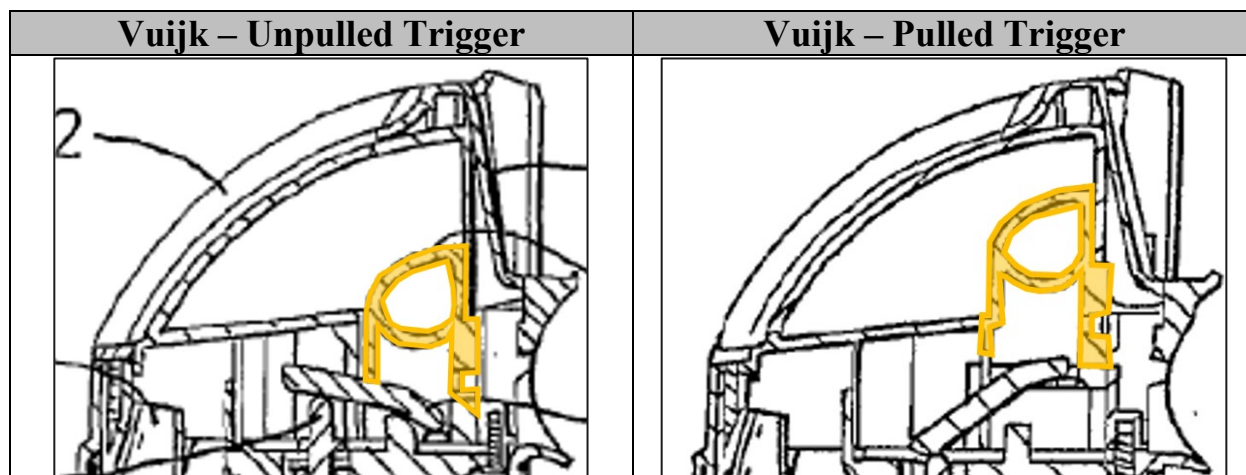
Id., Fig. 1.

82. Vuijk teaches that, to empty the separator unit, “**base 210**,” which “is **hinged 214** to the **cyclone chamber 205** to allow pivotal movement” moves from “a closed position” to “an open position,” as shown in the annotated figures below:



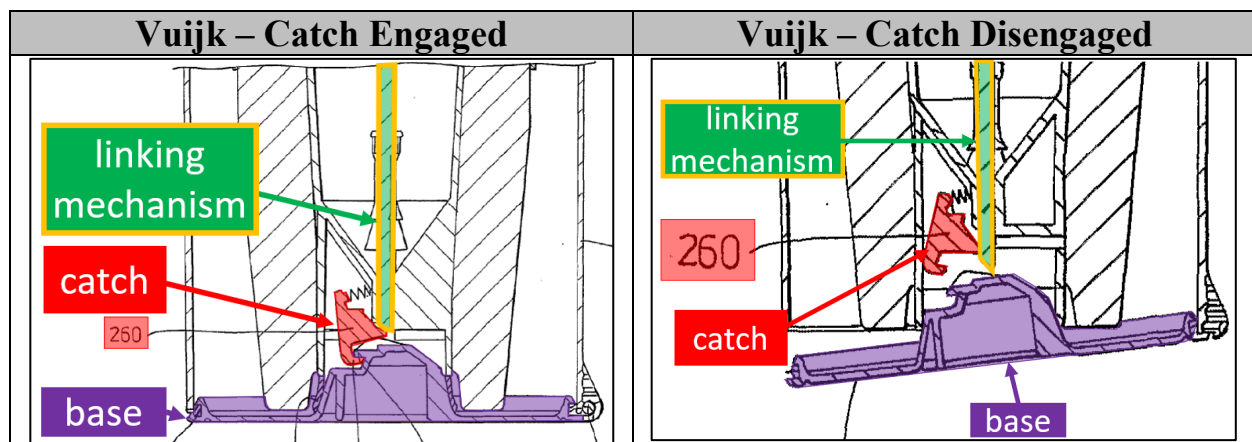
Ex. 1008, 2:22-23, 7:22-24, Figs. 1, 3, 5.

83. Vuijk also teaches that, to unlock the **base 210** for emptying, the user pulls **trigger 220** upwards, as shown in the annotated figures below:



Ex. 1008, 8:22-29, Fig. 7.

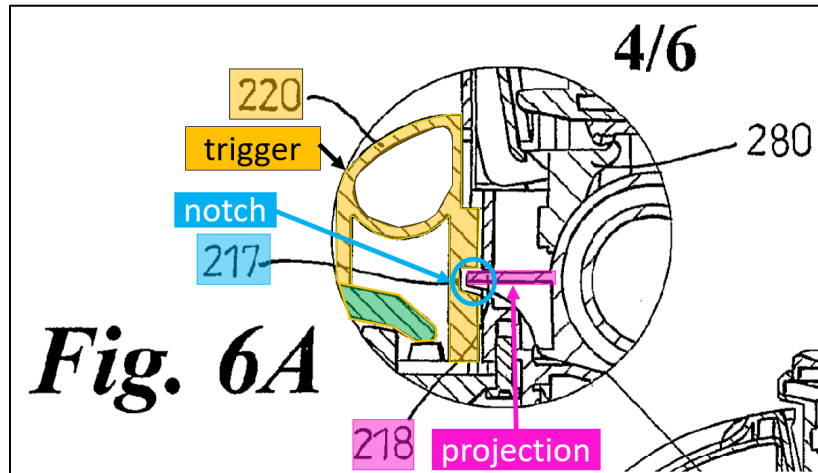
84. When “**trigger 220**” is pulled upwards, the “**linking mechanism**” “displac[es]” “**catch 260**,” which was previously “engage[d] with” and “h[e]ld the **base [210]** “in the closed position,” as shown in the annotated figures below:



Ex. 1008, 8:22-29, Fig. 7.

85. Vuijk also teaches a “feature ... which inhibits movement of the trigger release mechanism,” thereby inhibiting the base from pivoting open, which prevents a user from “accidentally releas[ing] the closure member” (i.e., “**base 210**”), which “avoids the mess which would result if the cleaner were operated with the closure member partially open.” Ex. 1008, 3:18-25, 5:4-5. Vuijk teaches that this feature includes “a **projection 218** which fits inside a **notch 217** on the **trigger 220**,” which “inhibit[s]” “the **trigger 220** ... from moving in the vertical direction which is necessary for the

closure member [(i.e., base)] 210 to be released,” as shown in the annotated figure below:



Ex. 1008, 10:7-12, Fig. 6A.

IX. CLAIM CONSTRUCTION

86. I am unaware of any claim construction determinations related to the '477 patent.

87. For purposes of this proceeding, I have been asked to consider and have considered whether the Challenged Claims are invalid as anticipated or obvious under their plain and ordinary meaning.

X. INVALIDITY OPINIONS: '477 PATENT

88. In my opinion, the Challenged Claims of the '477 patent are invalid based on the following references and combinations: claims 1-7, 12, and 14-15 are rendered obvious by the combination of Dimbylow and Howes; claims 1-20 are rendered obvious by Brown; and claims 1-20 are rendered obvious

by the combination of Brown and Vuijk; and it would have been obvious to a POSA to combine the teachings of these references.

89. As part of my obviousness analysis, I have considered the scope and content of the prior art, and whether any differences between the alleged invention and the prior art are such that the subject matter, as a whole, would have been obvious to a person having ordinary skill in the art at the time of the alleged invention, which I have been asked to assume was April 11, 2016, for the Challenged Claims of the '477 patent, as discussed above. I have also considered the level of ordinary skill in the pertinent art.

90. I describe in detail below the scope and content of the prior art, as well as any differences between the alleged invention and the prior art, on an element-by-element basis for each Challenged Claim of the '477 patent.

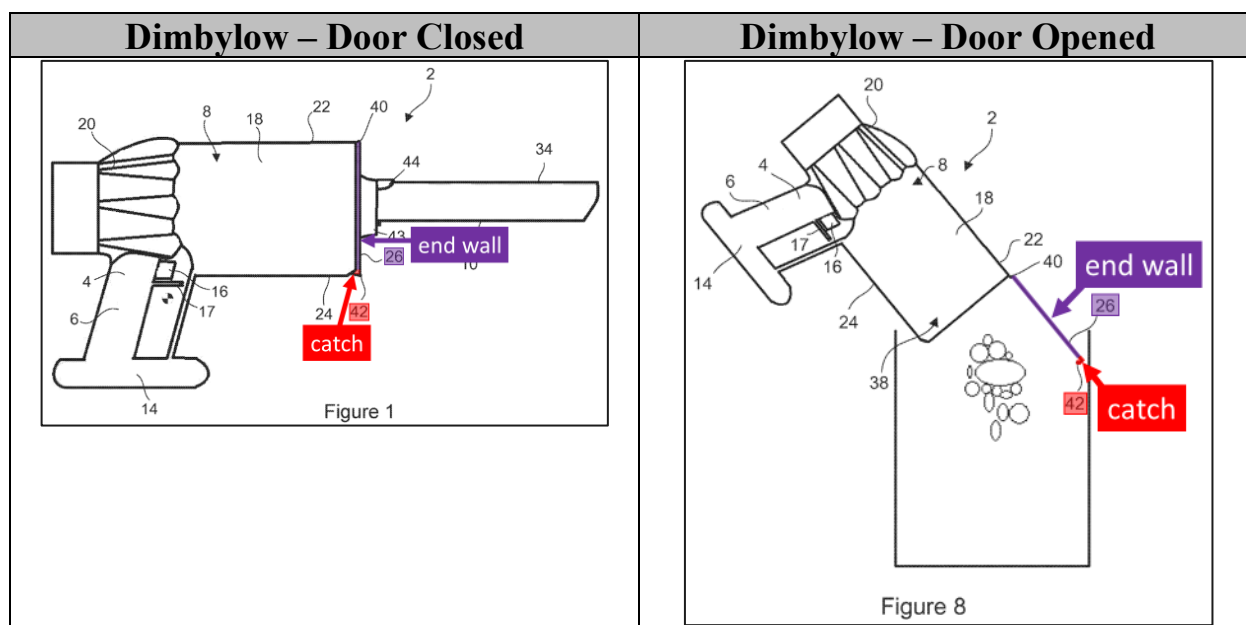
A. Ground 1: Dimbylow in Combination with Howes Renders Obvious Claims 1-7, 12, and 14-15

1. A POSA Would Have Combined Dimbylow and Howes

a. Scope and Content of the Dimbylow and Howes Prior Art References

91. As noted briefly above in the Background of the Prior Art section, Dimbylow is a Dyson patent publication from 2017 that teaches “[a] handheld vacuum cleaner.” Ex. 1005, Abstract. Dimbylow teaches that a user can empty its vacuum cleaner by “first disconnect[ing] the cleaning tool 10 or the wand 110,” “[t]hen, ... point[ing] the vacuum cleaner 2

towards a suitable receptacle ... into which the dirt is to be emptied,” and, finally, “release[ing]” “[t]he **catch 42**” (which, when engaged, holds a pivotable “**end wall 26**” closed), allowing “**end wall 26** [to be] pivoted from its closed position into its open position” as shown in the annotated figures below:



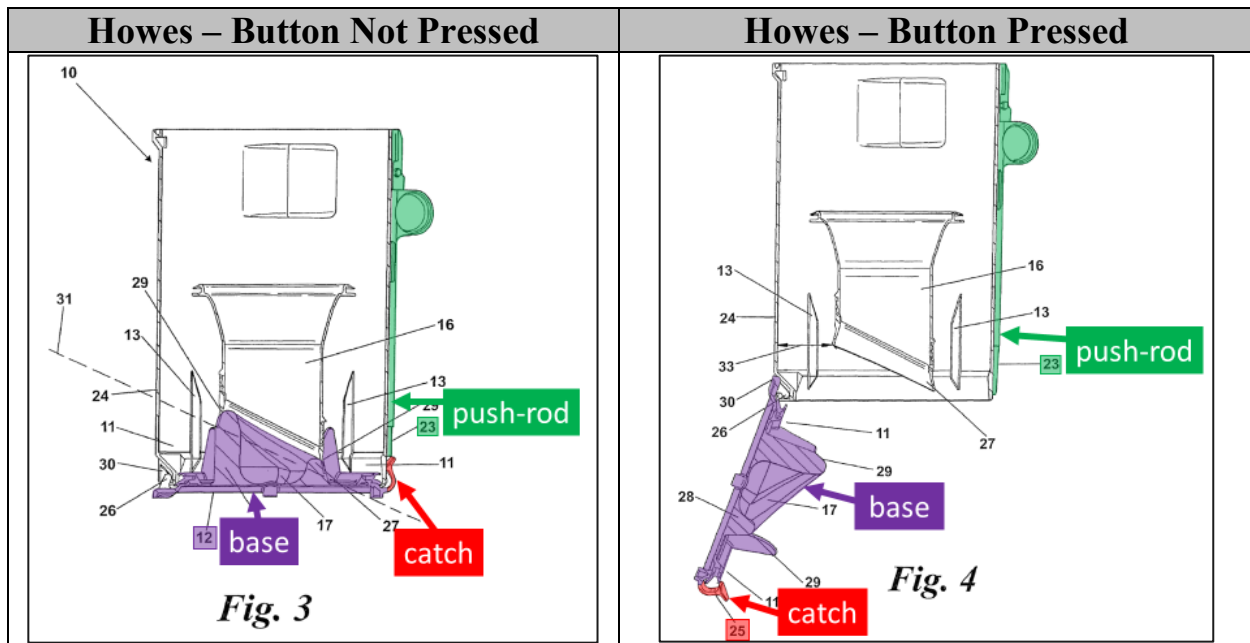
Ex. 1005, Abstract, ¶¶37, 48, Figs. 1, 8.

92. Dimbylow teaches that there are two advantages to this dust-emptying design. In my opinion, a POSA would have readily recognized and understood these to be advantages of Dimbylow’s design. First, Dimbylow teaches that its dust-emptying design is “very intuitive and ergonomic,” because, “[s]ince the cyclonic separating unit 8 is pointed away from the user, there is no need for the user to adopt a different grip

or posture from that which is adopted during normal cleaning.” Ex. 1005

¶48. Second, Dimbylow teaches that because “dirt exits the dirt collector 38/fine dust collector 51 from the end of the cyclonic separating unit 8 which is furthest from the handle 6 ..., there is less risk that dirt will spill ... onto a user during emptying.” *Id.* However, while Dimbylow describes releasing its “**catch 42**” to empty the cleaner, Dimbylow does not specify the method by which “[t]he **catch 42** is ... released by the user.” *Id.*; *see also id.* ¶37 (describing the “user-operable **catch 42**”).

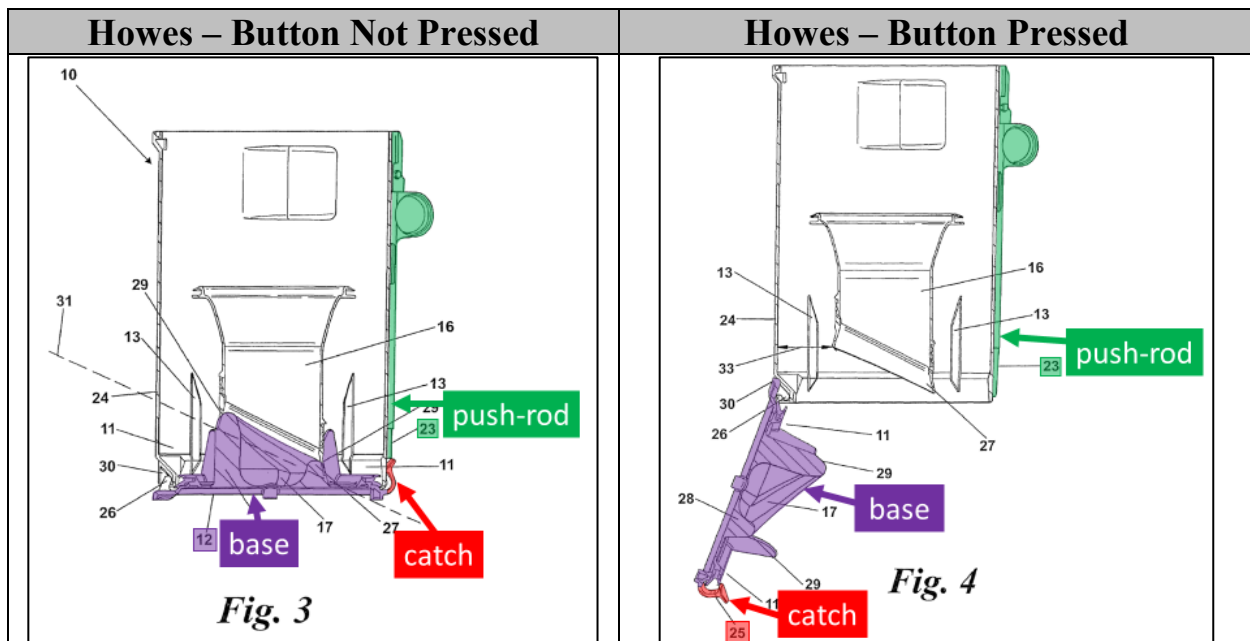
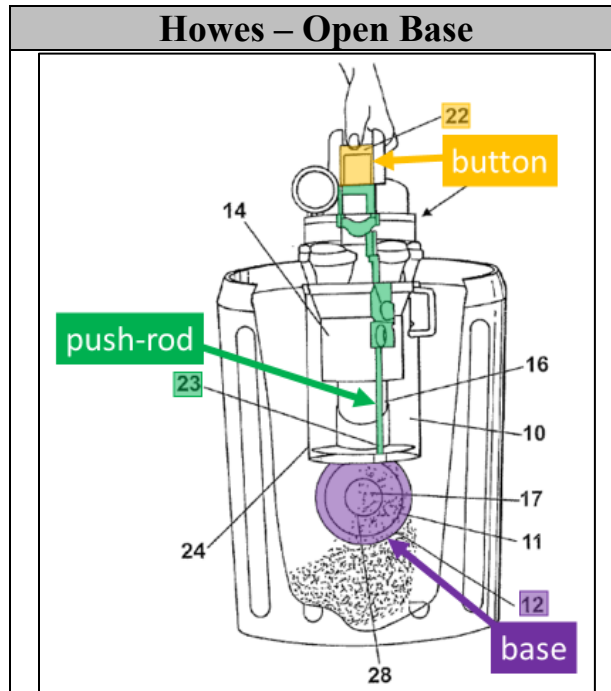
93. As described briefly above in the background of the prior art section, Howes is a Dyson patent from 2011. Ex. 1006. Howes teaches “a separating unit” for a “bagless vacuum cleaner” that “separate[s] dirt and dust by way of cyclonic, centrifugal or inertial separation” and that has a “**base**” that “is movable between a closed position and an open position” as shown in the annotated figures below:



Ex. 1006, 4:4-10, Figs. 2b-4.

94. As shown above, Howes’s “**base 12**” is held in the “closed position” by “**catch 25**.” Ex. 1006, 4:6-10, Figs. 3-4.

95. Howes further teaches a convenient and hygienic method of releasing the catch to open the base to empty the separating unit: “to empty the separator unit 3, the user presses the button 22” that is “linked to” a “push-rod 23.” Ex. 1006, 4:2-4, Fig. 2b. Howes explains that “[w]hen the user depresses the **button 22**, the **push-rod 23** is urged against a **catch 25** on the **base 12**,” and “[t]he force exerted by the **push-rod 23** overcomes any resistance of the **base 12** to move into the open position,” as shown in the annotated figures below:

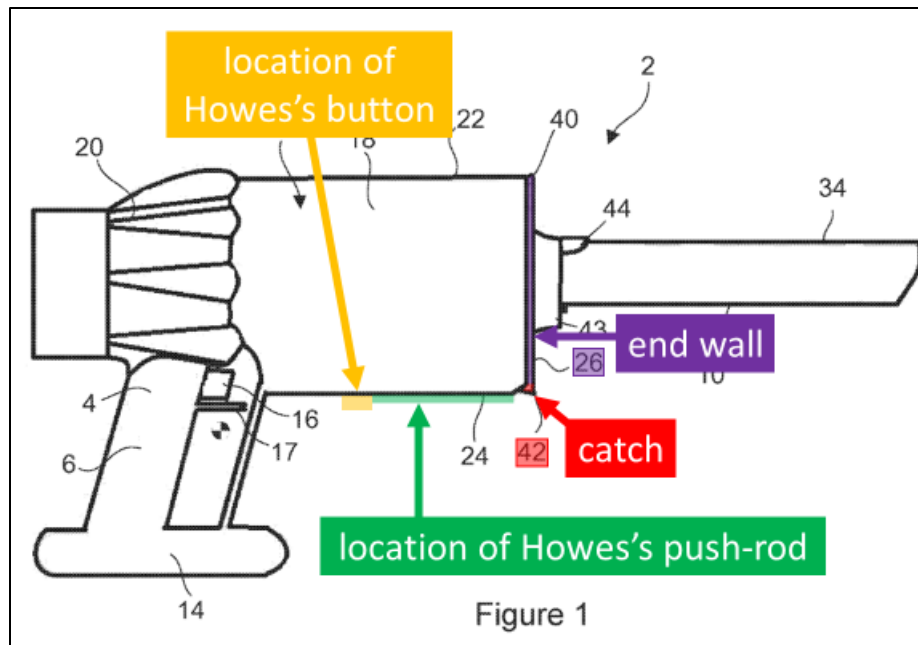


Ex. 1006, 4:4-10, Figs. 2b-4.

b. A POSA Would Have Been Motivated to Combine the Teachings of Dimbylow and Howes

96. Having reviewed the teachings of both Dimbylow and Howes, in my

opinion, a POSA would have been motivated to implement Howes's base "actuator mechanism" teachings (which include Howes's "button 22" and "push-rod 23") as the method by which Dimbylow's "catch 42 is ... released by the user," including because this would achieve Dimbylow's stated goal of "intuitive and ergonomic" dust emptying that reduces the "risk that dirt will spill ... onto a user during emptying." Ex. 1006, 4:4-10; Ex. 1005 ¶48. In particular, it is my opinion that a POSA would have been motivated to incorporate a button and a push-rod (as Howes teaches) on Dimbylow's "outer wall 24," at a position adjacent Dimbylow's "catch 42," such that, as Howes teaches, "[w]hen the user depresses the button 22, the push-rod 23 is urged against a catch 25 [Dimbylow's catch 42] on the base 12 [Dimbylow's end wall 26]," and "[t]he force exerted by the push-rod 23 overcomes any resistance of the base 12 [Dimbylow's end wall 26] to move into the open position" as is shown in the annotated figure below:



Ex. 1005, Fig. 1; Ex. 1006, 4:1-10.

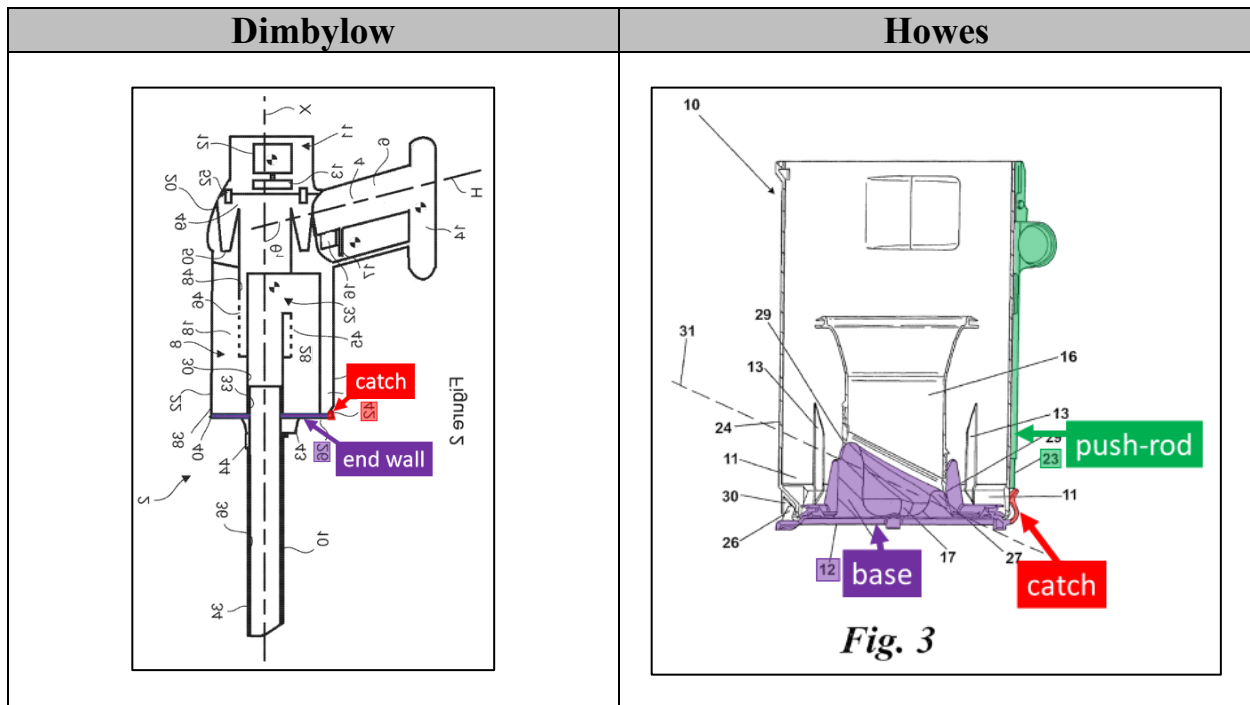
97. In my opinion, because Dimbylow does not teach how a user releases its “catch,” a POSA would have been motivated to look for ways to do this. In my opinion, a POSA would have been particularly motivated to look at similar references (for example, references that are assigned to the same assignee, Dyson) for a similar device(s) (dirt collection devices with a dirt collection chamber door) that teach mechanisms to release a similar component (a catch). Howes is such a reference.
98. In my opinion, a POSA would have understood that Howes’s teachings about its “actuator mechanism” would further the purpose described in Dimbylow of providing “intuitive and ergonomic” dust emptying. Ex. 1005 ¶48. This is because the simple act of pushing a button (Howes’s

“push-button 22,” *see* Ex1006, 4:1-2) with a finger on one hand while continuing to hold the cleaner’s handle with the other hand is, in my opinion, an intuitive and ergonomic method of emptying the collected dust, and a POSA would have understood this. A POSA would have also understood that a user could operate Howes’s “actuator mechanism” with Dimbylow’s cleaner while still achieving Dimbylow’s teaching of “no[t] need[ing] ... the user to adopt a different grip or posture from that which is adopted during normal cleaning.” Ex. 1005 ¶48.

99. In my opinion, a POSA would have understood that Howes’s “actuator mechanism” teachings would also further another of Dimbylow’s stated purposes: providing a process to empty the collected dirt and dust that reduces the “risk that dirt will spill ... onto a user during emptying.” Ex. 1005 ¶48. This is because, during emptying, the user would not need to place his or her hand in front of or near the openable door of the dirt collection chamber, which, when opened, releases the collected dirt. Instead, a user would push a button located closer to the handle near the opposite end of the collection chamber from the openable door. In my opinion, a POSA would have understood that this has certain advantages over a user manually releasing Dimbylow’s “catch 42.” In my opinion, one of these known advantages is that a user would not need to place his

or her hand near the area where dust is emptied, which, in my opinion, reduces the risk that dirt will spill onto a user during emptying.

100. In my opinion, a POSA reading Dimbylow would have been motivated to look to Howes to implement Dimbylow's catch-release functionality. I have several reasons for this opinion. For example, in my opinion, Dimbylow and Howes are analogous art as explained above. Both Dimbylow and Howes are Dyson patents that are related to bagless, cyclonic vacuum cleaners having separation units with pivotable doors held in place by a releasable, user-operable catch. Ex. 1005, Abstract, ¶¶37, 48, Figs. 1, 8; Ex. 1006, Abstract, 2:36-39, 4:1-10, Figs. 2b-4. These patents therefore share many similarities, including as shown in the annotated figures below:



Ex. 1005, Fig. 2; Ex. 1006, Fig. 3.

101. Also, in my opinion, a POSA would have understood that this combination would have involved a simple substitution of known elements—in particular, Howes’s button linked to a push-rod—to obtain the predictable result of opening a pivotable door by releasing a catch. This would have further motivated a POSA in my opinion.
102. As further support for my opinion, this combination would have involved applying a known technique (Howes’s button-actuated push-rod) to a known device ready for improvement (Dimbylow’s manually operated catch) to yield predictable results (using the push-rod to exert a force against the catch sufficient to release the catch and overcome any

resistance of the openable door). *See* Ex. 1006, 4:1-10. This would have further motivated a POSA in my opinion.

103. A POSA would have found this combination at least obvious to try. This is my opinion because a POSA would have understood that there are a finite number of ways to release Dimbylow's user-operable catch. Howes's manual push-rod allows a manual actuator to be located in a user-friendly location for releasing Dimbylow's catch.

c. A POSA Would Have Had A Reasonable Expectation of Success Combining the Teachings of Dimbylow and Howes

104. In my opinion, a POSA would have had a reasonable expectation of success implementing Howes's "actuator mechanism" teachings as the method of releasing Dimbylow's "user-operable catch 42," for the reasons that I discussed above. Ex. 1006, 4:1-10; Ex. 1005 ¶37. Also, as I explained above, the Dimbylow and Howes references are very similar, including because they are both Dyson patents related to bagless, cyclonic vacuum cleaners having separation units with pivotable doors held in place by a releasable, user-operable catch. In my opinion, these similarities would have further given a POSA a reasonable expectation of success. Ex. 1005, Abstract, ¶¶37, 48, Figs. 1, 8; Ex. 1006, Abstract, 2:36-39, 4:1-10, Figs. 2b-4. Also, in my opinion, implementing Howes's "actuator

mechanism” teachings with Dimbylow would have only involved incorporating a few basic, well-known components—specifically, a button that is linked to a push-rod. Accordingly, in my opinion, a POSA would have had a reasonable expectation of success combining the teachings of Dimbylow and Howes as described.

2. [1]/[14]

a. [1pre]/[14pre]

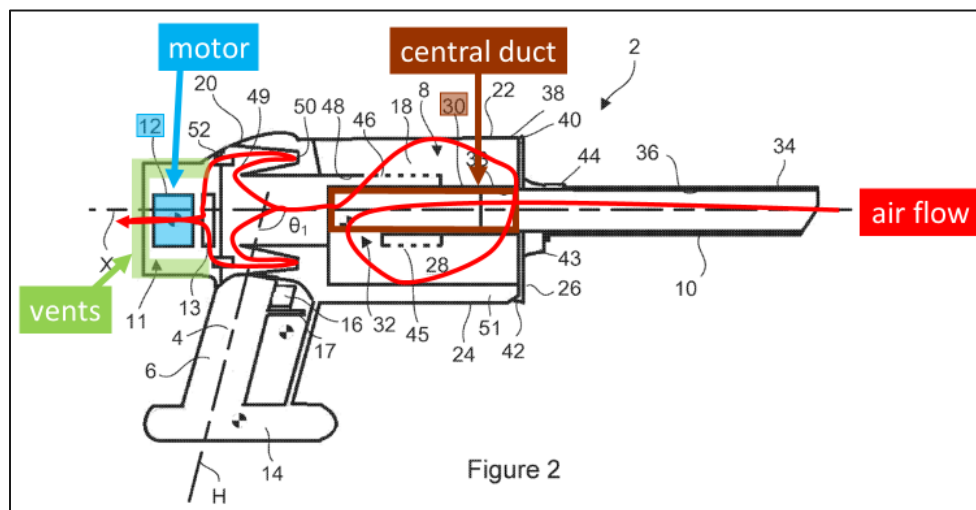
Reference Number	Claim Limitation
[1pre]	“A surface cleaning apparatus comprising:”
[14pre]	“A surface cleaning apparatus comprising:”

105. In my opinion, Dimbylow teaches a surface cleaning apparatus.
106. Dimbylow teaches a “handheld vacuum cleaner that is particularly suitable for cleaning confined spaces” and other “hard-to-reach surfaces.” Ex. 1005 ¶¶8, 43, Figs. 1, 6. In my opinion, a POSA would have recognized and understood that this is a surface cleaning apparatus.
107. Further, during prosecution, the Examiner found that Dimbylow disclosed this limitation, which PO did not dispute. Ex. 1004, 2488-89, 2539-44. I agree.

b. [1a]/[14a]

Reference Number	Claim Limitation
[1a]	“(a) an air flow path from a dirty air inlet to a clean air outlet and including a suction motor;”
[14a]	“(a) an air flow path from a dirty air inlet to a clean air outlet and including a suction motor;”

108. In my opinion, Dimbylow teaches an air flow path from a dirty air inlet to a clean air outlet and including a suction motor.
109. Dimbylow teaches that, in its vacuum cleaner, “[d]irty **air** is drawn by the suction generator 11 through the inlet duct 30, 36” (which includes the “**central duct 30**”), “into the [primary] cyclonic separation chamber 28,” then through the “secondary cyclones 20,” whereafter the “cleaned air exits ... through the suction generator 11,” “comprising a **motor 12**,” and “out of **vents** (not shown) at the rear of the main body” as shown in the annotated figure below:



Ex. 1005 ¶¶31, 35, 42, Fig. 2.

110. In my opinion, a POSA would have understood that the upstream portion of Dimbylow’s “central duct 30” is a dirty air inlet, at least because it is the inlet for dirty air into Dimbylow’s cleaner. Further, in my opinion, a POSA would have understood that Dimbylow’s “vents” are clean air outlets at least because they are outlets for air that has been cleaned by Dimbylow’s cleaner. And, in my opinion, a POSA would have understood that Dimbylow’s “motor 12” is a suction motor at least because it is a motor that creates suction. Finally, in my opinion, a POSA would have understood that, in Dimbylow, an air flow path extends between Dimbylow’s dirty air inlet and its clean air outlet and including a suction motor.

111. During prosecution, the Examiner found that Dimbylow disclosed this limitation, which PO did not dispute. Ex. 1004, 2488-89, 2539-44. I agree.

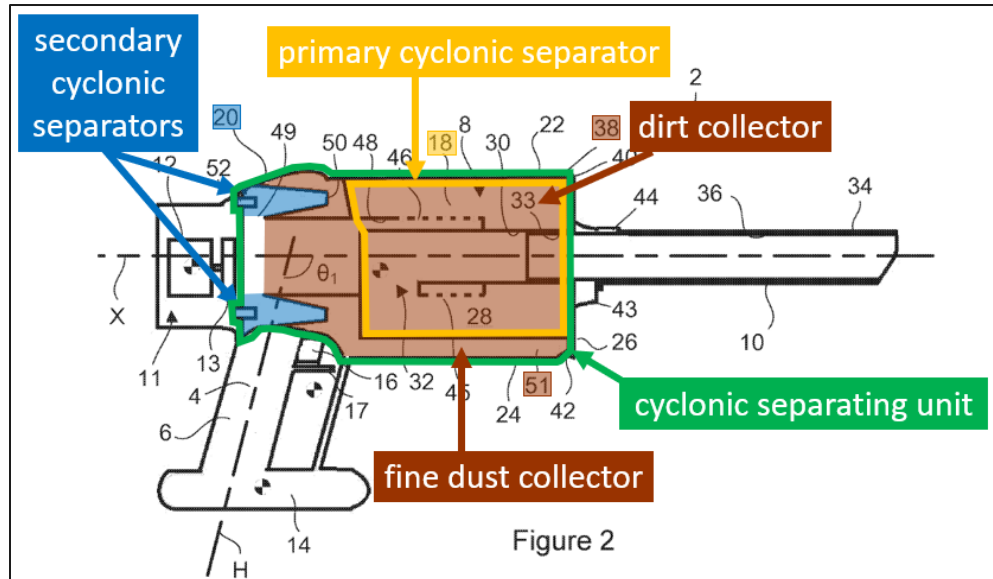
c. [1b]/[14b]

Reference Number	Claim Limitation
[1b]	“(b) an air treatment member comprising a dirt collection region having an openable door;”
[14b]	“(b) an air treatment member comprising a dirt collection region having an openable door;”

112. In my opinion, Dimbylow teaches an air treatment member comprising a

dirt collection region having an openable door.

113. In my opinion, Dimbylow teaches an air treatment member comprising a dirt collection region. Dimbylow teaches that its “**cyclonic separating unit 8**” comprises a **primary cyclonic separator 18**” with a “**dirt collector 38**,” and “a plurality of **secondary cyclonic separators 20**,” which are “in communication with a **fine dust collector 51**” as shown in the annotated figure below:



Ex. 1005 ¶¶32, 39, Fig. 2.

114. In my opinion, a POSA would have understood that Dimbylow’s “**cyclonic separating unit 8**” is an air treatment member, at least because it treats the air by using cyclonic airflow to separate dirt, and a POSA would have understood that it comprises a dirt collection region (specifically, “**dirt collector 38/fine dust collector 51**”), because that is where separated dirt

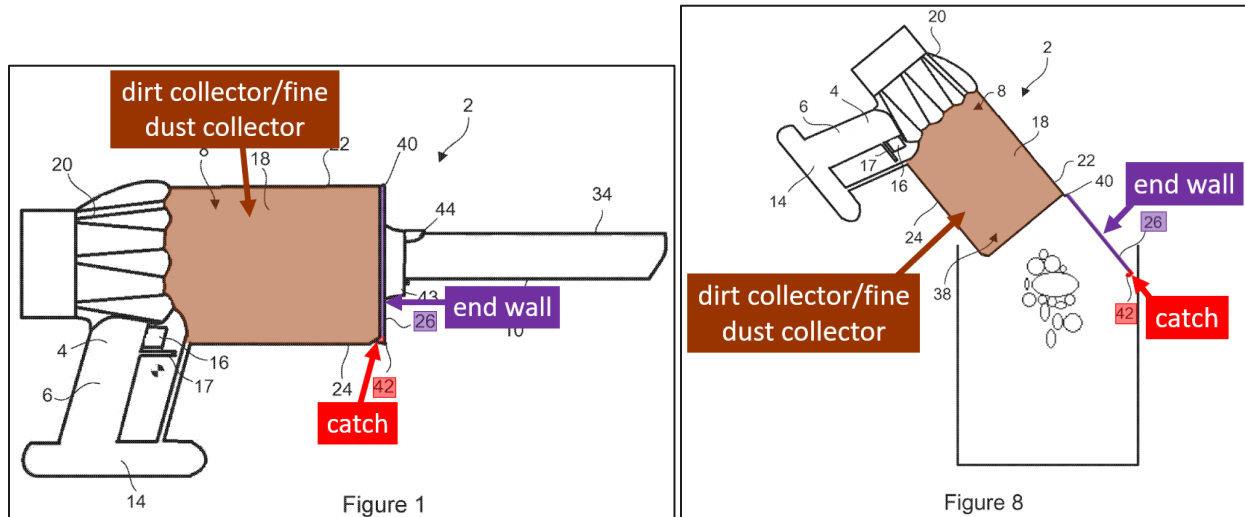
is collected. For example, Dimbylow describes its air flow path and dirt collection in the paragraph below:

In use, the handheld vacuum cleaner 2 is activated by a user pressing the trigger 16 with an index finger. Dirty air is drawn by the suction generator 11 through the inlet duct 30, 36 and through the inlet 32 into the cyclonic separation chamber 28. The rotational flow promoted by the second portion of the central duct 30 within the cyclonic separation chamber 28 produces a cyclonic action that separates relatively heavy or large dirt from the air. Typically, the vacuum cleaner 2 is held such that the cyclonic separating unit 8 points downwardly from the handle 6. Dirt separated in the cyclonic separation chamber 28 therefore falls under the influence of gravity into the dirt collector 38. The partially cleaned air passes through the apertures 46 in the shroud 45 and is drawn along the duct 48 to the secondary cyclones 20. Smaller and lighter particles of dirt are separated from the air by the secondary cyclones 20 and expelled through the respective solids outlets into the fine dust collector 51. The cleaned air exits the secondary cyclones 20 via the respective fluid outlets 52 of the secondary cyclones 20 through the suction generator 11 and out of vents (not shown) at the rear of the main body 4.

Ex. 1005 ¶42.

115. In my opinion, Dimbylow teaches the dirt collection region having an openable door. For example, Dimbylow teaches that its “**dirt collector 38/fine dust collector 51**” has an “**end wall 26** [that] is connected to the

cylindrical outer wall 24 by a pivot 40 and is held in a closed position by a user-operable **catch 42**” as shown in the annotated figures below:



Ex. 1005 ¶¶37, 48, Figs. 1, 8.

116. Also, Dimbylow explains how to empty its cleaner: “[T]o empty the **dirt collector 38** and the **fine dust collector 51**,” the “user points the vacuum cleaner 2 towards a suitable receptacle,” “release[s]” “**catch 42**,” and the “**end wall 26** [is] pivoted from its closed position into its open position.”

Ex. 1005 ¶48. In my opinion, a POSA would have understood that Dimbylow’s “**dirt collector 38/fine dust collector 51**” is a dirt collection region having an openable door (specifically, “**end wall 26**”) at least because it is a region where Dimbylow’s cleaner collects dirt and dust and because it has an openable, pivotable wall covering an end (“**end wall 26**”) that a POSA would understand is an openable door.

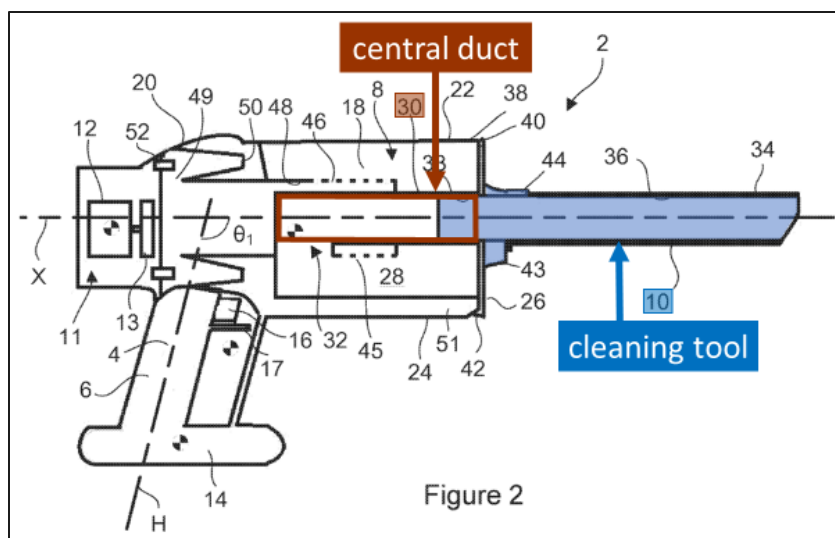
117. Further, during prosecution, the Examiner found that Dimbylow disclosed

this limitation, which PO did not dispute. Ex. 1004, 2488-89, 2539-44. I agree.

d. [1c]/[14c]

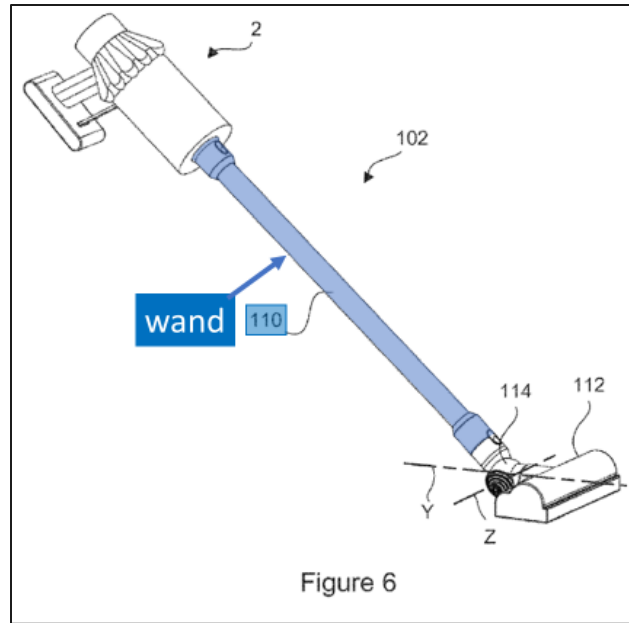
Reference Number	Claim Limitation
[1c]	“(c) an accessory removably connectable to the dirty air inlet wherein, when the accessory is connected to the dirty air inlet, the openable door is inhibited from opening; and,”
[14c]	“(c) an accessory removably connectable in air flow communication with the dirty air inlet; and,”

118. In my opinion, Dimbylow teaches an accessory removably connectable to the dirty air inlet wherein, when the accessory is connected to the dirty air inlet, the openable door is inhibited from opening.
119. In my opinion, Dimbylow teaches an accessory removably connectable in air flow communication with the dirty air inlet.
120. In my opinion, Dimbylow teaches an accessory removably connectable to and in air flow communication with the dirty air inlet. For example, Dimbylow teaches that its vacuum cleaner includes a “**cleaning tool 10** [that] is provided with retaining features (not shown) which engage with the **central duct 30** so as to secure the **cleaning tool 10** to the **central duct 30**” as shown in the annotated figure below:



Ex. 1005 ¶37, Fig. 2.

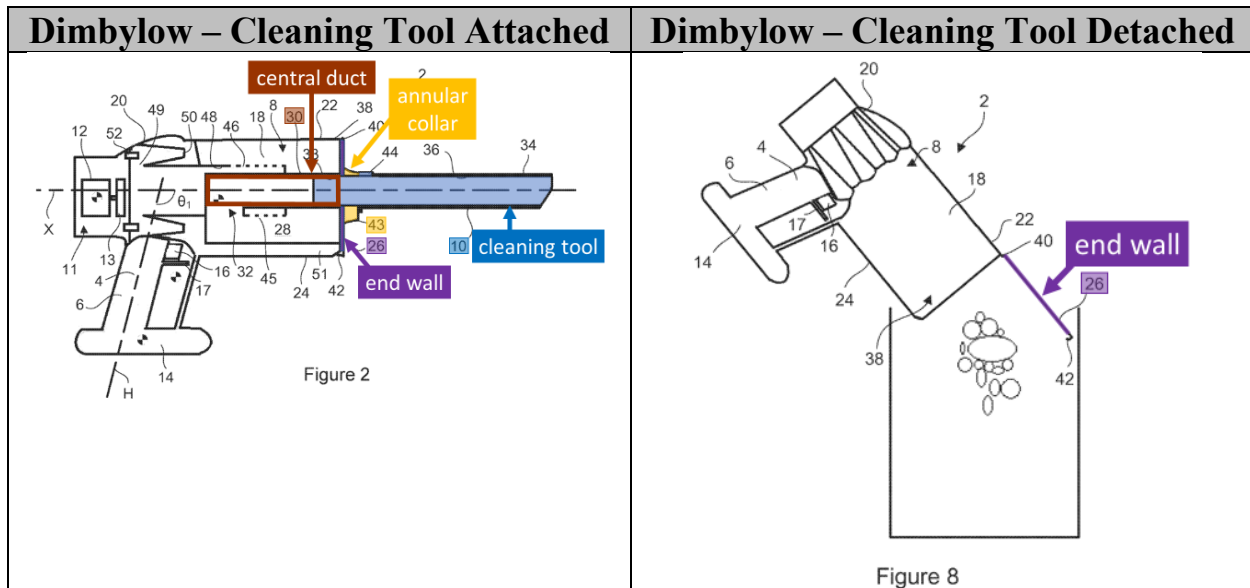
121. In my opinion, a POSA would understand that Dimbylow teaches that its “cleaning tool 10” is removably connectable: Dimbylow teaches that it “has a manually operated catch 44 that is actuated in order to disengage the retaining features ... to remove the tool 10 [from] the cyclonic separating unit 8.” Ex. 1005 ¶37. Dimbylow also teaches that its “cleaning tool 10 [can be] replaced with a wand 110,” which, in my opinion, a POSA would understand is also removably connectable, as shown in the annotated figure below:



Id. ¶44, Fig. 6.

122. In my opinion, a POSA would have understood that Dimbylow’s “cleaning tool 10” and “wand 110” are accessories, and that they are removably connectable to and, when connected, in airflow communication with “central duct 30,” the dirty air inlet. In my opinion, these components were well known in the art at the time of the ’477 Patent’s alleged invention.
123. Regarding Limitation [1c], in my opinion, Dimbylow teaches that its openable door is inhibited from opening when the accessory is connected to the dirty air inlet. Dimbylow teaches that its “**cleaning tool 10** further comprises an **annular collar 43** that abuts the **end wall 26** thereby holding the end wall 26 in the closed position, and so prevents accidental opening of the end wall 26 wh[en] the cleaning tool 10 is attached” to the “**central**

duct 30” as shown in the annotated figures below:



Ex. 1005 ¶37, Figs. 2, 8.

124. Dimbylow teaches that this is also the case for Dimbylow’s “wand 110”:

Dimbylow teaches that, “to empty the dirt collector 38 ... the user first disconnects ... the wand 110.” Ex. 1005 ¶48.

125. In my opinion, a POSA would have therefore understood that Dimbylow’s accessory (e.g., “cleaning tool 10” or “wand 110”) interferes with opening the openable door (“end wall 26”) when it is connected to the dirty air inlet (“central duct 30”), and therefore the openable door is inhibited from opening when the accessory is connected to the dirty air inlet, at least because Dimbylow teaches that the accessory is to be removed before opening the openable door and also because Dimbylow depicts and teaches that the accessory blocks the openable door when it is connected.

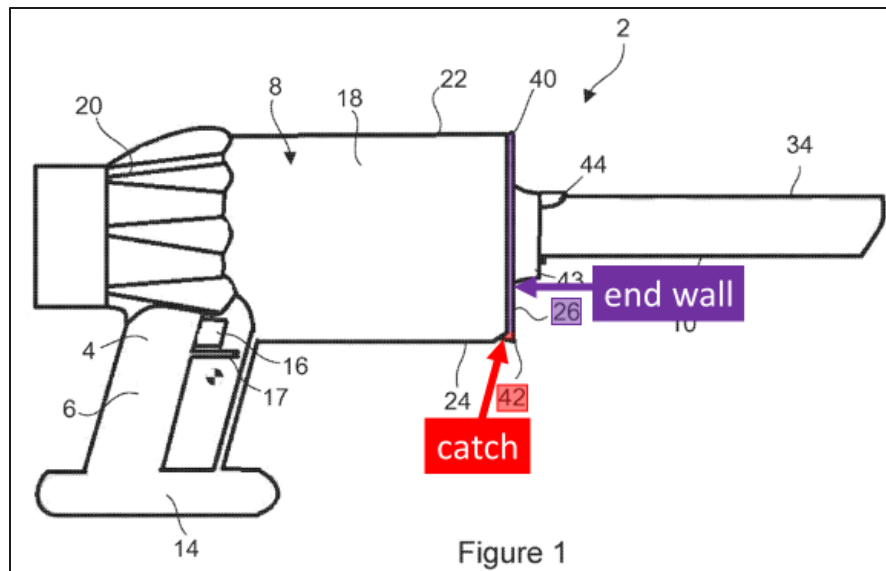
126. During prosecution, the Examiner found that Dimbylow disclosed this limitation, which PO did not dispute. Ex. 1004, 2488-89, 2539-44. I agree.

e. [1d.1]/[14d.1]

Reference Number	Claim Limitation
[1d.1]	“(d) an openable door lock comprising a lock engaging member and a door release actuator drivingly connected to the lock engaging member,”
[14d.1]	“(d) an openable door lock comprising a lock engaging member and a door release actuator drivingly connected to the lock engaging member,”

127. In my opinion, the combined teachings of Dimbylow and Howes teach an openable door lock comprising a lock engaging member and a door release actuator drivingly connected to the lock engaging member.

128. In my opinion, Dimbylow teaches the “lock engaging member” portion of the claimed “openable door lock.” For example, Dimbylow teaches that its “**end wall 26** is connected to the cylindrical outer wall 24 by a pivot 40 and is held in a closed position by a user-operable **catch 42**” as shown in the annotated figure below:

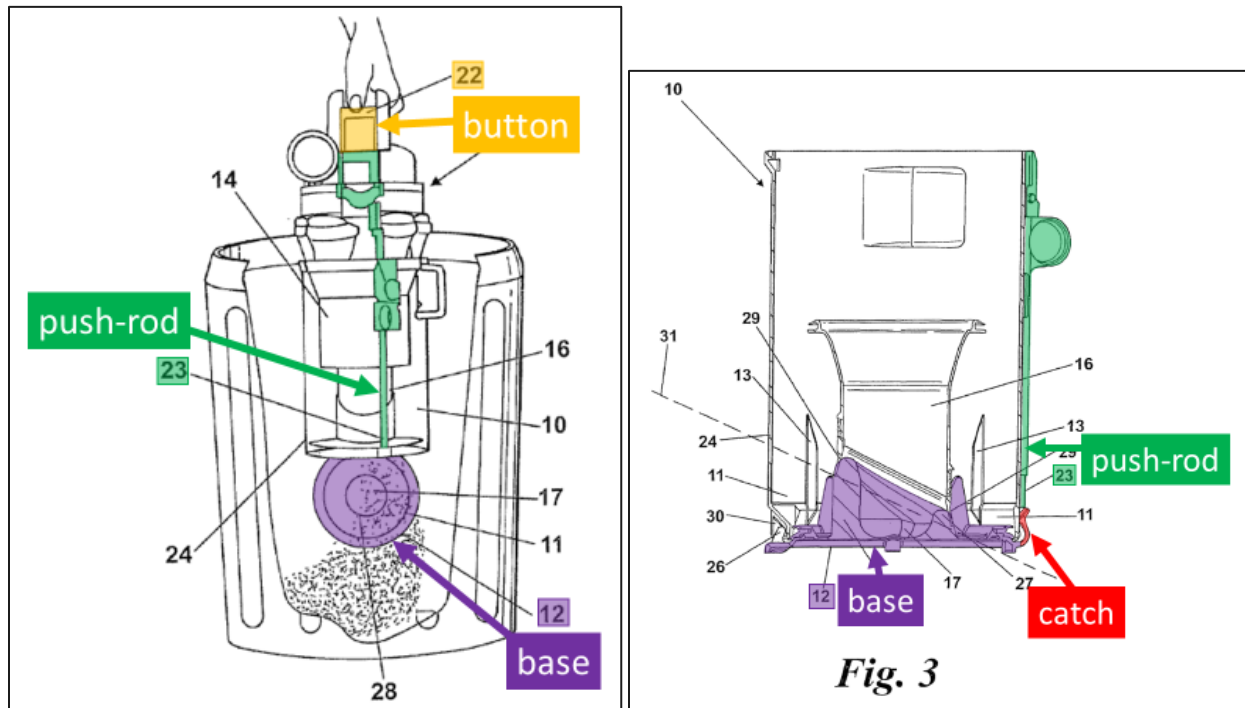


Ex. 1005 ¶37, Fig. 1.

129. In my opinion, a POSA would have understood that Dimbylow’s “user-operable catch 42” is a lock engaging member, at least because Dimbylow’s “user-operable catch 42” secures the openable door in a closed position. In addition, a “catch” was (and is) a common term, like latch, that a POSA would have also recognized as a member whose function is to engage a lock.

130. Also, in my opinion, Howes teaches an openable door lock comprising a lock engaging member and a door release actuator drivingly connected to the lock engaging member. For example, Howes teaches “[a]n actuator mechanism in the form of a **push-button 22**” “linked to on[e] end of a **push-rod 23**,” and the “other end of the push-rod 23 is adjacent the **base 12**,” which is pivotable and, when closed, is held in place by a “**catch 25**”

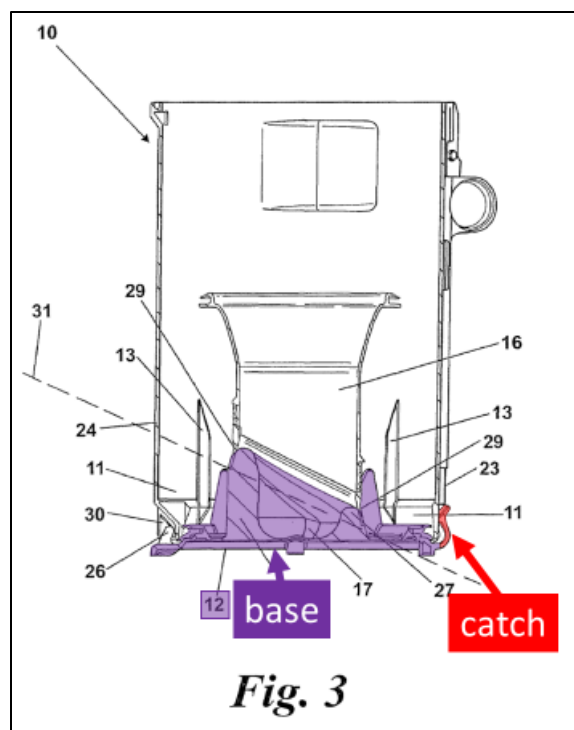
as shown in the annotated figures below:



Ex. 1006, 4:1-10, Figs. 2b-3.

131. In my opinion, a POSA would have understood that Howes's base 12 actuator mechanism, including "push button 22," "push-rod 23," and "catch 25," together are an openable door lock.

132. Further, in my opinion, a POSA would understand that Howes's "**catch 25**" is a lock engaging member because it holds "**base 12**" in a closed position, as shown in the annotated figure below:

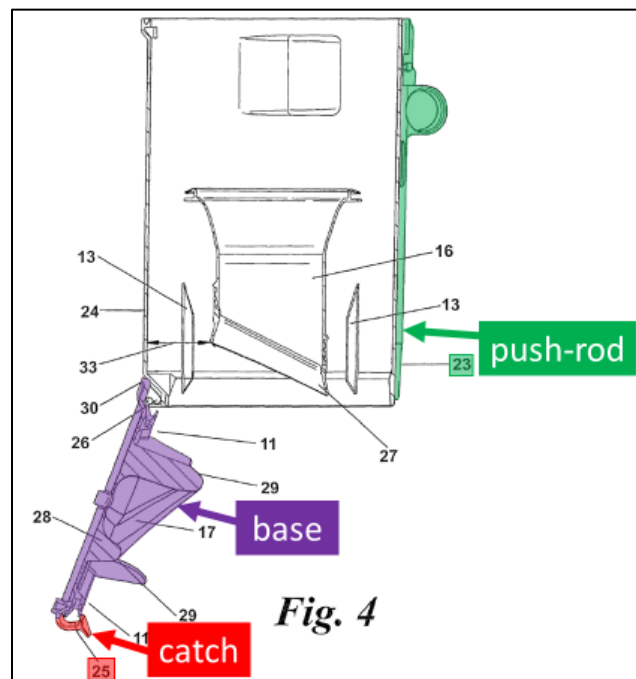
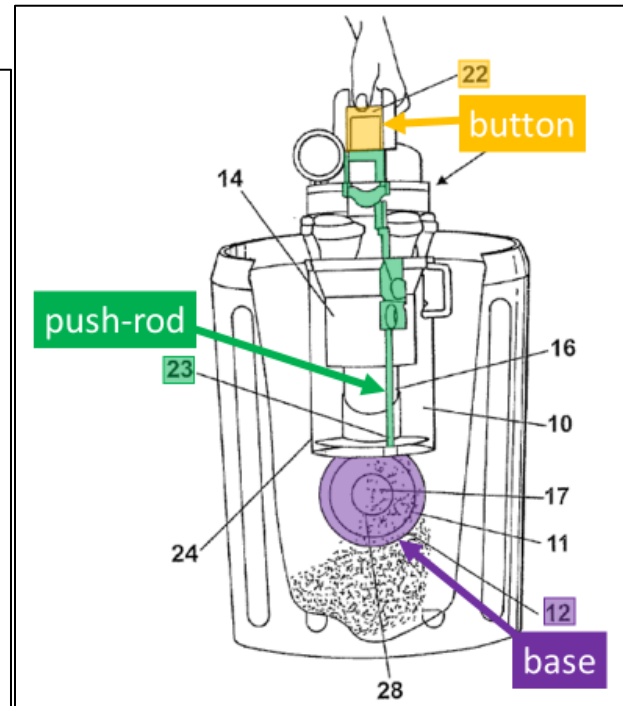
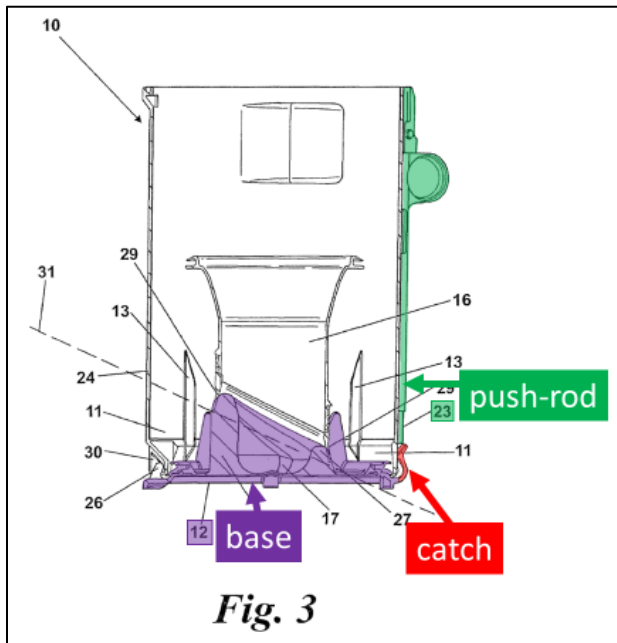


Ex. 1006, 4:6-10, Fig. 3.

133. In my opinion, Howes teaches a door release actuator drivingly connected to the lock engaging member. In my opinion, a POSA would understand that Howes’s “actuator mechanism” includes a door release actuator (“button 22”) because pushing the button releases the door: “to empty the separator unit 3, the user presses the button 22,” which causes “base 12 to move into the open position.” Ex. 1006, 4:2-10.

134. In my opinion, a POSA would understand that Howes’s button is drivingly connected to the lock engaging member, “catch 25,” via “push-rod 23,” because “the button 22 is linked to on[e] end of a push-rod 23” and “[t]he other end of the push-rod 23 is adjacent the base 12,” such that “[w]hen

the user depresses the **button 22**,” the “**push-rod 23** is urged against [the] **catch 25**,” as shown in the annotated figures below:



Ex. 1006, 4:1-10, Figs. 3, 2b, 4.

135. As I explained above, it is my opinion that a POSA would have been motivated to incorporate Howes's actuator mechanism teachings into Dimbylow and would have had a reasonable expectation of success. *See* Ground 1, §1. In my opinion, the combined teachings meet these limitations because Dimbylow's openable "end wall 26" is locked by Dimbylow's "catch 42." Further, in my opinion, the combined teachings use Howes's "actuator mechanism" (including "button 22" and "push-rod 23") to release Dimbylow's "end wall 26" (by releasing Dimbylow's "catch 42") therefore meeting these limitations.

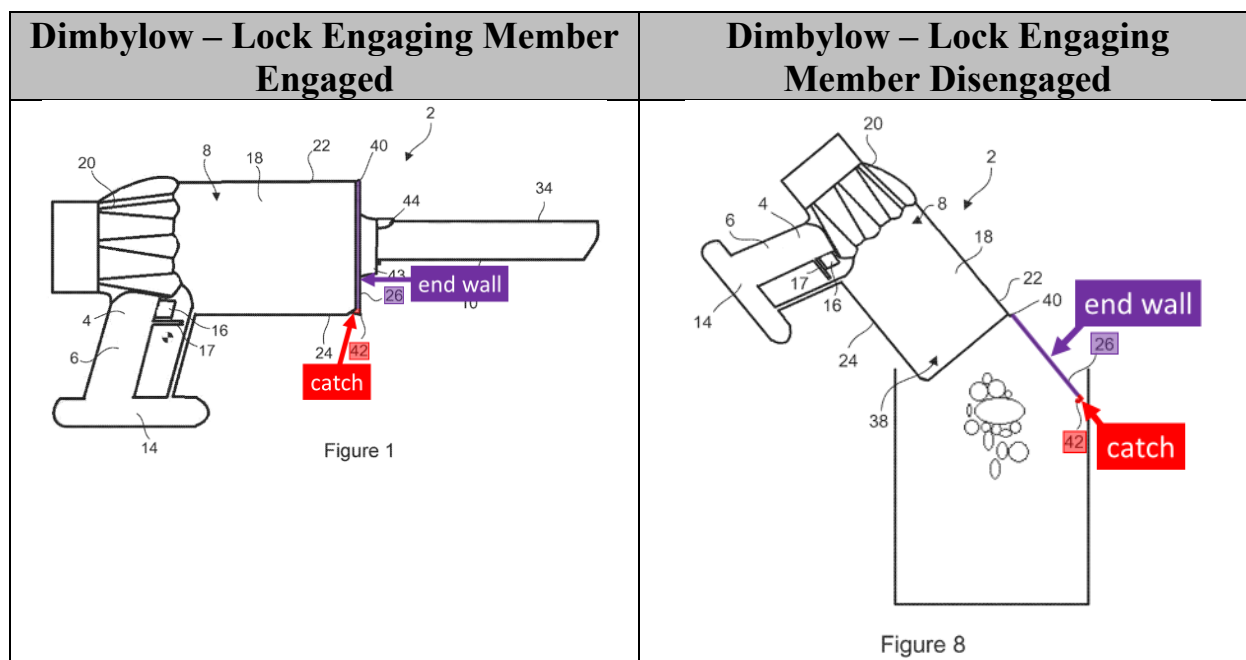
f. [1d.2]/[14d.2]

Reference Number	Claim Limitation
[1d.2]	"the lock engaging member moveable between an engaged position in which the lock engaging member secures the openable door in a closed position and a disengaged position in which the openable door is openable"
[14d.2]	"the lock engaging member is moveable between an engaged position in which the lock engaging member secures the openable door in a closed position and a disengaged position in which the openable door is openable"

136. In my opinion, the combined teachings of Dimbylow and Howes teach the lock engaging member moveable between an engaged position in which the lock engaging member secures the openable door in a closed position and a disengaged position in which the openable door is openable.

137. According to Dimbylow, its lock engaging member is moveable between

an engaged position in which the lock engaging member secures the openable door in a closed position and a disengaged position in which the openable door is openable. Dimbylow explains that “**end wall 26** is ... held in a closed position by a user-operable **catch 42**,” and “can be moved from the closed position ... to an open position ... by releasing the **catch 42** and pivoting the **end wall 26** away from the end of the cylindrical outer wall 24.” Ex1005 ¶37. I agree with this and it is shown in the annotated figures below:

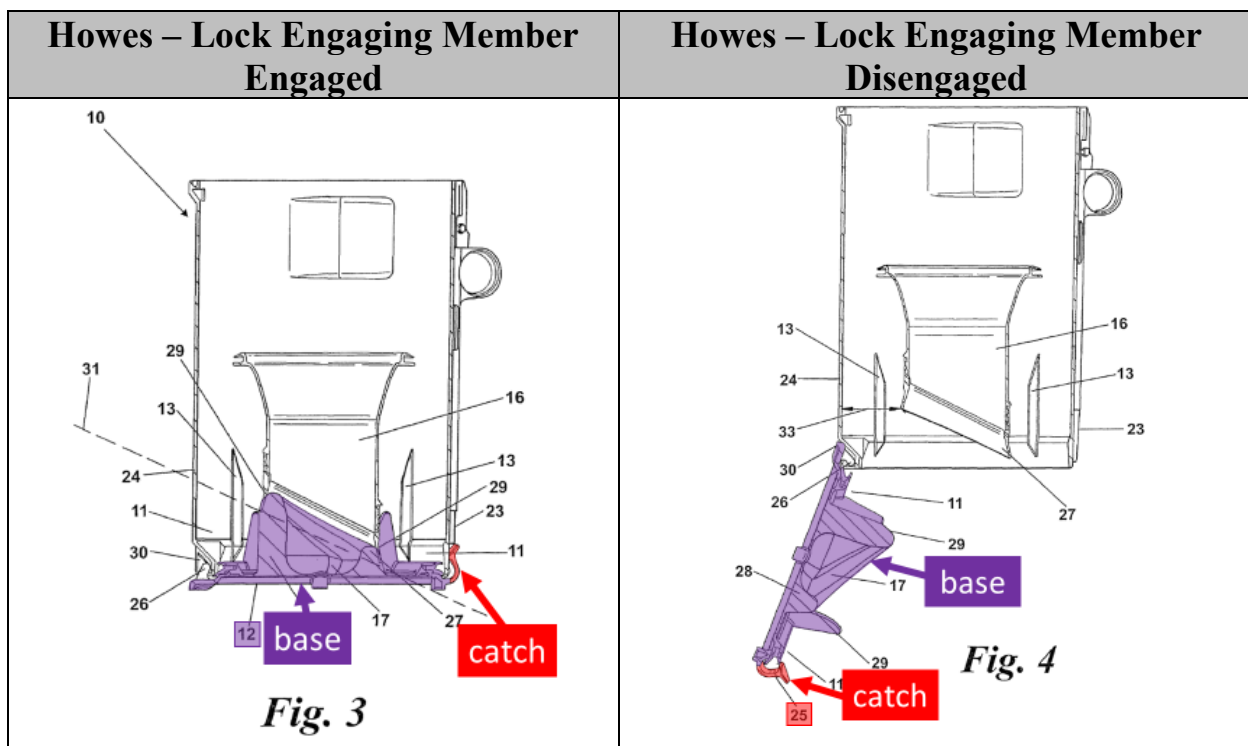


Ex. 1005 ¶37, Figs. 1, 8.

138. In my opinion, a POSA would therefore understand that Dimbylow’s “catch 42” is moveable between an engaged position, when “catch 42” is engaged and it secures “end wall 26” in the “closed position,” and a

disengaged position, when “catch 42” is disengaged (or “release[ed]”) and “end wall 26” is openable. Ex. 1005 ¶37, Figs. 1, 8.

139. Howes also describes its lock engaging member as moveable between an engaged position in which the lock engaging member secures the openable door in a closed position and a disengaged position in which the openable door is openable. Howes explains that “base 12 of the separator unit is movable between a closed position,” when “catch 25” is engaged, and “an open position,” when “catch 25” is disengaged. Ex. 1006, 3:64-4:10. I agree and have shown it in the annotated figures of Howes below:



Ex. 1006, 3:64-4:10, Figs. 3-4.

140. As I explained above, in my opinion, a POSA would have been motivated

to integrate Howes's actuator mechanism teachings into Dimbylow and would have had a reasonable expectation of success. *See* Ground 1, §1. For these reasons, in my opinion, the combined teachings also meet these limitations.

g. [1d.3]/[14d.3]

Reference Number	Claim Limitation
[1d.3]	“wherein the lock engaging member is inhibited from moving to the disengaged position when the accessory is connected to the dirty air inlet.”
[14d.3]	“wherein the lock engaging member is inhibited from moving to the disengaged position when the accessory is connected in air flow communication with the dirty air inlet.”

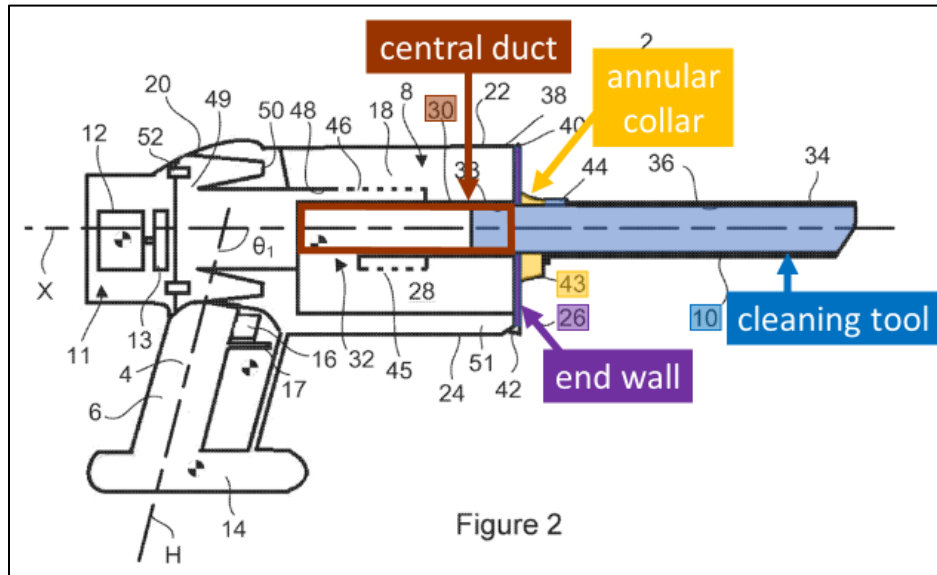
141. In my opinion, Dimbylow teaches wherein the lock engaging member is inhibited from moving to the disengaged position when the accessory is connected to the dirty air inlet.

142. It is also my opinion that Dimbylow teaches wherein the lock engaging member is inhibited from moving to the disengaged position when the accessory is connected in air flow communication with the dirty air inlet.

143. In my opinion, Dimbylow teaches that the lock engaging member is inhibited from moving to the disengaged position when the accessory is connected to and in air flow communication with the dirty air inlet.

According to Dimbylow, “**cleaning tool 10** further comprises an **annular collar 43** that abuts the **end wall 26** thereby holding the end wall 26 in the

closed position, and so prevents accidental opening of the end wall 26 when the cleaning tool 10 is attached” to the “**central duct 30**,” as shown in the annotated figure below:



Ex. 1005 ¶37, Fig. 2.

144. In my opinion, a POSA would understand that Dimbylow’s “**cleaning tool 10**”’s “**annular collar 43**” inhibits Dimbylow’s “**catch 42**” (the lock engaging member) from moving to the disengaged position when “**cleaning tool 10**” or “**wand 110**” (the accessory) is connected to and in air flow communication with “**central duct 30**” (the dirty air inlet). *See* Ground 1, Limitation [1c].

145. In my opinion, because Dimbylow’s “**catch 42**” is fixed to Dimbylow’s “**end wall 26**,” when Dimbylow’s “**cleaning tool 10**”’s “**annular collar 43**” inhibits Dimbylow’s “**end wall 26**” from opening, Dimbylow’s “**catch**

42” is likewise inhibited from moving to the disengaged position in which the openable door is openable, *see* Ground 1, Limitations [1d.2]/[14d.2].

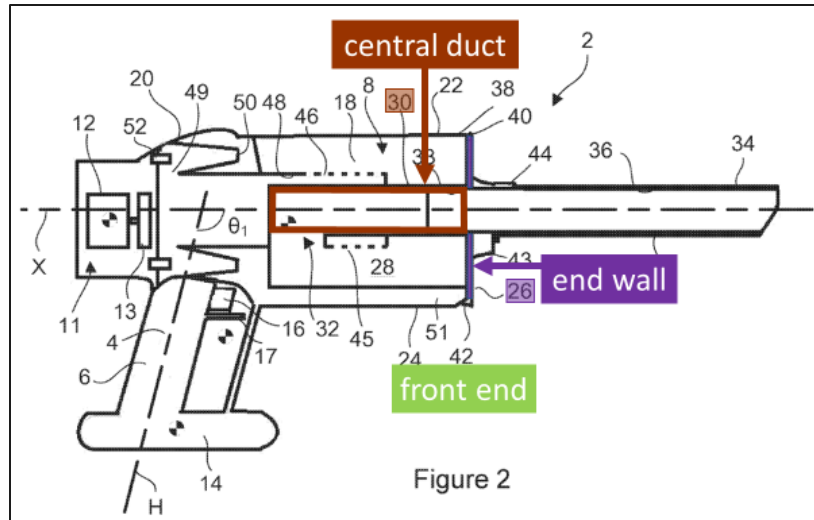
146. I have reviewed PO’s infringement contentions in the related litigation. In my opinion, the above disclosure is at least as much disclosure of these limitations as PO has accused of infringement in the related litigation. *See, e.g.,* Ex. 1016, 13-18, 44-49. During prosecution, the Examiner also found that Dimbylow disclosed this limitation, which PO did not dispute. Ex1004, 2488-89, 2539-44. I agree.

3. [2]

Reference Number	Claim Limitation
[2]	“The surface cleaning apparatus of claim 1 further comprising a front end having the dirty air inlet and the openable door is provided on the front end.”

147. In my opinion, the combined teachings of Dimbylow and Howes teach the surface cleaning apparatus of claim 1 further comprising a front end having the dirty air inlet and the openable door is provided on the front end.

148. In my opinion, Dimbylow teaches the surface cleaning apparatus comprising a front end having the dirty air inlet and the openable door is provided on the front end. For example, Dimbylow teaches that its “**central duct 30**” and “**end wall 26**” are located at the “**front**” end of Dimbylow’s “main body 4” as shown in the annotated figure below:



Ex. 1005 ¶41 Fig. 2.

149. Dimbylow teaches that the end where “cleaning tool 10” connects to “central duct 30” is the “front” end. *See* Ex. 1005 ¶41 (“FIG. 3 shows the vacuum cleaner 2 from the front. ... The cleaning tool 10 therefore extends within the outer profile of the cyclonic separating unit 8 as viewed from the front of the vacuum cleaner 2 along the longitudinal axis X.”), Fig. 3.

4. [3]

Reference Number	Claim Limitation
[3]	“The surface cleaning apparatus of claim 1 further comprising a front end having the dirty air inlet and the openable door is provided on the front end.”

150. In my opinion, the combined teachings of Dimbylow and Howes teach the surface cleaning apparatus of claim 1 further comprising a front end having the dirty air inlet and the openable door is provided on the front end.

151. For example, Dimbylow teaches that its accessory (“cleaning tool 10” or

“wand 110”) is removably connectable to the dirty air inlet (“central duct 30”), as I explained with respect to Ground 1, Limitation 1[c]. *See* Ground 1, Limitation [1c]. For the same reasons as I explained for that limitation, in my opinion, a POSA would have understood that Dimbylow’s accessory is removably mounted to the dirty air inlet.

5. [4]

Reference Number	Claim Limitation
[4]	“The surface cleaning apparatus of claim 1 wherein, when the accessory is connected to the dirty air inlet, the accessory physically inhibits the openable door from opening.”

152. In my opinion, the combined teachings of Dimbylow and Howes teach the surface cleaning apparatus of claim 1 wherein, when the accessory is connected to the dirty air inlet, the accessory physically inhibits the openable door from opening.
153. For example, Dimbylow teaches that its accessory is connected to the dirty air inlet, as I explained for Ground 1, Limitation [1c]. *See* Ground 1, Limitation [1c]. In my opinion, Dimbylow further teaches that, when its accessory is connected to the dirty air inlet, the accessory physically inhibits the openable door from opening. For example, Dimbylow teaches that “**cleaning tool 10** further comprises an **annular collar 43** that abuts the **end wall 26** thereby holding the end wall 26 in the closed position, and

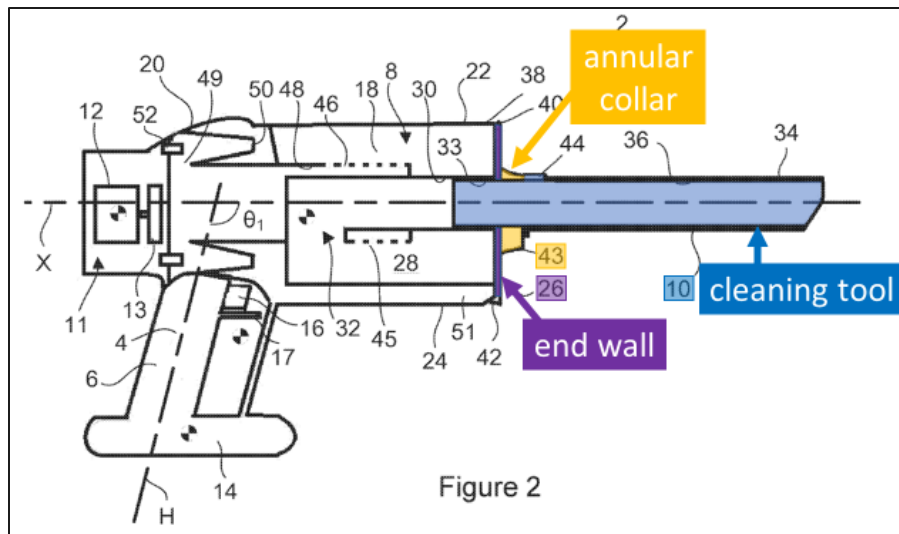
engaging member) is engaged. *See* Ground 1, Limitations [1d.1]-[1d.3].

6. [5]

Reference Number	Claim Limitation
[5]	“The surface cleaning apparatus of claim 4 wherein, when the accessory is connected to the dirty air inlet, the accessory overlies a portion of the openable door.”

156. In my opinion, the combined teachings of Dimbylow and Howes teach the surface cleaning apparatus of claim 4 wherein, when the accessory is connected to the dirty air inlet, the accessory overlies a portion of the openable door.

157. For example, when Dimbylow’s accessory is connected to the dirty air inlet (as I explained for Ground 1, Limitation [1c], *see* Ground 1, Limitation [1c]), Dimbylow teaches that the accessory overlies a portion of the openable door: “**cleaning tool 10** further comprises an **annular collar 43**” that overlies a portion of “**end wall 26**” as shown in the annotated figure below:



Ex. 1005 ¶37, Fig. 1; *see also* Ground 1, Limitation [1d.3].

158. Also, Dimbylow teaches that its “wand 110” likewise comprises an annular collar that, in my opinion, a POSA would understand performs the same function. Ex. 1005 ¶44, Fig. 6. Such a collar is depicted in Figures 6 and 7 of Dimbylow. *See* Ex1005, Figs. 6-7. Dimbylow also describes how, in “either of the described embodiments, the user first disconnects the cleaning tool 10 or the wand 110. Then, whilst gripping the handle 6 ... [t]he catch 42 is then released.” Ex1005 ¶44.

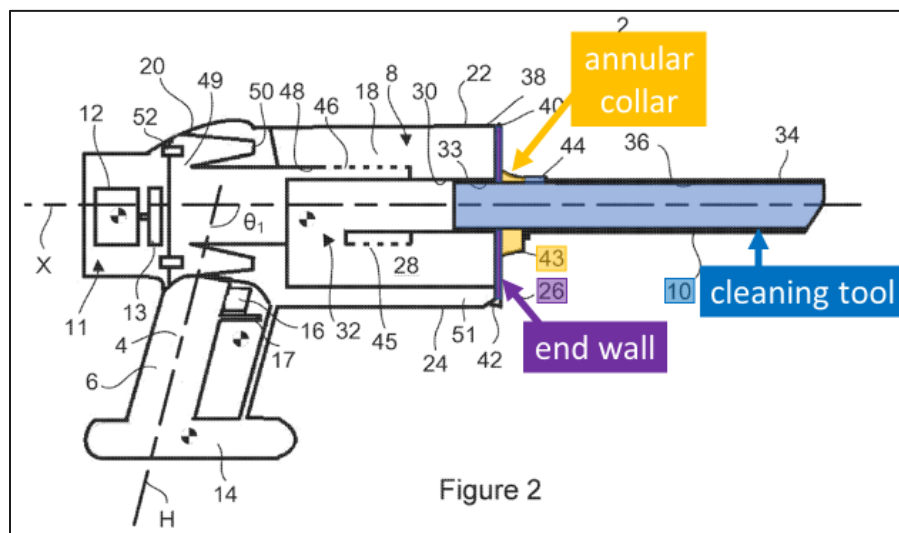
7. [6]

Reference Number	Claim Limitation
[6]	“The surface cleaning apparatus of claim 5 wherein, when the accessory is connected to the dirty air inlet, the accessory abuts a portion of the openable door.”

159. In my opinion, the combined teachings of Dimbylow and Howes teach the

surface cleaning apparatus of claim 5 wherein, when the accessory is connected to the dirty air inlet, the accessory abuts a portion of the openable door.

160. For example, Dimbylow teaches that, when Dimbylow's accessory is connected to the dirty air inlet (as I explained for Ground 1, Limitation [1c], *see* Ground 1, Limitation [1c]), the accessory abuts a portion of the openable door: “**cleaning tool 10** further comprises an **annular collar 43** that abuts the **end wall 26**” as shown in the annotated figure below:



Ex. 1005 ¶37, Fig. 2; *see also* Ground 1, Limitation [1d.3].

161. Also, Dimbylow teaches that its “wand 110” likewise comprises an annular collar that, in my opinion, a POSA would understand performs the same function. Ex. 1005 ¶44, Fig. 6. Dimbylow also describes how, in “either of the described embodiments, the user first disconnects the cleaning tool

10 or the wand 110. Then, whilst gripping the handle 6 ... The catch 42 is then released.” Ex1005 ¶44.

8. [7]/[15]

Reference Number	Claim Limitation
[7]	“The surface cleaning apparatus of claim 1 wherein the accessory has a blocking portion which inhibits the lock engaging member moving to the disengaged position when the accessory is connected to the dirty air inlet.”
[15]	“The surface cleaning apparatus of claim 14 wherein the accessory has a blocking portion which inhibits the lock engaging member moving to the disengaged position when the accessory is connected to the dirty air inlet.”

162. In my opinion, the combined teachings of Dimbylow and Howes teach the surface cleaning apparatus of claim 1 wherein the accessory has a blocking portion which inhibits the lock engaging member moving to the disengaged position when the accessory is connected to the dirty air inlet.

163. In my opinion, the combined teachings of Dimbylow and Howes teach the surface cleaning apparatus of claim 14 wherein the accessory has a blocking portion which inhibits the lock engaging member moving to the disengaged position when the accessory is connected to the dirty air inlet.

164. For the reasons that I explained above for Limitations [1c]/[1d.3] and Claims 4-6, Dimbylow teaches that its accessory (“cleaning tool 10” and/or “wand 110”) has a blocking portion (“annular collar 43,” alone or together with “catch 44”) which inhibits the lock engaging member (“catch 42”)

moving to the disengaged position when the accessory is connected to the dirty air inlet (“central duct 30”). *See* Ground 1, Limitations [1c]/[1d.3], Claims 4-6.

165. Further, I have reviewed PO’s infringement contentions in the related litigation. In my opinion, the above disclosure is at least as much disclosure of these limitations as PO has accused of infringement in the related litigation. *See* Ex. 1016 (V10 477 infringement contentions) at 36-45.

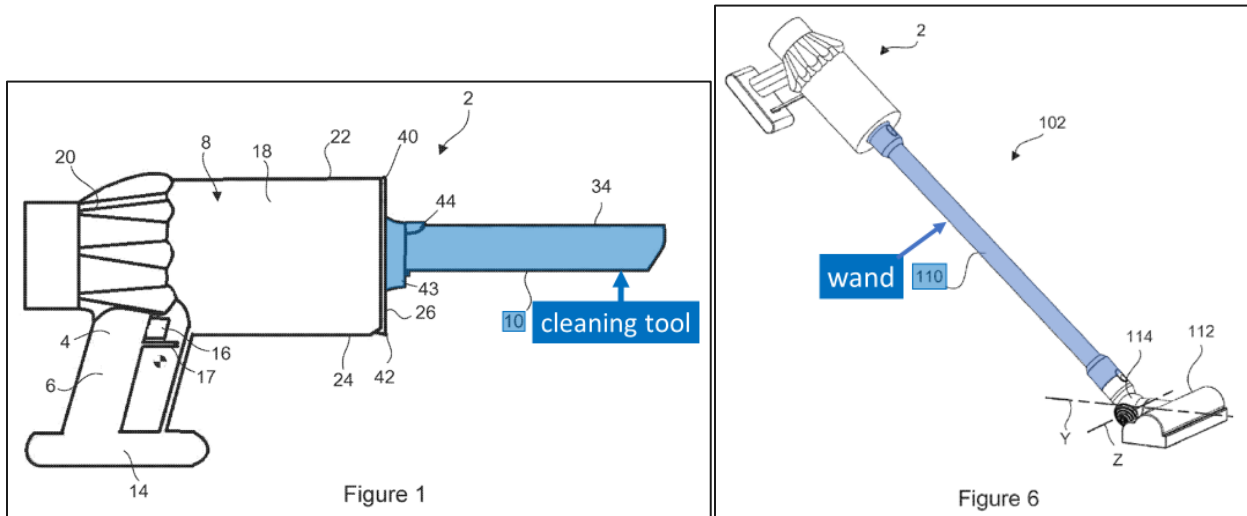
9. [12]

Reference Number	Claim Limitation
[12]	“The surface cleaning apparatus of claim 1 wherein the accessory is a longitudinally extending rigid member air flow member, an accessory cleaning tool, or a flexible hose.”

166. In my opinion, the combined teachings of Dimbylow and Howes teach the surface cleaning apparatus of claim 1 wherein the accessory is a longitudinally extending rigid member air flow member, an accessory cleaning tool, or a flexible hose.

167. In my opinion, Dimbylow teaches that the accessory is a longitudinally extending rigid member air flow member, an accessory cleaning tool, or a flexible hose. For example, in my opinion, a POSA would have understood that Dimbylow’s “**cleaning tool 10**” is an accessory cleaning

tool, and Dimbylow’s “wand 110” with a “longitudinal axis” is a longitudinally extending rigid member air flow member as shown in the annotated figures below:



Ex. 1005 ¶¶43-44, Figs. 1, 6.

168. These are rigid, longitudinal cleaning tools.

B. Ground 2: Brown Renders Obvious Claims 1-20

169. In my opinion, Brown’s disclosures render obvious claims 1-20 for the reasons explained below.

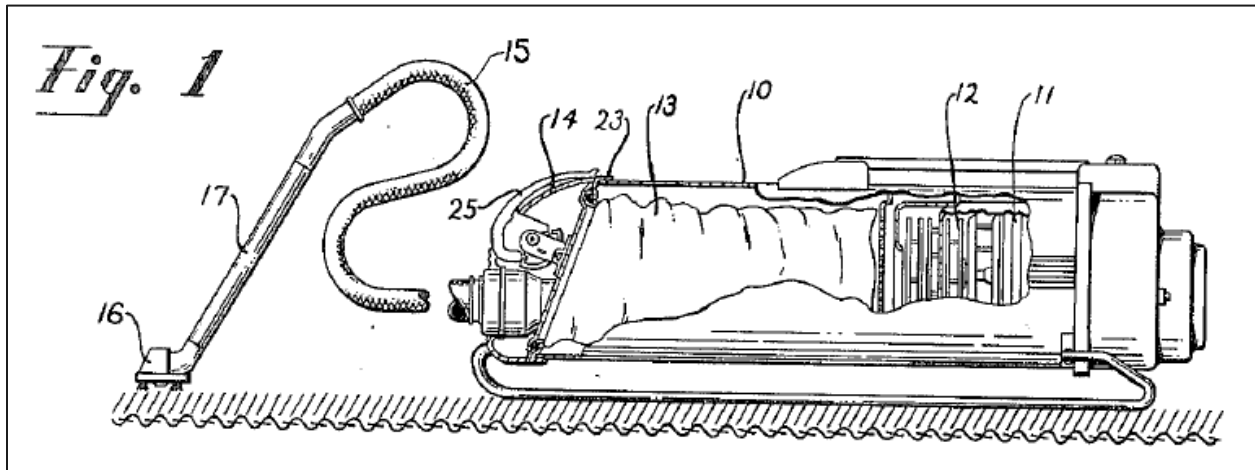
1. [1]/[13]/[14]/[18]

a. [1pre]/[13pre]/[14pre]/[18pre]

Reference Number	Claim Limitation
[1pre]	“A surface cleaning apparatus comprising:”
[13pre]	“A surface cleaning apparatus comprising:”
[14pre]	“A surface cleaning apparatus comprising:”
[18pre]	“A surface cleaning apparatus comprising:”

170. In my opinion, Brown teaches a surface cleaning apparatus.

171. For example, Brown teaches “a vacuum cleaner” that uses a “cleaning tool 16” to clean surfaces as shown in the figure below:



Ex. 1007, 2:7-25, Fig. 1.

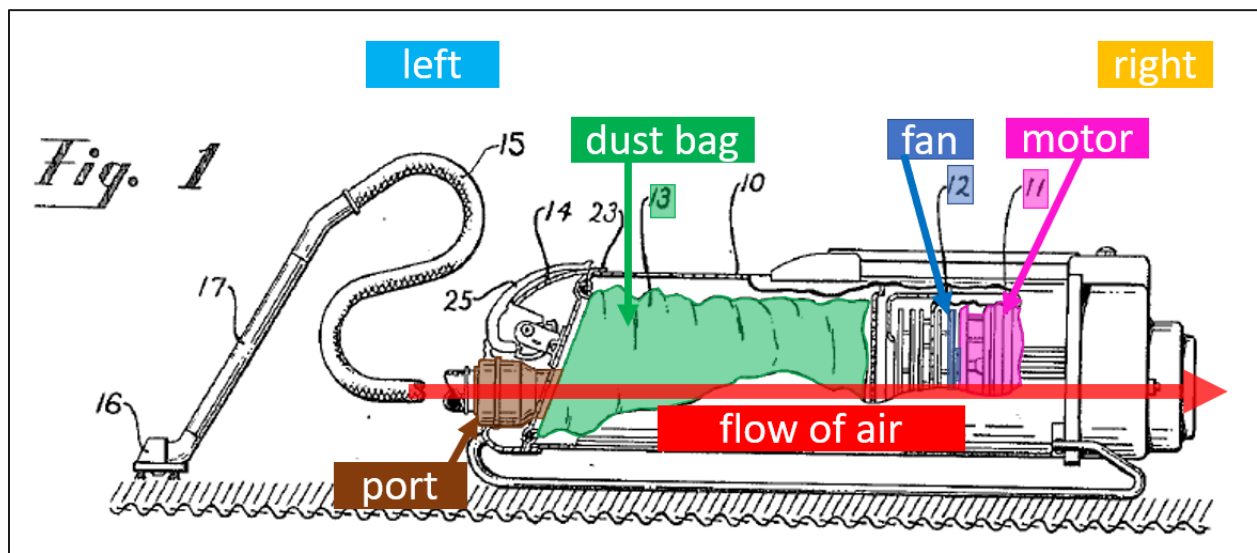
172. In my opinion, a POSA would have understood that this is a surface cleaning apparatus.

b. [1a]/[13a]/[14a]/[18a]

Reference Number	Claim Limitation
[1a]	“(a) an air flow path from a dirty air inlet to a clean air outlet and including a suction motor;”
[13a]	“(a) an air flow path from a dirty air inlet to a clean air outlet and including a suction motor;”
[14a]	“(a) an air flow path from a dirty air inlet to a clean air outlet and including a suction motor;”
[18a]	“(a) an air flow path from a dirty air inlet to a clean air outlet and including a suction motor;”

173. In my opinion, Brown teaches an air flow path from a dirty air inlet to a clean air outlet and including a suction motor.

174. For example, Brown teaches that, in its vacuum cleaner, a “**flow of air**” in casing 10,” “produce[d]” by “a **motor 11** driving a ... **fan 12**,” causes air to generally flow “from **left**,” where there is a “**port** for the admission of dust-laden air,” “to **right** as viewed in Fig. 1,” through “**dust bag 13**,” which “separate[s] the dust from the air” and then out on the far right, as shown in the annotated figure below:



Ex. 1007, 2:10-17, 1:40-46, Fig. 1.

175. In my opinion, a POSA would have understood that Brown’s “**port** for the admission of dust-laden air” at the “**left**” is a dirty air inlet, at least because it is an inlet for dirty air. Further, in my opinion, a POSA would have understood that Brown’s “**motor 11**,” independently or together with “**fan 12**,” is a suction motor in the air flow path, as depicted in Figure 1, at least because it generates suction in Brown’s cleaner.

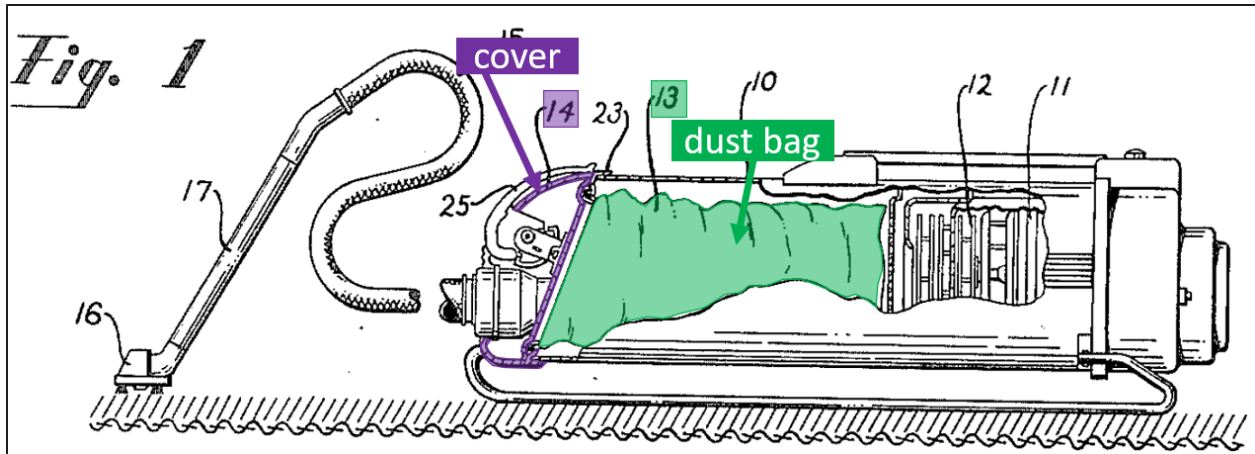
176. Also, in my opinion, a POSA would have understood that, after the “**flow of air**” in Brown’s cleaner has been cleaned by “**dust bag 13**,” it exits out of a clean air outlet, at least because this is conventional for such vacuum cleaners.

c. [1b]/[14b]/[18b]

Reference Number	Claim Limitation
[1b]	“(b) an air treatment member comprising a dirt collection region having an openable door;”
[14b]	“(b) an air treatment member comprising a dirt collection region having an openable door;”
[18b]	“(b) an air treatment member comprising a dirt collection region having an openable door;”

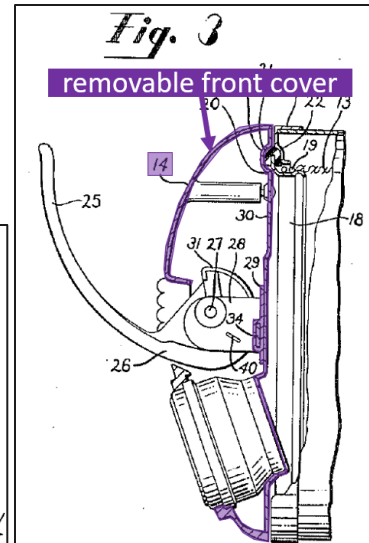
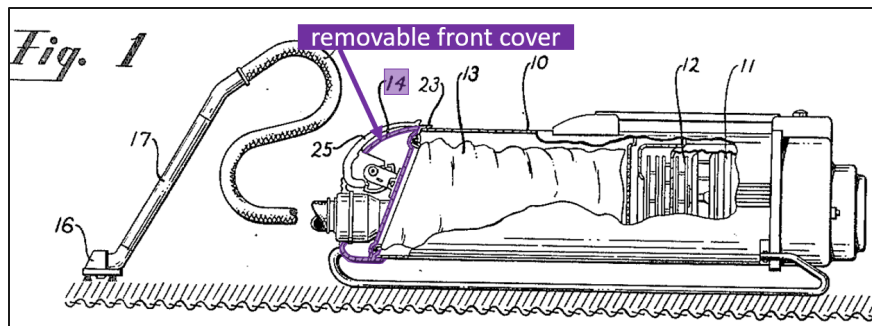
177. In my opinion, Brown teaches an air treatment member comprising a dirt collection region having an openable door.

178. For example, Brown teaches “a conventional tank type cleaner in which the **cover [14]** acts not only as a closure for the dust compartment but also as a retaining and sealing means for an internal **dust bag [13]**” as shown in the annotated figure below:



Ex. 1007 at 1:40-46, Fig. 1.

179. Brown teaches that its **dust bag 13** “separate[s] the dust from the air.” Ex. 1007, 2:12-14. Brown also teaches that “[a] **removable front cover 14** secures **dust bag 13** in casing 10 ... and permits access to remove **dust bag 13** to empty it.” *Id.*, 2:14-17. In my opinion, a POSA would have understood that Brown’s “dust compartment,” including “**dust bag 13**,” is an air treatment member comprising a dirt collection region at least because Brown teaches that it treats the air by “separate[ing] the dust” and because Brown teaches that it collects the separated dust. *Id.*, 2:12-14.
180. In my opinion, a POSA also would have understood that Brown’s dirt collection region has an openable door, “**removable front cover 14**” as shown in the annotated figures below:



Ex. 1007, 2:14-17, Figs. 1, 3; *see also id.*, 1:12-23, 1:29-35, 1:40-50, 2:32-39, 3:6-38.

181. In my opinion, a POSA would have understood that Brown's removable front cover is an openable door at least because it is a cover that is removable (openable).

d. [13b]

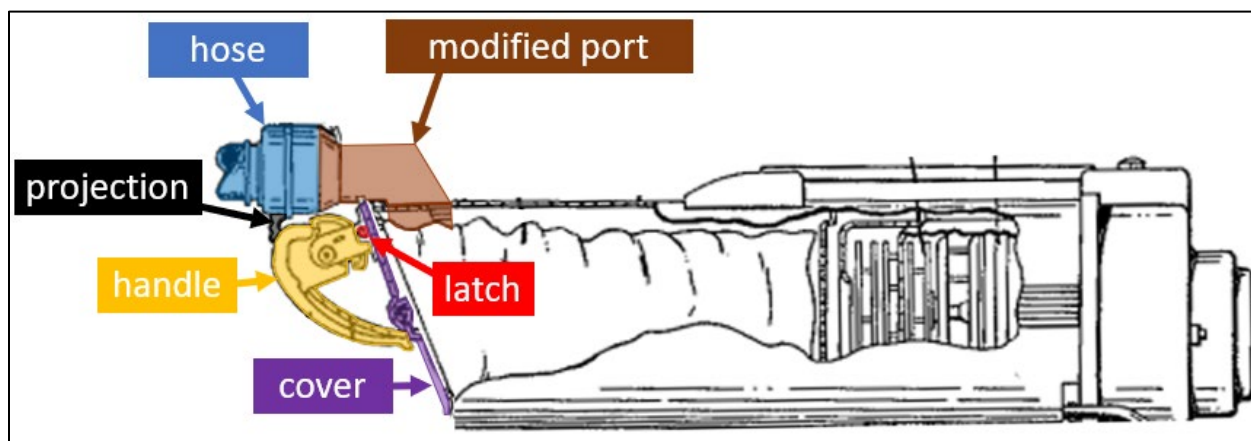
Reference Number	Claim Limitation
[13b]	"(b) an air treatment member comprising a dirt collection region having an openable door wherein the dirty air inlet is positioned above the air treatment member;"

182. In my opinion, Brown teaches and renders obvious an air treatment member comprising a dirt collection region having an openable door wherein the dirty air inlet is positioned above the air treatment member.

183. As I explained for Limitations [1b]/[14b]/[18b], in my opinion Brown

teaches an air treatment member comprising a dirt collection region having an openable door. *See* Ground 2, Limitations [1b]/[14b]/[18b]. It is also my opinion that Brown renders obvious positioning the dirty air inlet (Brown's "**port**") above the air treatment member.

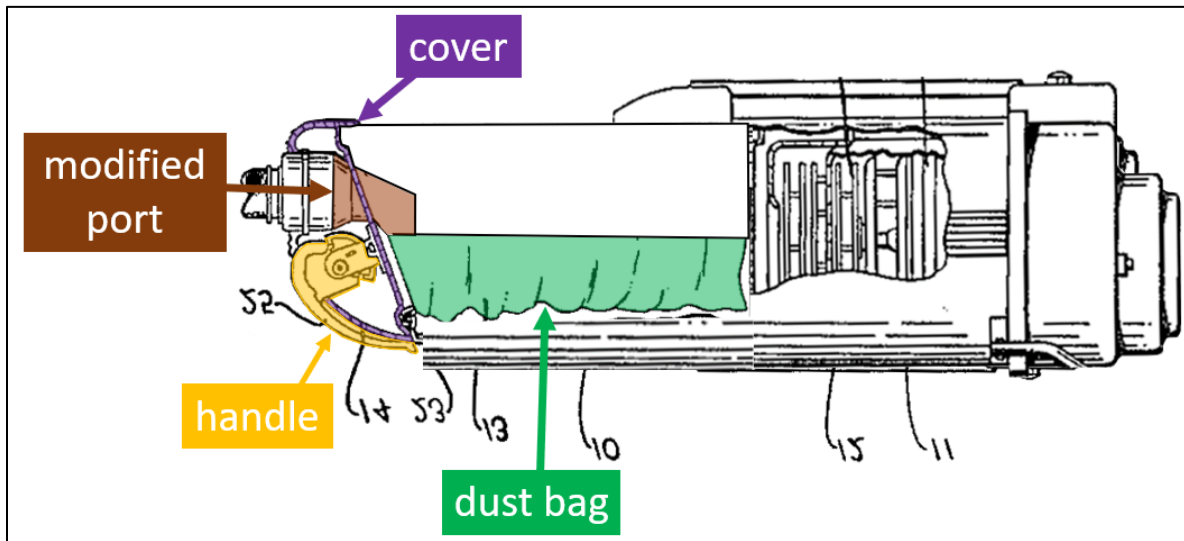
184. In my opinion, a POSA would have been motivated to modify Brown to relocate Brown's "**port**" at the top of the front of Brown's cleaner, above Brown's "casing 10" rather than on the bottom, as Brown teaches, and to reorient Brown's "**handle**" and accessory **projection** to accommodate this relocation: In this way, the handle and latch are able to be oriented for a handheld vacuum that can be opened ergonomically and hygienically.



Ex. 1007, Fig. 1 (modified).

185. Also, in my opinion, a POSA also would have been motivated to swap the positioning of Brown's "**port**" and "**handle**" such that the "**port**" would be located on the top of Brown's "**cover**" and the "**handle**" on the bottom, and to reduce the size of Brown's dust bag to accommodate the higher

“port” position:



Ex. 1007, Fig. 1 (modified).

186. In my opinion, these modifications would not alter the way in which Brown’s door-locking-and-opening mechanisms function, apart from a user simply having to lift Brown’s “**handle**” up, rather than down, to open Brown’s “**cover**,” which, in my opinion, would have given a POSA a reasonable expectation of success while also providing the vacuum user with a more ergonomic and hygienic posture while opening the vacuum.

187. Also, in my opinion, a POSA would have been motivated to make these modifications. First, a POSA would have been motivated to make these modifications to improve the hygienics of opening Brown’s handle and latch for dust emptying. A POSA would have been motivated to make this modification to hygienically reduce the likelihood of collected dust spilling

onto and re-entering Brown's "**port**" during emptying. For example, a POSA would have understood that the dust collected in a dust bag, such as Brown's, generally settles in the lower portion of the dust bag. Thus, a POSA would have understood that the modification described above beneficially locates Brown's "**port**" farther away from the settled, collected dust.

188. Second, in my opinion, a POSA would have been motivated to make these modifications to improve the ergonomics of opening Brown's handle and latch for dust emptying. In my opinion, placing Brown's "port" higher up on Brown's cleaner would make it easier for a user to connect an accessory to it, as the user would not need to reach or bend down as far to do so.
189. Third, in my opinion, this orientation would have at least been obvious to try, as there are a finite number of ways to orient Brown's "**handle**" as centered with its latch bars 34 forming a diameter when in the locked position and "**port**," including with a downwardly moving "**handle**" and a bottom-located "**port**," as Brown teaches, or an upwardly moving "**handle**" and a top-located "**port**," as described above. When so modified, Brown's dirty air inlet ("**port**") is positioned above Brown's air treatment member.

e. [1c]/[13c]/[14c]/[18c]

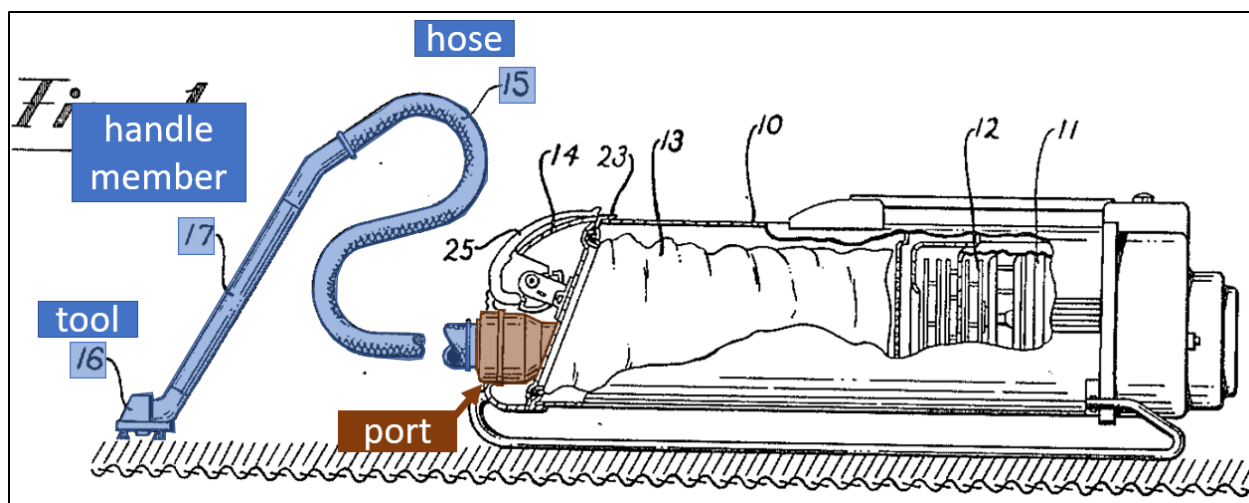
Reference Number	Claim Limitation
[1c]	“(c) an accessory removably connectable to the dirty air inlet wherein, when the accessory is connected to the dirty air inlet, the openable door is inhibited from opening; and,”
[13c]	“(c) an accessory removably connectable to the dirty air inlet wherein,”
[14c]	“(c) an accessory removably connectable in air flow communication with the dirty air inlet; and,”
[18c]	“(c) an accessory removably connectable in air flow communication with the dirty air inlet; and,”

190. In my opinion, Brown teaches and renders obvious an accessory removably connectable to the dirty air inlet wherein, when the accessory is connected to the dirty air inlet, the openable door is inhibited from opening.

191. In my opinion, Brown teaches and renders obvious an accessory removably connectable to the dirty air inlet.

192. In my opinion, Brown teaches and renders obvious an accessory removably connectable in air flow communication with the dirty air inlet.

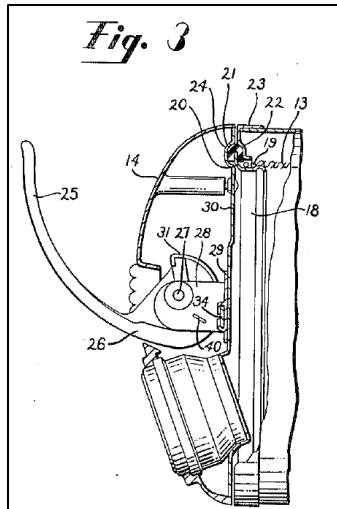
193. For example, in Brown, “[a] flexible **hose 15** is connected in an **inlet opening** in cover 14” (i.e., the “**port**”) “and *communicates* with the interior of dust bag 13,” and “[a] **cleaning tool 16** is connected to the other end of the **hose 15** by means of a rigid tubular **handle member 17**,” as shown in the annotated figure below:



Ex. 1007, 2:17-22, Fig. 1.

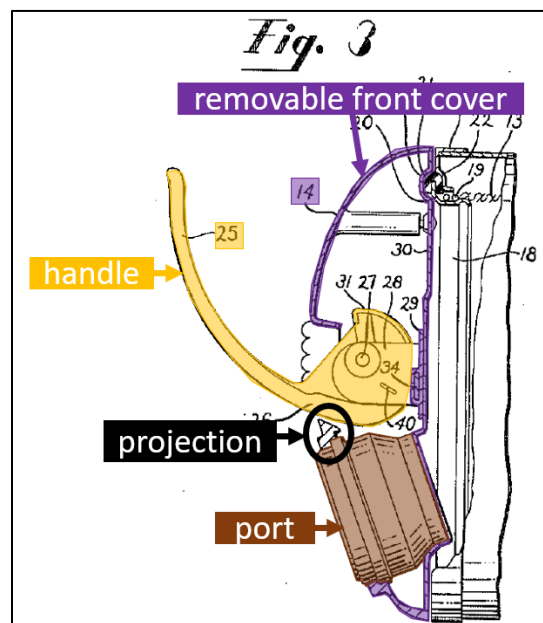
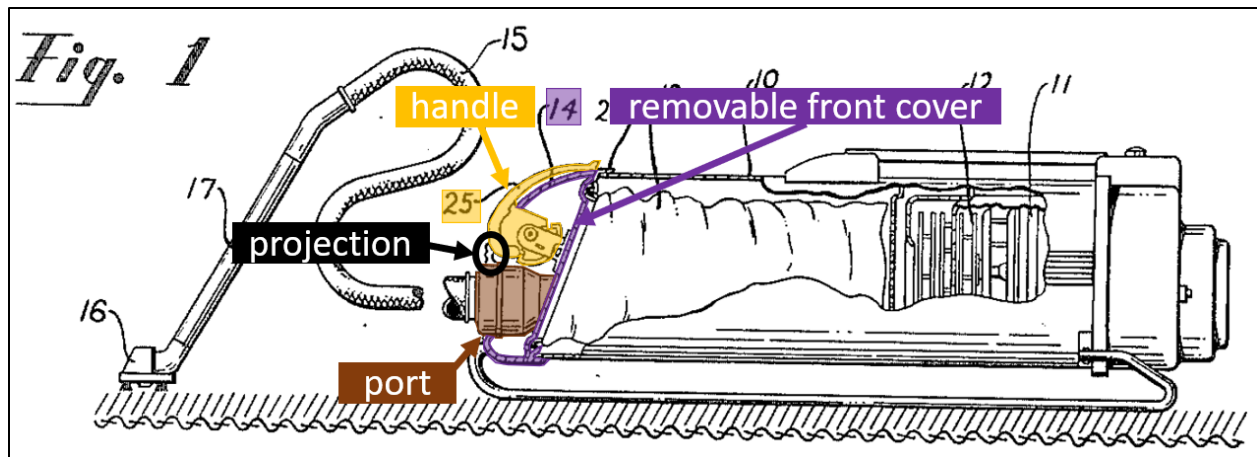
194. In my opinion, a POSA would understand that Brown’s “**hose 15**,” independently or together with “**handle member 17**” and “**cleaning tool 16**,” is an accessory in air flow communication with Butler’s “**port**” (which is, in my opinion, is the dirty air inlet), at least because Brown depicts it as an accessory and describes it as “communicat[ing] with the interior of dust bag 13.” Ex. 1007, 2:17-20.

195. Further, in my opinion, Brown teaches that its accessory is removable. Brown teaches that “**hose 15** is connected in an inlet opening in cover 14,” and depicts the accessory as removed in Figure 3:



Ex. 1007, Fig. 3.

196. In my opinion, a POSA would thus understand that Brown’s accessory is removable.
197. Regarding Limitation [1c], in my opinion, Brown teaches that the dirty air inlet inhibits the openable door from opening, including “when” the accessory is connected to the dirty air inlet. Brown depicts a **projection** located on its “**port**” that, in my opinion, inhibits Brown’s “**removable front cover 14**” from opening because it is depicted in contact with Brown’s “**handle 25**,” showing that it provides resistance against rotation of the handle, which must be “grasped and moved about ... the pintle 27” to open Brown’s door (i.e., “to remove the **cover**”), as shown in the annotated figures below:



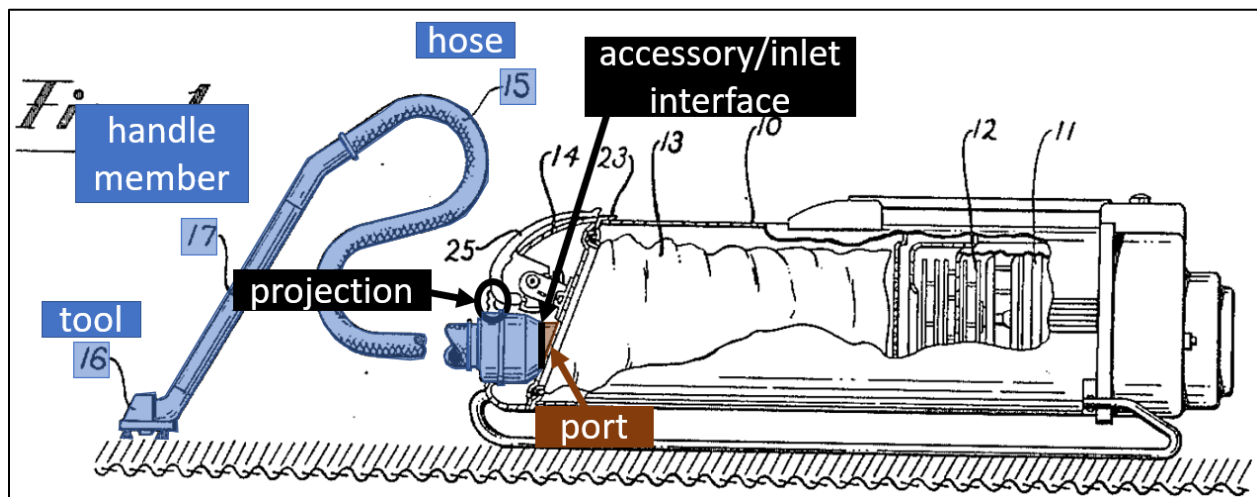
Ex. 1007, 3:24-38, Figs. 1, 3.

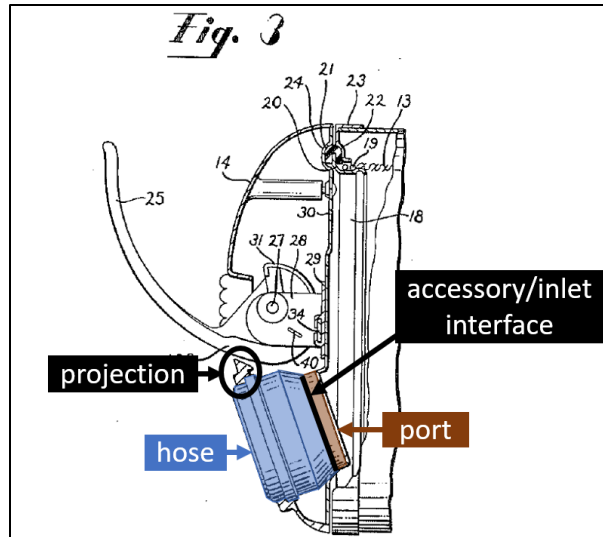
198. Brown depicts the **projection** plainly in both Figure 1 and Figure 3, as shown above. Ex1007, Figs. 1, 3. In my opinion, based on these depictions, a POSA would have understood that Brown's **projection** contacts and provides resistance against Brown's "**handle 25**" as described above. The contact loads on the projection generated by this action causes bending and stress in the projection, and the projection transfers these

forces to the port that it is attached to.

199. Further, in my opinion and as depicted in Figure 1, this also occurs “when” Brown’s accessory (“**hose 15**,” independently or together with Brown’s “**handle member 17**” and “**cleaning tool 16**”) is connected to the dirty air inlet (in my opinion, Brown’s “**port**”).

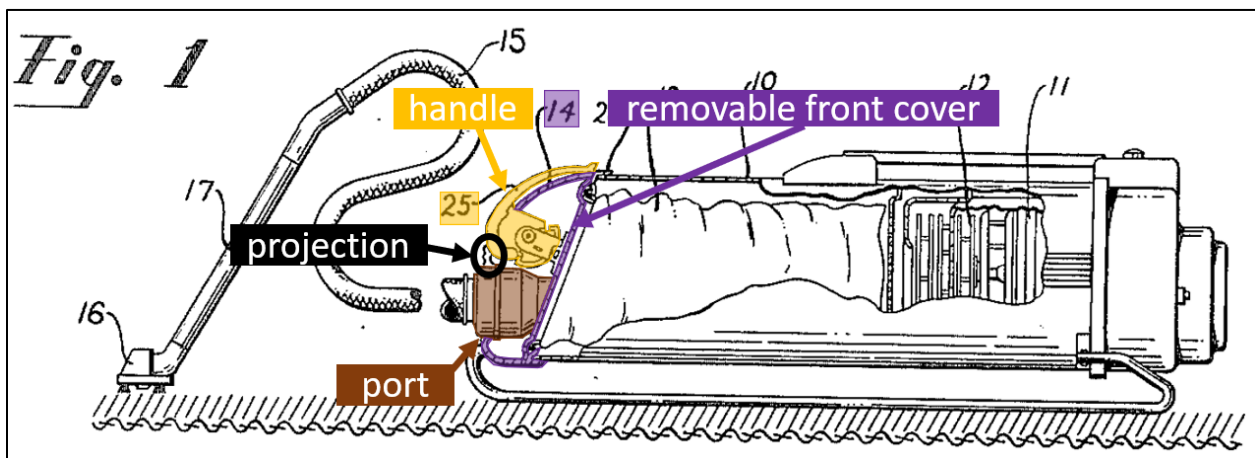
200. Further, in my opinion, it would have been obvious to modify Brown to move the interface between the dirty air inlet and the accessory rearward, which would relocate the **projection** from Brown’s “port” onto its accessory (e.g., “**hose 15**”), as shown in the annotated figure below:

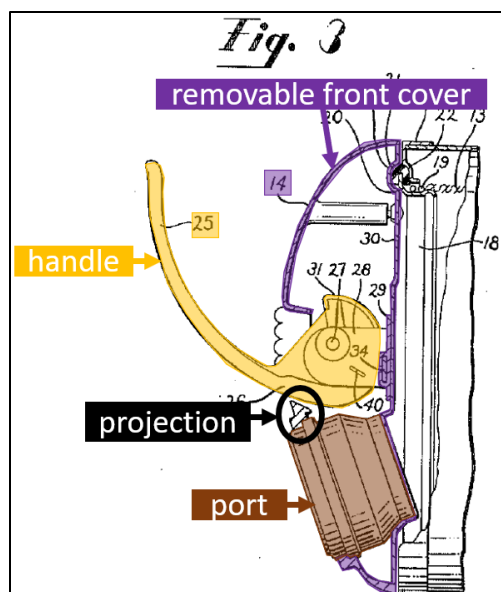




Ex. 1007, Figs. 1, 3.

201. In my opinion, a POSA would have been motivated to make this modification. In my opinion, a POSA would have understood that, in Brown's unmodified design as shown in Figures 1 and 3, opening the door by moving Brown's "handle 25" involves loading and stressing the port and its connections to the removeable front cover, as shown in the annotated figures below:





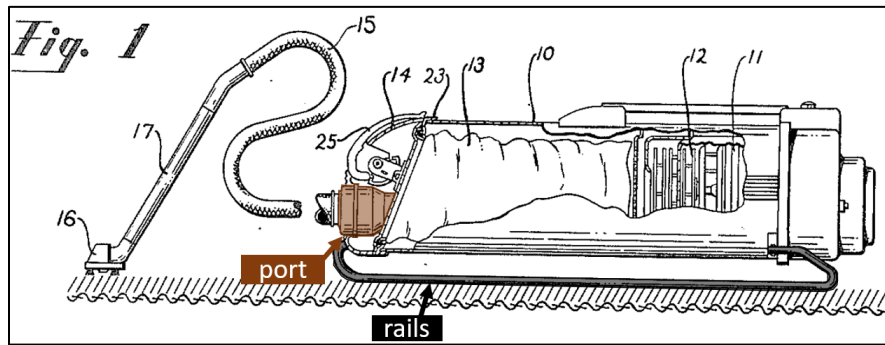
Ex. 1007, Figs. 1, 3.

202. For example, Brown Figure 1 shows that Brown’s “**handle 25**” interfaces with Brown’s depicted **projection** such that moving Brown’s Brown’s “**handle 25**” would impact Brown’s depicted **projection**, thereby causing this undesirable loading and stresses in the port. *See* Ex1007, Figs. 1, 3.

203. Because of this, in my opinion, a POSA would have been motivated to modify Brown to relocate the interface between the port and accessory to avoid this loading, because this fatigue disadvantageously creates wear-and-tear on several of Brown’s components, including the “**port**” and its connections to the removeable front cover and removing this loading would prevent these induced stresses, thereby extending the life of these components and reducing the risk that they break and/or permanently deform.

204. Further, in my opinion, the process of removing the accessory is simplified, as the user more conveniently removes the accessory when he/she wants to open Brown's "**front cover 14**," and no longer needs to load any components to do so, which furthers Brown's goal of a "simple and efficient" emptying process. Ex. 1007, 1:4-11. And, in my opinion, this modification still allows Brown's door to remain shut when desired—i.e., when an accessory is connected.
205. In my opinion, this modification also furthers the purpose of Brown's **projection** by more effectively preventing accidental opening of Brown's "**removable front cover 14**." In my opinion, a POSA would have been motivated to prevent Brown's "**removable front cover 14**" from accidentally opening during use, which could undesirably result in spilling collected dust onto the floor and/or the user. Further, in my opinion, a POSA would understand that Brown's accessory is typically attached when the vacuum cleaner is in use, and therefore would have been motivated to prevent accidental removal of "**front cover 14**" during this time. Indeed, in my opinion, it would be impractical to use Brown's vacuum cleaner design without its accessory, as other components, including the **rails**, would prevent Brown's short "**port**" from reaching the to-be-cleaned surface, making it more likely that the cleaner is not in use

when the accessory is detached, as shown in the annotated figure below:



Ex. 1007, Fig. 1.

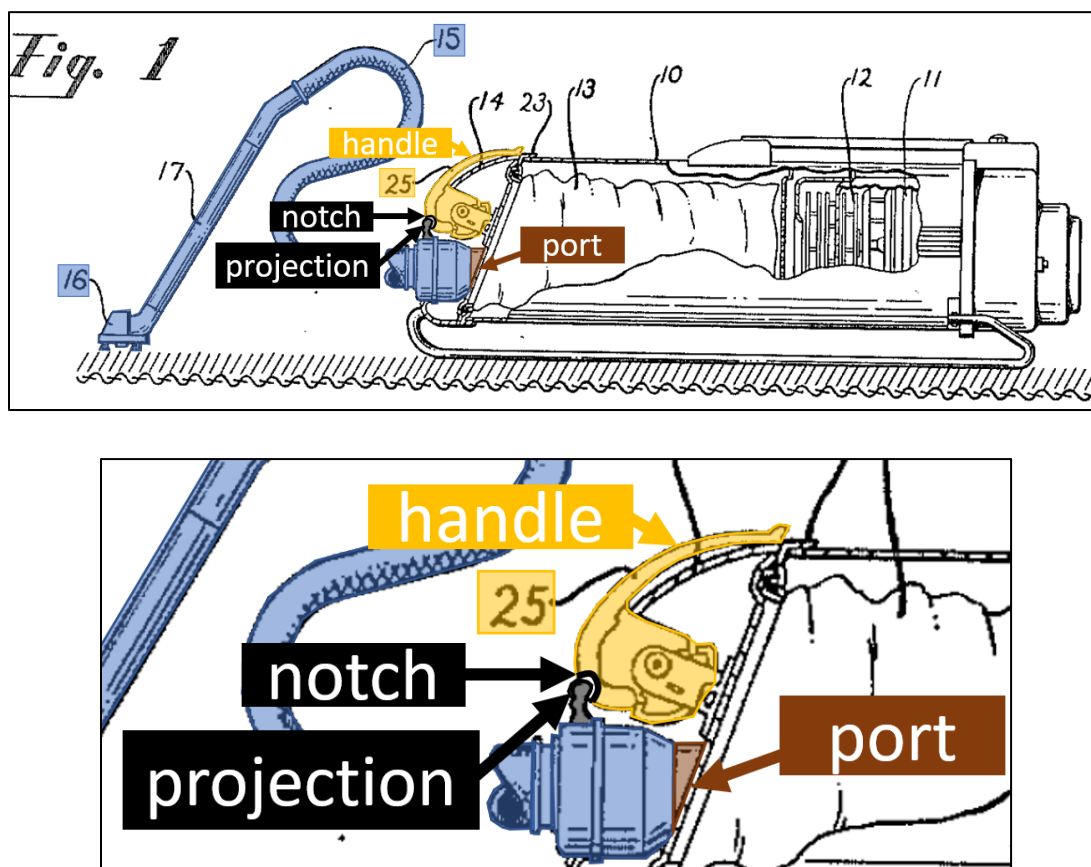
206. Accordingly, in my opinion, a POSA would have been motivated to facilitate “**front cover 14**” removal when the accessory is detached (and the cleaner is not likely to be in use) and to prevent such “**front cover 14**” removal when the accessory is attached (and the cleaner is more likely to be in use). As I described above, in my opinion, relocating Brown’s **projection** from the “**port**” to the accessory (e.g., “**hose 15**”) by moving the “**port**”/accessory interface accomplishes this. Further, in my opinion, a POSA would have understood that the straightforward addition of a slot and groove to the port/accessory interface aligns the projection with the handle when the accessory was attached.

207. Also, to the extent a POSA had any uncertainty regarding whether such handle-projection interference occurred, despite Brown depicting such interference in Figure 1, a POSA would have still been motivated to modify Brown as I describe both to avoid the potential for such undesirable

deformation of Brown's components and to obtain the benefits of preventing accidental opening of Brown's "**front cover 14**" as I described above.

208. Further, in my opinion, a POSA would have had a reasonable expectation of success in making this modification, because it would have involved simply modifying the location of the accessory/inlet interface between Brown's accessory (e.g., "**hose 15**") and its "**port**" by a few millimeters (for example, by extending Brown's accessory connection and by shortening Brown's "**port**" connection by a few millimeters), and it would have yielded the predictable result of "simple and efficient" emptying as described above. Ex. 1007, 1:4-11.
209. In my opinion, this modification would have involved using a known component (Brown's **projection**) in a known way (to inhibit the movement of Brown's "**handle 25**" in the same manner as Brown teaches—namely, by physically interfering with it).
210. Regarding Limitation [1c], when so modified, Brown in my opinion renders obvious when the accessory is connected to the dirty air inlet, the openable door is inhibited from opening.
211. In my opinion, a POSA would further have been motivated to add a corresponding notch in Brown's "**handle 25**" to accommodate Brown's

projection to *prohibit* door opening. In my opinion, a POSA would have understood that the physical interference between Brown's projection (when relocated to Brown's accessory) and an accompanying notch would prevent the user from moving Brown's "**handle 25**" when an accessory is attached, thereby beneficially prohibiting accidental door opening during use with an accessory, as shown in the annotated figures below:



Ex. 1007, Fig. 1.

212. In my opinion, a POSA would have had a reasonable expectation of success because it would have involved the simple addition of a notch to a handle that would not otherwise affect the handle or any related

components. And this arrangement avoids the contact with the projection on purposeful opening action, replacing it with occasional, accidental contact.

f. [1d.1]/[14d.1]/[18d.1]

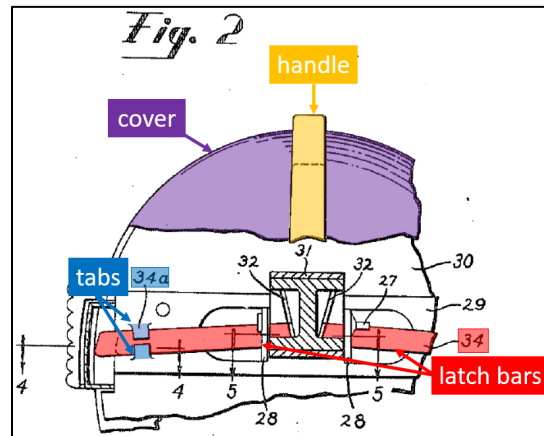
Reference Number	Claim Limitation
[1d.1]	“(d) an openable door lock comprising a lock engaging member and a door release actuator drivingly connected to the lock engaging member,”
[14d.1]	“(d) an openable door lock comprising a lock engaging member and a door release actuator drivingly connected to the lock engaging member,”
[18d.1]	“(d) an openable door lock securing the openable door in a closed position,”

213. In my opinion, Brown teaches an openable door lock comprising a lock engaging member and a door release actuator drivingly connected to the lock engaging member.

214. In my opinion, Brown teaches an openable door lock securing the openable door in a closed position.

215. In my opinion, Brown teaches an openable door lock having a lock engaging member and a door release actuator, and that the openable door lock secures the openable door in a closed position. When Brown’s “**handle 25**” is in the “upward” position, “the outer ends of the **latch bars 34** are engaged” in the “**locking** ... position” by “[g]uiding and securing **tabs 34a**,” thereby “**secur[ing]** the **cover** in position,” as shown in the

annotated figure below:



Ex. 1007, 3:1-38.

216. In my opinion, a POSA would understand that Brown's cover-securing mechanism, including "handle 25," "latch bars 34," and "tabs 34a," is an openable door lock because it "secure[s] the [removable] cover [14] in position." Ex. 1007, 3:13-20. A POSA would further understand, in my opinion, that Brown's "cover securing latch bars," the "outer ends" of which "are *engaged* under the walls 37 to secure the cover in position" and "are beveled ... to assist in securely holding the cover in sealing relation with the gasket 21" are a lock engaging member. In my opinion, a POSA would also understand that Brown's "handle" is a door release actuator: it is a "latch actuating handle" that "constitutes a manipulating handle for the cover as well as the actuating member for the latch." Ex. 1007, 1:51-55; *see also id.*, 1:12-18, 2:40-3:5, Fig. 4.

217. Also, in my opinion, a POSA would further understand that Brown's door

release actuator (“**handle**”) is drivingly connected to the lock engaging member (“**latch bars**”) at least because, when a user unlocks the cover, they “move” Brown’s “**handle**,” and it, in turn, “move[s] the **[latch] bars** inwardly ... permitting the **cover** to be removed.” Ex. 1007, 3:24-32 (“[W]hen it is desired to remove the **cover**, the **handle 25** is grasped and moved about with the pintle 27 as its axis thus rotating the cam 29 whereby the slots 32 engage the ends 33 of the **latch bars 34** to move the bars inwardly thus withdrawing their ends 39 from the engagement with the keepers 35 and permitting the cover to be removed.”).

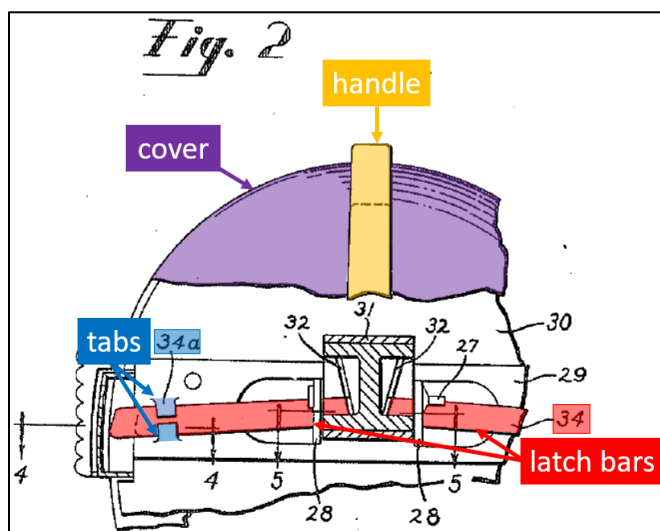
g. [1d.2]/[14d.2]

Reference Number	Claim Limitation
[1d.2]	“the lock engaging member moveable between an engaged position in which the lock engaging member secures the openable door in a closed position and a disengaged position in which the openable door is openable”
[14d.2]	“the lock engaging member is moveable between an engaged position in which the lock engaging member secures the openable door in a closed position and a disengaged position in which the openable door is openable”

218. In my opinion, Brown teaches the lock engaging member moveable between an engaged position in which the lock engaging member secures the openable door in a closed position and a disengaged position in which the openable door is openable.

219. In my opinion, Brown teaches that its lock engaging member is movable

to an engaged position in which the lock engaging member secures the openable door in a closed position. When Brown's "handle" is in the "upward" position, "the outer ends of the latch bars 34 are engaged" in the "locking ... position" by "[g]uiding and securing tabs 34a," thereby "secur[ing] the cover in position," as shown in the annotated figure below:



Ex. 1007, 3:1-38.

220. In this position, "the outer ends of the latch bars 34 are engaged" under the walls 37 to secure the cover in position" and "are beveled ... to provide a slight camming action to assist in securely holding the cover in sealing relation with the gasket 21." Ex. 1007, 2:48-5, 3:13-20, Fig. 2. In my opinion, a POSA would understand that this is an engaged position of the lock engaging member in which the lock engaging member ("latch bars") secures the openable door (Brown's "cover") in a closed position.

221. In my opinion, Brown teaches that the lock engaging member is movable to a disengaged position in which the openable door is openable. Brown explains that “when it is desired to remove the **cover**, the **handle 25** is grasped and moved about with the pintle 27 as its axis thus rotating the cam 29 whereby the slots 32 engage the ends 33 of the **latch bars 34** to *move the bars inwardly* thus withdrawing their ends 39 from the engagement with the keepers 35 and *permitting the cover to be removed.*” Ex. 1007, 3:24-32. In my opinion, a POSA would understand that this is a disengaged position of the lock engaging member in which the openable door (in my opinion Brown’s “**cover**”) is openable.
222. As I described above, in my opinion Brown teaches the lock engaging member is moveable between those two positions by operation of Brown’s “**handle**.” Ex. 1007, 3:1-38.

h. [1d.3]/[14d.3]

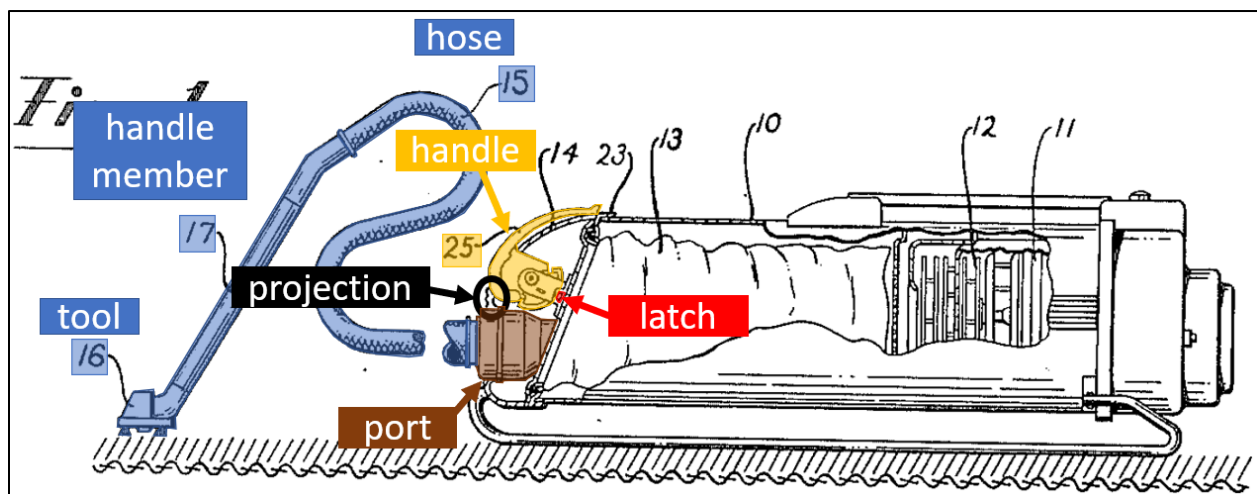
Reference Number	Claim Limitation
[1d.3]	“wherein the lock engaging member is inhibited from moving to the disengaged position when the accessory is connected to the dirty air inlet.”
[14d.3]	“wherein the lock engaging member is inhibited from moving to the disengaged position when the accessory is connected in air flow communication with the dirty air inlet.”

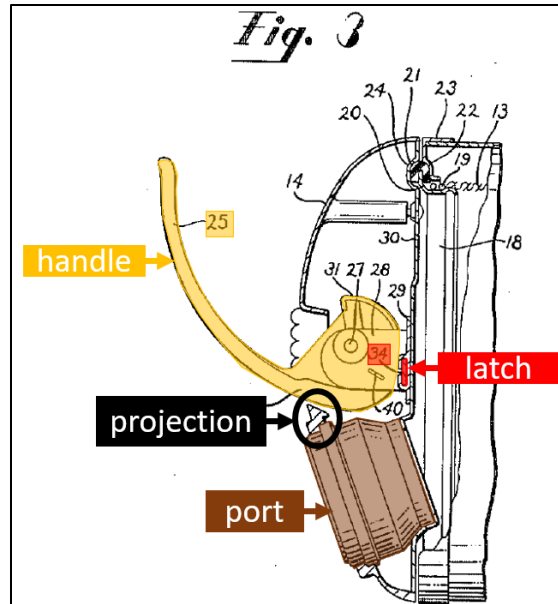
223. In my opinion, Brown teaches and renders obvious wherein the lock engaging member is inhibited from moving to the disengaged position

when the accessory is connected to the dirty air inlet.

224. In my opinion, Brown teaches and renders obvious wherein the lock engaging member is inhibited from moving to the disengaged position when the accessory is connected in air flow communication with the dirty air inlet.

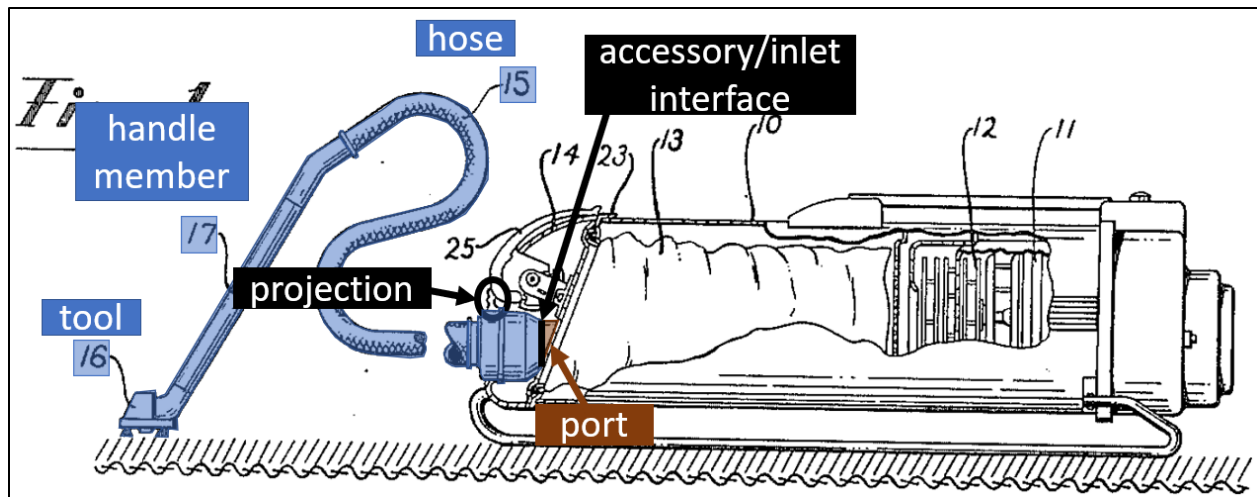
225. In my opinion, Brown teaches a **projection** that inhibits Brown's lock engaging member ("latch bars") from moving to the disengaged position when the accessory ("hose," independently or together with "handle member" and/or "tool") is connected to and in air flow communication with the dirty air inlet ("port"). In my opinion, Brown's **projection** contacts and inhibits the movement of Brown's "handle" (this movement is required to move Brown's lock engaging member to the disengaged position, *see* Ground 2, Limitations [1d.2]/[14d.2]), including when Brown's accessory is attached, as shown in the annotated figures below:





Ex. 1007, Figs. 1, 3.

226. Further, in my opinion, it would have been obvious to modify Brown such that the lock engaging member is inhibited from moving to the disengaged position when the accessory is connected to and in air flow communication with the dirty air inlet. As I explained for Limitations [1c]/[13c]/[14c]/[18c], in my opinion a POSA would have been motivated to modify Brown such that its **projection** is located on the accessory, not the “**port**,” and would have reasonably expected success, as shown in the annotated figure below:



Ex. 1007, Fig. 1; *see* Ground 2, Limitations [1c]/[13c]/[14c]/[18c].

227. In my opinion, when so modified, Brown’s **projection** would likewise inhibit Brown’s lock engaging member from moving to the disengaged position in the same manner as described above, when Brown’s accessory is connected to and in air flow communication with the dirty air inlet.

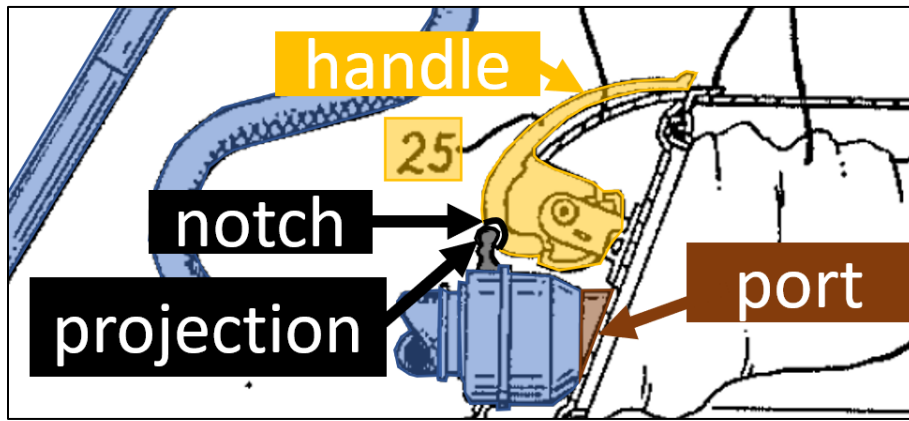
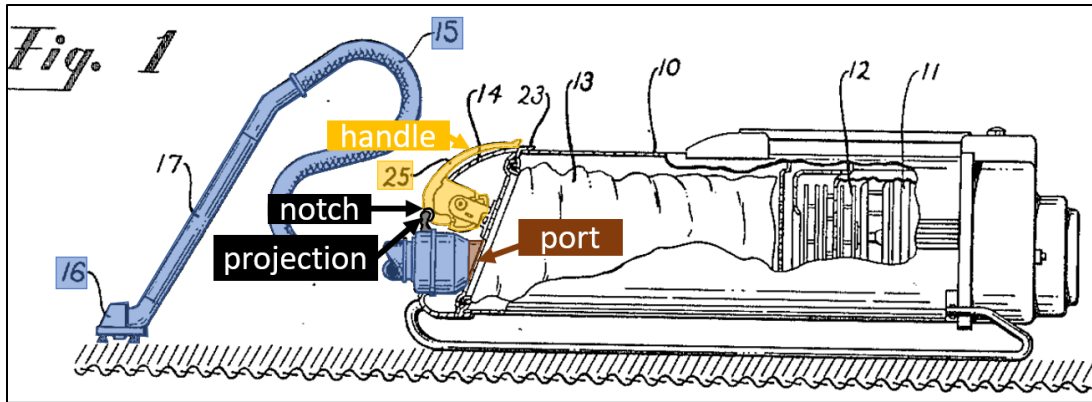
228. For example, in my opinion a POSA would understand that Brown’s **projection** provides resistance against the movement of the “**handle**,” which therefore provides resistance against the “**handle**” moving Brown’s lock engaging member (“**latch bars**”). In my opinion, this is consistent with the plain and ordinary meaning of the term “inhibit” as well as the ’477Patent’s use of “inhibit.” For example, the ’477Patent specification states that having an air inlet at an upper portion of the cyclone sidewall “inhibits” dirt from exiting or blocking the air inlet:

Alternately or in addition, in accordance with this aspect, the cyclone air inlet may be in an upper portion of the sidewall 168 of the cyclone. An advantage of this design is that it *inhibits* dirt that may remain in cyclone chamber 160 from exiting or blocking the air inlet when the apparatus is moved to various operating angles.

Ex. 1001, 20:53-58; *see also id.*, 21:62-66 (“For example, cyclone air inlet 180 may be positioned at an upper end 544 of cyclone 160. This allows gravity to assist with *inhibiting* dirt inside cyclone 160 from blocking or exiting cyclone air inlet 180.”).

229. In my opinion, a POSA would understand that such a design would not *prevent* dirt from blocking or escaping, but instead would only “inhibit” it. Further, the specification discusses “inhibiting” and “preventing” separately, further distinguishing them. *See, e.g.*, Ex. 1001, 36:54-57 (“when an accessory is connected to the dirty air inlet, the door lock may be inhibited *or prevented* from being disengaged.”); *see also id.*, 12:45-50, 12:65-13:3, 36:19-24, 36:40-45, 38:7-11 (using “inhibit *or prevent*” in the context of door locking and opening).

230. Further, as I explained for Limitations [1c]/[13c]/[14c]/[18c], in my opinion a POSA would have been motivated to modify Brown to add a notch to Brown’s “handle” that interacts with Brown’s **projection** thereby *preventing* “**handle**” movement, as shown in the annotated figures below:



Ex. 1007, Fig. 1; *see* Ground 2, Limitations [1c]/[13c]/[14c]/[18c].

231. In my opinion, when so modified, Brown’s **projection** would inhibit—and would prevent—Brown’s lock engaging member from moving to the disengaged position by prohibiting movement of Brown’s “**handle**” when an accessory is attached.

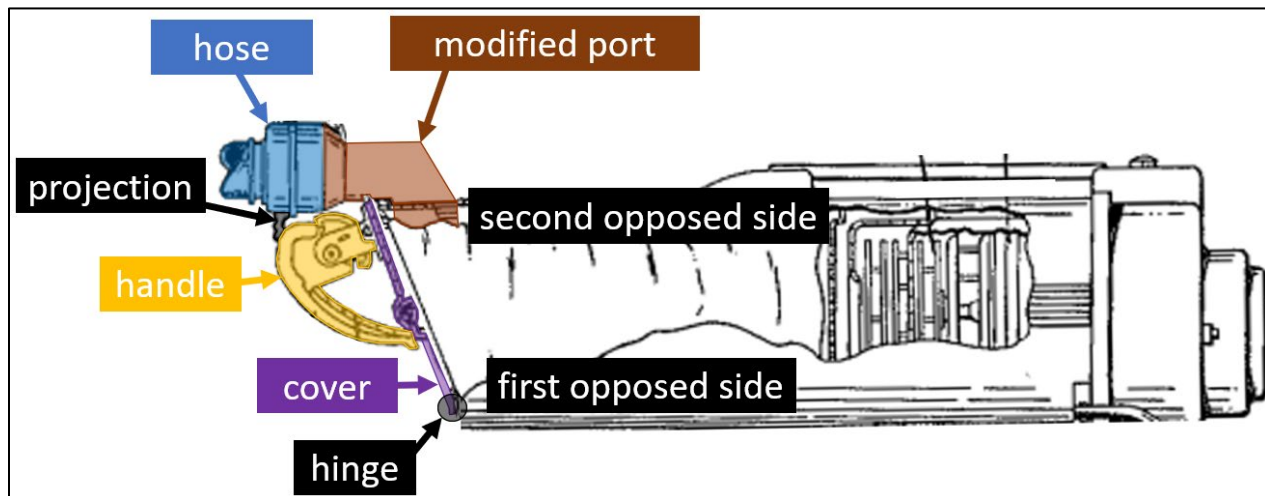
i. [13d]

Reference Number	Claim Limitation
[13d]	“wherein the openable door has first and second opposed sides, the first side having a hinge for the openable door and the second opposed side is positioned adjacent the dirty air inlet such that, when the accessory is connected to the dirty air inlet, the accessory overlies the second opposed side thereby inhibiting the openable door from opening.”

232. In my opinion, Brown renders obvious wherein the openable door has first and second opposed sides, the first side having a hinge for the openable door and the second opposed side is positioned adjacent the dirty air inlet such that, when the accessory is connected to the dirty air inlet, the accessory overlies the second opposed side thereby inhibiting the openable door from opening.

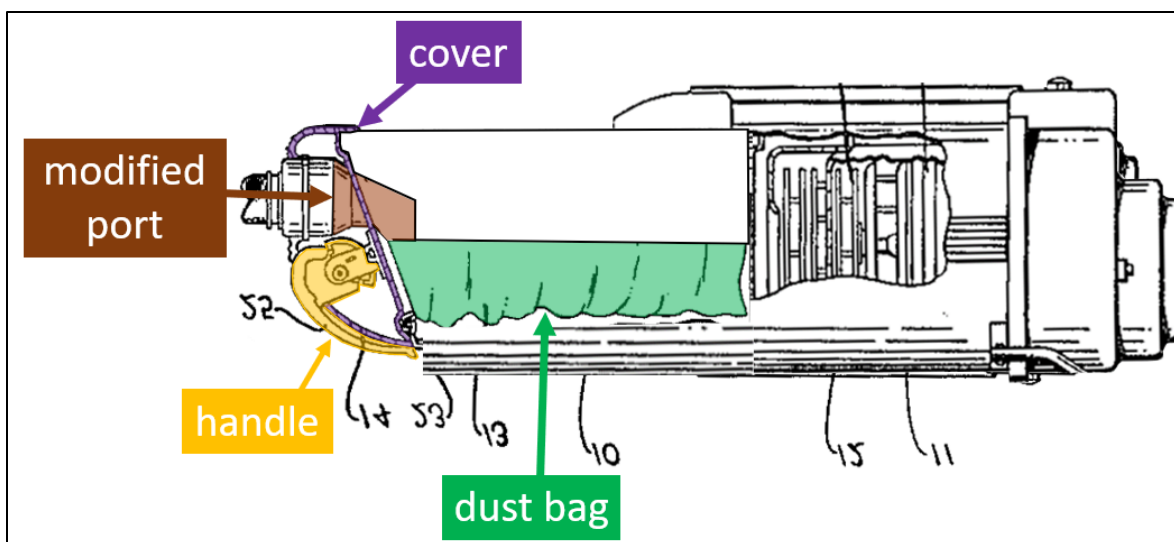
233. As I explained for Limitation [13b], in my opinion it would have been obvious to modify Brown to position its “**port**” above the air treatment member. *See* Ground 2, Limitation [13b]. Further, in my opinion it would have been obvious to add a **hinge** to Brown’s openable door (in my opinion the “**cover**”), such that Brown’s openable door has **first** and **second opposed sides**, the **first side** having a **hinge** for the openable door and the **second opposed side** is positioned adjacent the dirty air inlet (in my opinion Brown’s “**port**”) such that, when the accessory (e.g., in my

opinion Brown's "**hose**") is connected to the dirty air inlet, the accessory (specifically, in my opinion Brown's accessory's **projection**) overlies the **second opposed side** thereby inhibiting the openable door from opening, as shown in the annotated figure below:



Ex. 1007, Fig. 1 (modified).

234. In my opinion, a POSA would understand that when Brown's accessory's **projection** would inhibit the openable door from opening by overlying the **second opposed side** as depicted above. In my opinion, this is likewise true when Brown is modified such that the "**port**" and the "**handle**" are switched and the "**dust bag**" is resized, as shown in the annotated figure below:



Ex. 1007, Fig. 1 (modified).

j. [18d.2]

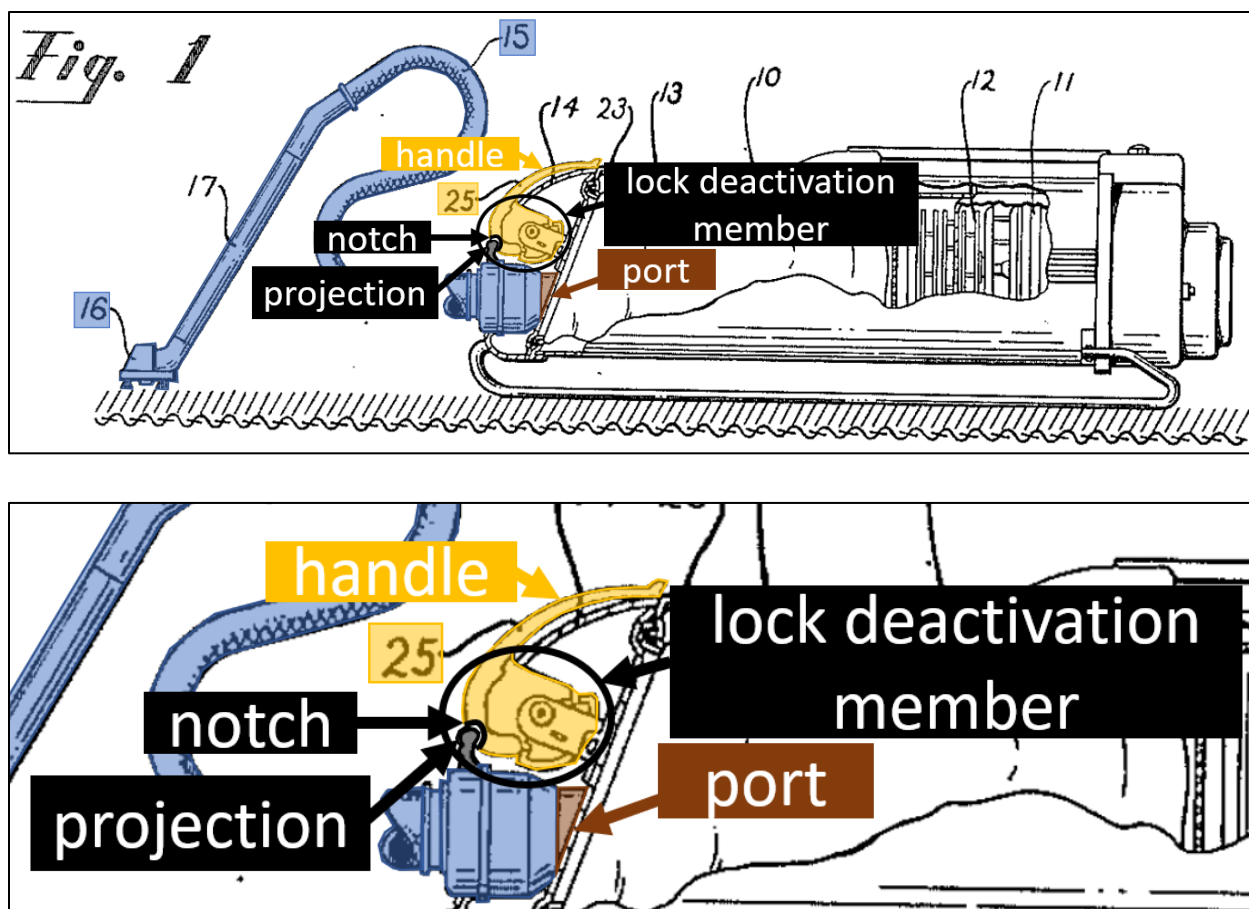
Reference Number	Claim Limitation
[18d.2]	“a lock deactivation member and the accessory has a blocking portion which moves the lock deactivation member to a blocking position which inhibits the openable door lock moving to a door openable position when the accessory is connected in air flow communication with the dirty air inlet.”

235. In my opinion, Brown renders obvious a lock deactivation member and the accessory has a blocking portion which moves the lock deactivation member to a blocking position which inhibits the openable door lock moving to a door openable position when the accessory is connected in air flow communication with the dirty air inlet.

236. In my opinion, Brown renders obvious a **lock deactivation member** (in my opinion the portion of Brown’s “**handle**” containing the **notch**). See

Ground 2, Claim 10. In my opinion, Brown also renders obvious that the accessory has a blocking portion (in my opinion Brown's accessory's **projection**). *See* Ground 2, Limitations [1d.1]/[14d.1], [1d.3]/[14d.3].

237. Further, in my opinion, Brown's accessory's **projection** moves the **lock deactivation member** to a blocking position which inhibits the openable door lock moving to a door openable position when the accessory (in my opinion Brown's "**hose**") is connected in air flow communication with the dirty air inlet (in my opinion Brown's "**port**"). Specifically, in my opinion, to lock Brown's "**cover**," a user attaches the accessory to Brown's "**port**" by moving the **notch** and the **projection** to mate with each other. In my opinion a POSA would understand that this moves Brown's **lock deactivation member** to a blocking position at least because a user can attach the accessory by moving the accessory to meet the "**port**" and the accessory's **projection** to meet the **notch**, or by moving Brown's cleaner, including the "**port**" and the **notch**, to meet the accessory and its **projection** (or some combination of both movements), as shown in the annotated figures below:



Ex. 1007, Fig. 1 (modified).

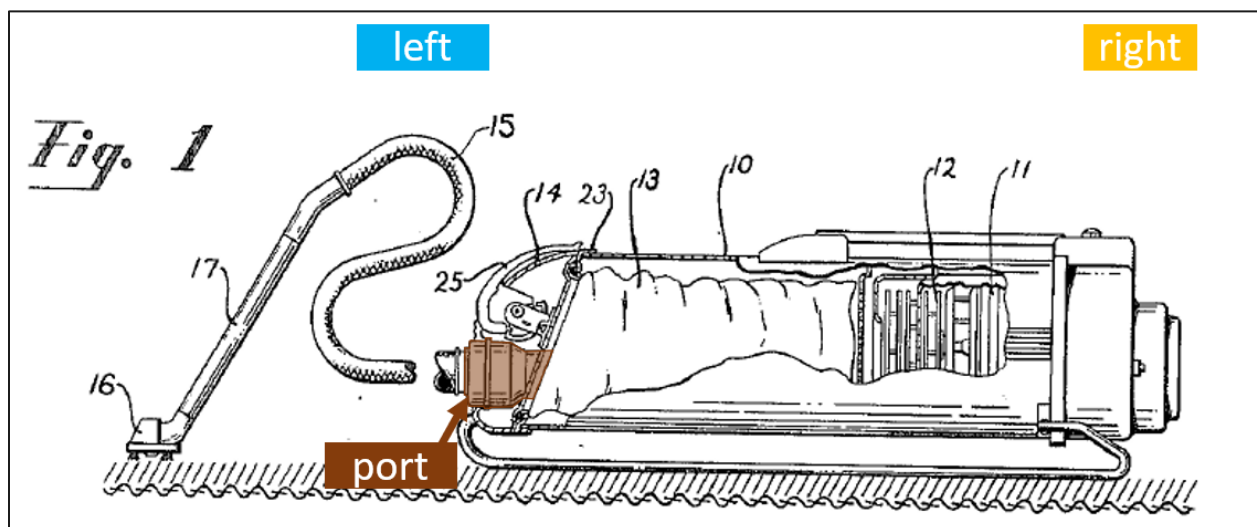
238. In my opinion, a POSA would understand that this is because Brown's accessory's **projection** engages and interacts with the **notch** on Brown's "**handle**" when Brown's accessory is connected with Brown's "**port**," and this interaction prohibits movement of Brown's "**handle**," thereby inhibiting Brown's openable door lock from moving to the openable position (e.g., as shown in Brown Figure 3). *See* Ground 2, Limitations [1d.1]/[14d.1]-[1d.3]/[14d.3] (explaining operation of Brown's lock).

2. [2]

Reference Number	Claim Limitation
[2]	“The surface cleaning apparatus of claim 1 further comprising a front end having the dirty air inlet and the openable door is provided on the front end.”

239. In my opinion, Brown renders claim 1 obvious and further teaches the surface cleaning apparatus of claim 1 further comprising a front end having the dirty air inlet and the openable door is provided on the front end.

240. In my opinion, Brown teaches a front end of the surface cleaning apparatus having the dirty air inlet, including when modified as described above. For example, Brown teaches that its “**port** for the admission of dust-laden air” is located at the “**left**” end of the vacuum cleaner, as viewed in the annotated Figure 1 shown below:

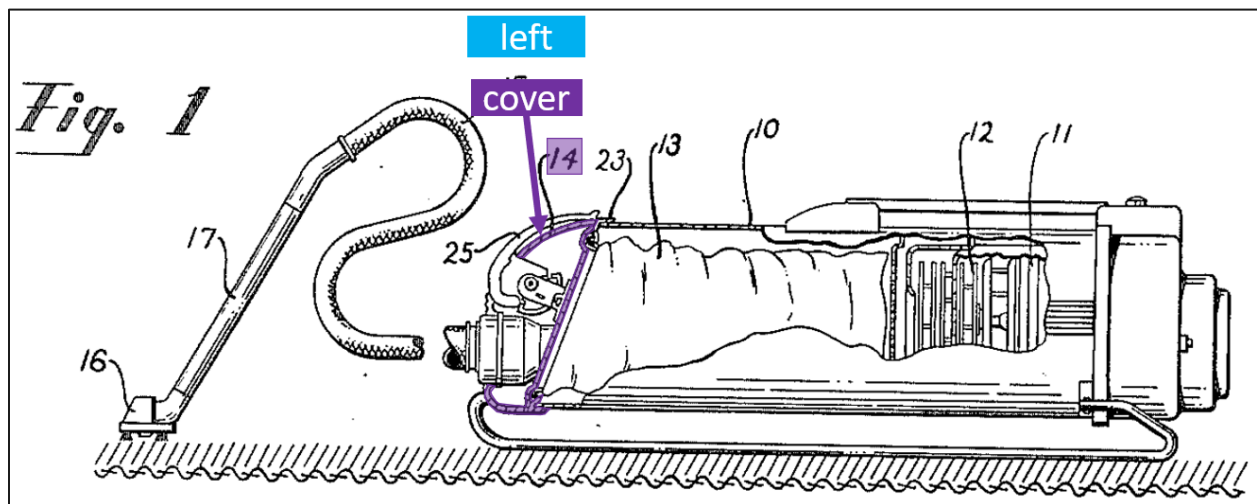


Ex. 1007, 2:10-17, 1:40-46, Fig. 1; *see also* Ground 2, Limitation [1a].

241. In my opinion, a POSA would have understood that the “**left**” end of

Brown's vacuum cleaner (as viewed in Figure 1 above) is its front end. This is because Brown's "left" end is the end at which Brown's accessory is attached, it is the end at which the dirty air enters the cleaner, and it is also opposite the end in which clean air exits the cleaner.

242. In my opinion, Brown teaches that the openable door is provided on the front end. For example, as I have explained for Ground 2, Limitation [1b], Brown teaches an openable door, "removable front cover 14." See Ground 1, Limitation [1b]. Brown also teaches that its "removable front cover 14" is provided on the front end (the "left" end) of Brown's cleaner as shown in the annotated figure below:



Ex. 1007, 2:10-17, Fig. 1; see also *id.*, Fig. 3.

3. [3]

Reference Number	Claim Limitation
[3]	“The surface cleaning apparatus of claim 1 further comprising a front end having the dirty air inlet and the openable door is provided on the front end.”

243. In my opinion, Brown renders claim 1 obvious and further teaches and renders obvious the surface cleaning apparatus of claim 1 further comprising a front end having the dirty air inlet and the openable door is provided on the front end.

244. In my opinion, the same reasons that I explained for Ground 2, Limitations [1c]/[13c]/[14c]/[18c] also demonstrate that Brown teaches and renders obvious the additional limitations of this claim. *See* Ground 2, Limitations [1c]/[113c]/[14c]/[18c].

4. [4]/[5]/[6]

Reference Number	Claim Limitation
[4]	“The surface cleaning apparatus of claim 1 wherein, when the accessory is connected to the dirty air inlet, the accessory physically inhibits the openable door from opening.”
[5]	“The surface cleaning apparatus of claim 4 wherein, when the accessory is connected to the dirty air inlet, the accessory overlies a portion of the openable door.”
[6]	“The surface cleaning apparatus of claim 5 wherein, when the accessory is connected to the dirty air inlet, the accessory abuts a portion of the openable door.”

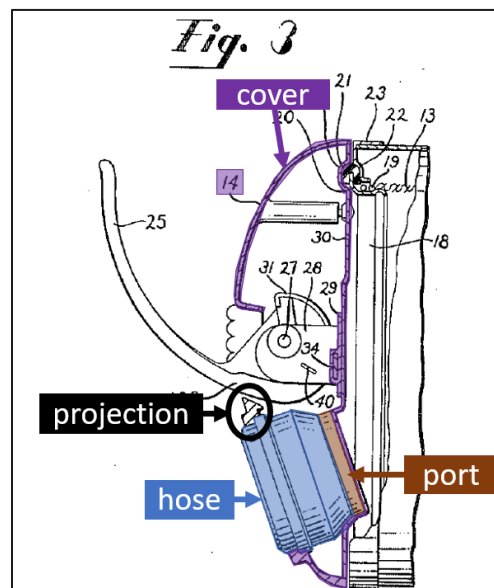
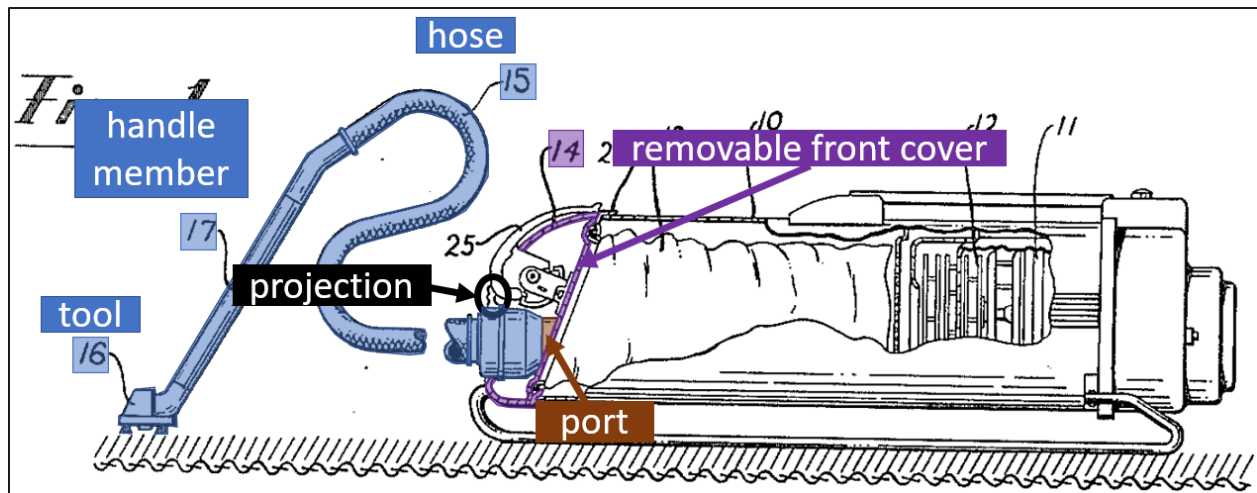
245. In my opinion, Brown renders claim 1 obvious and further renders obvious

the surface cleaning apparatus of claim 1 wherein, when the accessory is connected to the dirty air inlet, the accessory physically inhibits the openable door from opening.

246. In my opinion, Brown renders claim 4 obvious and further renders obvious the surface cleaning apparatus of claim 4 wherein, when the accessory is connected to the dirty air inlet, the accessory overlies a portion of the openable door.

247. In my opinion, Brown renders claim 5 obvious and further renders obvious the surface cleaning apparatus of claim 5 wherein, when the accessory is connected to the dirty air inlet, the accessory abuts a portion of the openable door.

248. For example, as I have explained for Ground 2, Limitations [1c]/[13c]/[14c]/[18c], in my opinion, a POSA would have been motivated to modify Brown such that Brown's **projection** is positioned on its accessory (for example, Brown's "**hose 15**"), instead of on Brown's dirty air inlet (which is Brown's "**port**"), and, in my opinion, a POSA would have had a reasonable expectation of success. *See* Ground 2, Limitations [1c]/[13c]/[14c]/[18c]. This is depicted in the annotated figures below:



Ex. 1007, Figs. 1, 3.

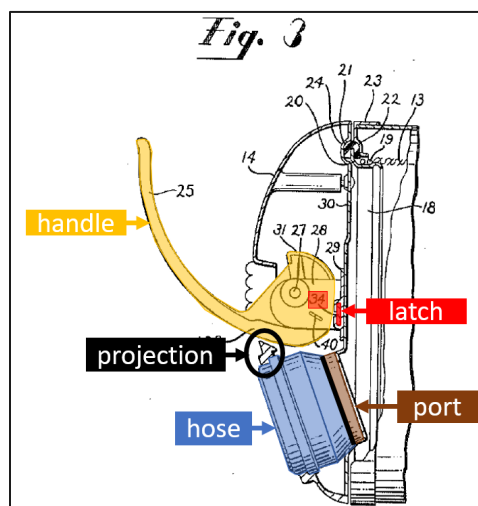
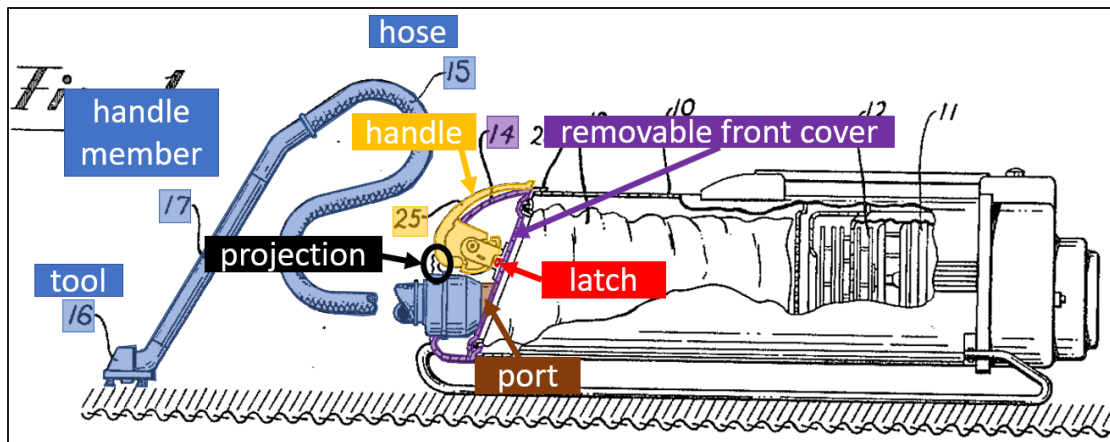
249. With respect to Claim 4, in my opinion, when so modified, Brown's accessory (specifically, the accessory's **projection**) physically inhibits Brown's openable door ("**removable front cover**") from opening, because the accessory's **projection** physically contacts Brown's "**handle**," providing resistance against the movement of that is required to open Brown's openable door, for the reasons I explained for Limitations

- [1c]/[13c]/[14c]/[18c]. *See* Ground 2, Limitations [1c]/[13c]/[14c]/[18c].
250. Further, in my opinion, when Brown is further modified to include a notch in Brown’s “**handle**,” Brown’s accessory (the accessory’s **projection**) physically inhibits Brown’s openable door from opening by physically prohibiting movement of Brown’s “**handle**” when the accessory is attached. *See* Ground 2, Limitation [1c]/[14c].
251. Regarding Claims 5 and 6, as I have depicted above, in my opinion when Brown’s “**port**”/accessory interface is so modified, Brown’s accessory (including the accessory’s **projection**) overlies and abuts a portion of Brown’s openable door: Brown’s accessory is located in front of and adjacent to Brown’s openable door, which extends above and below the accessory when the accessory is attached to the dirty air inlet. *See* Ex. 1007, Figs. 1, 3. This also occurs when Brown’s “**handle**” is modified to include a notch.

5. [7]/[15]

Reference Number	Claim Limitation
[7]	“The surface cleaning apparatus of claim 1 wherein the accessory has a blocking portion which inhibits the lock engaging member moving to the disengaged position when the accessory is connected to the dirty air inlet.”
[15]	“The surface cleaning apparatus of claim 14 wherein the accessory has a blocking portion which inhibits the lock engaging member moving to the disengaged position when the accessory is connected to the dirty air inlet.”

252. In my opinion, Brown renders claim 1 obvious and further renders obvious the surface cleaning apparatus of claim 1 wherein the accessory has a blocking portion which inhibits the lock engaging member moving to the disengaged position when the accessory is connected to the dirty air inlet.\
253. In my opinion, Brown renders claim 14 obvious and further renders obvious the surface cleaning apparatus of claim 14 wherein the accessory has a blocking portion which inhibits the lock engaging member moving to the disengaged position when the accessory is connected to the dirty air inlet.
254. For example, as I have explained for Ground 2, Limitations [1c]/[13c]/[14c]/[18c], in my opinion, a POSA would have been motivated to modify Brown such that Brown's **projection** is located on its accessory (for example, Brown's "**hose 15**"), instead of on Brown's dirty air inlet (which is Brown's "**port**"), and, in my opinion, a POSA would have had a reasonable expectation of success. See Ground 2, Limitations [1c]/[13c]/[14c]/[18c]. This is depicted in the annotated figures below:



Ex. 1007, Figs. 1, 3.

255. In my opinion, when Brown has been so modified, a POSA would understand that Brown's accessory has a blocking portion (Brown's accessory's **projection**) which inhibits Brown's lock engaging member (Brown's "**latch 34**") from moving to the disengaged position when the accessory is connected to the dirty air inlet. This is because the **projection** physically inhibits the movement of Brown's "**handle 25**" that is required to move Brown's lock engaging member to the disengaged position, as I

have explained for Ground 2, Limitations [1c]/[14c]-[1d.3]/[14d.3]. *See* Ground 2, Limitations [1c]/[14c]-[1d.3]/[14d.3].

256. Further, in my opinion when Brown’s “**handle**” is modified to include a notch, Brown’s accessory blocking portion (the accessory’s **projection**) inhibits Brown’s lock engaging member from moving to the disengaged position when the accessory is connected to the dirty air inlet because the interaction between Brown’s **projection** and the notch in Brown’s “**handle**” prohibits this by prohibiting the handle from moving when the accessory is attached. *See* Ground 2, Limitations [1c]/[14c].

6. [8]/[16]

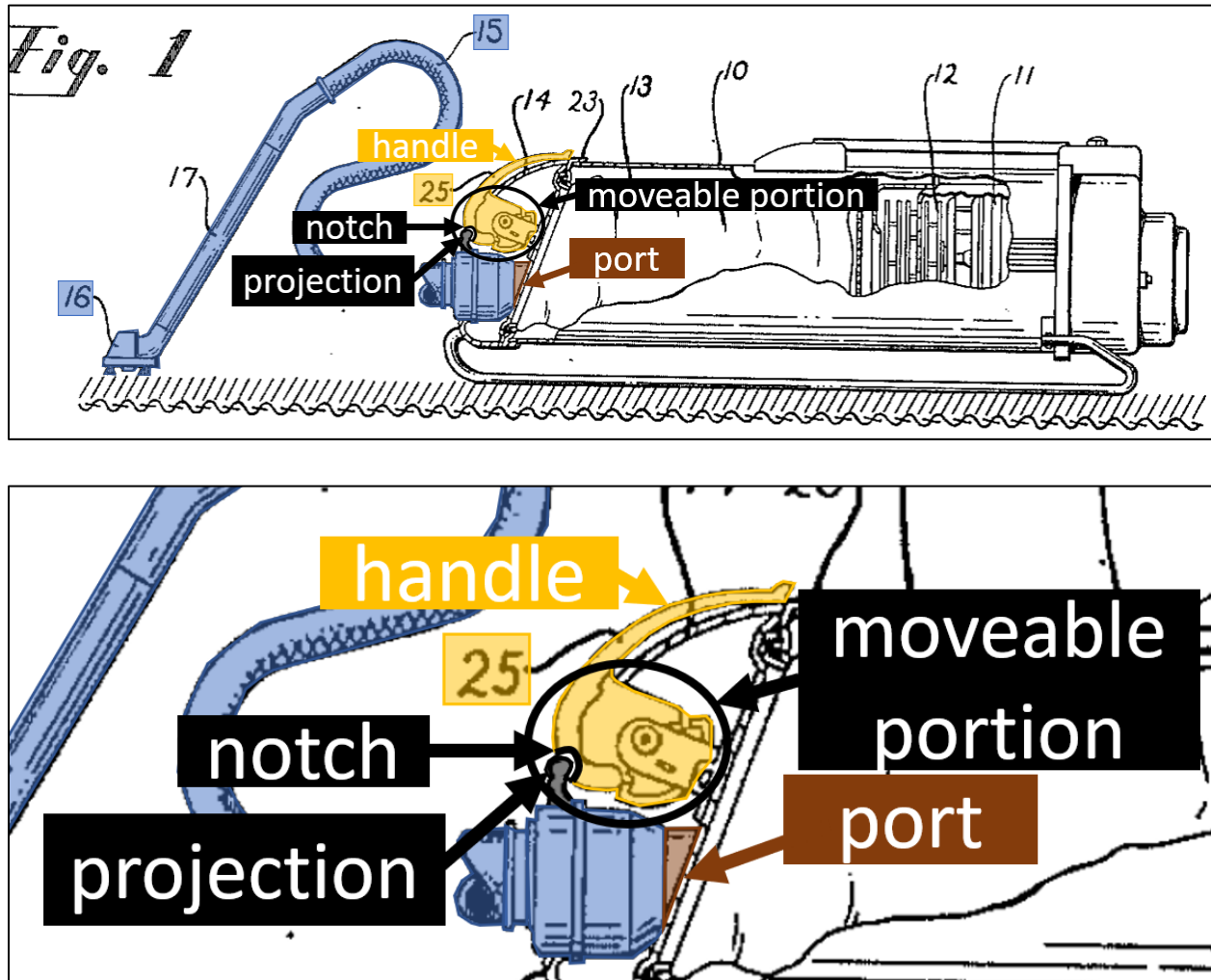
Reference Number	Claim Limitation
[8]	“The surface cleaning apparatus of claim 7 wherein the openable door lock includes a moveable portion which moves along a path from a first position when the lock engaging member is in the engaged position to a second position when the lock engaging member is in the disengaged position, the moveable portion has an abutment surface and the blocking portion is positioned in the path of the abutment surface when the accessory is connected to the dirty air inlet.”
[16]	“The surface cleaning apparatus of claim 15 wherein the openable door lock includes a moveable portion which moves along a path from a first position when the lock engaging member is in the engaged position to a second position when the lock engaging member is in the disengaged position, the moveable portion has an abutment surface and the blocking portion is positioned in the path of the abutment surface when the accessory is connected to the dirty air inlet.”

257. In my opinion, Brown renders obvious the surface cleaning apparatus of

claim 7 wherein the openable door lock includes a moveable portion which moves along a path from a first position when the lock engaging member is in the engaged position to a second position when the lock engaging member is in the disengaged position, the moveable portion has an abutment surface and the blocking portion is positioned in the path of the abutment surface when the accessory is connected to the dirty air inlet.

258. In my opinion, Brown renders obvious the surface cleaning apparatus of claim 15 wherein the openable door lock includes a moveable portion which moves along a path from a first position when the lock engaging member is in the engaged position to a second position when the lock engaging member is in the disengaged position, the moveable portion has an abutment surface and the blocking portion is positioned in the path of the abutment surface when the accessory is connected to the dirty air inlet.
259. As I explained for Limitations [1c]/[13c]/[14c]/[18c], in my opinion it would have been obvious to modify Brown to add a **notch** to Brown's "**handle**." See Ground 2, Limitations [1c]/[13c]/[14c]/[18c].
260. In my opinion, when so modified, Brown's "**handle**" contains a **moveable portion** which moves along a path from a first position when the lock engaging member (Brown's "**latch bars**") is in the engaged position (i.e., when Brown's "**cover**" is locked, *see* Ex. 1007, Fig. 1) to a second position

when the lock engaging member is in the disengaged position (i.e., when Brown's "**handle**" is moved to open Brown's "**cover**," see Ex. 1007, Fig. 3), as shown in the annotated figures below:



Ex. 1007, Fig. 1 (modified).

261. Further, in my opinion, when so modified, Brown's moveable portion has an abutment surface (the interior surface of the **notch** that is added to Brown's "**handle**") and the blocking portion (Brown's accessory's **projection**) is positioned in the path of the abutment surface when the

accessory (e.g., Brown’s “**hose**”) is connected to the dirty air inlet (Brown’s “**port**”). For example, if a user were to try to move Brown’s “**handle**” when an accessory was attached, the interior surface of Brown’s “**handle**”’s **notch** would hit Brown’s accessory’s **projection**, which is in its path.

7. [9]/[17]

Reference Number	Claim Limitation
[9]	“The surface cleaning apparatus of claim 8 wherein the moveable portion is part of a drive member drivingly connecting the door release actuator to the lock engaging member.”
[17]	“The surface cleaning apparatus of claim 16 wherein the moveable portion is part of a drive member drivingly connecting the door release actuator to the lock engaging member.”

262. In my opinion, Brown renders claim 8 obvious and teaches wherein the moveable portion is part of a drive member drivingly connecting the door release actuator to the lock engaging member.

263. In my opinion, Brown renders claim 16 obvious and teaches wherein the moveable portion is part of a drive member drivingly connecting the door release actuator to the lock engaging member.

264. In my opinion, Brown’s moveable portion (the portion of Brown’s “**handle**” containing the **notch**, *see* Ground 2, Claims [8]/[16]) is part of a drive member drivingly connecting the door release actuator (Brown’s

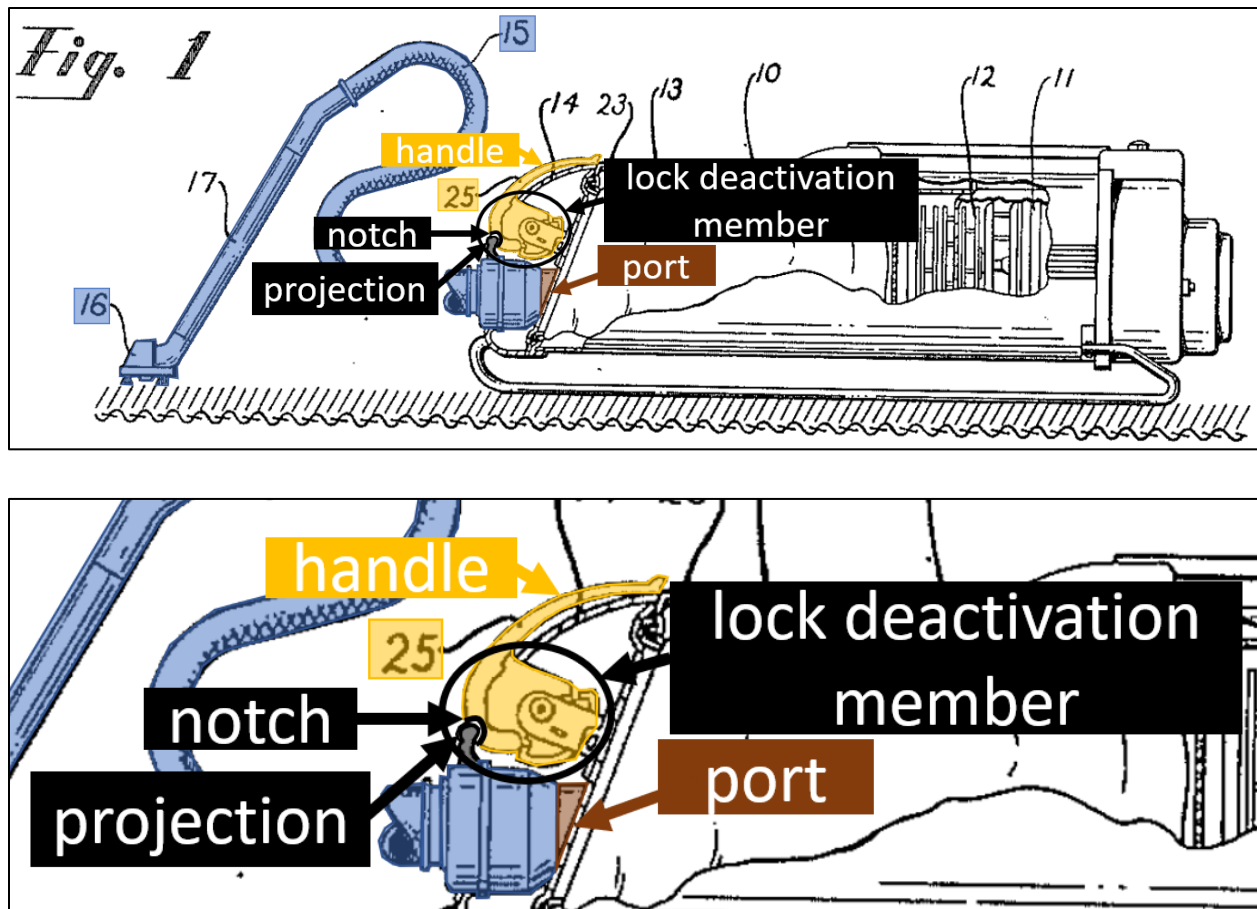
“**handle**”) to the lock engaging member (Brown’s “**latch bars**”), for the reasons I explained in Limitations [1d.1]/[14d.1]-[1d.2]/[14d.2]. See Ground 2, Limitations [1d.1]/[14d.1]-[1d.2]/[14d.2].

8. [10]

Reference Number	Claim Limitation
[10]	“The surface cleaning apparatus of claim 1 further comprising a lock deactivation member and the accessory has a blocking portion which activates the lock deactivation member when the accessory is connected to the dirty air inlet.”

265. In my opinion, Brown renders obvious the surface cleaning apparatus of claim 1 further comprising a lock deactivation member and the accessory has a blocking portion which activates the lock deactivation member when the accessory is connected to the dirty air inlet.

266. In my opinion, when Brown is modified to include a **notch** in Brown’s “**handle**” (see Ground 2, Limitation [1c]), Brown’s “**handle**” comprises a lock deactivation member (the portion of Brown’s “**handle**” containing the **notch**) and Brown’s accessory has a blocking portion (Brown’s accessory’s **projection**) which activates the lock deactivation member when the accessory is attached to the dirty air inlet (Brown’s “**port**”), as shown in the annotated figures below:



Ex. 1007, Fig. 1 (modified).

267. In my opinion, a POSA would understand that Brown's lock deactivation member (the portion of Brown's "**handle**" containing the **notch**) is activated by Brown's accessory blocking portion (Brown's accessory's **projection**) when the accessory is connected to the dirty air inlet (Brown's "**port**") because that is when the **projection** interacts with the **notch**.

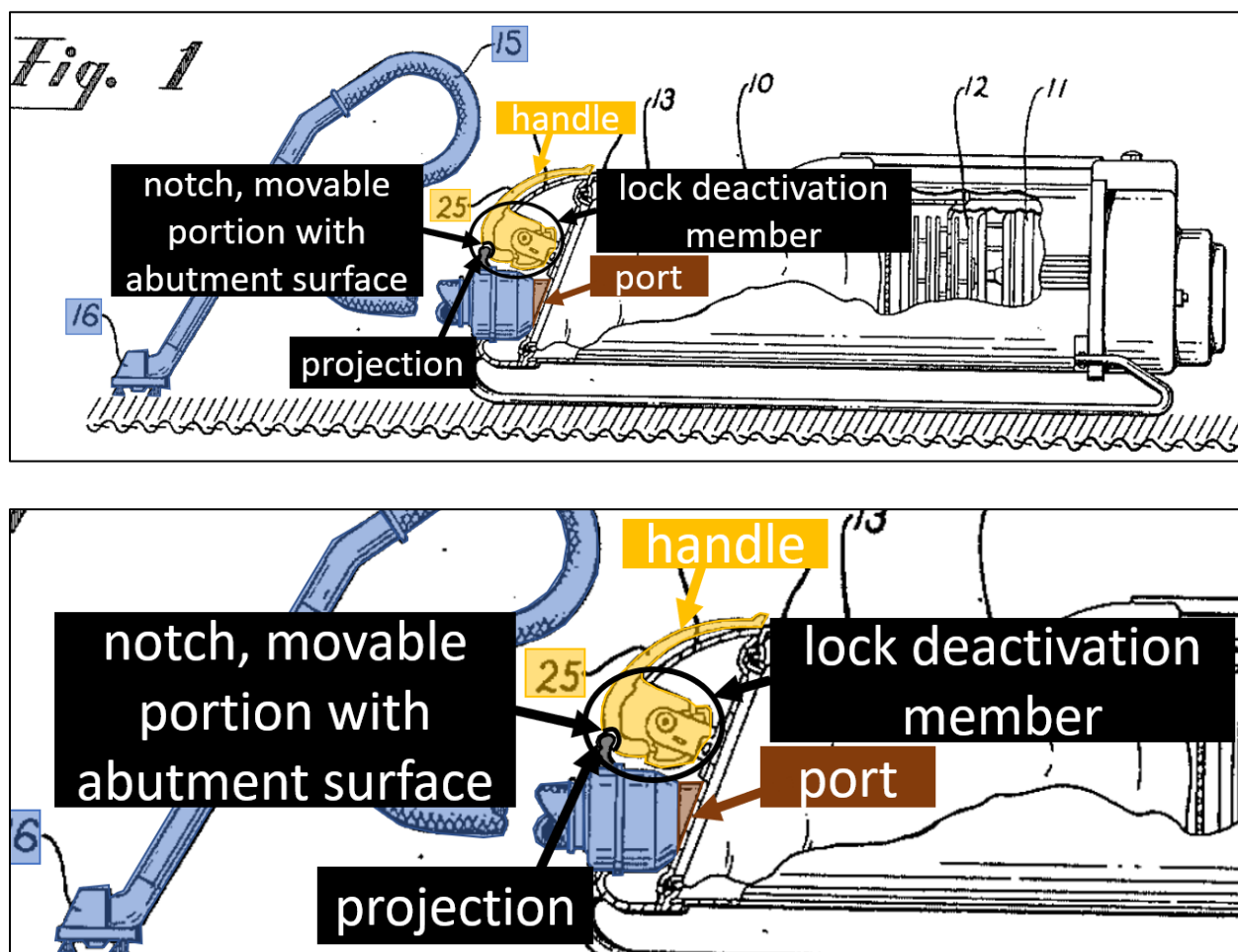
9. [11]

Reference Number	Claim Limitation
[11]	“The surface cleaning apparatus of claim 10 wherein the lock deactivation member includes a moveable portion which moves along a path from a first position when the lock engaging member is in the engaged position to a second position when the lock engaging member is in the disengaged position, the moveable portion has an abutment surface and the blocking portion is positioned in the path of the abutment surface when the accessory is connected to the dirty air inlet.”

268. In my opinion, Brown renders obvious the surface cleaning apparatus of claim 10 wherein the lock deactivation member includes a moveable portion which moves along a path from a first position when the lock engaging member is in the engaged position to a second position when the lock engaging member is in the disengaged position, the moveable portion has an abutment surface and the blocking portion is positioned in the path of the abutment surface when the accessory is connected to the dirty air inlet.

269. In my opinion, Brown’s lock deactivation member includes a moveable portion (the **notch** added to Brown’s “**handle**”) which moves along a path from a first position when the lock engaging member is in the engaged position (i.e., when Brown’s “**cover**” is locked, *see* Ex. 1007, Fig. 1) to a second position when the lock engaging member is in the disengaged position (i.e., when Brown’s “**handle**” is moved to open Brown’s “**cover**,”

see Ex. 1007, Fig. 3), the moveable portion has an abutment surface (the **notch**'s interior surface) and the blocking portion (Brown's accessory's **projection**) is positioned in the path of the abutment surface when the accessory (e.g., Brown's "**hose**") is connected to the dirty air inlet (Brown's "**port**"), as shown in the annotated figures below:



Ex. 1007, Fig. 1 (modified).

270. In my opinion, a POSA would understand that Brown's blocking portion (Brown's accessory's **projection**) is positioned in the path of the abutment

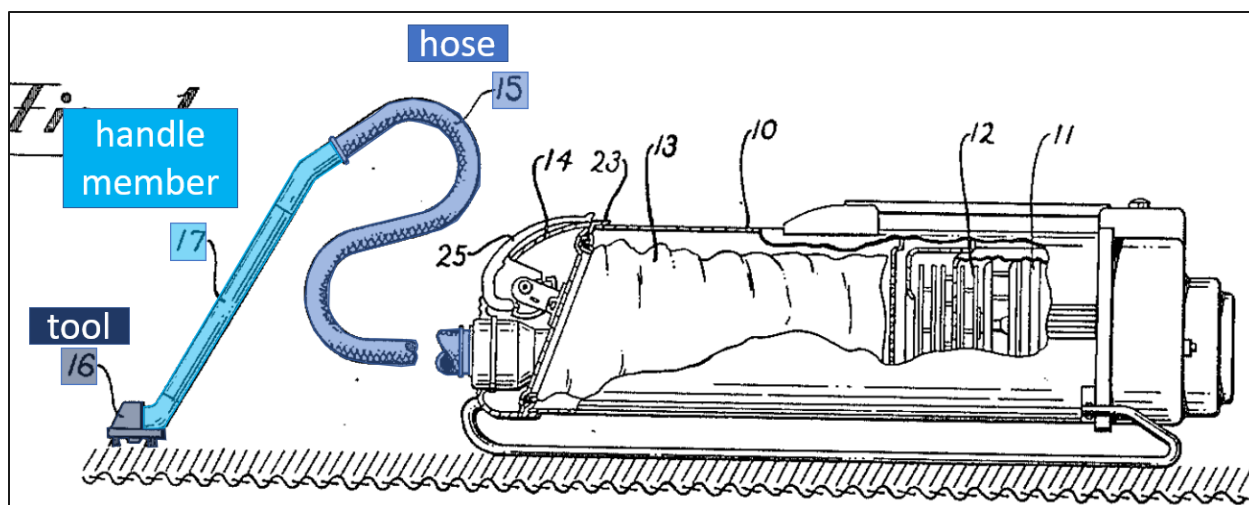
surface (the **interior surface** of the **notch** added to Brown’s “**handle**”) when the accessory is connected to the dirty air inlet (Brown’s “**port**”) because that is when the **projection** interacts with the **notch**.

10. [12]

Reference Number	Claim Limitation
[12]	“The surface cleaning apparatus of claim 1 wherein the accessory is a longitudinally extending rigid member air flow member, an accessory cleaning tool, or a flexible hose.”

271. In my opinion, Brown renders claim 1 obvious and further teaches the surface cleaning apparatus of claim 1 wherein the accessory is a longitudinally extending rigid member air flow member, an accessory cleaning tool, or a flexible hose.

272. For example, as I have explained for Ground 2, Limitations [1c]/[13c]/[14c]/[18c], Brown teaches “**hose 15**,” which a POSA would understand independently or together with Brown’s “**handle member 17**” and/or “**cleaning tool 16**” is an accessory as shown in the annotated figure below:



Ex. 1007, Fig. 1; *see* Ground 2, Limitations [1c]/[13c]/[14c]/[18c].

273. In my opinion, a POSA would have understood that Brown’s “**hose 15**” is a flexible hose. Further, in my opinion, a POSA would have understood that Brown’s “**handle member 17**” is a longitudinally extending rigid member air flow member, and Brown’s “**cleaning tool 16**” is an accessory cleaning tool.

11. [19]

Reference Number	Claim Limitation
[19]	“The surface cleaning apparatus of claim 18 wherein the accessory has a blocking portion which inhibits the lock engaging member moving to the disengaged position when the accessory is connected to the dirty air inlet.”

274. In my opinion, Brown renders obvious the surface cleaning apparatus of claim 18 wherein the accessory has a blocking portion which inhibits the lock engaging member moving to the disengaged position when the

accessory is connected to the dirty air inlet.

275. For the same reasons I explained for claims 7 and 15, in my opinion Brown renders obvious wherein the accessory has a blocking portion which inhibits the lock engaging member moving to the disengaged position when the accessory is connected to the dirty air inlet. *See* Claims [7]/[15].

12. [20]

Reference Number	Claim Limitation
[20]	“The surface cleaning apparatus of claim 19 wherein the openable door lock includes a moveable portion which moves along a path from a first position when the lock engaging member is in the engaged position to a second position when the lock engaging member is in the disengaged position, the moveable portion has an abutment surface and the blocking portion is positioned in the path of the abutment surface when the accessory is connected to the dirty air inlet.”

276. In my opinion, Brown renders obvious the surface cleaning apparatus of claim 19 wherein the openable door lock includes a moveable portion which moves along a path from a first position when the lock engaging member is in the engaged position to a second position when the lock engaging member is in the disengaged position, the moveable portion has an abutment surface and the blocking portion is positioned in the path of the abutment surface when the accessory is connected to the dirty air inlet.

277. For the same reasons I explained for claims 8 and 16, in my opinion Brown

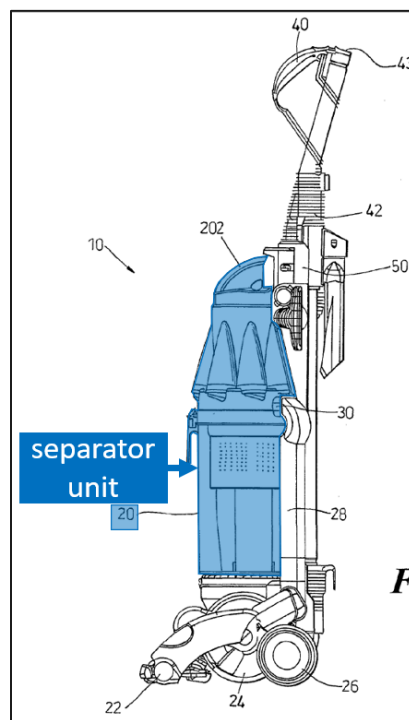
renders obvious wherein the openable door lock includes a moveable portion which moves along a path from a first position when the lock engaging member is in the engaged position to a second position when the lock engaging member is in the disengaged position, the moveable portion has an abutment surface and the blocking portion is positioned in the path of the abutment surface when the accessory is connected to the dirty air inlet.

C. Ground 3: Brown In Combination With Vuijk Renders Obvious Claims 1-20

278. In my opinion, Brown in combination with Vuijk renders obvious claims 1-20.
279. As I explained in Ground 2, in my opinion, a POSA would have been motivated to modify Brown such that Brown's **projection** is located on its accessory (for example, Brown's "**hose 15**"), rather than on Brown's dirty air inlet (which is Brown's "**port**"). It is also my opinion that a POSA would have had a reasonable expectation of success making such a modification. And, in my opinion, when Brown is so modified, Brown renders obvious the Challenged Claims. *See* Ground 2.
280. It is further my opinion that a POSA would have also been motivated to modify Brown to prevent such accidentally opening in light of the teachings of Vuijk. It is also my opinion that, if a POSA had any

uncertainty as to whether the modification to Brown described above (i.e., moving Brown's **projection** to Brown's accessory) would have successfully prevented a user from accidentally opening Brown's openable door during use, a POSA would have looked to Vuijk's teachings to accomplish this.

281. As explained briefly above in the background of the prior art section, Vuijk teaches a vacuum cleaner with a cyclonic "separator unit 20" as shown in the annotated figure below:



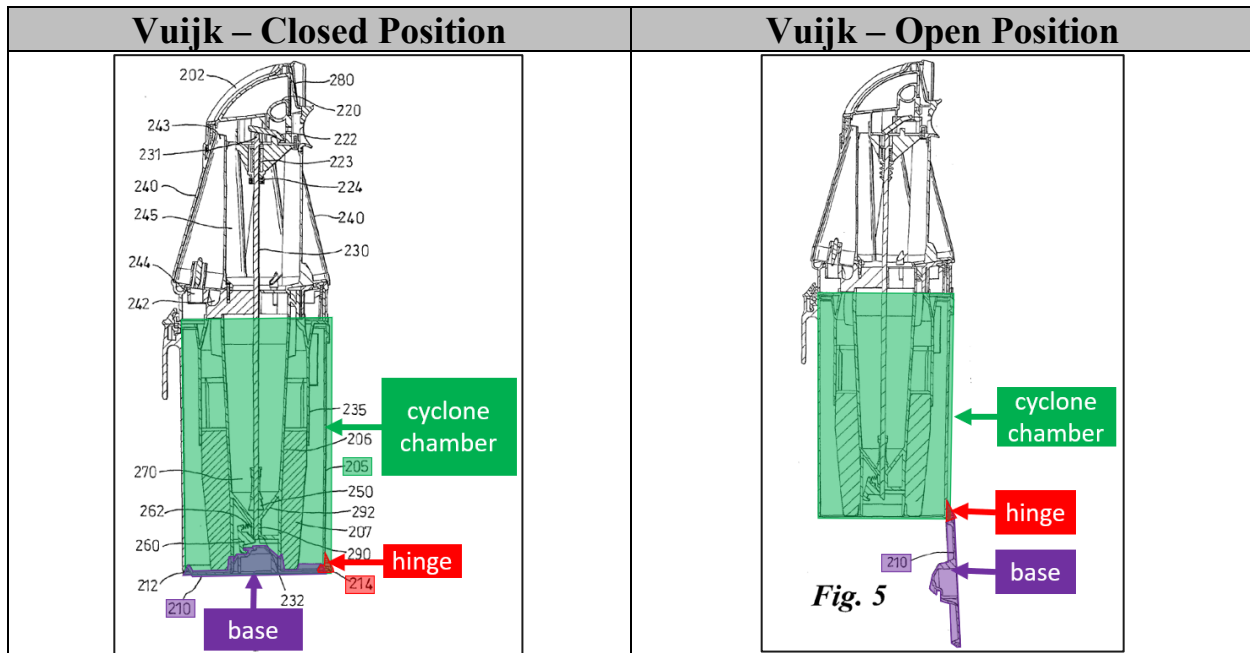
Ex. 1008, 5:29-31, Fig. 1.

282. Vuijk teaches that its vacuum cleaner "is more convenient for a user to manipulate" because its "**separator unit 20**" has a "**base 210**" that "is

hinged 214 to the cyclone chamber 205 to allow pivotal movement”

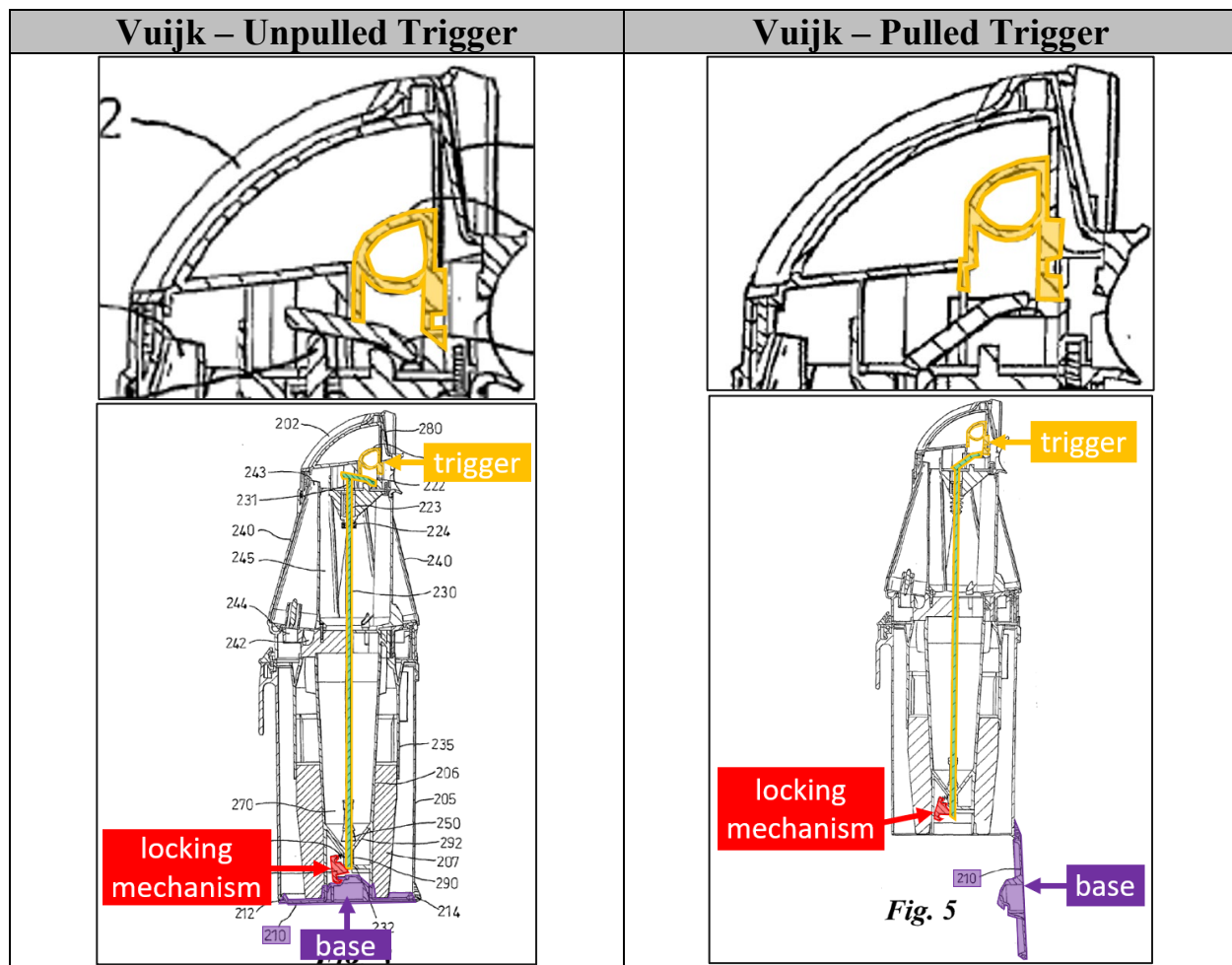
“between a closed position” “and an open position” “to permit emptying”

as shown in the annotated figures below:



Ex. 1008, 2:22-23, 7:22-25, Figs. 1, 3, 5.

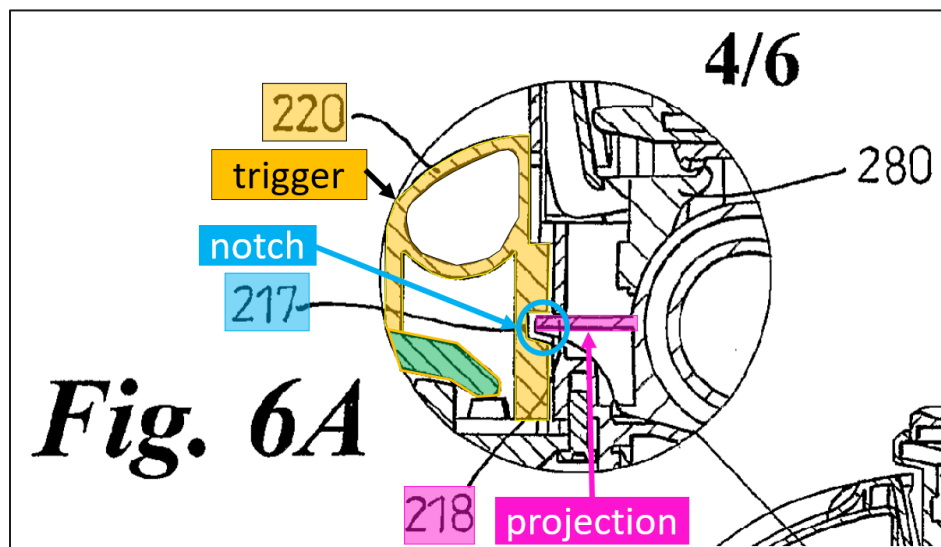
283. Vuijk explains that “[t]he [base 210] locking mechanism is controlled by a manually operable trigger 220,” which, when “pulled” up by the user, “causes the base 210 to swing open and dirt, dust and debris which has been collected in the chamber 205 falls out of the unit 20 into the bin” as shown in the annotated figures below:



Ex. 1008, 8:6-7, 9:28-31, Figs. 3, 5.

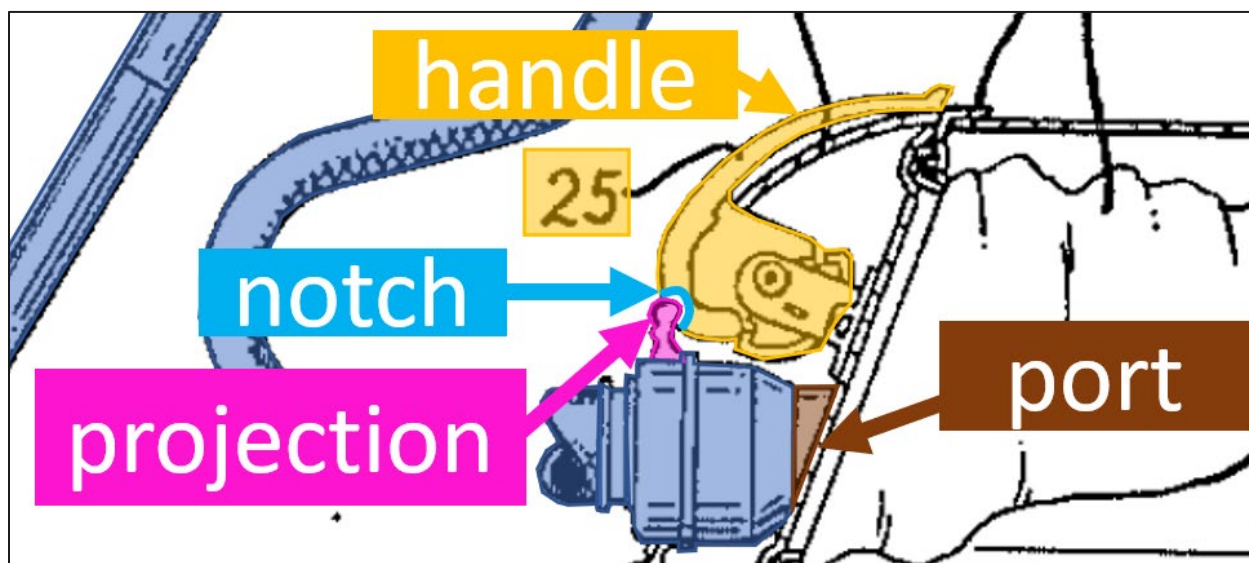
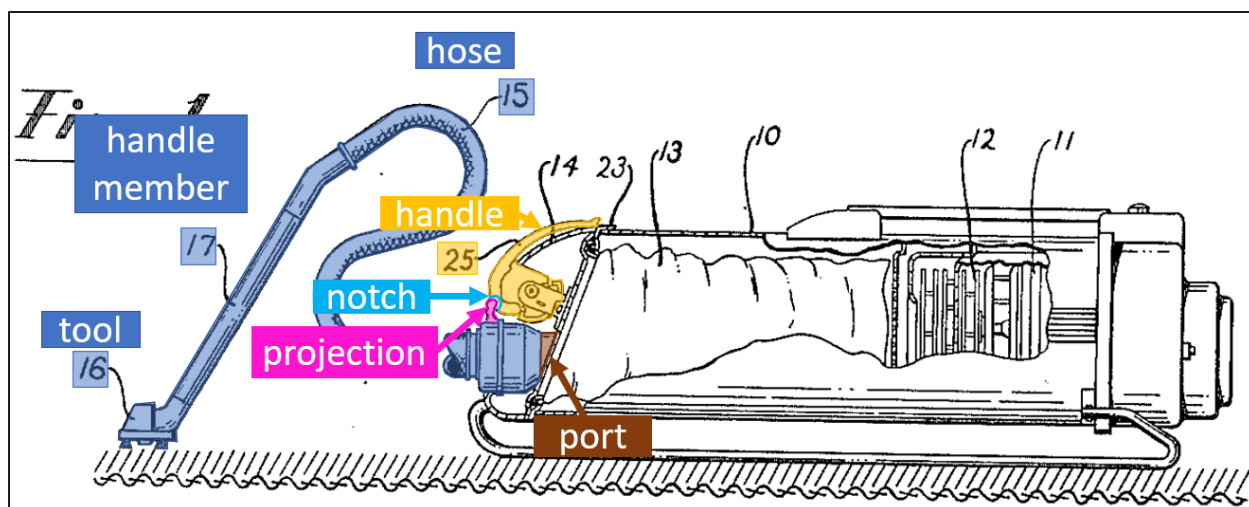
284. Vuijk also teaches that its vacuum cleaner includes a “feature ... which inhibits movement of the trigger release mechanism,” thereby inhibiting **base 210** from opening. Ex. 1008, 5:4-5. As Vuijk explains, this feature prevents a user from “accidentally releas[ing] the closure member” (“base 210”) “when the cleaner is in use,” which “avoids the mess which would result if the cleaner were operated with the closure member partially open.” *Id.*, 3:6-13, 5:4-5, 10:7-10. To achieve this objective, Vuijk teaches “a

projection 218 which fits inside a **notch 217** on the **trigger 220**,” which “inhibit[s]” “the **trigger 220** ... from moving in the vertical direction which is necessary for the closure member [(base)] 210 to be released” as shown in the annotated figure below:



Ex. 1008, 10:6-12, Fig. 6A.

285. In my opinion, a POSA would have been motivated to combine the teachings of Brown and Vuijk. Specifically, in my opinion, a POSA would have been motivated to incorporate a notch in Brown’s **handle 25** such that the notch is engaged by a **projection** (e.g., Brown’s **projection** or Vruik’s “**projection 218**”) that is positioned on Brown’s **accessory** (for example, Brown’s “**hose 15**”) when the **accessory** is connected to Brown’s “**port.**” This would prevent accidental opening of Brown’s openable door, as shown in the annotated and modified figures below:



Ex. 1007, Fig. 1 (modified); *see also* Ex. 1008, 10:6-12, Fig. 6A.

286. In my opinion, there are several reasons why a POSA would have been motivated to combine the teachings of Brown and Vuijk in this way.

287. First, in my opinion, Brown and Vuijk are analogous art. As shown above, like Brown, which teaches a **projection** that contacts and inhibits Brown's "**handle 25**" from moving in a way that is necessary to open Brown's openable door ("**removable front cover 14**"), *see* Ex. 1007, Fig. 1, Vuijk

also teaches the use of a “**projection 218**” that contacts and inhibits Vuijk’s “**trigger 220**” from moving in a way that is necessary to open Vuijk’s openable door (“**base 210**”), Ex. 1008, 10:6-12. In my opinion, these similarities would have motivated a POSA to combine the teachings of Brown and Vuijk as described.

288. Second, in my opinion, this combination would have involved a simple substitution of one known element (a handle with a notch) for another (a handle without a notch) to obtain predictable results (a projection engaging with a notch to prevent movement of the handle). In my opinion, this also would have motivated a POSA to combine the teachings of Brown and Vuijk as described.
289. Third, in my opinion, this combination would have involved applying known techniques (adding a notch) to a known device (a handle) to yield predictable results (preventing handle movement when the projection engages the notch). In my opinion, this also would have motivated a POSA to combine the teachings of Brown and Vuijk as described.
290. Fourth, in my opinion, it would have at least been obvious to a POSA to try this combination. This is because, in my opinion, a POSA would have understood that there are a finite number of known ways to ensure that a projection inhibits movement of a handle, including by using a notch that

is engaged by the projection.

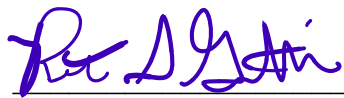
291. It is also my opinion that a POSA would have had a reasonable expectation of success making this combination for the reasons stated above. Further, in my opinion a POSA would have had a reasonable expectation of success making this combination because the teachings of Vuijk and Brown are so similar, as noted above. And, it is also my opinion that a POSA would have had a reasonable expectation of success making this combination because the modification would have involved the simple addition of a notch in Brown's handle and the placement of Brown's projection on its accessory rather than its dirty air inlet, which, in my opinion, a POSA would understand to be routine modifications.
292. In my opinion, when the teachings of Vuijk and Brown are combined as described above, they render obvious all Challenged Claims for the reasons described herein and in Ground 2. *See* Ground 2.

XI. SECONDARY CONSIDERATIONS OF NON-OBVIOUSNESS

293. I am unaware of any secondary considerations of non-obviousness that provide evidence the claims of the above patents are not obvious. To the contrary, as I explained in detail above, the claims are based on an obvious combination well-known bone plate and screws. To the extent Patent Owner attempts to argue there are secondary considerations of non-

obviousness, I reserve the right to evaluate Patent Owner's arguments and purported evidence at that time.

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of the Title 18 of the United States Code. I declare under penalty of perjury that the foregoing is true and correct.

Signature: 
Dr. Robert Giachetti

Dated: 4/1/24