UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TOUGHBUILT INDUSTRIES, INC.,
Petitioner

v.

MERIDIAN INTERNATIONAL CO., LTD.,
Patent Owner

Case IPR2025-01462
U.S. Patent No. 11,192,689

DECLARATION OF DR. J MICHAEL MCCARTHY IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 11,192,689

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ToughBuilt EX1003
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d. [14.C] wherein a portion of the sliding mechanism extends laterally away from a side surface of the second container when the sliding mechanism is disengaged from the locking groove and wherein the portion of the sliding mechanism is coplanar with the side surface of the second container when the sliding mechanism is engaged with the locking groove. 96

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I, Dr. J. Michael McCarthy, hereby declare as follows.

I. INTRODUCTION

1. I have been retained as an expert witness on behalf of Petitioner ToughBuilt Industries, Inc. ("Petitioner") for the above-captioned *inter partes* review (IPR). I am being compensated for my time in connection with this IPR at my standard consulting rate.

2. I understand that this Declaration accompanies a petition for an IPR involving U.S. Patent No. 11,192,689 ("the '689 patent") (EX1001), which resulted from U.S. Patent Application No. 16/846,878 ("the '878 application"), filed on April 13, 2020. Based on Chinese Application No. 201922118361.7, which issued as Chinese Utility Model No. 211483271 U), I understand that the '689 patent alleges a priority date of November 27, 2019. I refer to this date throughout this Declaration.

3. In preparing this Declaration, I have reviewed the '689 patent and each of the documents cited herein, in light of general knowledge in the art before November 27, 2019. In formulating my opinions, I have relied upon my experience, education, and knowledge in the relevant art. In formulating my opinions, I have also considered the viewpoint of a person of ordinary skill in the art at the time of the invention ("POSA").

II. MY BACKGROUND AND QUALIFICATIONS

4. My complete qualifications and professional experience are described in my Curriculum Vitae, a copy of which can be found in Exhibit 1004. The following is a brief summary of my relevant qualifications and professional experience.

5. I am a Distinguished Professor in Mechanical and Aerospace Engineering in the Henry Samueli School of Engineering at the University of California, Irvine. I am the past Director of UCI's Performance Engineering Program, and former Director of the Center for Engineering Science in Design at the University of California, Irvine, which supports the design and execution of team engineering projects across the School of Engineering.

6. I received my B.S. in Mechanical Engineering from Loyola Marymount University, and received my M.S. and Ph.D. at Stanford University, both in Mechanical Engineering.

7. I have taught at Loyola Marymount University and the University of Pennsylvania before joining UCI in 1986. In winter 2018, I was a Visiting Professor at Stanford University and taught a graduate course in Kinematic Synthesis of Mechanisms.

8. From 2019-2024, I served as an elected member of the Executive Council of IFTOMM, the International Federation for the Promotion of

Mechanisms and Machine Science. I am a co-founder and co-organizer of the Biannual USCToMM Symposium on Mechanical Systems and Robotics, and listed in the 2020 Marquis Who's Who in America, 73rd Edition.

9. I have published over 250 articles and five books including The Geometric Design of Linkages (Springer 2000, 2nd Ed. 2010) and the recent Kinematic Synthesis of Mechanisms: a project based approach.

10. I have served as the Editor-in-Chief of the ASME Journal of Mechanical Design (2002-2007) and I am the founding Editor-in-Chief of the ASME Journal of Mechanisms and Robotics (2007-2014). I serve on the Technical Communications and Publications Committee of ASME International.

11. My research team is responsible for the Sphinx, Synthetica and MecGen software packages, which extend computer-aided design to spherical and spatial linkage systems and integrate this process with geometric modeling. I have presented tutorials on the design of linkages and robotic systems at ASME and IEEE conferences, including the NSF sponsored 2012 Workshop on 21st Century Kinematics.

12. In addition to working on many projects for local industry, I served as Chief Technical Officer of Accuray Incorporated to assist the transition of a robotic radiosurgery system from research to market. I have served two terms as Chair of the Board of Governors for the Southern California Section of SAE

international and as the Secretary for the Orange County Engineering Council.

13. Over the past 20 years at UCI, I have focused on developing engineering leadership through student design and execution of major engineering projects. I introduced project engineering courses for graduate students, seniors, and freshman at UCI and provided course materials for racecar engineering courses in local high schools, including a Summer Program for Racecar Engineering. I organized the UCI Energy Invitational racecar energy time trial and the UCI Rescue Robotics competition for local High School engineering teams from 2010 until 2019.

14. My education, work, teaching and research have helped me develop a broad base of knowledge regarding machine design and the design of mechanical systems. This field of technology encompasses mechanical products, in general, and their structural members and components.

III. SUMMARY OF OPINIONS

15. In forming my opinions about the ’689 patent, I have considered the following grounds of unpatentability. Based on my review of the prior art references that form the basis of these grounds, it is my opinion that claims 1-4 and 14-15 of the ’689 patent are anticipated and claims 1-20 would have been obvious to a POSA prior to November 27, 2019.

Ground	Basis	Claims	References
1A	§102	1-4, 14, 15	Duvigneau
1B	§103	1-4, 14, 15	Duvigneau
1C	§103	5-7, 16	Duvigneau and Niles
1D	§103	5-7, 16	Duvigneau and Morel
1E	§103	8, 17	Duvigneau, Morel, and Weng
1F	§103	9-11	Duvigneau and Frydenberg
1G	§103	12-13, 19-20	Duvigneau and Brunner
1H	§103	18	Duvigneau, Morel, Weng, and Frydenberg
2A	§103	1-4, 14-15	Brocket and Heinrichs
2B	§103	5-6	Brocket, Heinrichs, and Morel

IV. MATERIALS CONSIDERED

16. In formulating my opinions, I have relied upon my training, knowledge, and experience that are relevant to the ’689 patent. I have also reviewed and am familiar with the following documents and materials in addition to any other documents cited in this declaration:

Exhibit No.	Description
1001	U.S. Patent No. 11,192,689 B2 to Cai, issued December 7, 2021 ("the '689 patent")
1002	File History of U.S. Patent No. 11,192,689 ("Prosecution History")
1004	*Curriculum Vitae* of Dr. J. Michael McCarthy
1005	EP 3492226 A1 to Brocket ("Brocket")
1006	U.S. Publication No. 2007/0215015 to Heinrichs et al. ("Heinrichs")
1007	U.S. Publication No. 2007/0012694 to Duvigneau ("Duvigneau")
1008	U.S. Publication No. 2015/0151661 to Morel et al. ("Morel")
1009	U.S. Patent No. 6,238,031 B1 to Weng, issued May 29, 2001 ("Weng")
1010	U.S. Publication No. 2019/0002004 to Brunner et al. ("Brunner")
1011	U.S. Patent No. 4,576,307 to Frydenberg ("Frydenberg")
1012	U.S. Patent No. 4974740 to Niles et al. ("Niles")
1013	Plaintiff Meridian Int'l Co. Ltd.'s Infringement Contentions
1014	EP Search report EP20170368.3 (Oct. 30 2020)
1015	Meridian EP Amendment/Response
1016	U.S. Publication No. 2015/0274362 to Christopher et al. ("Christopher")
1017	U.S. Publication No. 5,461,731 to Shida ("Shida")
1018	U.S. Publication No. 2020/0298392 to Baruch et al. ("Baruch")
1019	U.S. Publication No. 2003/0094392 to Meier et al. ("Meier")

Exhibit No.	Description
1020	Chinese Utility Model No. 206841966 U to Wang ("Wang")
1021	U.S. Publication No. 2008/0000899 to Baker et al. ("Baker")
1022	U.S. Patent No. 5,934,466 to Loeffler ("Loeffler")
1023	U.S. Publication No. 2019/0291922 to Gonitianer et al. ("Gonitianer922")
1024	U.S. Patent No. 9,725,209 to Ben-Gigi ("Ben-Gigi")
1025	U.S. Publication No. 2019/0315515 to Gonitianer et al. ("Gonitianer515")
1026	U.S. Patent No. 9,962,826 to Surridge ("Surridge")
1027	U.S. Publication No. 2008/0121547 to Dur et al. ("Dur")
1028	U.S. Patent No. 6,592,000 to Owens et al. ("Owens")
1029	Non-Infringement and Invalidity Report of J. Michael McCarthy, Ph.D., *Meridian Int'l Co., Ltd. v. ToughBuilt Industries, Inc.*, Civil Action No. 8:24-cv-01840 (C.D. Cal.)

17. To the best of my knowledge, the above-mentioned documents and materials are true and accurate copies of what they purport to be. An expert in the field would reasonably rely on them to formulate opinions such as those set forth in this declaration.

V. LEGAL UNDERSTANDING

18. I have also relied upon various legal principles (as explained to me by ToughBuilt's counsel) in formulating my opinions. My understanding of these principles is summarized below.

A. My Understanding of Claim Construction

19. I understand that during an *inter partes* review proceeding, claims are to be construed in light of the specification as would be read by a person of ordinary skill in the relevant art at the time the application was filed. I understand that claim terms are given their ordinary and customary meaning as would be understood by a person of ordinary skill in the relevant art in the context of the entire disclosure. A claim term, however, will not receive its ordinary meaning if the patentee acted as his own lexicographer and clearly set forth a definition of the claim term in the specification. In this case, the claim term will receive the definition set forth in the patent.

B. My Understanding of Anticipation

20. I understand that a patent claim is unpatentable if every element is actually disclosed in a prior art reference as recited in the claims. The disclosure may be explicit, implicit, or inherent. I understand that a reference is read from the perspective of a person of ordinary skill in the relevant art ("POSA") at the time of the invention.

C. My Understanding of Obviousness

21. I understand that a patent claim is invalid if the claimed invention would have been obvious to a POSA at the time the application was filed. This means that even if all of the requirements of the claim cannot be found in a single prior art reference that would anticipate the claim, the claim can still be invalid.

22. To obtain a patent, a claimed invention must have, as of the priority date, been nonobvious in view of the prior art in the field. I understand that an invention is obvious when the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious to a POSA at the time the invention was made.

23. I understand that to prove that prior art or a combination of prior art renders a patent obvious, it is necessary to:

(1) identify the particular references that, singly or in combination, render the patent obvious;

(2) specifically identify which elements of the patent claim appear in each of the asserted references; and

(3) explain how the prior art references could have been combined in order to create the inventions claimed in the asserted claim.

24. I also understand that prior art references can be combined under several different circumstances. For example, it is my understanding that one such circumstance is when a proposed combination of prior art references results in a system that represents a predictable variation, which is achieved using prior art elements according to their established functions.

25. I also understand that when considering the obviousness of a patent claim, one should consider whether a teaching, suggestion, or motivation to

combine the references exists so as to avoid impermissibly applying hindsight when considering the prior art. I understand this test should not be rigidly applied, but that the test can be important to avoid such hindsight.

26. I understand that certain objective indicia can be important evidence as to whether a patent is obvious or nonobvious. Such indicia include: (1) commercial success of products covered by the patent claims; (2) a long-felt need for the invention; (3) failed attempts by others to make the invention; (4) copying of the invention by others in the field; (5) unexpected results achieved by the invention as compared to the closest prior art; (6) praise of the invention by the infringer or others in the field; (7) the taking of licenses under the patent by others; (8) expressions of surprise by experts and those skilled in the art at the making of the invention; and (9) the patentee proceeded contrary to the accepted wisdom of the prior art.

27. At this point, I am not aware of any secondary indicia of non-obviousness. But, I reserve the right to review and opine on any evidence of objective indicia of nonobvious that may be presented during this proceeding.

28. I also understand that "obviousness" is a legal conclusion based on the underlying factual issues of the scope and content of the prior art, the differences between the claimed invention and the prior art, the level of ordinary skill in the prior art, and any objective indicia of non-obviousness.

29. For that reason, I am not rendering a legal opinion on the ultimate legal question of obviousness. Rather, my testimony addresses the underlying facts and factual analysis that would support a legal conclusion of obviousness or non-obviousness, and when I use the term obvious, I am referring to the perspective of one of ordinary skill in the art at the time of invention.

D. A Person of Ordinary Skill in the Art

30. I understand that a person of ordinary skill in the relevant art ("POSA") is presumed to be aware of all pertinent art, thinks along conventional wisdom in the art, and is a person of ordinary creativity—not an automaton.

31. I have been asked to consider the level of ordinary skill in the field that someone would have had at the time the claimed invention was made. In deciding the level of ordinary skill, I considered the following:

- the levels of education and experience of persons working in the field;
- the types of problems encountered in the field; and
- the sophistication of the technology.

32. My opinion below explains how a POSA would have understood the technology described in the references I have identified herein around the November 27, 2019 timeframe, which I have been advised is the earliest possible effective filing date for the '689 patent. However, my opinions herein would not be

affected if the ’689 patent is found to only be entitled to a later effective filing date.

33. Regardless of whether I use “I” or a “POSA” during my technical analysis below, all of my statements and opinions are to be understood to be based on how a POSA would have understood or read a document at the time of the alleged invention.

VI. BACKGROUND OF THE TECHNOLOGY

34. As I further explain in Section VII, the ’689 patent describes stackable storage containers and connection mechanisms for attaching stacked storage containers to one another. The claims of the ’689 patent broadly recite known features, such as storage containers that connect via a sliding mechanism, wherein a portion of the sliding mechanism is coplanar with a side surface of a container when the sliding mechanism of the container is engaged with a locking groove of another container. See EX1001, Claims 1, 14. Each of these features—stackable storage containers, sliding latch mechanisms to secure stacked storage containers to one another, components that regulate sliding latch motion, and coplanar portions—was known in the art well before the alleged priority date of the ’689 patent.

35. As I further explain below, stackable storage containers were widely known in various fields and widely adopted in both consumer and professional applications. Locking mechanisms that slidingly engage or latch when containers

are stacked or joined were also common. Likewise, components to regulate the movement of such locking mechanisms were standard components in the design of latching or interlocking systems.

A. Stackable Storage Containers Were Well Known in the Prior Art

36. Prior to the ’689 patent, storage containers designed to be stacked or connected together were widely known and commonly used. These storage containers came in many configurations (e.g., rigid boxes, pliable bags, etc.) and were commonly used by tradespeople, hobbyists, and consumers for tool storage, transportation, and organization.

37. For example, by 1998, the concept of a “stackable interlocking toolbox” was already known in the art. EX1022, Title. Loeffler—which was filed in January 1998—describes “portable toolboxes which stack and interlock.” EX1022, 1:4-5. Loeffler explains that there already existed a well-known “need for a portable, stackable toolbox where several can be combined into a single unit for transportation.” EX1022, 1:45-46. Accordingly, Loeffler explains that:

> The toolboxes should be available in a variety of sizes. It should be possible to combine the boxes in any order and in any combination. The ***stacked toolboxes should interlock so that the combination can be handled as a single item. It should be possible to easily separate the individual toolboxes for access and so that they can be positioned and stored separately***. Ideally, the toolboxes, individually

> or as a stack, could be physically secured to a mounting device either in a vehicle or in the shop.

EX1022, 1:45-55 (emphasis added).

38. In view of these design considerations, Loeffler described a "toolbox which utilizes an interlocking configuration of the top and bottom of the sidewalls which allow them to mate together." EX1022, 1:61-63. "A latching mechanism locks the adjacent boxes in their mating position and can be released to separate the boxes." EX1022, 1:64-65. "Two boxes can be slid together, with their tongues and grooves matching to form a stacked unit which can be treated as one. By using the same configuration on all boxes, they can be stacked in any combination and in any order." EX1022, 2:2-5. Loeffler depicts an example of stacked containers in Figure 10.

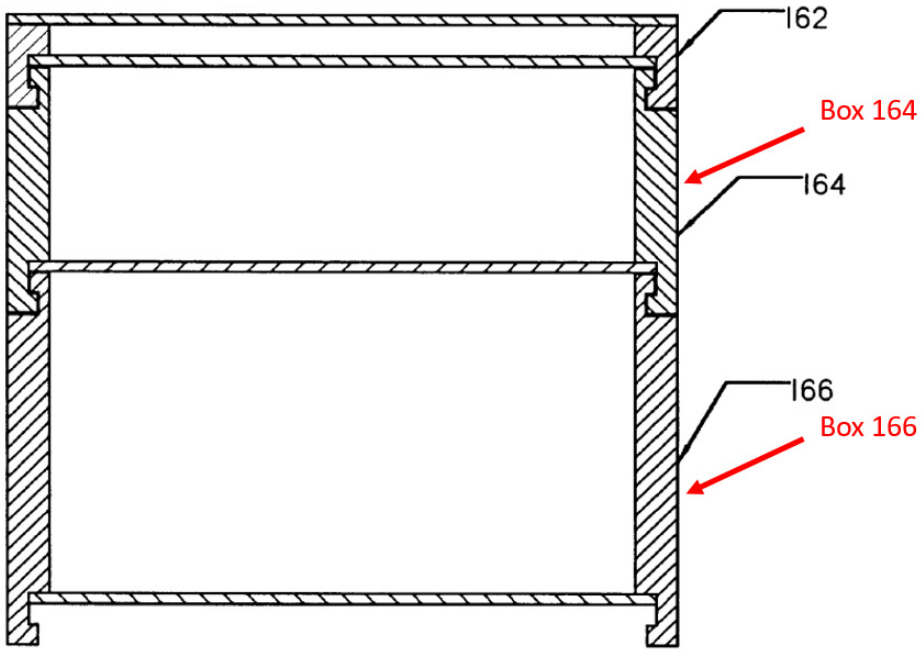
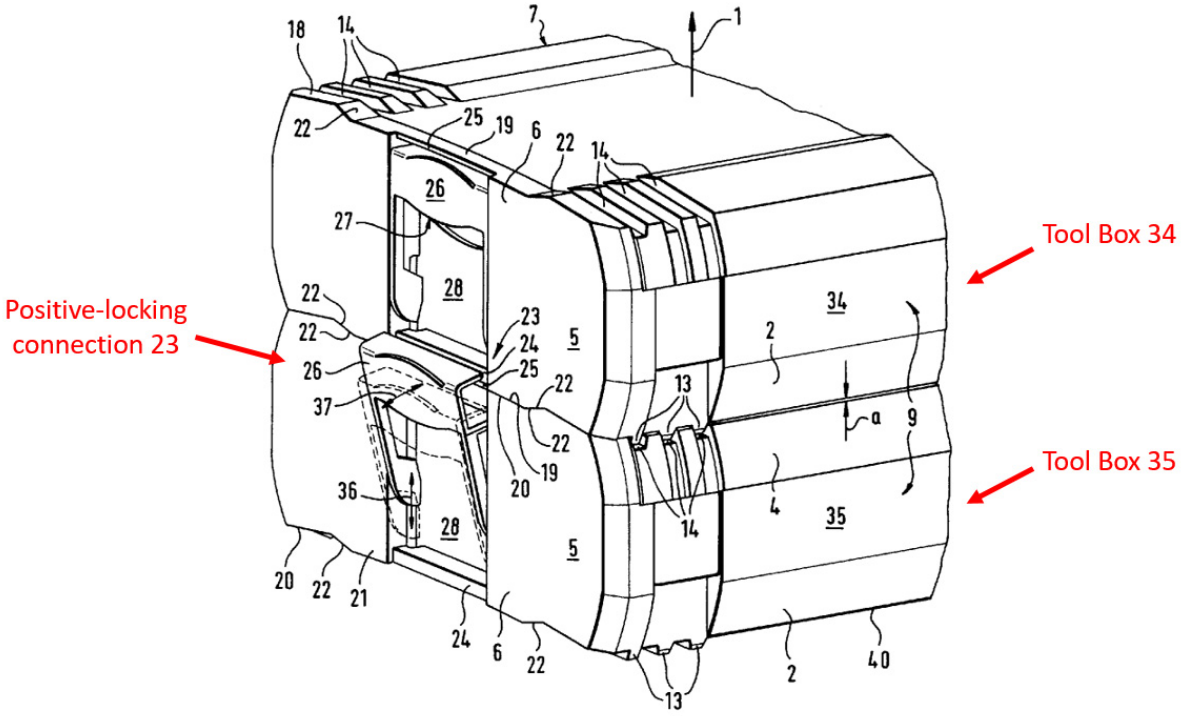


FIG. 10

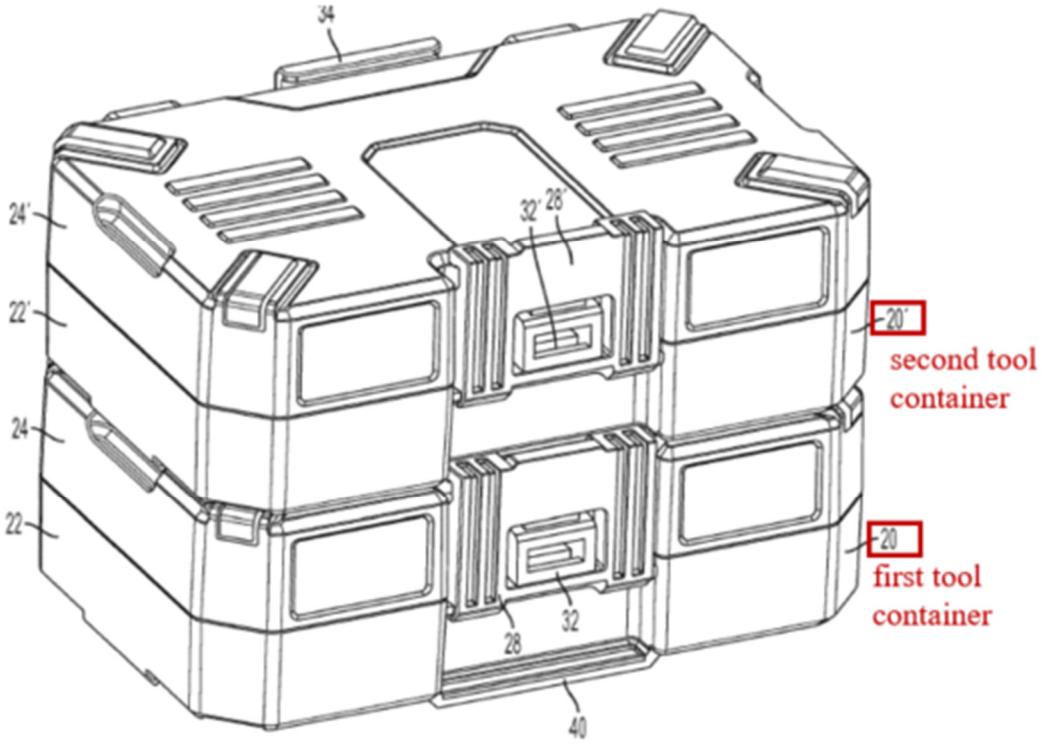
EX1022, FIG. 10 (annotated).

39. Meier describes a similar "stacking tool case vertically stackable with additional stacking tool cases having an identical configuration." EX1019, Abstract. Figure 2 from Meier depicts two tool boxes 34, 35 stacked on top of one another with a locking mechanism 23. EX1019, ¶34.



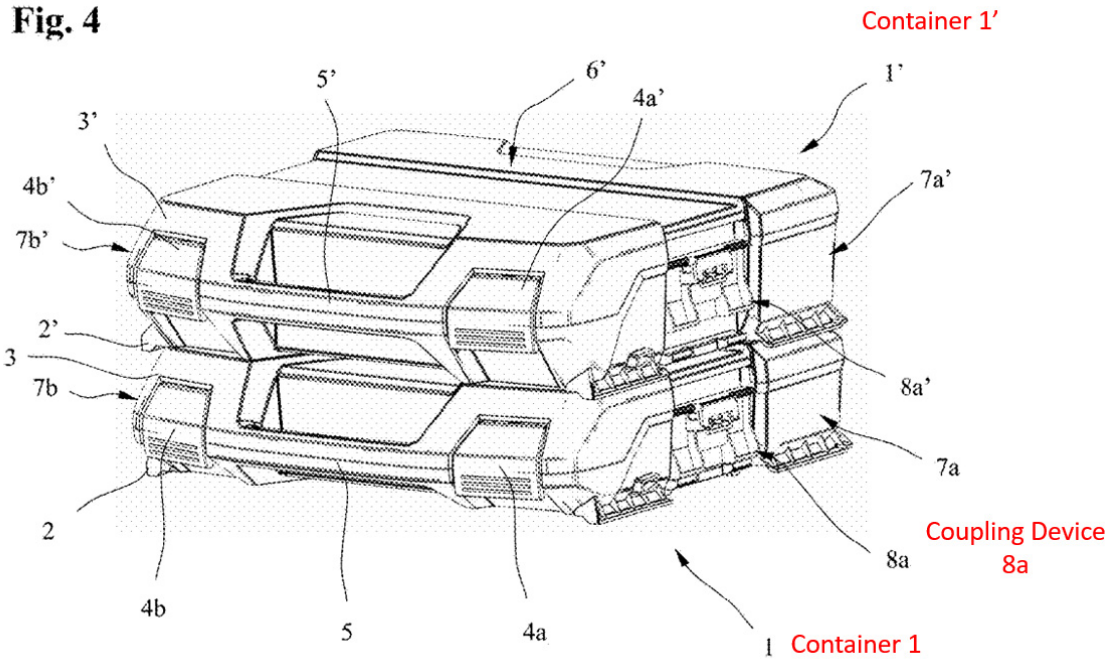
EX1019, FIG. 2 (annotated).

40. As another example, Brocket discloses storage containers that can be detachably coupled to one another using a locking system. EX1005, ¶¶1-5, 14-16, FIGs. 3-5B. Brocket discloses a tool container system 10 including a first tool container 20 and second tool container 20'. EX1005, ¶12, FIGs. 3-5B. Brocket describes that the "second tool container is stackable on the first cover of the first tool container" and is "lockable to the first tool container." EX1005, ¶3. Figure 4, illustrated below, shows Brocket's storage assembly.



EX1005, FIG. 4.

41. Different configurations and shapes of stackable containers were also well known. For example, Gonitianer922 describes a "stackable system container" with flat-shaped containers. EX1023, FIG. 4, ¶¶37, 39.



EX1023, FIG. 4 (annotated).

42. Additionally, modular storage systems designed for portability were also widely known and often comprised multiple storage containers that could be stacked or interconnected into a single transportable unit. These portable systems allowed users to transport tools, equipment, and supplies efficiently, while locking mechanisms were frequently employed to prevent the containers from separating or shifting during movement or handling.

43. One example of a portable modular storage system is described in Brunner. EX1010, ¶¶15, 28, 108. Brunner describes "at least two containers detachably attached to one another by locking arrangements." EX1010, Abstract.

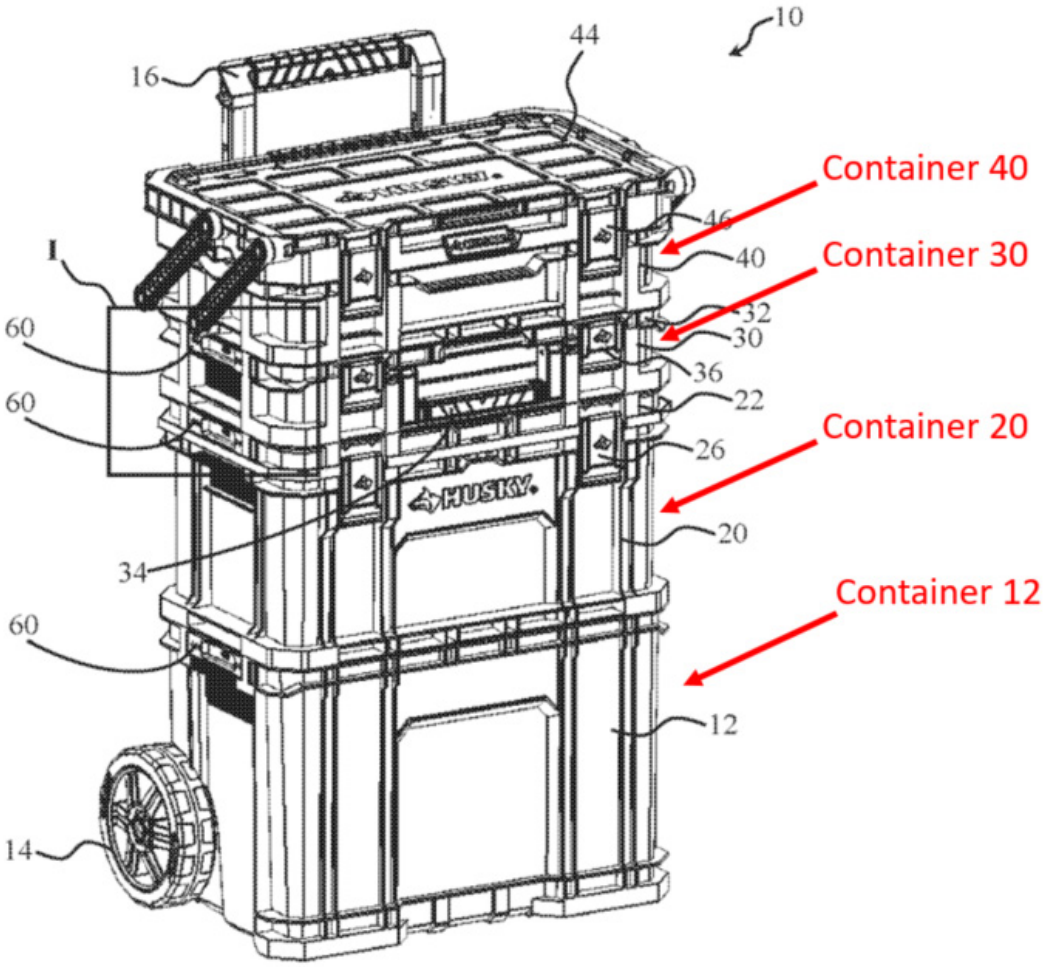


Fig. 1A

EX1010, FIG. 1A (annotated).

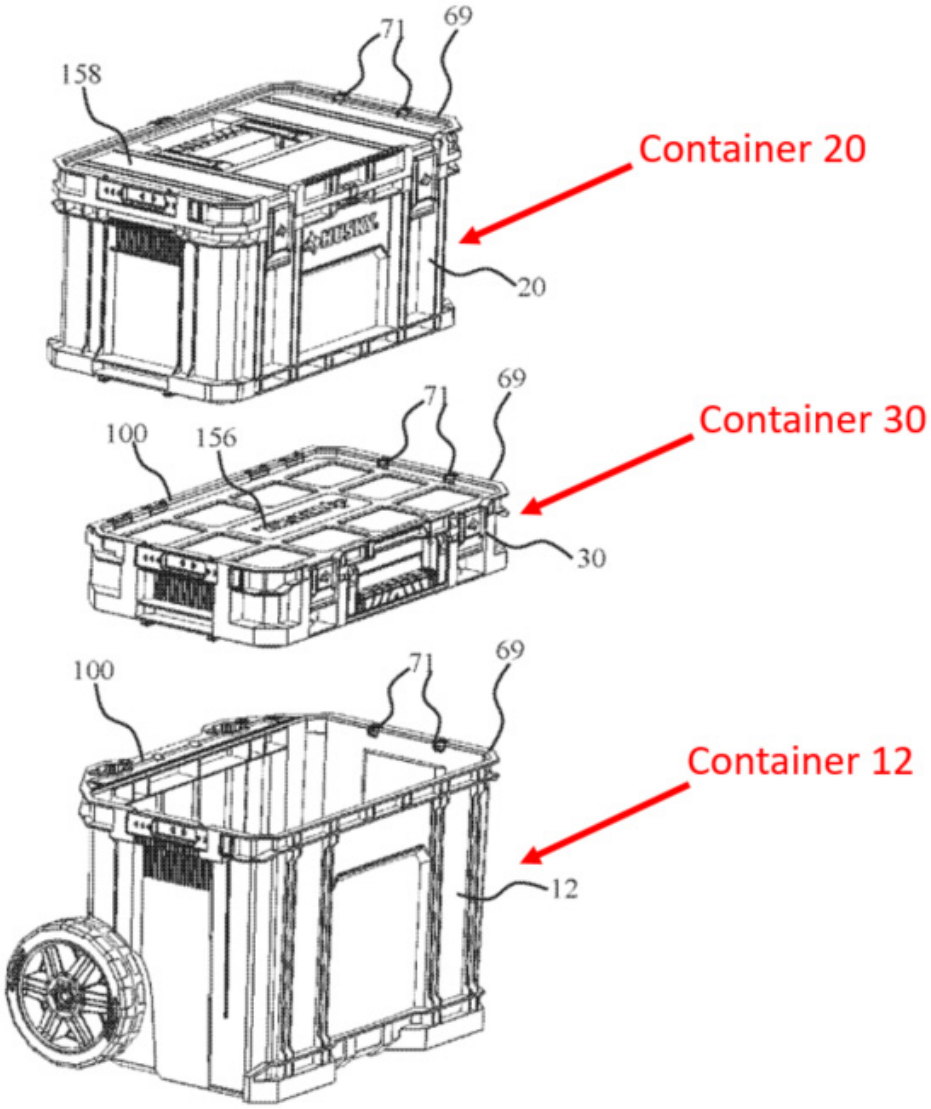


Fig. 8B

EX1010, FIG. 8B (annotated).

44. "The container assembly, generally designated 10, is a wheeled tool cart assembly comprising a wheeled base open top, bucket-like container 12, [and] fitted with wheels 14 at a bottom rear portion of the base container." EX1010, ¶108. "The container assembly 10 further comprises a second bucket-like container

20 mounted over container 12." EX1010, ¶109. Brunner further explains:

> Over container 20 there is an organizer-type container 30 accommodating a plurality of removable storage boxes (not seen), said container 30 being configured with a pivotable lid 32 (the lid 32 being fitted with a carrying handle 34), said lid 32 secured by a pair of latches 36 at a front side of the container 30. Over container 30, there is provided yet an organizer container 40, being a double-deck cantilever-type organizer, fitted with a top cover 44 and securable at a closed position by a pair of locking latches 46.

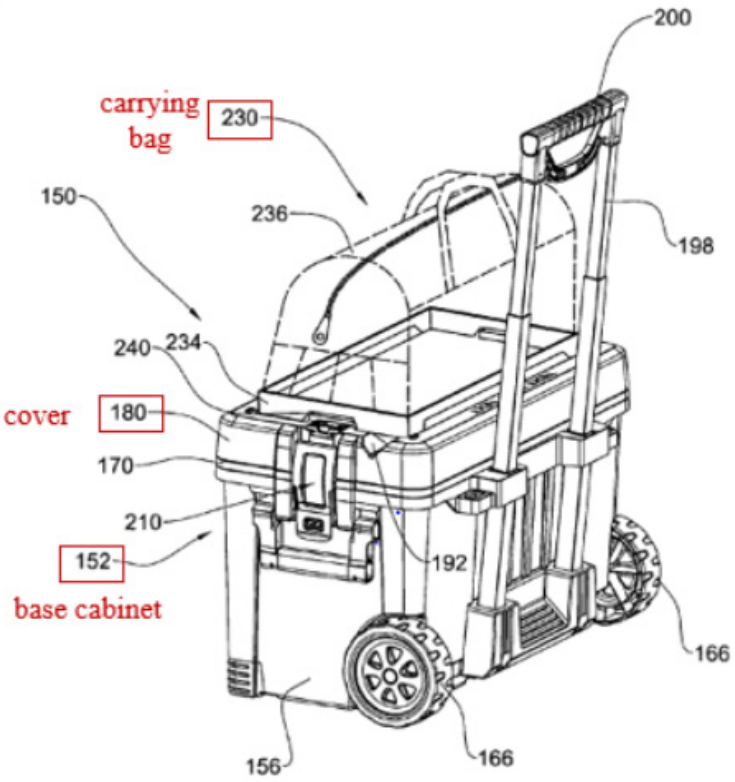
EX1010, ¶109.

45. In this manner, Brunner describes multiple types of stackable boxes and a portable way of transporting such containers.

46. Another example of a portable modular storage system is described in Duvigneau. Duvigneau describes a portable stackable storage system with wheels, a pull handle, and vertically stackable containers.

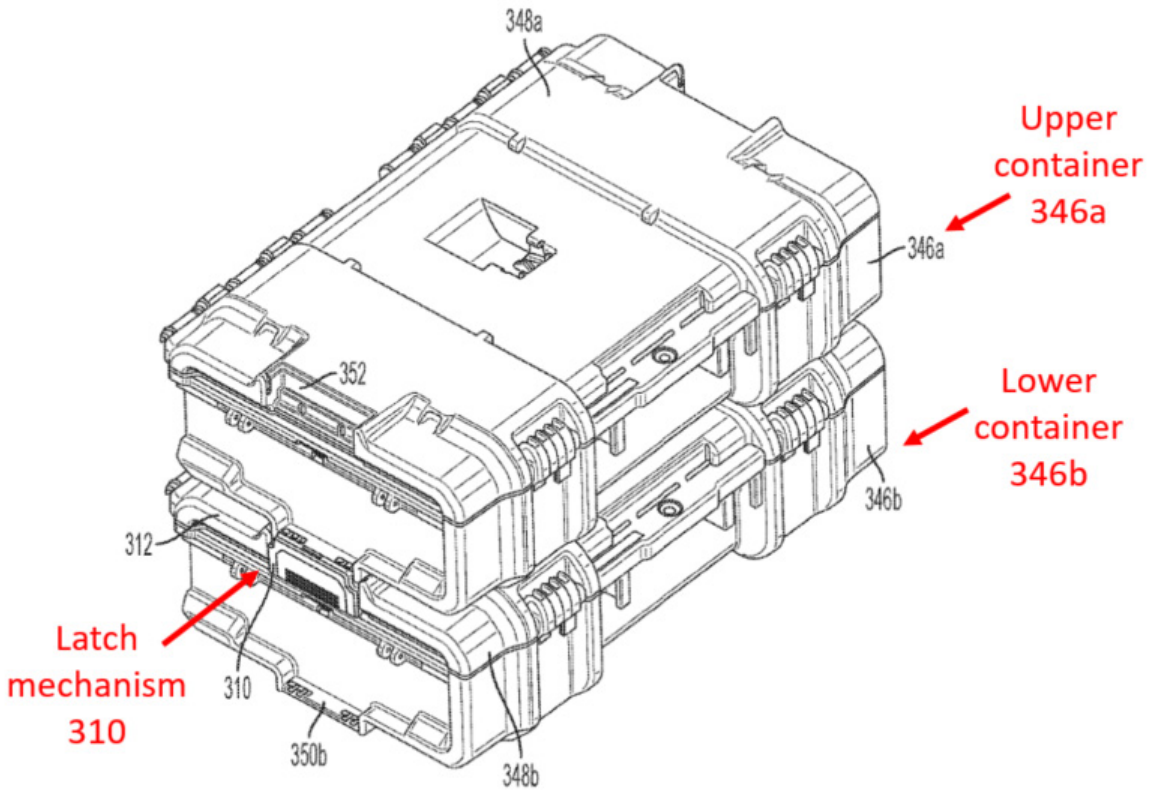
47. Duvigneau "relates generally to containers adapted to store any items" wherein "at least one container is [] detachably articulated for carrying away items in an easy to carry container." EX1007, ¶¶2, 12. In particular, Duvigneau discloses "a cabinet assembly comprising a wheeled base cabinet … and at least one detachable container made from a pliable material and designed as a carrying bag." EX1007, ¶13. The carrying bag 230 includes a rigid base portion and is detachably fitted over base cabinet 152. EX1007, ¶¶41-44, 57, FIG. 4A. Figure 4A, depicted

below, shows carrying bag 230 attached to base cabinet 152 (which includes cover 180).



EX1007, FIG. 4A.

48. Another vertically stacked configuration is described in Baruch, which discloses modular containers coupled by latch mechanism 310. EX1018, Abstract.



EX1018, FIG. 23A (annotated).

49. As shown in Figure 23A of Baruch, body 346a of an upper container is pressed downward onto lid 348b of a lower container, where latch mechanism 310 is disposed to engage a top portion of the lower container. EX1018, ¶56, FIG. 23A.

50. Baruch explains that latch mechanism 310 is configured to lockably retain the upper container 346a to the lower container 346b, such that the primary function of latch mechanism 310 is to secure two bodies to one another. EX1018, ¶¶56, 62, FIG. 23A. This vertical coupling allows one container to be positively retained to another, enabling the two containers to be releasably connected in a

locked state. EX1018, ¶¶56, 62.

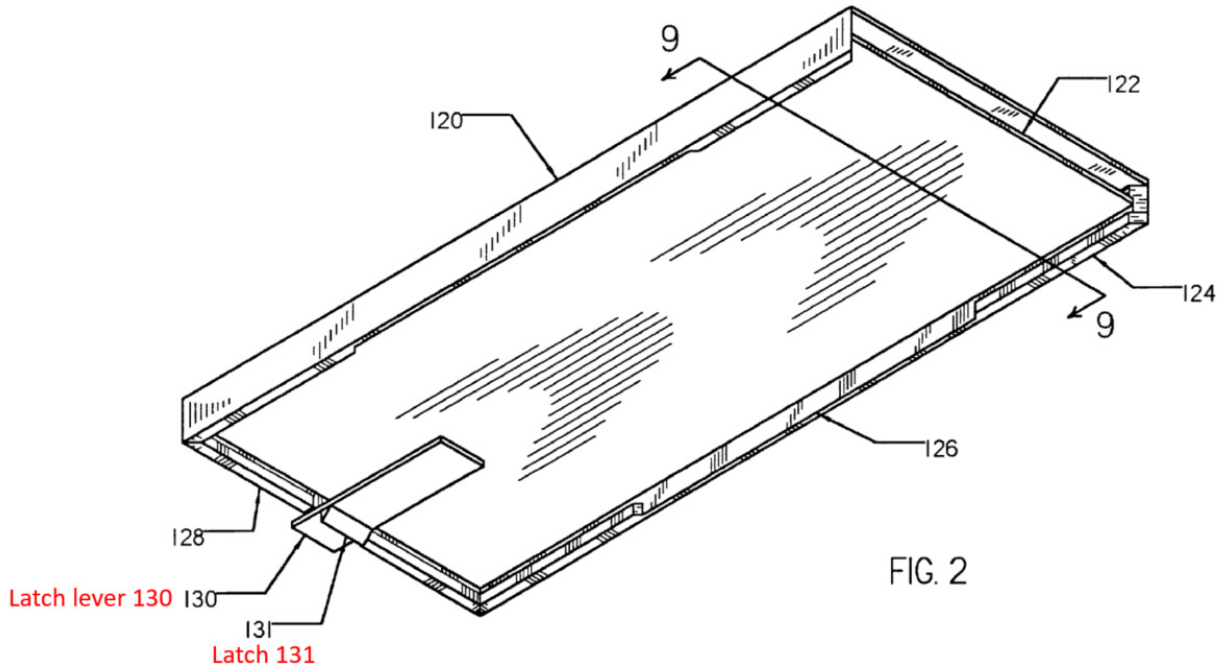
51. As seen from these references, stacking or interconnecting multiple modular storage boxes in a vertical arrangement was widely known and commonly practiced before the ’689 patent. These modular systems often included structural features, such as grooves, protrusions, or latch mechanisms, to align and secure one box atop another. Such configurations allowed users to build customized storage stacks and were frequently equipped with locking features to prevent accidental separation during handling or transport.

B. Latching Mechanisms for Storage Containers Were Well Known in the Prior Art

52. Before the ’689 patent, latching mechanisms for connecting storage containers were widely known and commonly used in modular storage systems. These mechanisms allowed multiple containers to be joined together in stacked arrangements and sometimes included features for automatic engagement when the containers were brought into contact. They were typically designed to permit quick release as well making it easy for users to unlock and separate connected storage units when needed.

53. Again, Loeffler demonstrates that using a latch mechanism for locking adjacent boxes was a concept known more than 20 years before the ’689 patent. EX1022, Title. “A latching mechanism locks the adjacent boxes in their mating position and can be released to separate the boxes.” EX1022, 1:64-65. Figure 2

depicts a latch 131 and latch lever 130 on the cover of box in a stack. EX1022, 3:59-4:8.



EX1022, FIG. 2 (annotated).

54. Loeffler explains:

> Latch, 131, engages the front edge of the box when the cover is in place. It is released by moving lever, 130, upward. In the preferred embodiment, the lever is formed from a flexible material to also serve as a biasing means.

EX1022, 4:4-8.

> The latch lever, 130, operates ***the latch which serves to prevent unintentional sliding movement between two mating boxes by locking them in a fixed relative longitudinal position. This effectively locks the two boxes together*** as the tongue and groove

> joint can be unmated only by sliding it apart. In the preferred embodiment a simple catch is used which is spring biased to engage the lip [] of the lower box. ***Any of several well known means of preventing sliding motion, such as pins, pawls, or detents could also be used***.

EX1022, 4:48-56 (emphasis added).

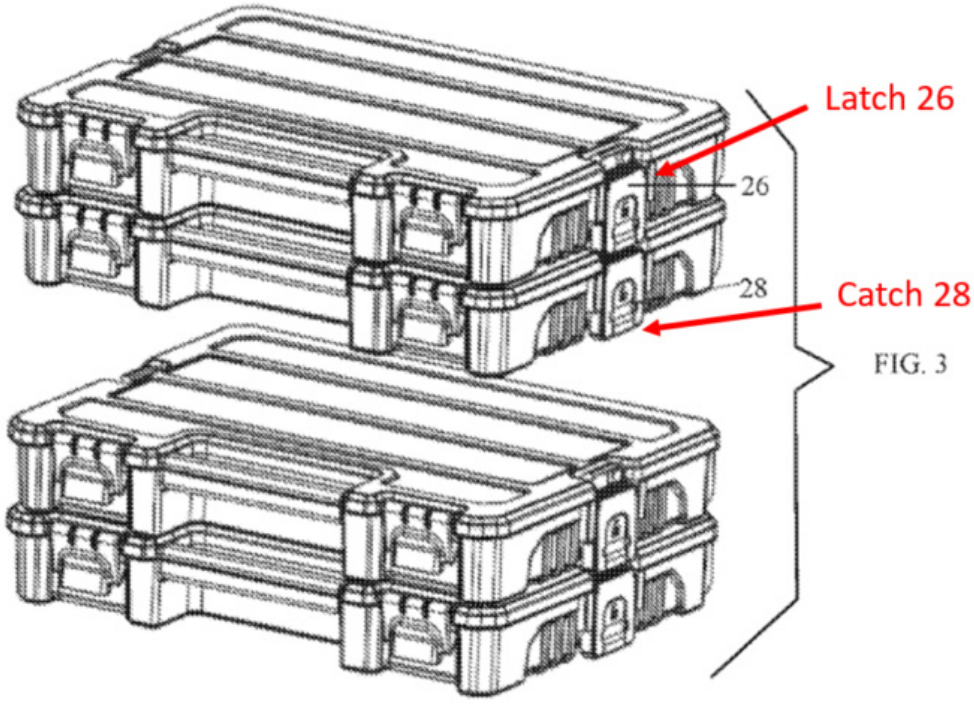
55. Loeffer provides the following example of how latches would be implemented with toolboxes:

> As a tradesperson prepares to leave their workshop for a job site, they identify the set of tools needed for the specific task to be performed. The individual toolboxes containing those tools are located and removed from their rack mounts by releasing the latch, allowing them to be fully extracted. The boxes are then assembled into one or more stacks of boxes according to the users preference. … After the tradesperson reaches the job site, the toolbox stacks are removed from the vehicle and taken to the work location. Then, they may be left stacked, or unstacked and arranged for easy access to the tools.

EX1022, 7:14-31; *see also* EX1022, 6:64-7:4 (describing a "single combined latch" for coupling boxes and coupling boxes to a rack).

56. In this manner, the concept of latching mechanisms for storage containers was known in the art well-before the '689 patent.

57. Ben-Gigi further confirms this understanding and describes a "stackable tool box assembly" with "side latches with catches." EX1024, Abstract.



EX1024, FIG. 3 (annotated).

58. Ben-Gigi explains:

> The first and second tool boxes have a stacked orientation in which the second tool box sits on top of the first tool box, and in which the ***catch edge of the catch of the latch of the second tool box engages a lip of the first tool box to hold the first and second tool boxes together***. The first and second tool boxes have a released orientation from the stacked orientation in which the ***catch edge of the catch of the latch of the second tool box is pivoted to disengage from the lip of the first tool box so that the first and second tool boxes are released from each other***.

EX1024, Abstract (emphasis added).

59. This latch mechanism can be seen from Figures 4A-4C:

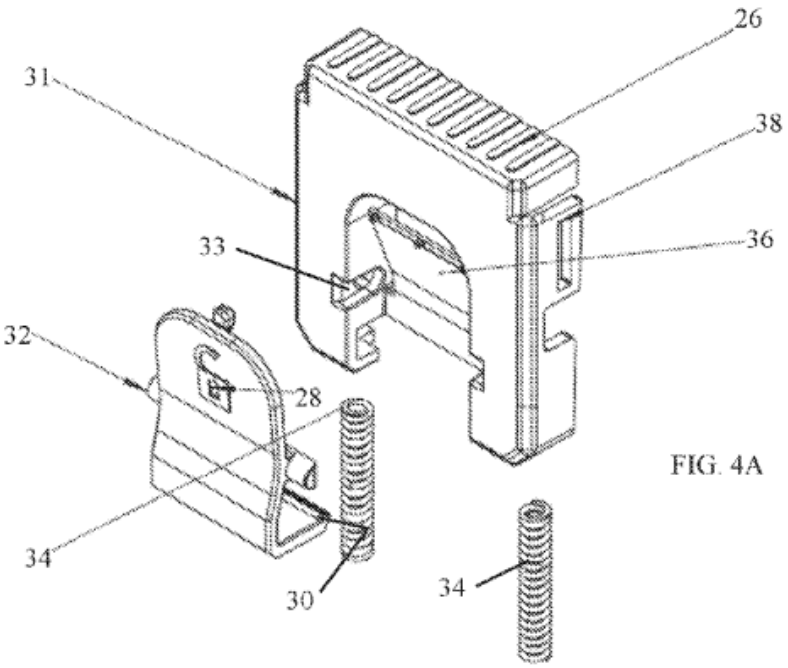


FIG. 4A

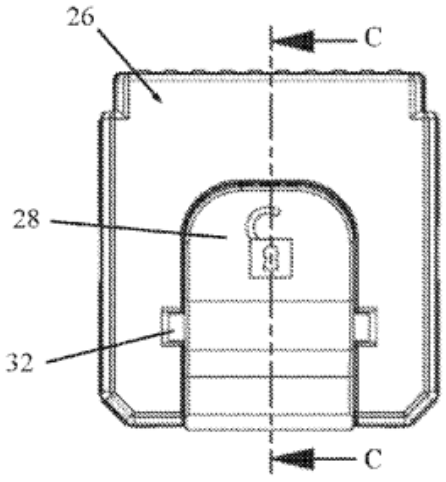


FIG. 4B

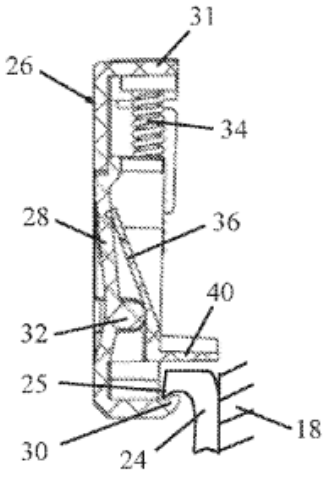


FIG. 4C

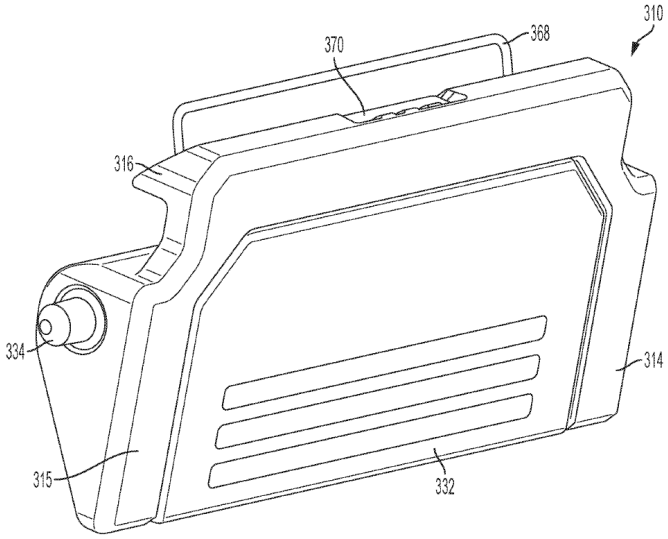
EX1024, FIGs. 4A-4C.

60. "FIGs. 4A, 4B and 4C are simplified exploded, front view and sectional illustrations of a latch of the tool box." EX1024, 2:40-44. "A latch 26 is arranged to slide along the side wall 18 towards and away from lip 24." EX1024, 3:5-6. "Latch 26 is biased by a first biasing device 34 (such as, without limitation,

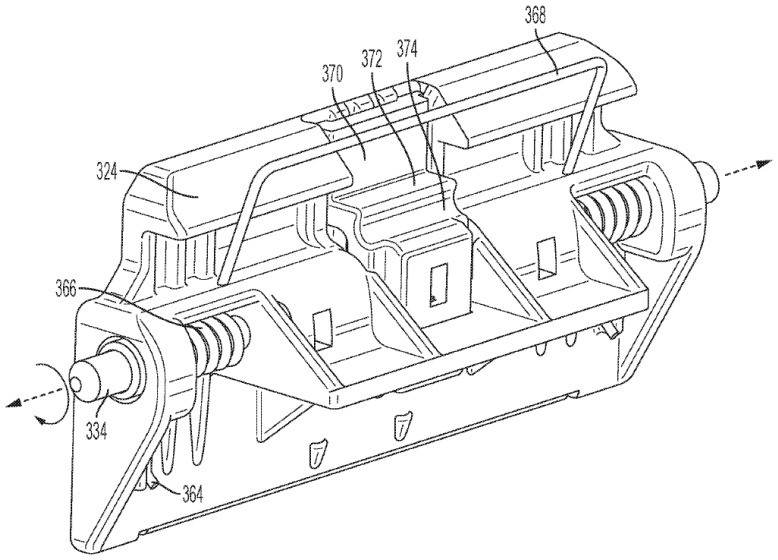
a pair of coil springs) configured to provide an urging force to urge latch 26 towards top portion 22." EX1024, 3:12-15.

61. Baruch also teaches that rotational latching mechanisms were well known and commonly used in modular storage systems to connect storage containers before the '689 patent. These mechanisms typically operated by rotating a latch component about a pivot or axis to engage or disengage a locking feature between adjacent containers. In modular tool storage systems, rotational latches were frequently employed to secure vertically stacked containers by pressing or rotating the latch into position to lock onto a lower or upper container. These latches were typically designed to be quickly released by rotating or pivoting in the opposite direction, enabling fast disassembly of stacked storage units.

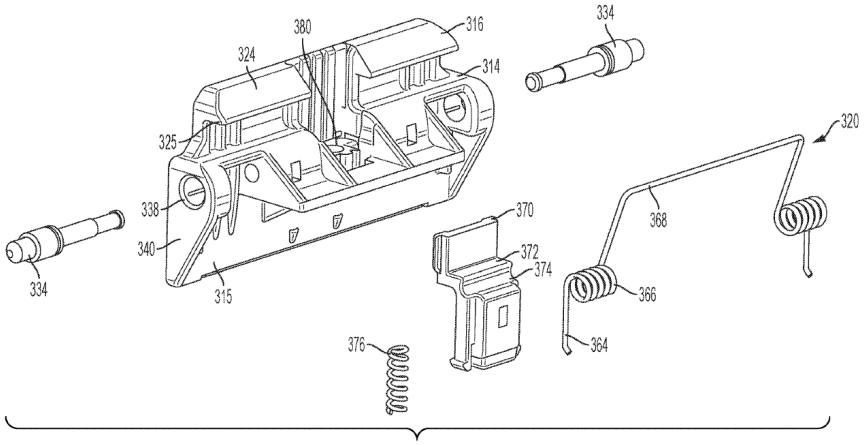
62. For example, Baruch describes a modular latch mechanism that rotates about a horizontal axis to secure vertically stacked storage boxes.



EX1018, FIG. 20.



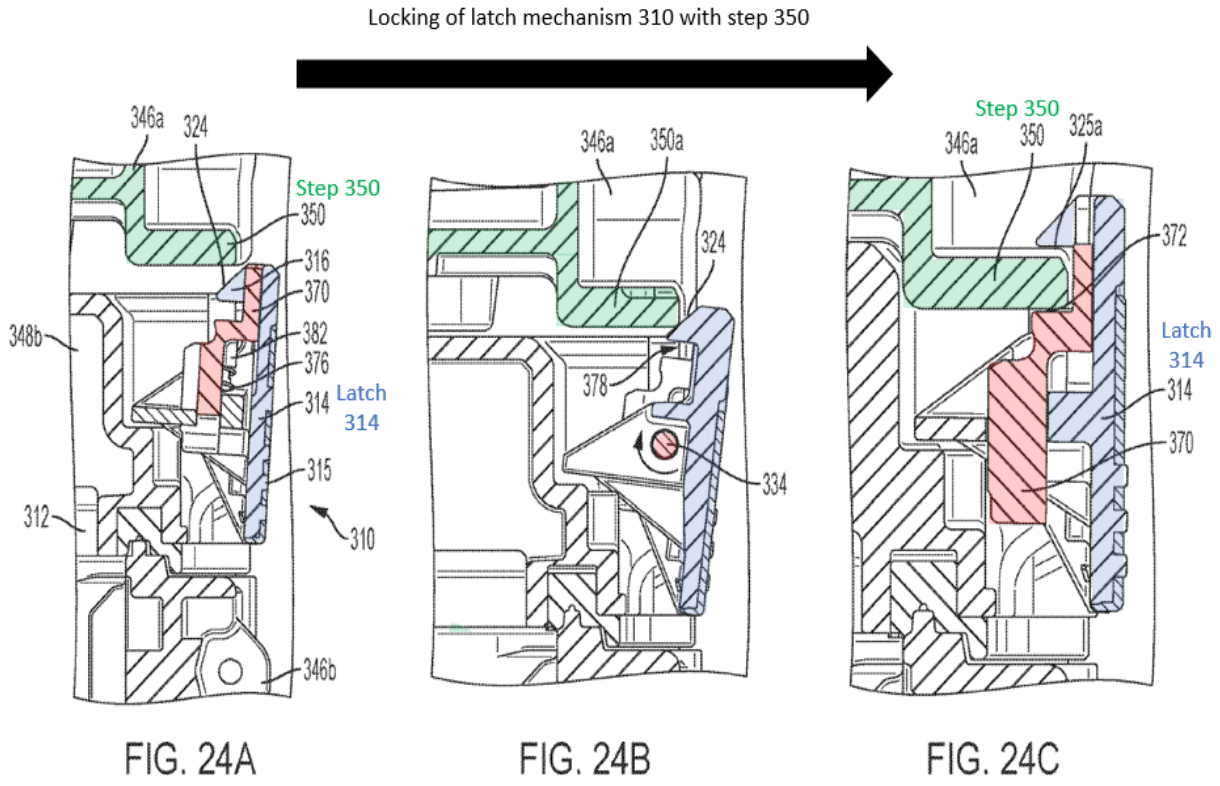
EX1018, FIG. 21.



EX1018, FIG. 22.

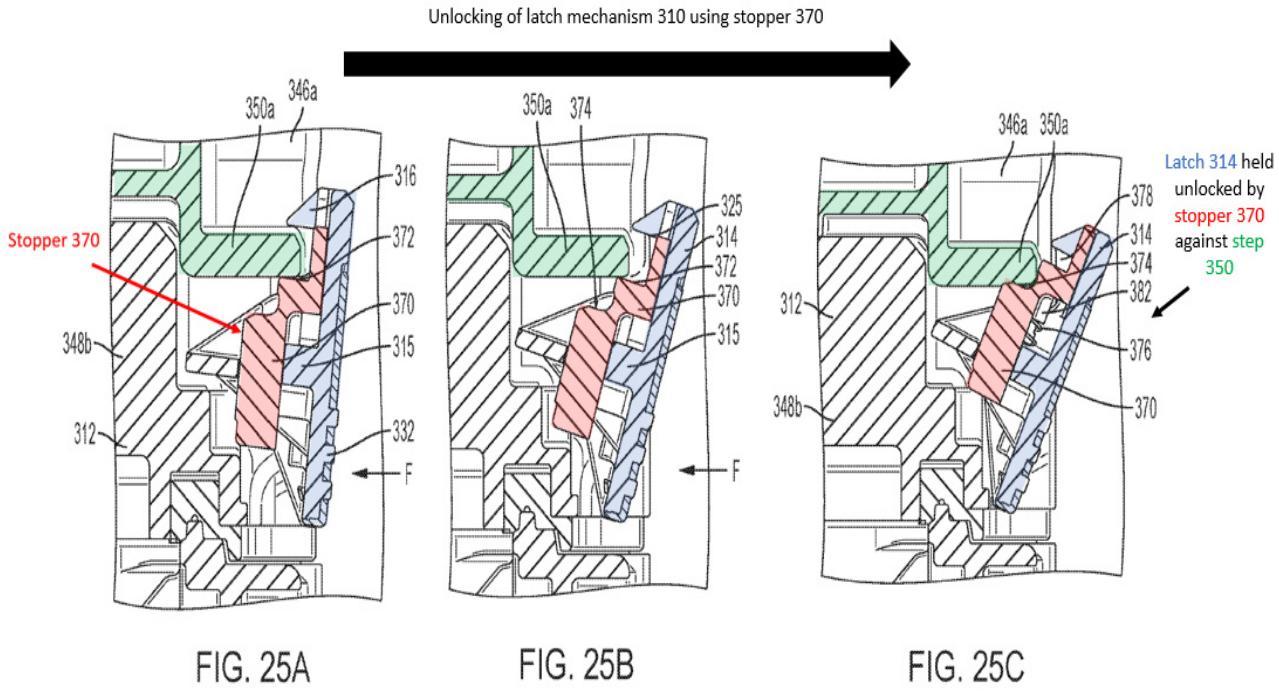
63. Figures 20-22 of Baruch disclose a rotational latch mechanism 310 that includes a latch 314 rotatably disposed within a housing 312. EX1018, ¶¶49-55. The latch 314 includes a main body 315 and a primary hook 316, and is biased toward a first position by a latch bias 320, which in a preferred embodiment is a torsion spring. EX1018, ¶51. Rotational movement of the latch is facilitated by pins 334, which act as a pivot axis and pass through openings in the housing, torsion spring, and latch body. EX1018, ¶54. The primary hook 316 extends from the latch body and includes a step receiving surface 324, which is angled to guide and automatically engage with a corresponding step on an adjacent container. EX1018, ¶50. The latch bias 320 applies rotational force to hold the latch in its default, locked position, enabling automatic locking upon stacking.

64. Baruch further explains the operation of the latch during stacking and unstacking in FIGs. 24A-C and 25A-D. EX1018, ¶¶62-63.



EX1018, FIGs. 24A-24C (annotated).

65. To couple two containers, the step 350a of the upper container is aligned above the step receiving surface 324 and pressed downward. EX1018, ¶62, FIG. 24A. The angled surface on the hook causes the latch to rotate automatically against the torsion bias to a second position, allowing step 350a to pass beneath the primary hook 316. EX1018, ¶62, FIG. 24B. Once fully engaged, the torsion spring automatically returns the latch to the locked position, securing the containers together without user manipulation of the latch. EX1018, ¶62, FIG. 24C.

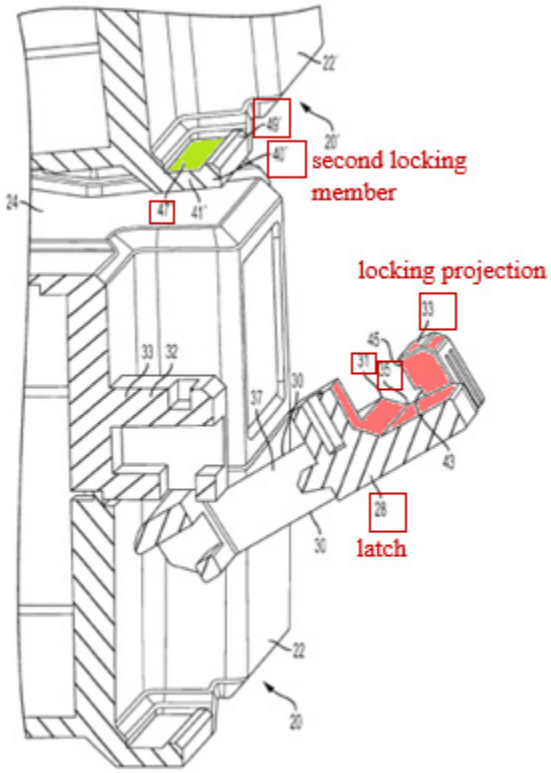


EX1018, FIGs. 25A-25C (annotated).

66. To release the latch, the operator applies pressure to the operator surface 332, rotating the latch away from the first position. EX1018, ¶63, FIG. 25A. As the latch rotates, the cantilevered and locking surfaces disengage from the step 350a, allowing stopper 370 to move downward and hold the latch in its second (open) position. EX1018, ¶63, FIGs. 25B-25C. Once the upper container is removed, the spring biases automatically return both the latch and stopper to their default locked positions. EX1018, ¶63, FIG. 25D.

67. Other rotational latching mechanisms are shown in, for example, Brocket. Brocket discloses a latch 28 for securing first tool container 20 to second tool container 20'. As shown in Figure 5B below, the latch 28 includes a second

locking latch portion 31 (red) "(e.g., a rectangular locking projection 33 and a lateral groove or recess 35 defined below the locking projection 33") for engaging a second locking member 40' on second tool container 20'. EX1005, ¶14, FIG. 5B.



EX1005, FIG. 5B.

68. Pivoting latch 28 causes a lateral projection 45 of second locking latch portion 31 to engage a top surface of a rectangular projection 47' (green) of second locking member 40' and couple together containers 20 and 20'. EX1005, ¶16, FIG. 5B. Accordingly, similar to the '689 patent, Brocket discloses a locking groove (defined by top surface 47' and upward projecting lip 49' of second locking member 40') and a mechanism for selectively engaging the locking groove to

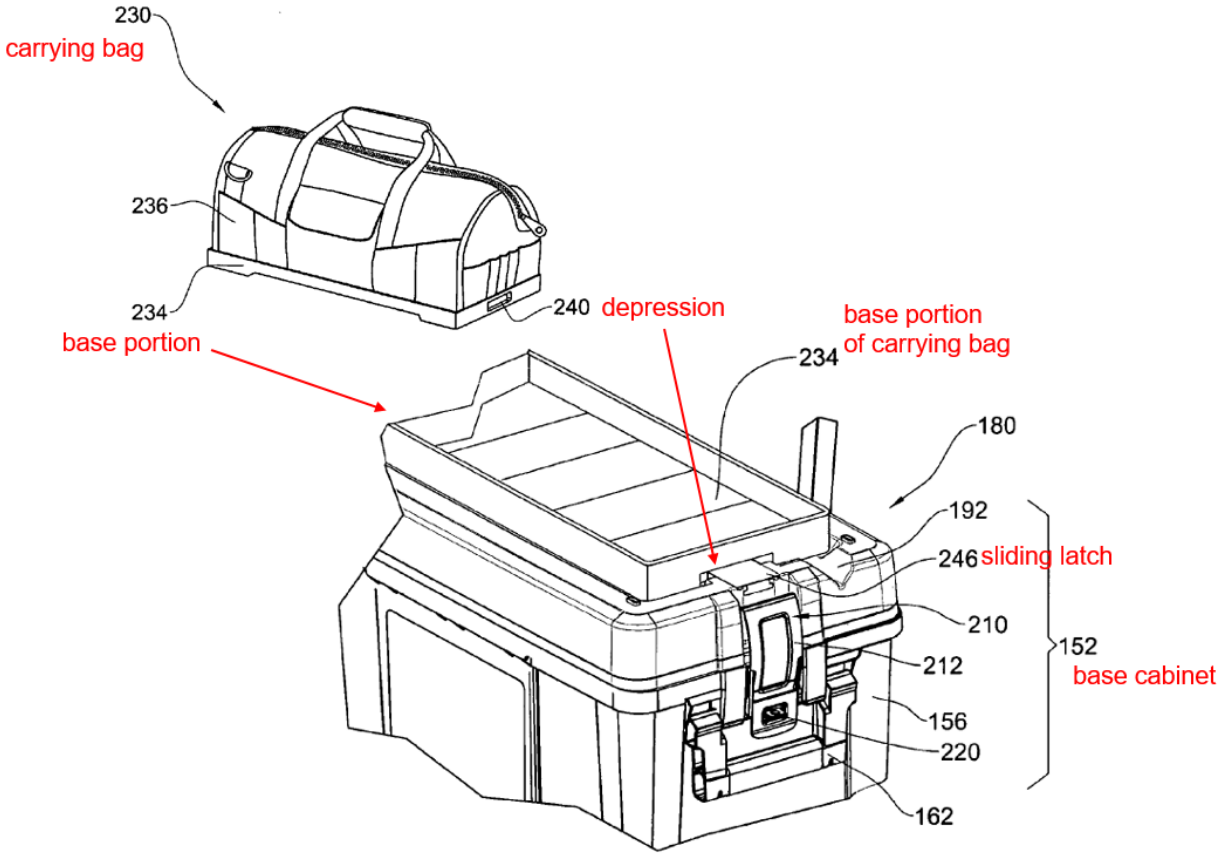
connect and hold two storage containers together.

69. It is important to note that just because a latching mechanism uses a rotational movement path does not mean it is not a "sliding mechanism." "Sliding" can refer to both rotational and linear movement and simply describes the process of surfaces of two components moving smoothly relative to one another while contacting one another. This understanding was confirmed by the European Examiner in European Application No. 20170368.3, who stated that "[b]y definition to slide means to 'move smoothly along a surface while maintaining continuous contact with it.'" EX1014, 6.

70. Nevertheless, linear sliding mechanisms for coupling two storage containers were also known in the art well-before the '689 patent.

71. For example, Duvigneau describes a modular latching mechanism that moves in a linear, horizontal direction to connect stacked carriers.

72. Duvigneau's carrying bag 230 "has a rigid base portion 234" that "comprises at its each of it's [sic] two side edges a depression 240." EX1007, ¶57. Duvigneau further describes that its base cabinet 152 comprises a cover 180 upon which "a sliding latch 246" is fitted. EX1007, ¶¶52, 57, FIG. 6. Duvigneau discloses "depression 240 [is] fitted for arresting by a sliding latch 246 … for detachably articulating the carrying bag 230 over the base cabinet 152." EX1007, ¶57.

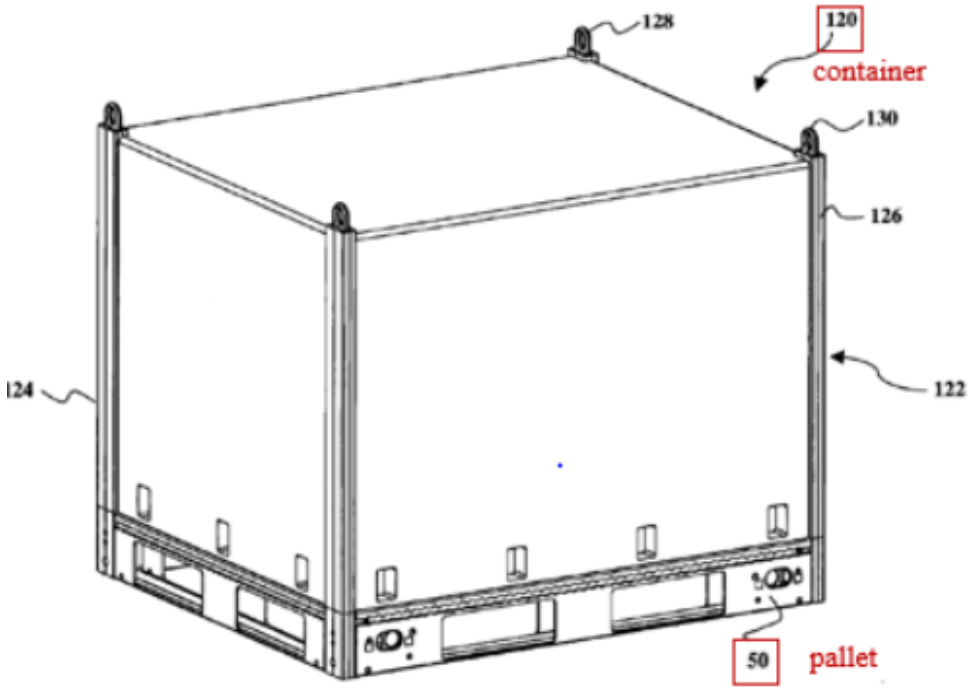


EX1007, FIG. 4B (top, cropped), FIG. 6 (bottom).

73. Duvigneau discloses "[d]isengagement of the carrying bag 230 from the base cabinet 152 is facilitated by slidingly displacing the latch 246 away from the base member 234 so as to disengage from the depression 240." EX1007, ¶57.

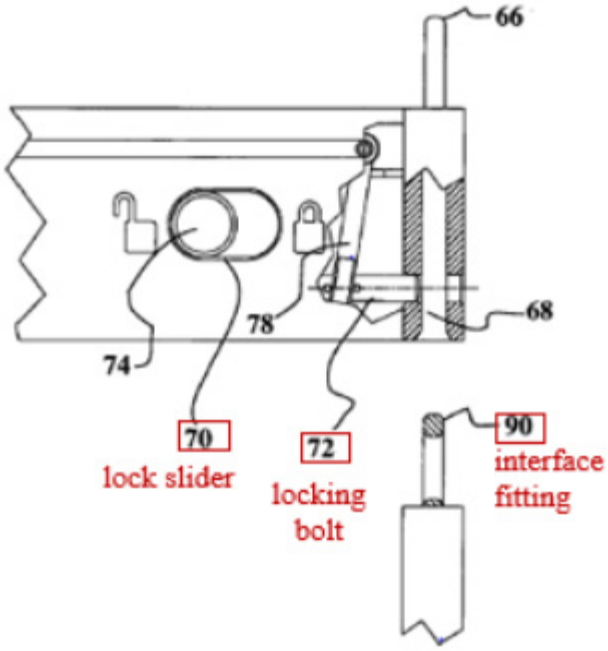
74. Accordingly, Duvigneau discloses a sliding mechanism (latch 246) that (i) travels along a direction perpendicular to the stacking axis of two joined containers, (ii) protrudes from a side surface of the container comprising the sliding mechanism when disengaged, and (iii) is coplanar with the side surface when engaged. EX1007, ¶57, FIG. 6.

75. Another form of a linear latching mechanism is shown in Heinrichs.



EX1006, FIG. 6.

76. Heinrichs discloses that a pallet 50 includes a locking arrangement for engaging and disengaging an interface fitting (e.g., an interface fitting 90, 130) of a storage assembly (e.g., another container 120). EX1006, ¶¶10, 51-62. Figure 3, depicted below, illustrates this mechanism.

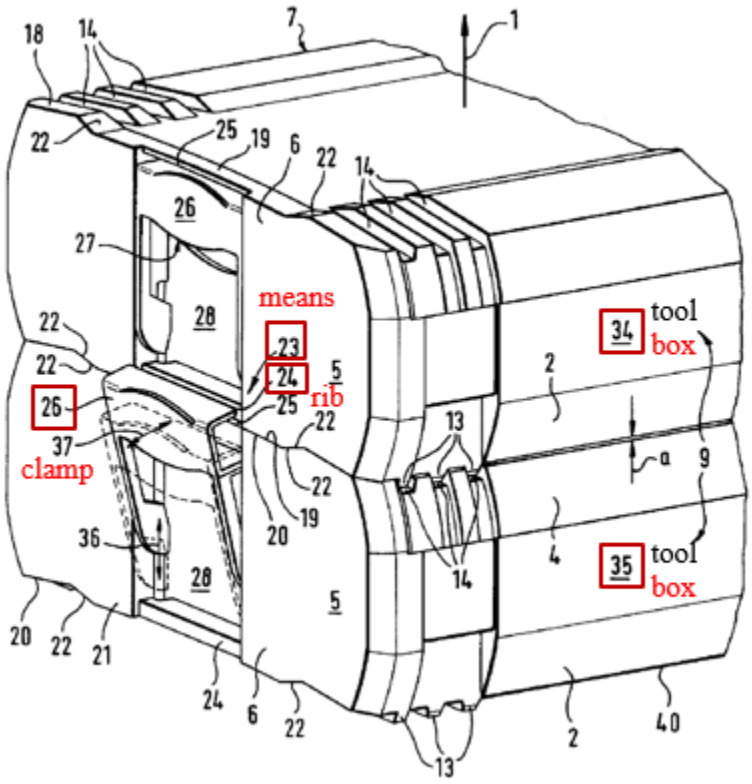


EX1006, FIG. 3.

77. Heinrichs describes its locking mechanism includes a lock slider 70 and a locking bolt 72. EX1006, ¶¶52-53. In operation, pallet 50 is stacked on a structure (e.g., a container 120) having substantially identical interface fittings. Interface fitting 90 shown in FIG. 3 (an example interface fitting substantially identical to an interface fitting 130 of container 120 shown in FIG. 6) is received through cavity 68 so that it aligns with locking bolt 72. EX1006, ¶56. A key is inserted into keyhole 74 and "[l]ock slider 70 is manually translated, i.e., slid, from an unlocked position to a locked position so that locking bolt 72 attached to lock slider 70" travels through cavity 62 to engage the interface fitting 90. EX1006, ¶56.

78. Accordingly, Heinrichs discloses a sliding mechanism (lock slider 70 and locking bolt 72) for selectively engaging a locking groove (interface 90) to connect and hold two containers together.

79. Additionally, latching mechanisms that include both a linear and rotational component of movement were well known. For example, Meier describes two toolboxes 34, 35 that are "stacked on top one and another and have means 23 for a positive-locking connection in the vertical direction 1 of stacked tool boxes." EX1019, ¶34. FIG. 2 of Meier, reproduced below, shows the two toolboxes and means 23.



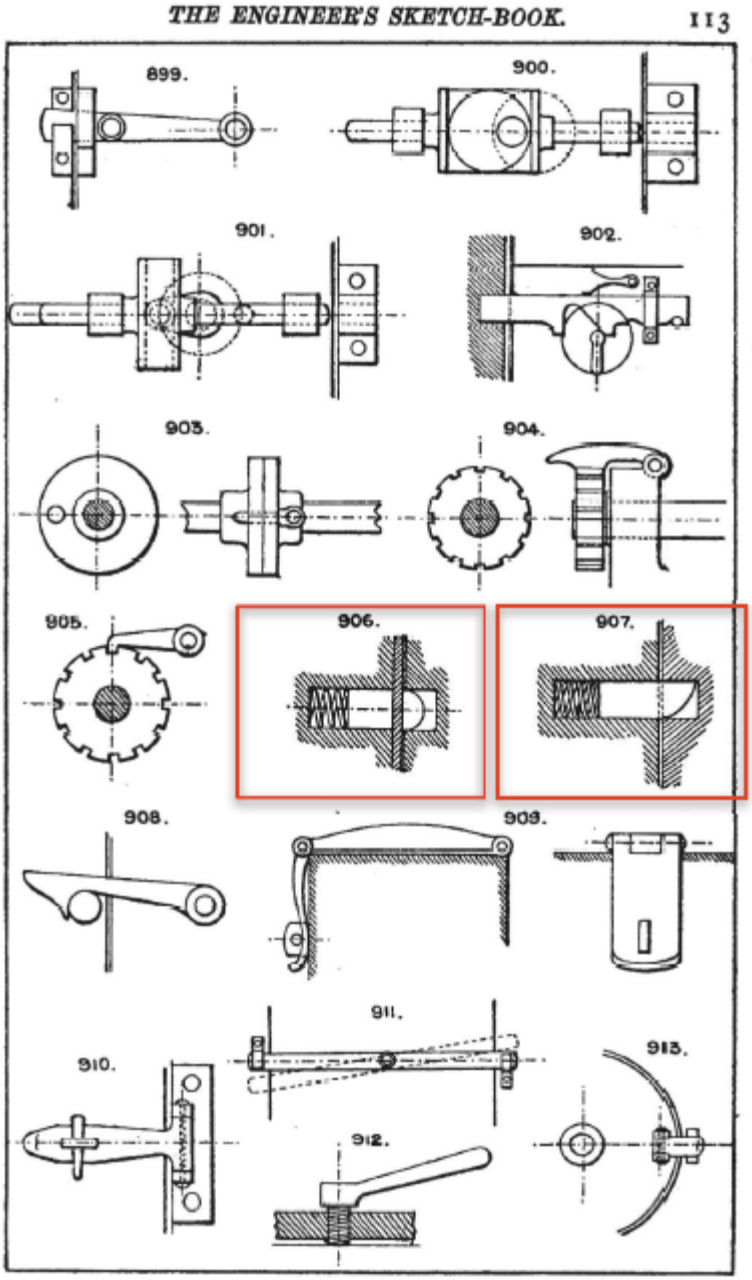
EX1019, FIG. 2.

80. As shown in FIG. 2, Meier's means 23 includes a clamp 26 that "can be lifted from its position in dashed lines in the direction of the double arrow 36 and pivoted in the direction of the double arrow 37." EX1019, ¶35. Clamp can interface with a rib 24 of toolbox 34 to provide "a positive-locking connection of the upper tool box 34 with the lower tool box 35 in the vertical direction." EX1019, ¶35. Accordingly, Meier's means 23 includes a device that follows a linear translation path and a rotational path to secure toolboxes 34, 35 together.

81. As seen from these references, latching mechanisms were well known and commonly used in modular storage systems to connect stacked storage containers. These mechanisms typically operated by moving a latch component to engage or disengage a locking feature on an adjacent container. Latches often included grooves, bars, plates, or catches that would automatically or by user operation align and engage when containers were stacked. Once engaged, the latch would hold the containers securely in place. These systems were also frequently designed to allow users to pull and/or rotate the latch outward to release the connection and separate the containers, providing both secure locking and easy disassembly. Whether the configuration was linear, rotational, or both, they involved components sliding relative to each other to selectively engage a component on an adjacent container.

C. Other Latching Components Were Well Known in the Prior Art

82. Before the ’689 patent, it was well known in the art that modular latching mechanisms often incorporated various components that selectively constrict the movement of a sliding mechanism to control latch movement and ensure reliable engagement and disengagement. These components were typically used to (i) temporarily hold a latch in an open or disengaged position during unstacking operations and (ii) prevent a sliding component from fully disengaging from a supporting structure. These features contributed to safer handling and improved usability in modular storage systems. Three common configurations are discussed below: i) engagement structures that releasably hold a sliding component in particular positions; ii) stop mechanisms that prevent the complete detachment of a sliding component; and iii) stabilization structures. As illustrated in the Figures below, my report that I provided in the related district court proceeding includes well-known examples of locking devices and latching mechanisms that date to as early as 1897. EX1029, 40-42.


THE ENGINEER'S SKETCH-BOOK. 113
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EX1029, 40.

Diagrams of basic latching and quick-release mechanisms.

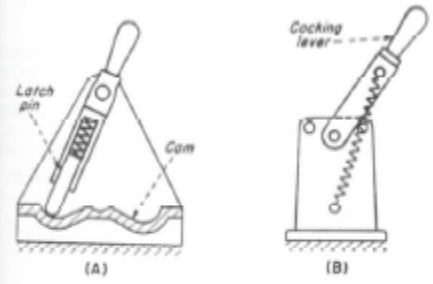
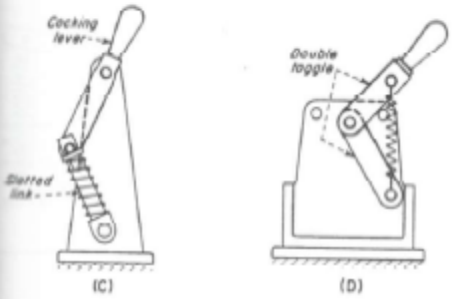


Fig. 1 Cam-guided latch (A) has one cocked, and two relaxed positions, (B) Simple overcenter toggle action. (C) An overcenter toggle with a slotted link. (D) A double toggle action often used in electrical switches.



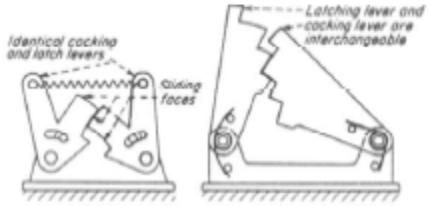


Fig. 2 An identically shaped cocking lever and latch (A) allow their functions to be interchangeable. The radii of the sliding faces must be dimensioned for a mating fit. The stepped latch (B) offers a choice of several locking positions.

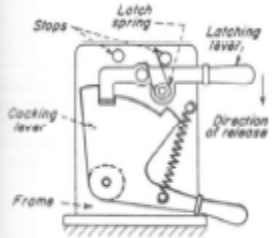


Fig. 3 A latch and cocking lever is spring-loaded so that latch movement releases the cocking lever. The cocked position can be held indefinitely. Studs in the frame provide stops, pivots, or mounts for the springs.

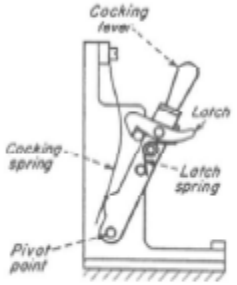


Fig. 4 A latch mounted on a cocking lever allows both levers to be reached at the same time with one hand. After release, the cocking spring initiates clockwise lever movement; then gravity takes over.

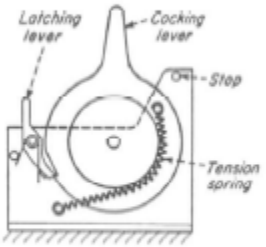


Fig. 5 A disk-shaped cocking has a tension spring resting against the cylindrical hub. Spring force always acts at a constant radius from the lever pivot point.

EX1029, 41.

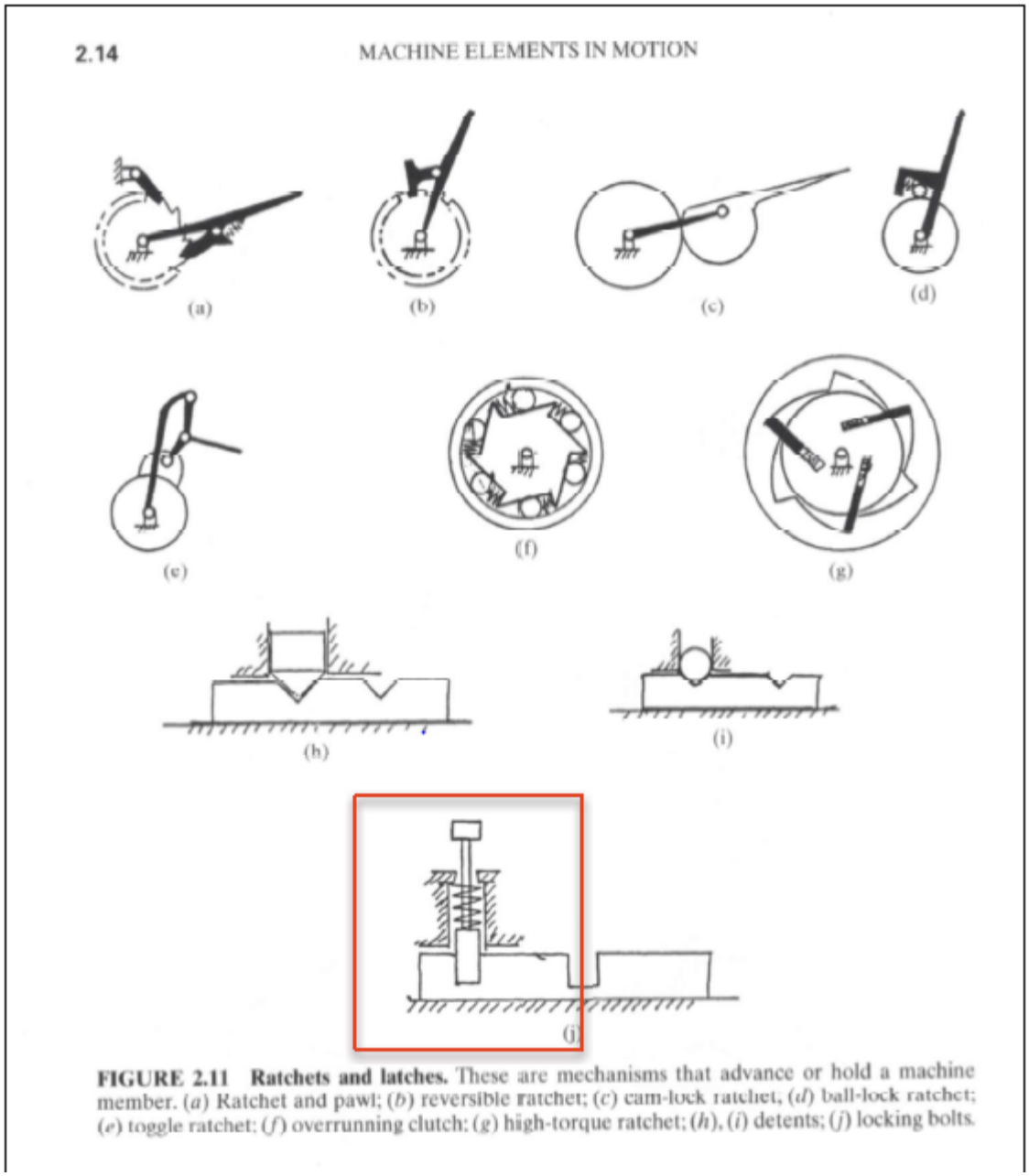


FIGURE 2.11 Ratchets and latches. These are mechanisms that advance or hold a machine member. (*a*) Ratchet and pawl; (*b*) reversible ratchet; (*c*) cam-lock ratchet, (*d*) ball-lock ratchet; (*e*) toggle ratchet; (*f*) overrunning clutch; (*g*) high-torque ratchet; (*h*), (*i*) detents; (*j*) locking bolts.

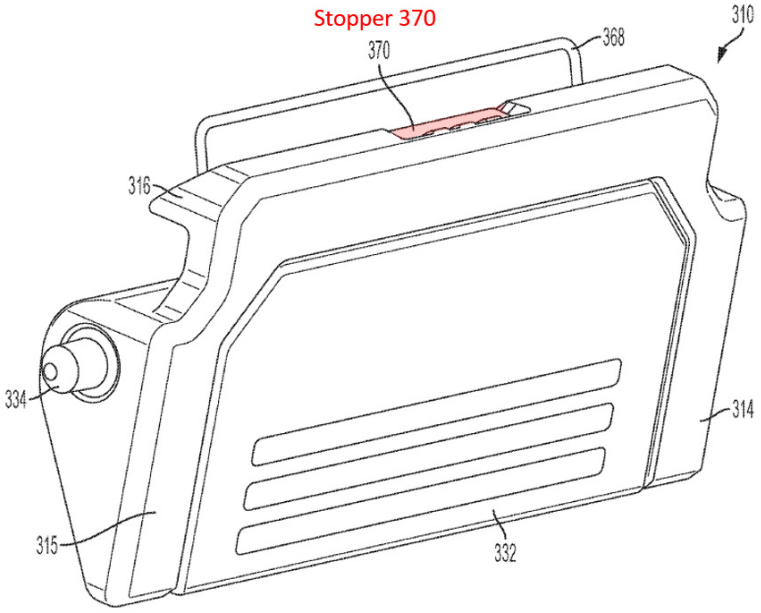
EX1049, 42.

1. Releasable engagement structures

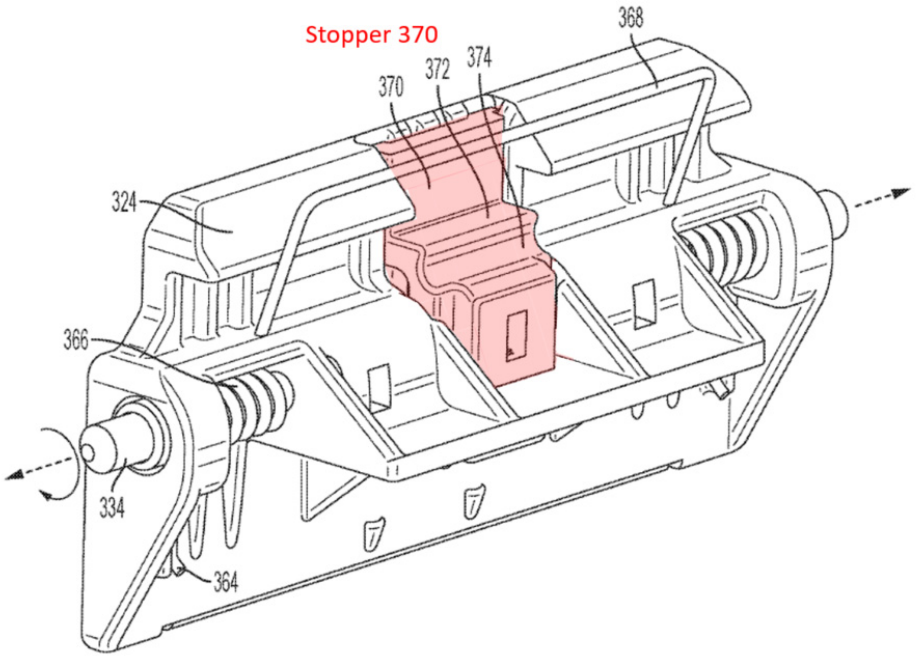
83. Before the '689 patent, releasable engagement structures were well known and commonly used in sliding latching systems for storage containers. These structures were often integrated to temporarily hold the latch in the open

position after disengagement (preventing the latch from automatically returning to the locked position during unstacking), or in a closed position when the containers were stacked and latched together. This facilitated easier and more reliable attachment of the stacked boxes and improved the user experience.

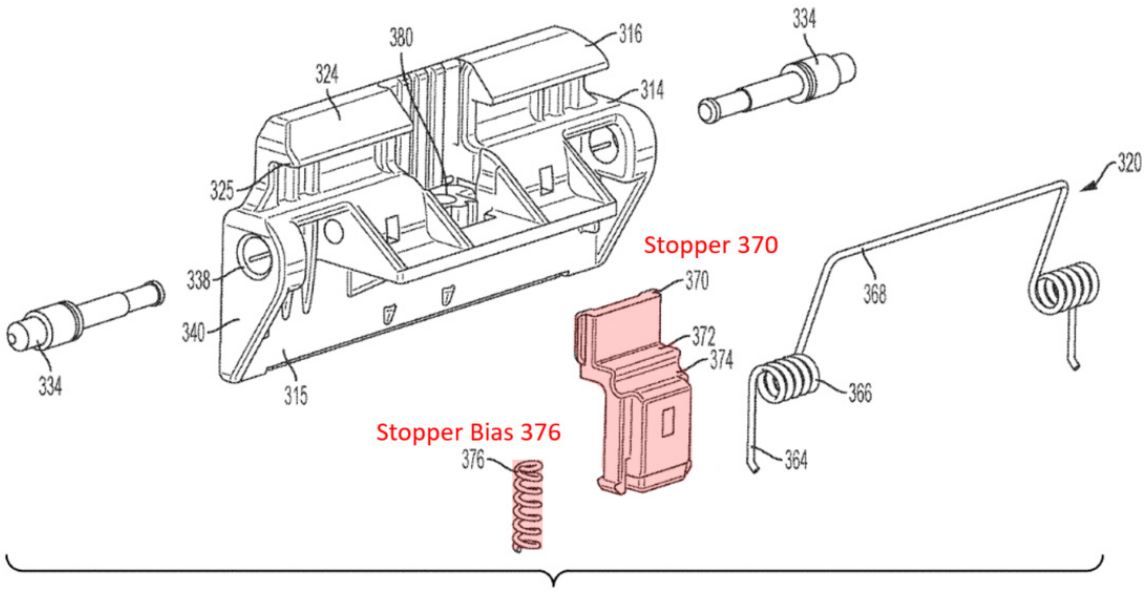
84. Baruch describes an engaging mechanism integrated within its rotational latch system to control and limit latch movement. Figures 20-22 illustrates a stopper 370, which cooperates with the latch 314 to hold it in a designated open position during unstacking and ensures automatic return to the locked position when engaged. EX1018, ¶63.



EX1018, FIG. 20 (annotated).



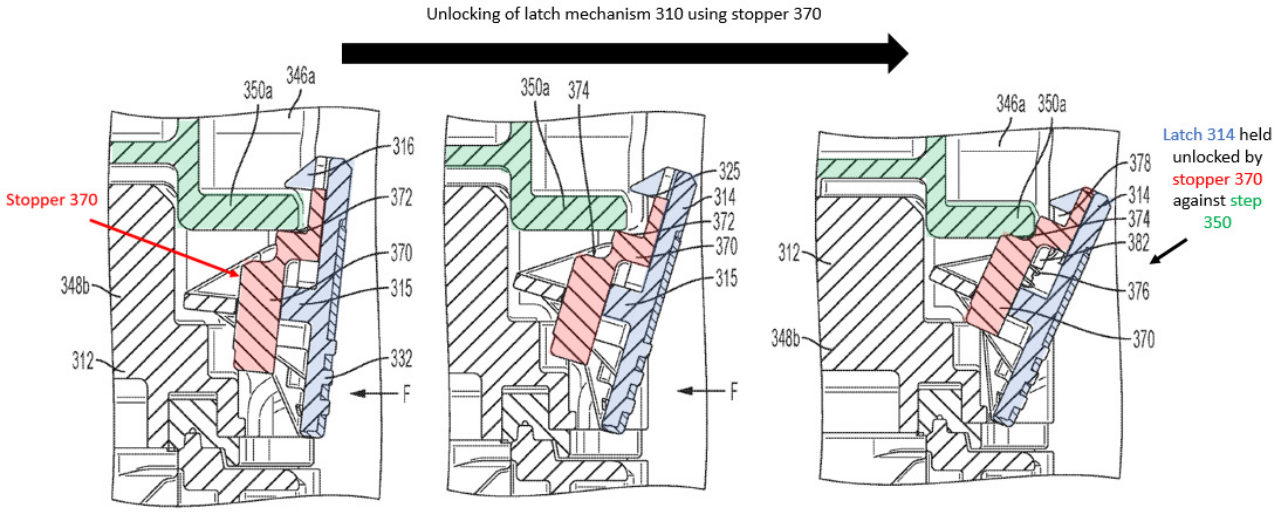
EX1018, FIG. 21 (annotated).



EX1018, FIG. 22 (annotated).

85. Figures 25A-25D depict the operation of the latch and stopper during

unstacking and resetting. EX1018, ¶63.



EX1018, FIGs. 25A-25C (annotated).

86. During unstacking, the operator presses the latch's operator surface 332, causing the latch 314 to rotate away from its default locked position. EX1018, ¶63. As the latch rotates, the stopper 370 moves upward and holds latch 314 in the open position, preventing it from returning prematurely. EX1018, ¶63. This temporary retention allows the user to separate the stacked containers easily. EX1018, ¶63. After the upper container is removed, latch 314 automatically returns to the default locked position, preparing the mechanism for the next stacking operation. EX1018, ¶63.

87. Further, references like Niles, Morel, and Shida make clear that selectively holding sliding and/or pivoting latch components in various positions along their movement track was not a novel concept. EX1008, ¶¶18-19, 23-34, 47-

58, FIGs. 1-1B, 4A-4C, 5A-5B; EX1012, 7:21-40, FIGs. 3-5; EX1017, 4:3-5, 4:24-32, FIGs. 2, 6. Indeed, this was a standard and well-known concept for preventing the free sliding movement of a latch component, which could lead to unintentional engagement or disengagement with a locking component on an adjacent container.

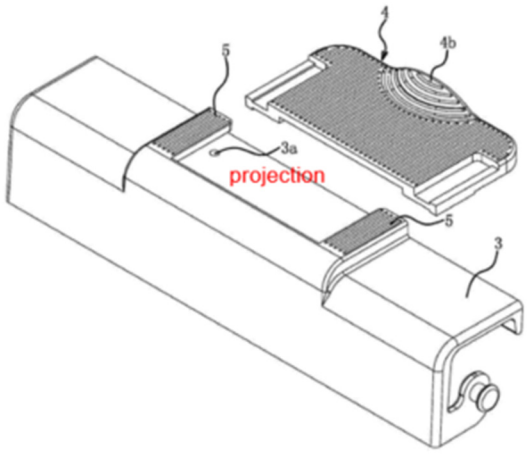
88. As another example, Brunner also describes locking member 248 is configured with bulges for protruding into a respective depression 280 configured at a top wall of the support rim for arresting the locking member at the locked position within locking receptacle 254 of the other container. EX1010, ¶141. Brunner further discloses its locking latches 250 are configured with an upward projection 270 and the top face of the support rim is configured with an arresting opening 274 to restrict locking member 248 at its unlocked position. EX1010, ¶141.

2. Stop mechanisms

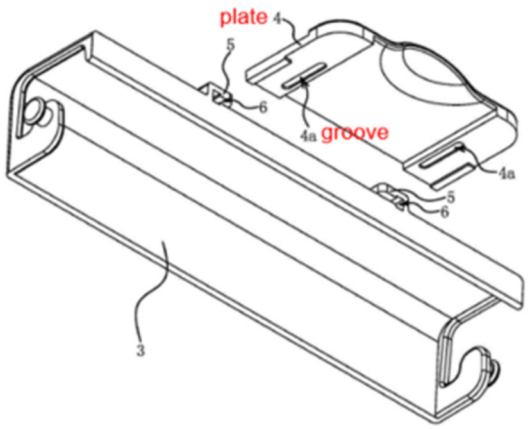
89. Before the ’689 patent, it was well known in the art that sliding latching mechanisms often included stopping components or retention features designed to control the extent of movement of a sliding component and to prevent complete disengagement of the sliding component. These features improved both the safety and user experience of modular storage systems.

90. Wang, applied during prosecution of the ’689 patent, discloses a protrusion 3a that travels within a groove 4a on plate 4 to limit the extent plate 4

can be slid.



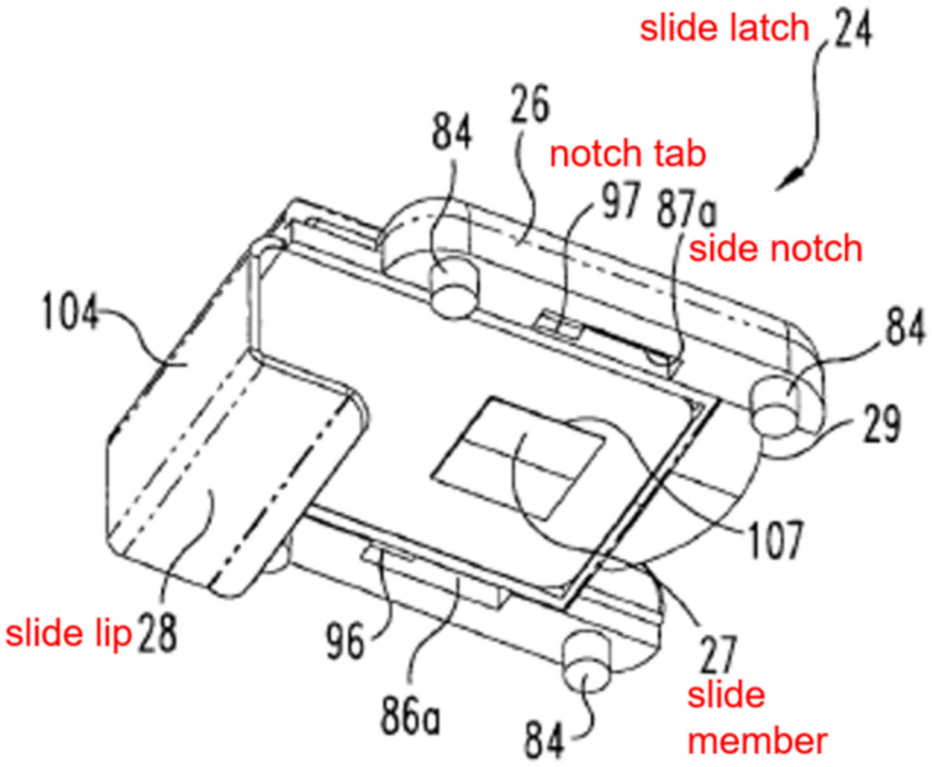
EX1020, FIG. 4.



EX1020, FIG. 5.

91. Wang was cited during prosecution for its plate 4, which is used to slidingly lock two storage containers together. Though Wang's protrusion 3a was not referenced by the Office during prosecution, Applicant wrote in its reply to the Office Action that "[t]he locking mechanism of Wang has its movement constrained by a protrusion 3a and a corresponding groove 4a." EX1002, 117-121, 154.

92. Baker discloses a similar stopping mechanism. Baker discloses a slide latch 24 that can be attached to a lid and includes a slide member 27. Slide member 28 has a slide lip 28 configured to engage the sidewall of a container to attach the lid to the container. EX1021, ¶42, FIG. 26.



EX1021, FIG. 26.

93. Slide member 27 also has a notch tab 97 disposed within a side notch 87a within a body of slide latch 24. Baker discloses that "to avoid any risk of moving slide member 27 too far in either direction, notch tabs 96 and 97 slide in notches 86a and 87a, respectively. The fixed length of each slide notch with closed ends provides a positive stop, in each direction, if needed." EX1021, ¶64.

94. Accordingly, the use of a stopping mechanism to prevent the complete detachment of a sliding component of a latch was well known. And as shown below in the analysis of Clam 8 in Ground 1E (pointing to Weng), the particular structure used in the '689 patent (the claimed *block* and *recess*) to prevent

detachment of the ’689 patent’s slider 30 was not novel. EX1001, 4:31-40.

3. Stabilization Structures

95. Gonitianer515 teaches the use of a “stop 23” to control the lateral movement of stackable containers. EX1025, ¶¶9-10, 44-45. For example, Gonitianer515 explains:

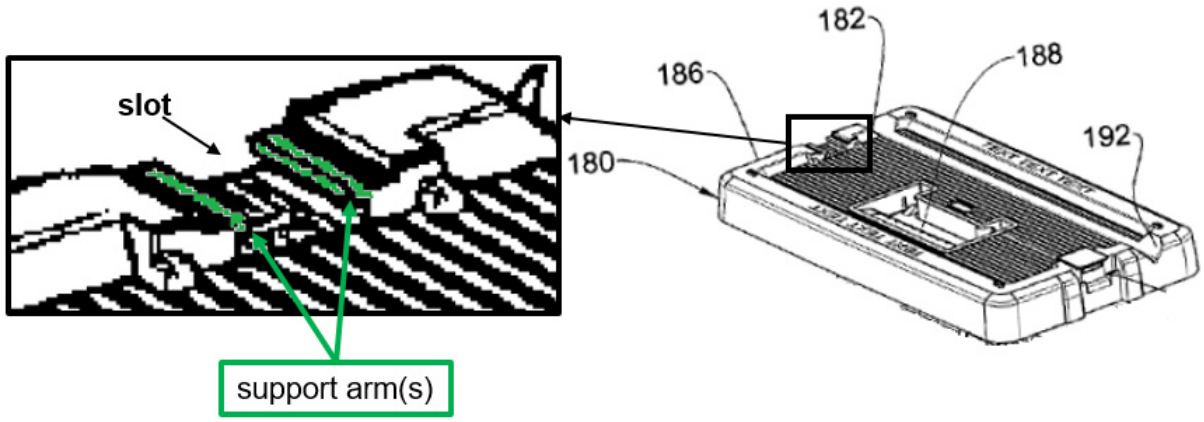
> To further increase the stability of the coupling elements, these coupling elements, in the protruding position, can ***adjoin a stop of the system container***. This causes the coupling elements, when in the protruding position, to be retained in a defined position and to be ***especially effectively shored up against any lateral forces***.

EX1025, ¶9 (emphasis added).

> The transmission of forces from the coupling elements into the system container can be especially effectively implemented in that the coupling elements in the protruding position engage the stop in the vertical direction from behind. This means that, in the vertical direction, a portion of a coupling element in the protruding position disposed above the stop engages the stop from below. As a result, ***any vertically upwardly acting forces, such as occur especially when a plurality of stacked system containers are transported, can be especially effectively counteracted***. Thus, even relatively heavy system containers, connected to each other, can be transported as a unit by means of the grip on the system container positioned at the top.

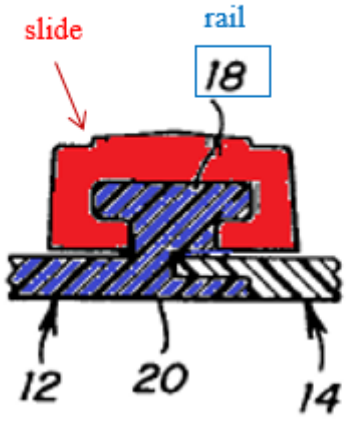
EX1025, ¶10 (emphasis added).

96. Additionally, Duvigneau discloses stabilization structures with its laterally extending protrusions (support arm(s)).



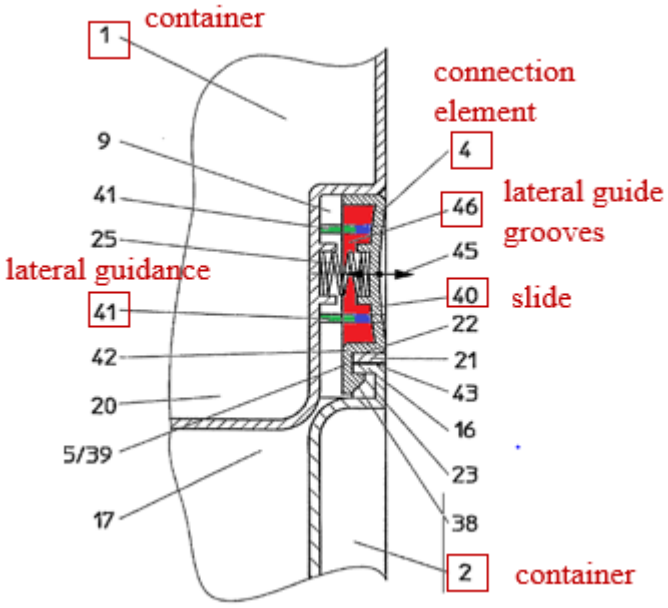
EX1007, FIG. 5 (cropped to show top 180 and annotated).

97. Frydenberg discloses a "T-shaped rail 18" upon which slide 30 is installed. EX1011, 3:17-23, 9:4-8, FIGs. 3-4, 6. The slide has a cavity 36 that extends for the full length of the slide and engages with the T-shaped rail. EX1011, 4:3-42. This "rail and slot" arrangement constrains lateral movement of the slide.



EX1011, FIG. 3 (annotated).

98. Dur describes a connection system which enables stackable containers to be interconnected for storage and transport purposes. EX1027, Abstract. "The connection element 4 is comprised of a slide 40." EX1027, ¶33. Dur further discloses the well-known structure of a slide with grooves engaging with lateral guidance (also known as tracks, protrusions, and ribs) through its description that slide 40 includes "lateral guide grooves 46" and corresponding lateral guidance 41 on container 1. EX1027, ¶33. The "guidances 41 and the guide grooves 46 ensure the desired movement of slide 40." EX1027, ¶33; FIG. 6. This well-known track (rib) and slot structure are shown in annotated Figure 6 below (which depicts a partial section through two adjacent stacked containers). EX1027, ¶25, FIG. 6.



EX1027, FIG. 6 (annotated).

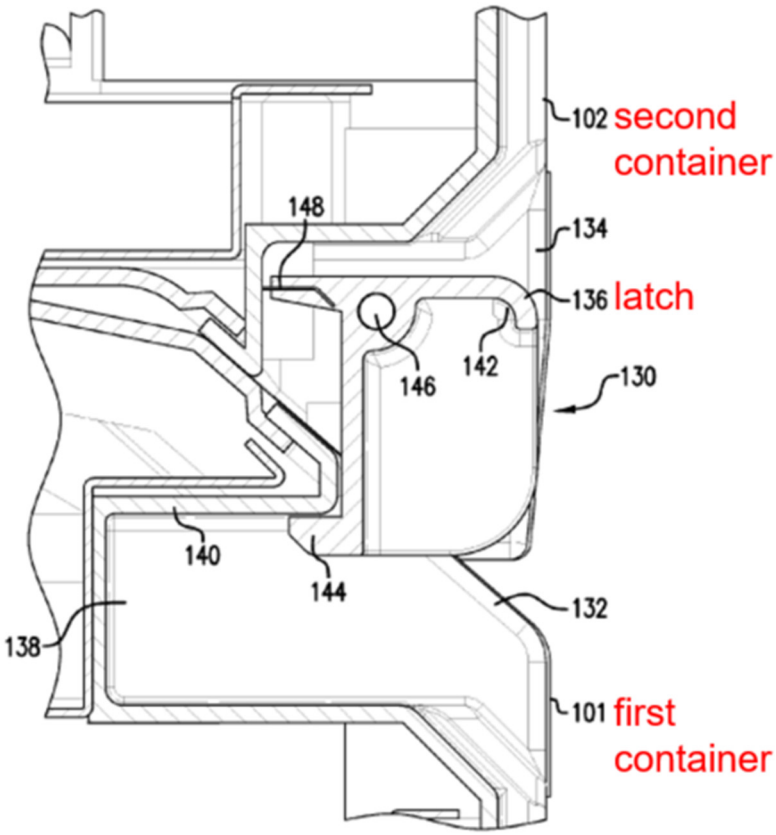
99. Owens also describes a rib and groove structure that constrains lateral movement of a slider. Owens describes a latch used to attach a lid a base of the container. EX1028, Abstract. Latch mechanism 8 includes a slide part 12 that has a rib 36, which extends along each of its sides. EX1028, 2:45-47. Slide part is slid between open and closed positions "with ribs 36 being restrictively guided by grooves 18." EX1028, 2:66-3:5; FIGs. 3, 6.

100. Thus, it was well-known in the art to use stabilization structures to laterally and vertically stabilize the movement of latch mechanisms.

4. Sliding Latch Mechanisms Coplanar with a Container Side Surface Were Well Known

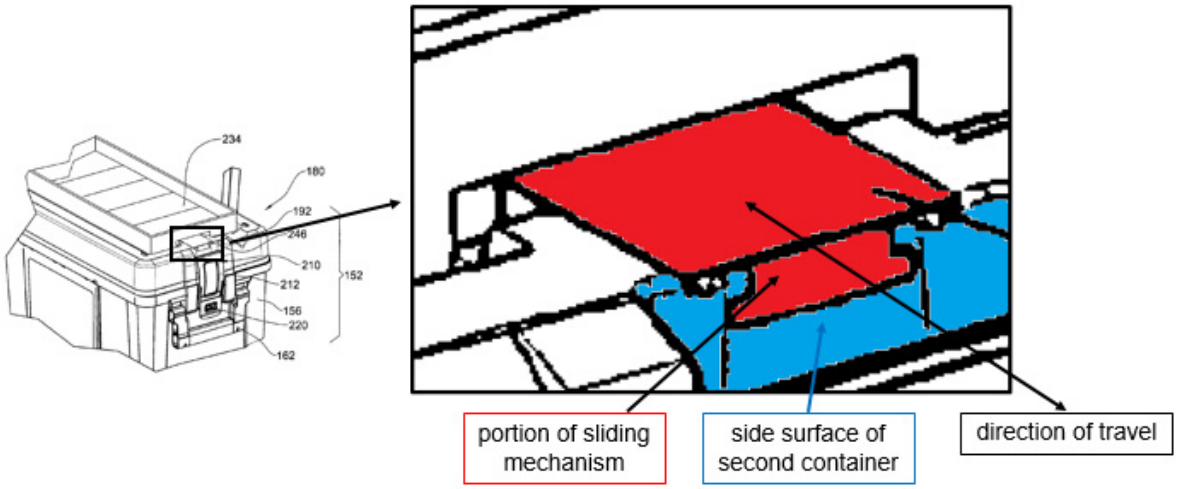
101. Before the '689 patent, it was well known in the art that a portion of a sliding latch mechanism was often coplanar with a side surface of the container including the sliding latch mechanism. This feature improved the safety, durability, and aesthetics of sliding latch mechanisms.

102. For example, Meridian's own prior application, Christopher, describes a latch 136 for interconnecting storage containers that "is substantially flush with the side of" a second container 102 in its engaged position. EX1016, ¶24, FIG. 5.



EX1016, FIG. 5.

103. Similarly, Duvigneau shows sliding latch 246 as coplanar with a side surface of cover 180 of base cabinet 152 when it is engaged with depression 240 of base portion 234.



EX1007, FIG. 6 (cropped and annotated).

104. Meier describes some of the benefits of a latching mechanism not protruding from a side surface: "The closures are advantageously recessed relative to the outer contour of the tool box in the closed state. This prevents that the closures are accidentally impacted or torn off and also contributes to the reduction of the required storage space when in the stacked state." EX1019, ¶14. While Meier is describing recessed closures, these benefits would evidently apply to coplanar closures as well.

105. Additionally, Dur discloses a coplanar arrangement of its latching mechanism and container through its description "connection element 4 is embedded in a recess 9 on the side wall 5 and does not project beyond the outer contours of side wall 5." EX1027, ¶29.

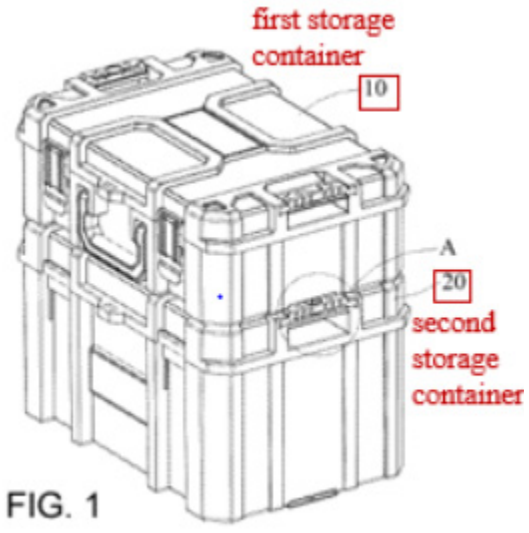
106. For all the above reasons, the features of the '689 patent—its sliding

mechanism, coplanar positioning, selective engagement structures on its sliding component and support structure, stop mechanisms for preventing complete disengagement of the sliding component, and stabilization structures—are simply well known features existing throughout the art before the ’689 patent.

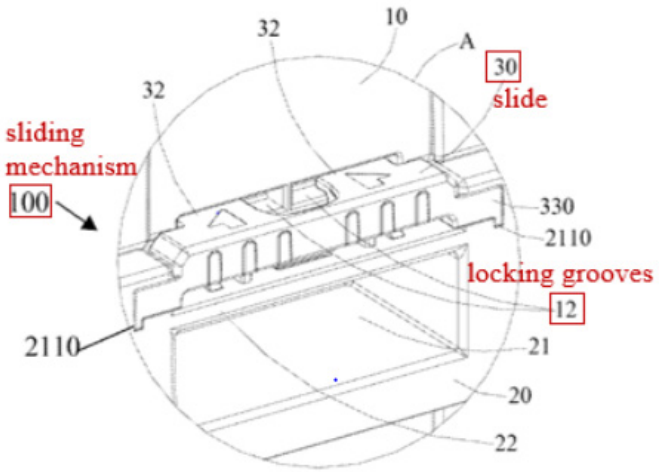
VII. OVERVIEW OF THE ’689 PATENT

A. Summary

107. The ’689 patent discloses a latching mechanism for connecting and holding a first storage container 10 to a second storage container 20. EX1001, Title, Abstract. Figures 1 and 2 of the ’689 patent (below), illustrate the storage containers latched together with locking sliding mechanism 100.



EX1001, FIG. 1 (annotated).



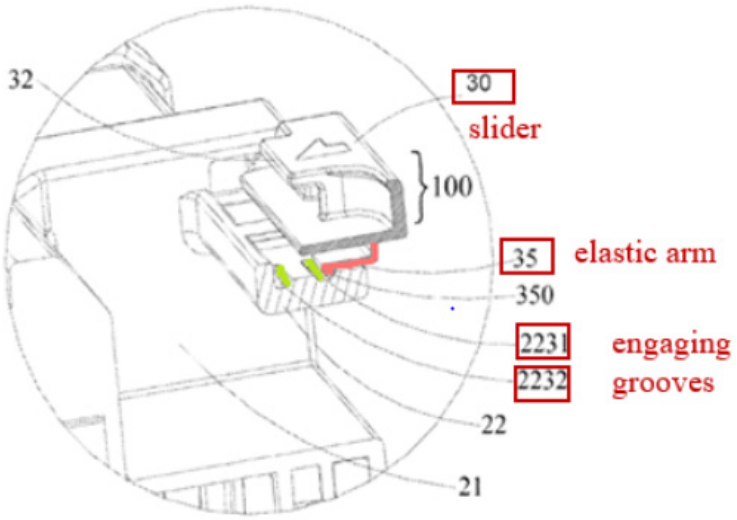
EX1001, FIG. 2 (annotated).

108. The “interlocking sliding mechanism 100” includes “locking grooves 12 … of the first storage container 10” and “slider 30 … slidably disposed on the

second storage container 20." EX1001, 3:15-27. Locking grooves 12 "each receive an insertion portion 32 on slide 30 … for attaching first storage container 10 to second storage container 20." EX1001, 3:26-30.

109. As shown in FIG. 2 of the '689 patent, sliding mechanism 100 can includes slider 30 that "has a side surface that is perpendicular to the direction of travel of the slider between the engaged and disengaged position … and the side surface is coplanar with a side surface of the second container when the slider is engaged with the locking groove." EX1001, 1:42-48.

110. The '689 patent describes second container 20 can include a slot 21 and support arm 22 with engaging grooves 2231, 2232 that "are spaced apart and can be engaged with the slider 30 in the unlocked and locked position." EX1001, 3:30-37, 3:49-62. As shown in Figure 3, reproduced below, the "lower surface of the slider 30" is provided with elastic arm 35 (red), which has an "engaging protrusion 350 [that] can be selectively engaged with the first engaging groove 2231 or the second engaging groove 2232" (green). EX1001, 4:15-31.



EX1001, FIG. 3 (annotated).

111. The support arm and the slider can further comprise "a cooperating guide to constrain lateral movement of the slider with respect to the support arm," such as "a guiding rib on the support arm that cooperates with a guiding slot on the slider." EX1001, 2:3-8. "Both ends of the slider 30 are provided with guide portions 330 that cooperate with the guiding grooves 2110 of the second storage container 20, so that the slider 30 can slide relative to the second storage container." EX1001, 4:10-14, FIGs. 9, 11.

112. In my opinion, the disclosure of the '689 patent amounts to commonly known components for sliding mechanisms, and sliding latch mechanisms in particular, combined in predictable ways. As I previously explained in Section VI, many of these components have been in use for decades, if not longer. For example, Duvigneau's latching mechanism is almost identical to many of the

claimed features in the ’689 patent. As I further demonstrate below with reference to Duvigneau, Heinrichs, and the other applied references, the ’689’s latching mechanism and components were already well known in the art and a person of ordinary skill in the art would not have found these features to be innovative or unique.

B. Prosecution History

113. I understand that the ’689 patent issued from U.S. Application No. 16/846,878 (“the ’878 application”), which claims the benefit of Chinese Application No. 201922118361.7, filed November 27, 2019 (now Chinese Utility Model No. 211483271 U).

114. I also understand that during prosecution, in the only Office Action issued in the case, the claims of the ’878 application received § 112 indefiniteness rejections and § 102 anticipation rejections over Chinese Utility Model No. 206841966 U to Wang (“Wang”). EX1002, 115-121. Claims 5, 12, 16, and 19 of the originally filed ’878 application were indicated to be allowable. In response, I understand the applicant amended the claims to address the § 112 rejections, but argued that Wang does not teach the claimed “portion” of the claimed “sliding mechanism” that “extends laterally away from a side surface of the second container when the sliding mechanism is disengaged from the locking groove” and “is coplanar with the side surface of the second container when the sliding

mechanism is engaged with the locking groove." EX1002, 145-155. I understand that the Examiner agreed with the applicant, and allowed the '878 application following the applicant's amendment and response. EX1002, 160-166.

115. I understand that there is relevant art that was not considered during prosecution of the '878 application. For example, I understand the art cited in related European Application No. 20170368.3 (now EP Patent No. 3828097 B1), which claims priority to the '878 application was not disclosed, even though the art was cited in European prosecution over a year prior to the issue date of the '689 patent. EX1014, 3-7. I understand Brocket is a reference that does not appear in the file. I also understand that two months before the issue date of the '689 patent, to overcome the art cited by the European Patent Office, the applicant amended the independent claim in Europe to be more narrow than the allowed independent claims of the '878 application. *See* EX1015, 26-29.

C. Level of Ordinary Skill in Art

116. In my opinion , a person of ordinary skill in the art (POSA) at the time that the '689 patent was filed would have had a bachelor's degree in mechanical engineering, or industrial design, and would have had at least two years of industry or academic experience with connecting technologies or similar mechanisms.

117. I am familiar with the technology of the '689 patent during the November 2019 timeframe. By 2019, I had at least 30 years of experience pursuing

university teaching and research, including working with industry, with applications to automotive and robotic systems, which included experience related to mechanical devices such as latches and closures. Based on my education, teaching, research and experience I am a person of more than ordinary skill in the art of the ‘689 patent, however in my analysis I have continually relied upon the viewpoint of a person of ordinary skill in the art.

VIII. CLAIM CONSTRUCTION

118. I have been informed that the claims of the ’689 patent are to be given their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention, in light of the specification and prosecution history pertaining to the patent.

119. Based on my review of the challenged claims, it is my opinion that none of the claim terms require explicit constructions. Accordingly, all claim terms should receive their ordinary and customary meaning, in the context of the ’689 patent specification. In the analysis below, I explain my opinion that the claims are unpatentable using the ordinary and customary meaning of the claim terms understood by a person of ordinary skill in the art.

IX. OVERVIEW OF THE APPLIED REFERENCES

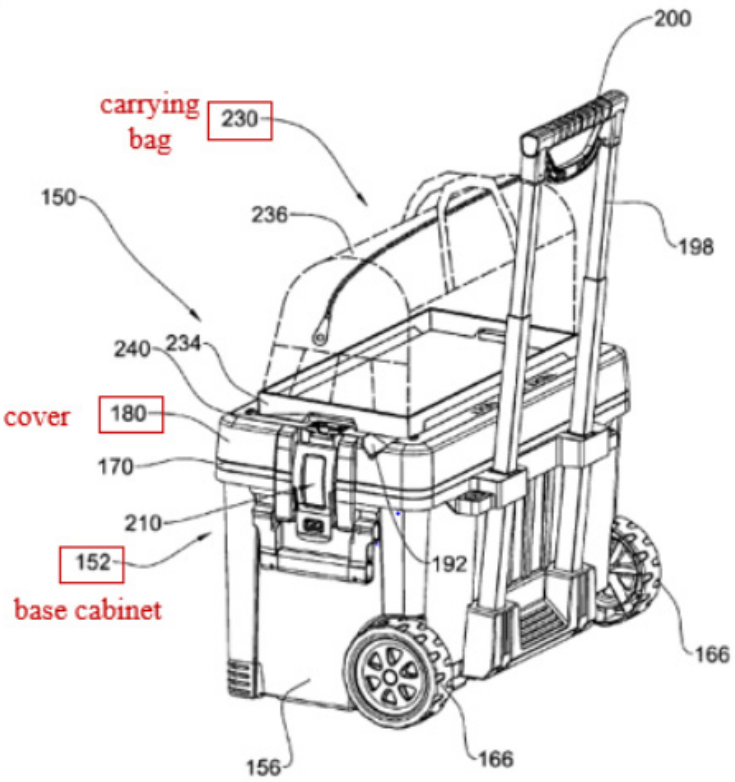
120. In this section, I provide an overview of the prior art that is ultimately used in the grounds of unpatentability that I further analyze below. *See* Section X. I

note that the prior art references summarized below and applied in the grounds of unpatentability are analogous. Specifically, and as I further explain throughout this declaration, Heinrichs, Brocket, Duvigneau, Morel, Brunner, Niles, and Frydenberg are in the same field because they all disclose latching mechanisms for containers. In my opinion, Niles and Frydenberg are further analogous, or at least reasonably pertinent, because they disclose a sliding latch mechanism for joining and holding together two separable elements, such as container portions. This is the same field of technology as the '689 patent and the claims of the '689 patent. I additionally note that all of the prior art references (including Weng for the reasons explained in Section X.D.1) are pertinent to problems presented by the '689 patent. For example, the prior art references are all pertinent to addressing and achieving "a stackable storage system" which uses "a sliding mechanism [that] selectively engages the locking groove of the first storage container to connect and hold the first storage container to the second storage container." EX1001, 1:24-39.

A. Duvigneau

121. Duvigneau discloses a locking system for detachably attaching storage containers to one another. EX1007, ¶¶2, 12-13, 24, 50-5, FIGs. 2A, 4A-6. Duvigneau "relates generally to containers adapted to store any items" wherein "at least one container is [] detachably articulated for carrying away items in an easy to carry container." EX1007, ¶¶2, 12. In particular, Duvigneau discloses "a cabinet

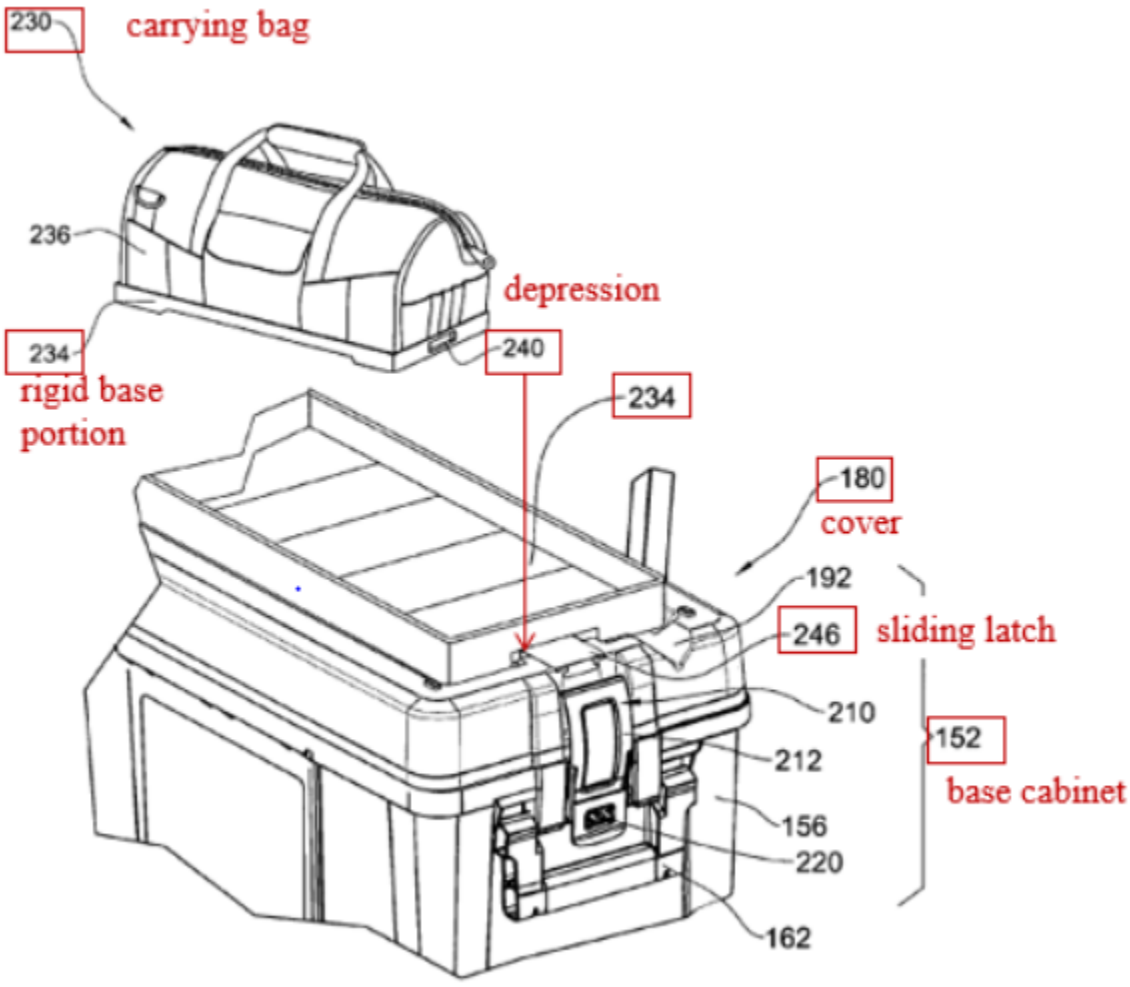
assembly comprising a wheeled base cabinet … and at least one detachable container made from a pliable material and designed as a carrying bag." EX1007, ¶13. The carrying bag 230 includes a rigid base portion and is detachably fitted over base cabinet 152. EX1007, ¶¶41-44, 57, FIG. 4A. Figure 4A, depicted below, shows carrying bag 230 attached to base cabinet 152, which includes a cover 180.



EX1007, FIG. 4A (annotated).

122. Duvigneau discloses a sliding mechanism for securing one storage container to another. Duvigneau's carrying bag 230 "has a rigid base portion 234" that "comprises at its each of it's [sic] two side edges a depression 240." EX1007, ¶57. Duvigneau further describes that its base cabinet 152 comprises a cover 180

upon which "a sliding latch 246" is fitted. EX1007, ¶¶52, 57, FIG. 6. Duvigneau discloses "depression 240 [is] fitted for arresting by a sliding latch 246 … for detachably articulating the carrying bag 230 over the base cabinet 152." EX1007, ¶57. This means that the sliding latch catches suddenly and engagingly to detachably join the carrying bag over the cover 180 of base cabinet 152.



EX1007, FIG. 4B (top, cropped), FIG. 6 (bottom) (annotated).

123. Duvigneau discloses "[d]isengagement of the carrying bag 230 from the base cabinet 152 is facilitated by slidingly displacing the latch 246 away from

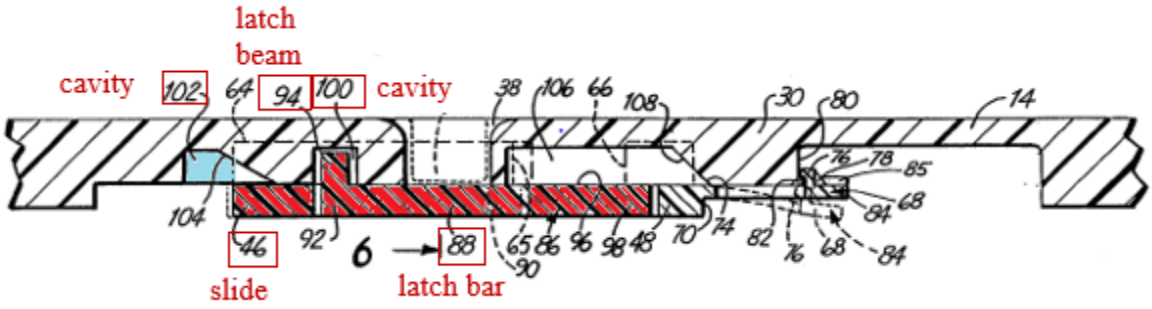
the base member 234 so as to disengage from the depressions 240." EX1007, ¶57. Duvigneau further describes that "[a]ttachment of the carrying bag to the base cabinet may be facilitated by a variety of arrangements of an attaching mechanism." EX1007, ¶24.

124. Accordingly, like the '689 patent, Duvigneau discloses a sliding mechanism (latch 246) that (i) travels along a direction perpendicular to the stacking axis of two joined containers, (ii) protrudes from a side surface of the container comprising the sliding mechanism when disengaged, and (iii) is coplanar with the side surface when engaged. EX1007, ¶57, FIG. 6.

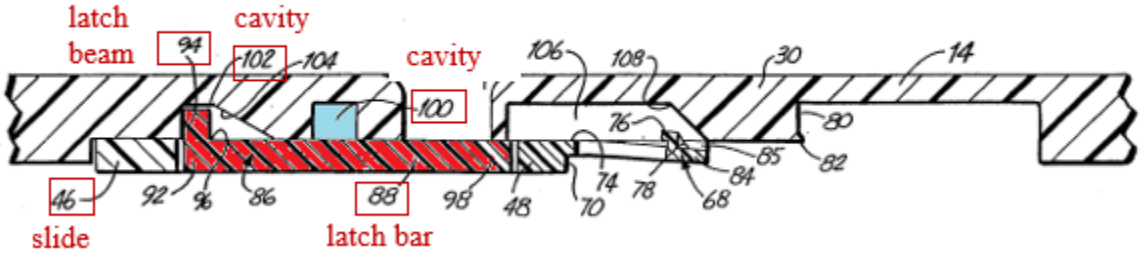
B. Niles

125. Niles discloses a latch assembly 12 to latch together first housing member 14 and second housing members 18 of case 10. EX1012, 4:31-5:4, 5:28-65, 7:3-38; FIGs. 1-6. The housing members are two separable container portions of case 10. EX1012, FIG. 1. Niles describes its latch assembly 12 includes a flexible slide 46 with a latch bar 88 that includes outwardly extending latch beam 94. EX1012, 4:60-62, 5:63-65, FIG. 6. When slide 46 is in a locked state, latch beam 94 is received in first cavity 100 "to secure the slide 46 against movement." EX1012, 6:6-9, 7:21-25; FIG. 3. When the slide is in an open (unlocked) state, latch beam 94 engages "second cavity 102 adjacent the first cavity 100." EX1012, 6:14-24, 7:31-39; FIG. 5. Figure 3 (illustrating slide 46 in the locked position) and

Figure 5 (illustrating slide 46 in the unlocked position) are shown below.



EX1012, FIG. 3 (annotated).



EX1012, FIG. 5 (annotated).

C. Morel

126. Morel discloses components for holding a sliding part in first and second positions (e.g., selectively arresting the sliding movement). EX1008, ¶¶18-19, 23-34, 47-58, FIGs. 1-1B, 4A-4C, 5A-5B. As shown in annotated Figure 1 (below), Morel discloses a storage compartment 1 that has a partition member 10 (red) arranged to be moveable in a sliding direction. EX1008, ¶49; FIG. 1.

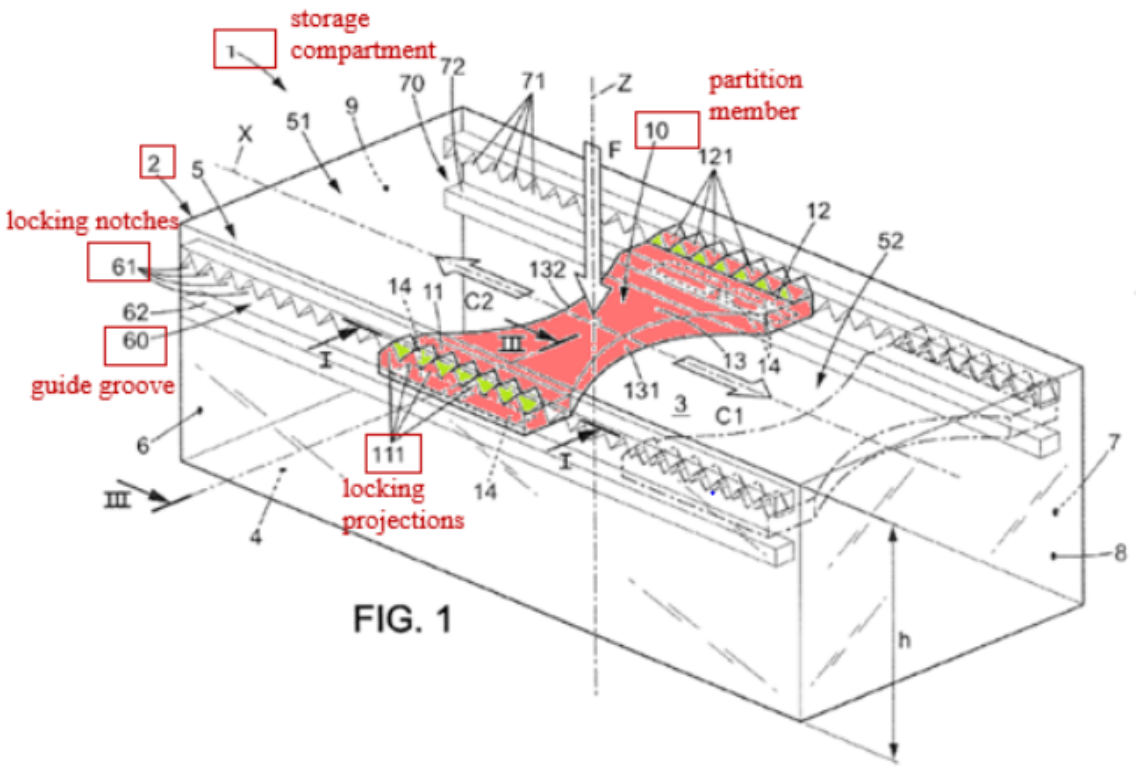
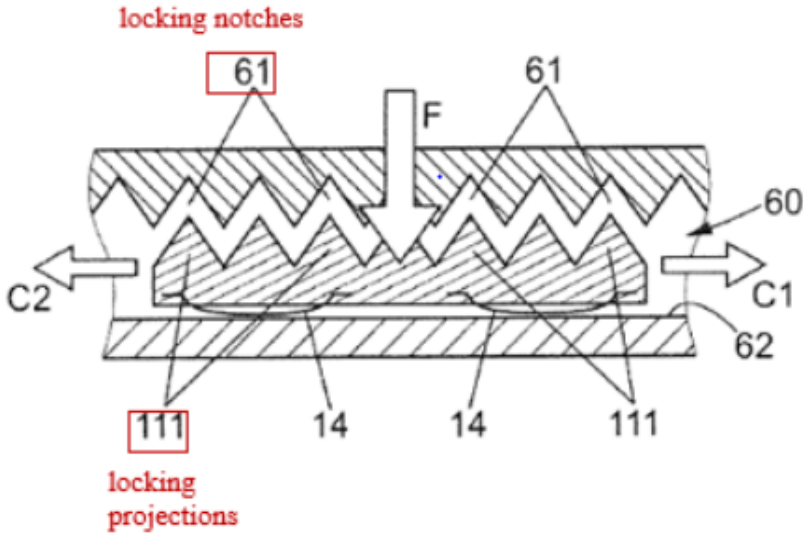


FIG. 1

EX1008, FIG. 1 (annotated).

127. The storage compartment 1 comprises "a locking device for locking the partition member 10 relative to the receptacle 2 in the sliding direction X, which allows immobilizing said partition member 10." EX1008, ¶52. The locking device comprises a series of adjacent locking notches 61, 71 (green) formed on the upper face of each guide groove 60, 70, which are adapted to engage with second locking members in the form of locking projections 111, 121 provided on the partitioning plate 10. EX1008, ¶53.

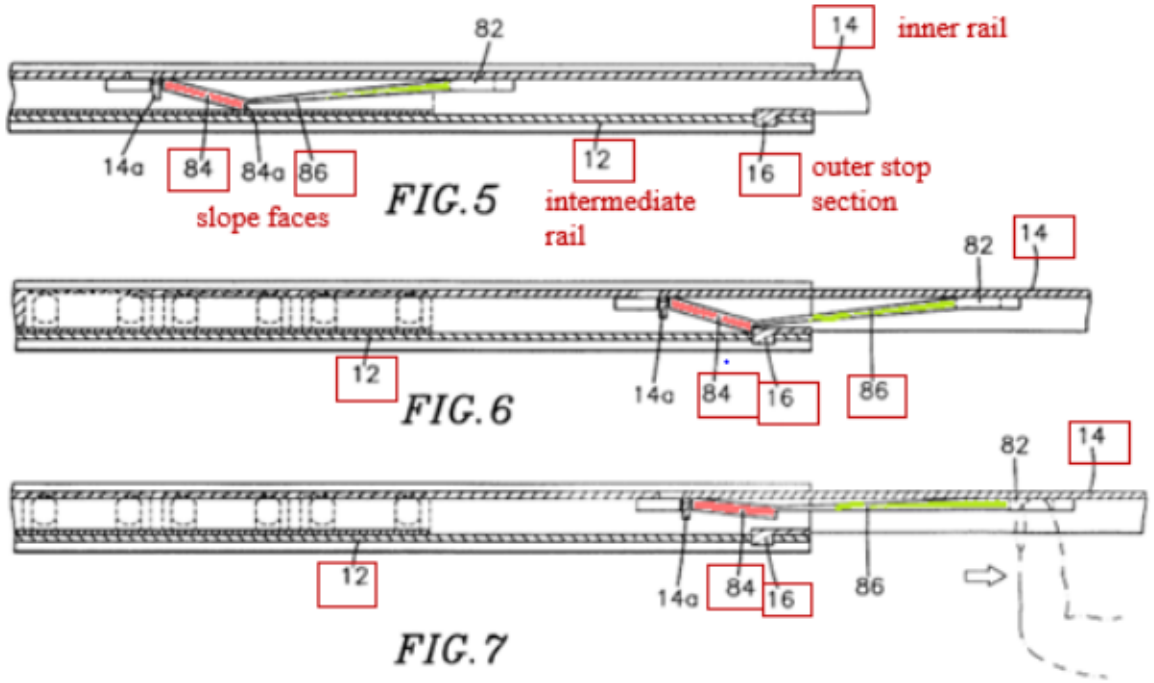


EX1008, FIG. 1B (annotated).

128. As shown in Figure 1B, similar to engaging grooves 2231, 2232 of the '689 patent, Morel's locking notches 61 hold a sliding element in place. EX1008, FIG. 1B. Further, Morel discloses an elastic component (e.g., including elastic member 14) similar to elastic arm 35 of the '689 patent for providing a force biasing a locking protrusion (e.g., a locking projection 111) toward an engaging groove (e.g., a locking notch 61) EX1008, ¶¶58, 82, 94; FIG. 1B, 4A-5B.

D. Weng

129. Weng discloses components useful for preventing a sliding part from fully disengaging from a supporting structure. EX1009, 2:1-15, 2:40-45, 3:5-38, FIGs. 1, 5-7. Weng's sliding track assembly 1 includes an inner rail 14 that can be slid relative to an intermediate rail 12. EX1009, 2:40-45, FIGs. 5-7.



EX1009, FIGs. 5-7 (annotated).

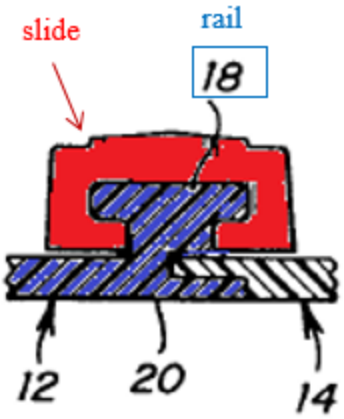
130. An inner engaging section is coupled to inner rail 14 to stop inner rail 14 from sliding relative to intermediate rail 12. EX1009, 3:13-38. Inner engaging section is a "plastic polymer body" and includes "two adjoining slope faces 84, 86" (red and green, respectively). EX1009, 3:13-22. Inner engaging section also includes an inner engaging face 84a that interfaces with an outer stop section 16 disposed at an end of intermediate rail 12 to stop inner rail 14 from sliding relative to intermediate rail 12. EX1009, 3:22-38, FIG. 6.

131. Accordingly, Weng discloses components commonly used in sliding latches for coupling containers, the components configured to stop a slider (e.g., inner rail 14) from fully disengaging from a supporting structure. This disclosure is

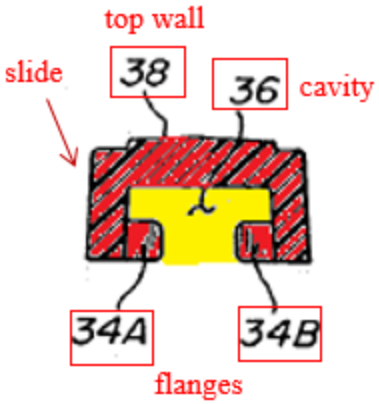
similar to the ’689 patent’s disclosure of a block for arresting outward movement of a slider. And as I explain in Section X.D.1, Weng is pertinent to the problems presented by the ’689 patent to keep its sliding mechanism from detaching from cover 180 of the storage container.

E. Frydenberg

132. Frydenberg discloses “a slide-type latching mechanism” for “selectively joining and holding together two separable elements with a sliding fastener,” such as first and second container portions 12/14 or 50/52. EX1011, 1:11-20; 2:60-3:3, 9:3-8. FIGs. 1-9. A “T-shaped rail 18 is mounted above a base 20,” with the base “constituting a structural part of one of the portions that is to be connected by the latching mechanism.” EX1011, 3:17-23, FIGs. 3-4. An elongated slide 30 has a longitudinal cavity 36 (bounded by top wall 38) that extends for the full length of the slide, with two flanges 34A, 34B below cavity 36. EX1011, 4:2-42. The gap between the flanges is wide enough to accommodate the T-rail “as to foster sliding movement of the slide 30 with respect to the rail 18.” EX1011, 4:43-48. Slide 30 is installed on rail 18 and longitudinal movement of the slide captures a button to hold the container portions together. EX1011, 9:4-8. Figures 3 and 6 illustrate this well-known rail and slot arrangement for constraining lateral movement of a slide. EX1011, FIGs. 3, 4.



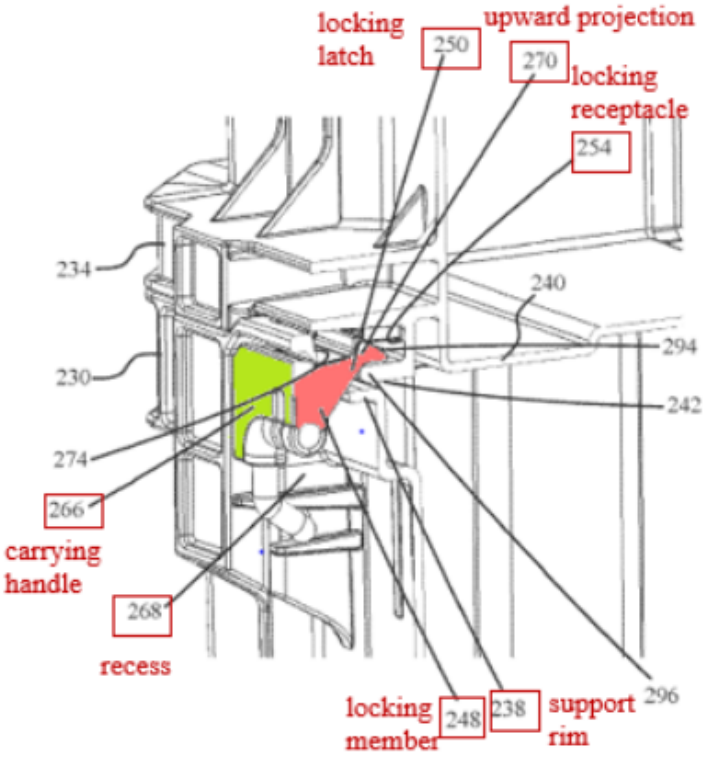
EX1011, FIG. 3 (annotated).



EX1011, FIG. 6 (annotated).

F. Brunner

133. Brunner discloses a locking system for detachably attaching storage containers to one another. EX1010, ¶¶1, 4-5, 131-141, FIGs. 11C-11E, 12A-13E. Brunner describes a recess 268 formed in the side wall of a first container (e.g., a bottom container); the recess is immediately below a locking member 248 for locking engagement within a locking receptacle of a second container on top of the first container. EX1010, ¶¶135, 140, FIG. 13A. As shown in Figure 13A (below), Brunner discloses locking member 248 (red) has a carrying handle 266 (green) that "extends within a recess 268 … thus providing to a grip[p]ing space facilitating an individual to insert his fingers for gripping said gripping portion." EX1010, ¶140.



EX1010, FIG. 13A.

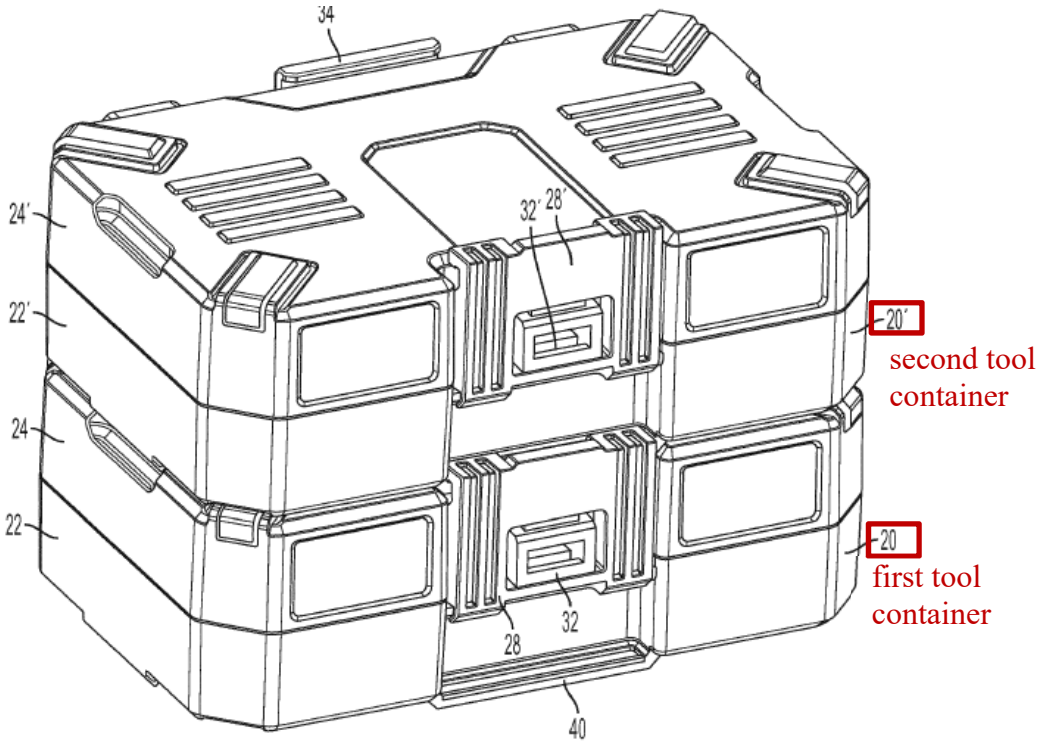
134. The first container is fitted with an upwardly projecting support rim 238 at least partially encircling the top base portion of the first container. EX1010, ¶133. The container is configured with a locking member 248 secured at the top portion of the container, which is configured with at least one locking latch 250. EX1010, ¶135. Brunner discloses locking member 248 is configured with bulges for protruding into depression 280 for arresting the locking member at the locked position within locking receptacle 254 of the other container. EX1010, ¶141. Brunner discloses locking latches 250 are configured with upward projection 270 and a support rim is configured with arresting opening 274 to restrict locking

member 248 at its unlocked position. EX1010, ¶140.

135. Accordingly, like the ’689 patent, Brunner discloses a locking member for selectively locking two containers together, the locking member being engaged with a support arm (e.g., support rim 238) and moving between an unlocked and locked position, where it is respectively secured in each position.

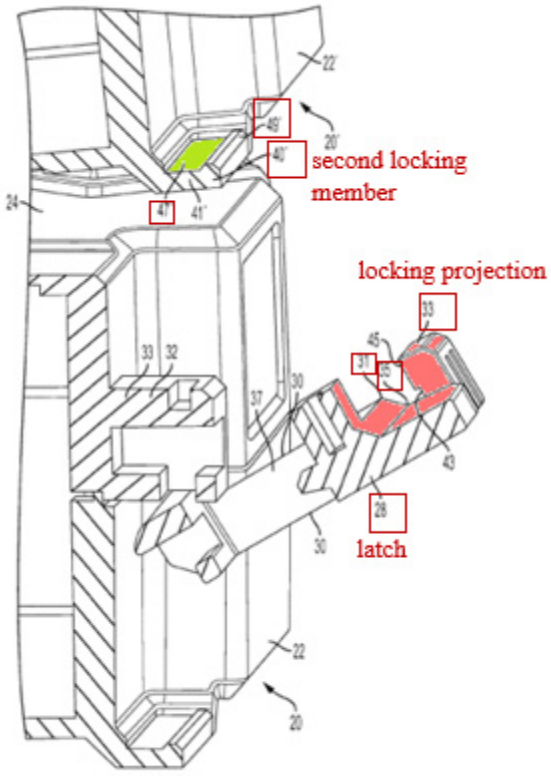
G. Brocket

136. Like the ’689 patent, Brocket discloses a locking system for detachably attaching storage containers to one another. EX1005, ¶¶1-5, 14-16, FIGs. 3-5B. Brocket discloses a tool container system 10 including a first tool container 20 and second tool container 20'. EX1005, ¶12, FIGs. 3-5B. Brocket describes the “second tool container is stackable on the first cover of the first tool container” and is “lockable to the first tool container.” EX1005, ¶3. Figure 4, illustrated below, shows Brocket’s storage assembly.



EX1005, FIG. 4.

137. Brocket discloses a latch 28 for securing first tool container 20 to second tool container 20'. As shown in Figure 5B below, the latch 28 includes a second locking latch portion 31 (red) "(e.g., a rectangular locking projection 33 and a lateral groove or recess 35 defined below the locking projection 33") for engaging a second locking member 40' on second tool container 20'. EX1005, ¶14, FIG. 5B.



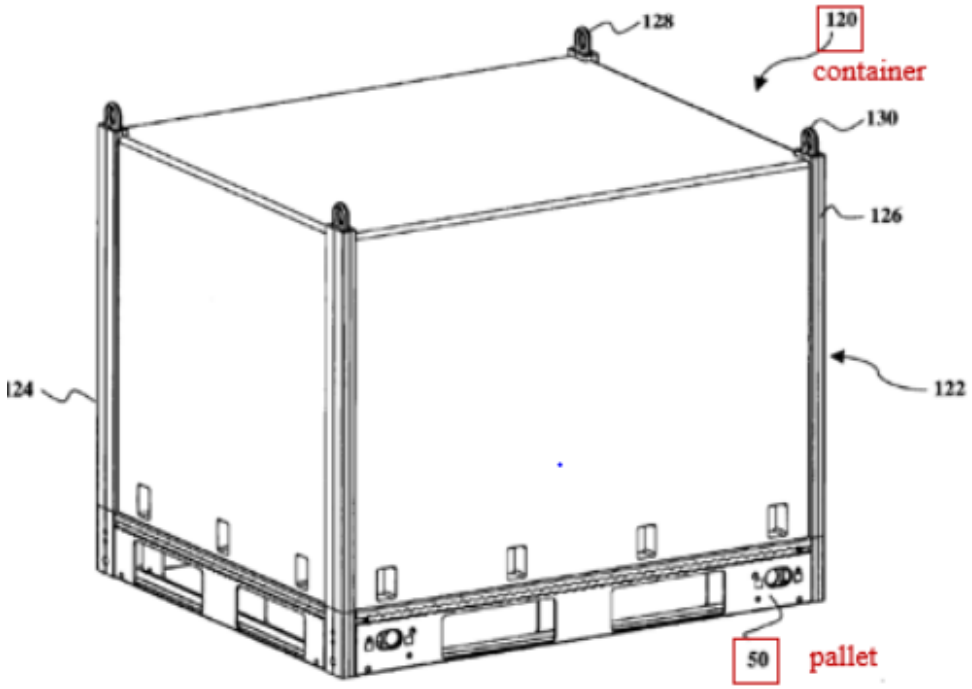
EX1005, FIG. 5B.

138. Pivoting latch 28 causes a lateral projection 45 of second locking latch portion 31 to engage a top surface of a rectangular projection 47' (green) of second locking member 40' and couple together containers 20 and 20'. EX1005, ¶16, FIG. 5B.

139. Accordingly, similar to the '689 patent, Brocket discloses a locking groove (defined by top surface 47' and upward projecting lip 49' of second locking member 40') and a mechanism for selectively engaging the locking groove to connect and hold two storage containers together.

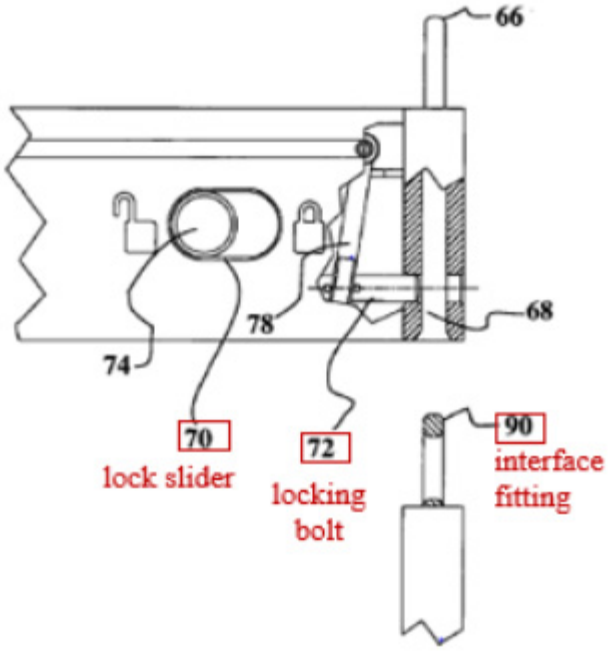
H. Heinrichs

140. Like the '689 patent, Heinrichs discloses a sliding mechanism for selectively locking storage containers together. EX1006, ¶¶51-62, FIGs. 2-4, 6. For example, Heinrichs discloses a container 120 and that "another storage container having a second pallet which is substantially identical to pallet 50 may be stacked on container 120." EX1006, ¶62, FIG. 6.



EX1006, FIG. 6.

141. Heinrichs discloses that a pallet 50 includes a locking arrangement for engaging and disengaging an interface fitting (e.g., an interface fitting 90, 130) of a storage assembly (e.g., another container 120). EX1006, ¶¶10, 56, 58,-62. Figure 3, depicted below, illustrates this mechanism.



EX1006, FIG. 3.

142. Heinrichs describes its locking mechanism includes a lock slider 70 and a locking bolt 72. EX1006, ¶¶52-53. In operation, pallet 50 is stacked on a structure (e.g., a container 120) having substantially identical interface fittings. Interface fitting 90 shown in Figure 3 (which is substantially identical to interface fitting 130 of container 120 shown in FIG. 6) is received through cavity 68 so that it aligns with locking bolt 72. EX1006, ¶56. A key is inserted into keyhole 74 and "[l]ock slider 70 is manually translated, i.e., slid, from an unlocked position to a locked position so that locking bolt 72 attached to lock slider 70" travels through cavity 62 to engage the interface fitting 90. EX1006, ¶56.

143. Accordingly, like the '689 patent, Heinrichs discloses a sliding

mechanism (lock slider 70 and locking bolt 72) for selectively engaging a locking groove (interface 90) to connect and hold two containers together.

X. GROUNDS OF UNPATENTABILITY

A. Ground 1A: Duvigneau anticipates claims 1-4 and 14-15.

144. In my opinion, Duvigneau anticipates claims 1-4 and 14-15.

1. Claim 1

a. [1.P] A stackable storage system comprising:

145. I understand that in certain circumstances the preamble of a claim may be limited. To the extent the preamble is determined to be limiting, it is my opinion that Duvigneau discloses [1.P].

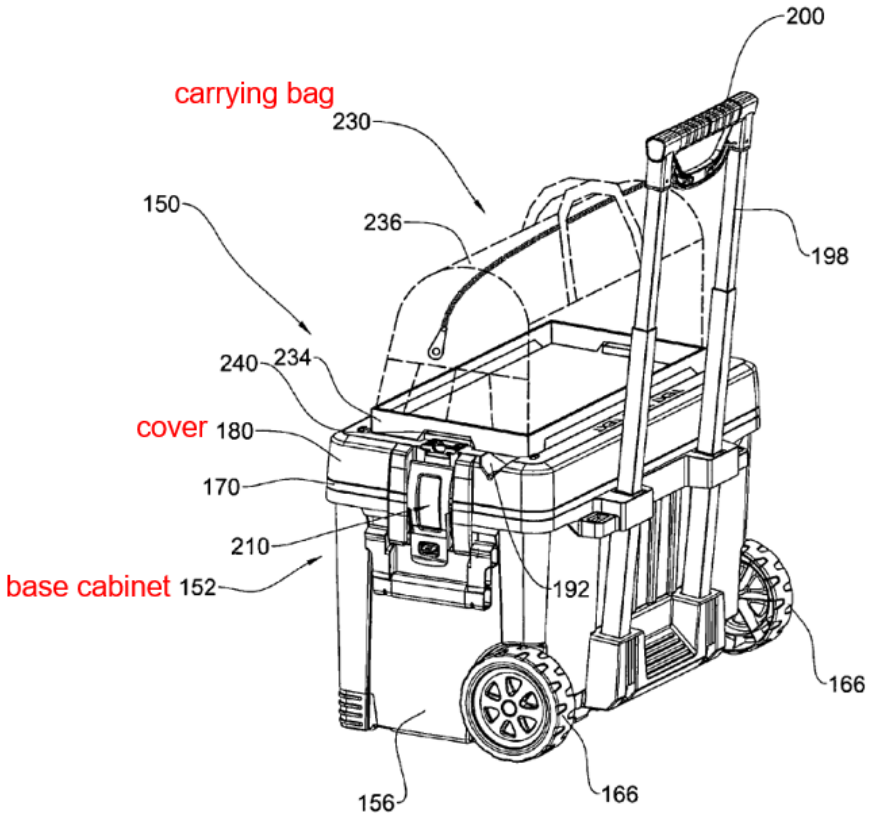
146. Duvigneau "relates generally to containers adapted to store any items" wherein "at least one container is a detachably articulated for carrying away items in an easy to carry container." EX1007, ¶¶2, 12. Duvigneau discloses "a cabinet assembly" (e.g., "*stackable storage system*") "comprising a wheeled base cabinet … and at least one detachable container made from a pliable material and designed as a carrying bag." EX1007, ¶13. The carrying bag 230 can be detachably mounted, and is thus "*stackable*," on base cabinet 152 (which includes cover 180). EX1007, ¶¶12, 57, FIG. 4A. Duvigneau further discloses base cabinet 152 "may be designed in different modules and comprise any combination of drawers, bins, shelves, and removable compartments." EX1007, ¶59.

147. Thus, Duvigneau discloses "*a stackable storage system*."

b. [1.A] a first storage container configured and arranged to be selectively connected to a second storage container,

148. In my opinion, Duvigneau discloses [1.A]. Duvigneau discloses carrying bag 230 ("*a first storage container*") is configured to be detachably connected ("*configured and arranged to be selectively connected*") over the base cabinet 152, which includes cover 180. EX1007, ¶57; FIG. 4A; *see also* EX1007, ¶¶41-47. The base cabinet 152, including its cover 180, is "*a second storage container.*"

149. Figure 4A, depicted below, illustrates Duvigneau's stackable storage system in which the carrying bag 230 is mounted on and attached on cover 180 of base cabinet 152.



EX1007, FIG. 4A (annotated).

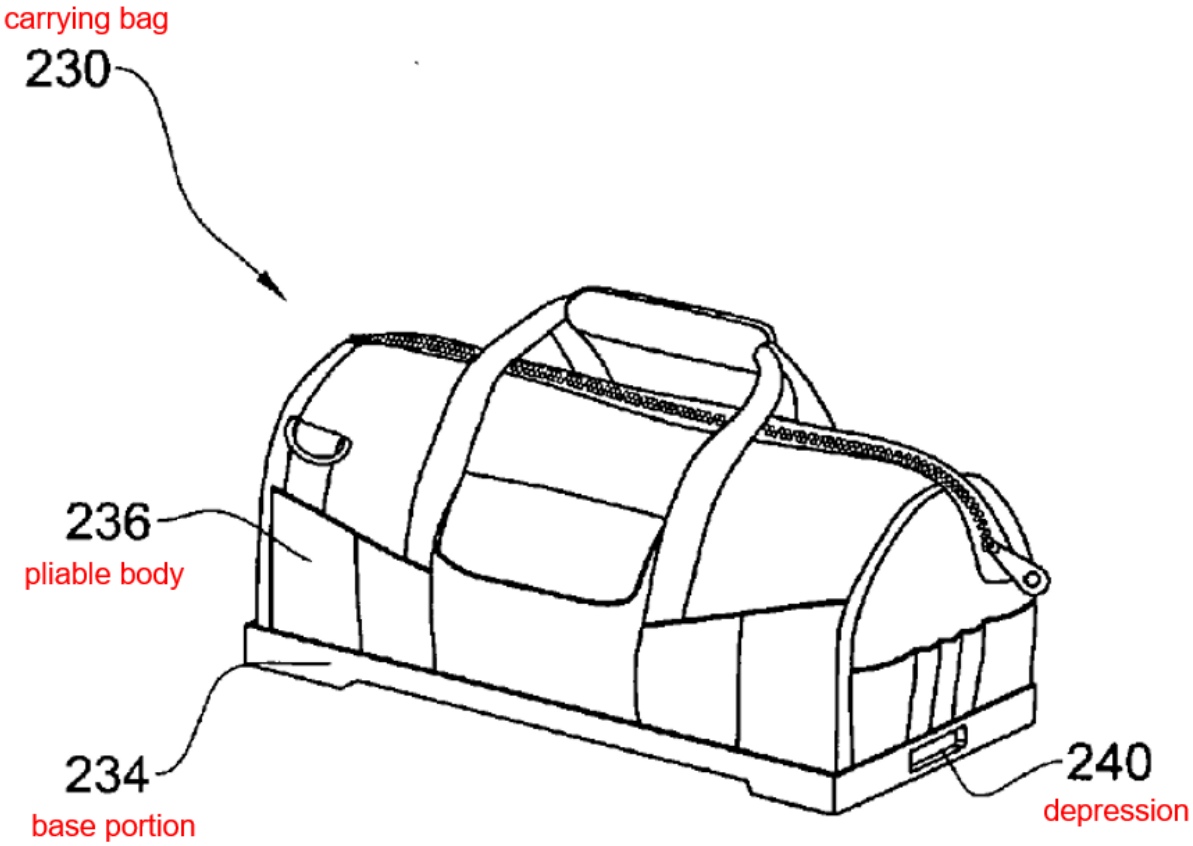
c. [1.B] wherein the first storage container comprises of at least one locking groove and the second container comprises a sliding mechanism for selectively engaging the locking groove to connect and hold the first storage container to the second storage container, and

150. In my opinion, Duvigneau discloses [1.B].

151. First, Duvigneau discloses that "*the first storage container comprises of at least one locking groove.*" Duvigneau's carrying bag 230 ("*first storage container*") "has a rigid base portion 234." EX1007, ¶57. Duvigneau describes that the carrying bag 230 is "[s]imiliar to the previous embodiments." EX1007, ¶57. Thus, Duvigneau discloses that the carrying bag "is made of a pliable material and

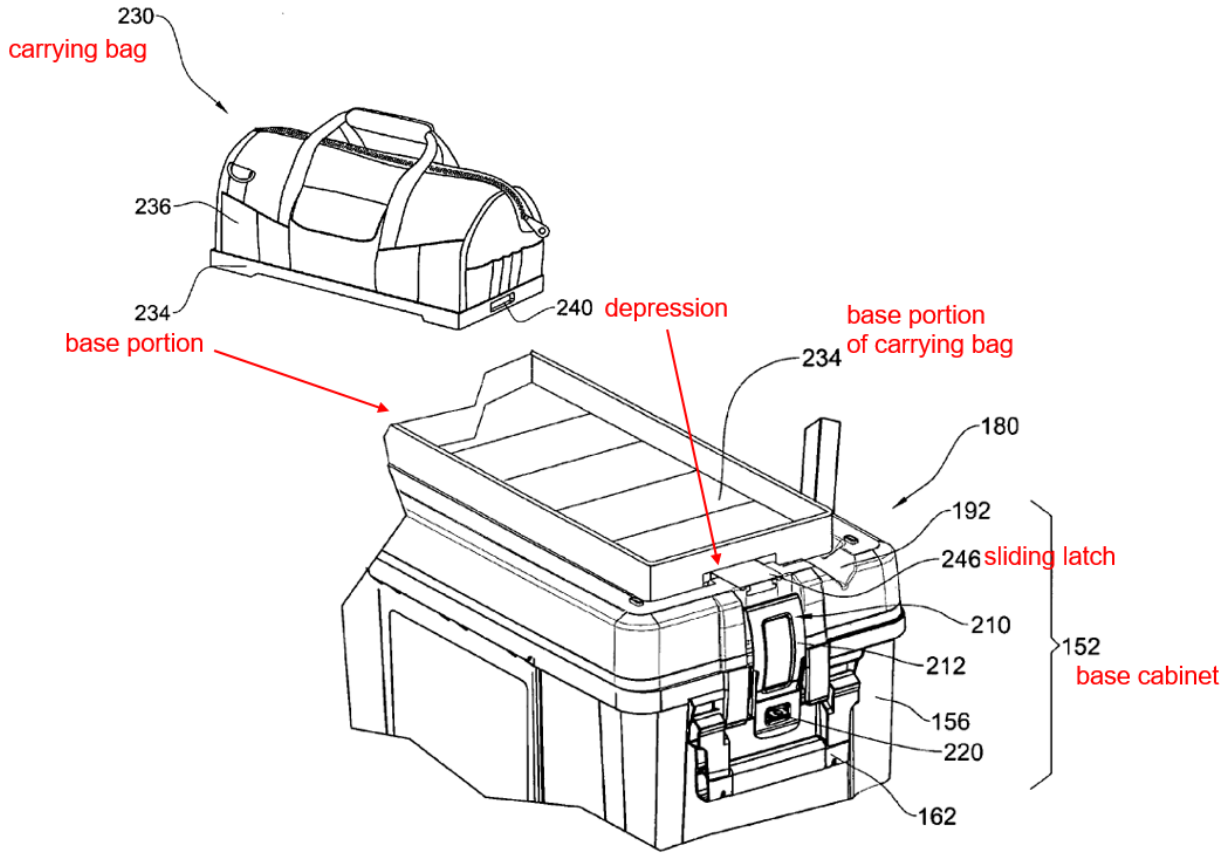
is formed with a rigid base portion," which is described as "a solid basin-like structure into which the fabric structure of the carrying bag **is fixedly fitted**." EX1007, ¶¶42-44 (emphasis added). In light of this description, a POSA would have understood that the rigid base portion 234 is part of carrying bag 230.

152. The base portion 234 of carrying bag 230 "comprises at its each of it[]s two side edges a depression 240" ("*at least one locking groove*"). EX1007, ¶57. Each depression 240 is a "*locking groove*" because it accepts a "*sliding mechanism*" to detachably couple carrying bag 230 to base cabinet 152.



EX1007, FIG. 4B (cropped and annotated).

153. Next, Duvigneau discloses "*the second container comprises a sliding mechanism for selectively engaging the locking groove to connect and hold the first storage container to the second storage container*." Figures 4B and 6 of Duvigneau, depicted below, illustrate this arrangement.



EX1007, FIGs. 4B (top), 6 (bottom) (cropped and annotated).

154. Duvigneau discloses that base cabinet 152 includes a cover 180 upon which "a sliding latch 246" ("*sliding mechanism*") is fitted. EX1007, ¶¶52, 57, FIG. 6. Duvigneau discloses that "depression 240 [is] fitted for arresting by a sliding latch 246 fitted on cover 180 for detachably articulating the carrying bag 230 over the base cabinet 152." EX1007, ¶57; FIGs. 4A-4B. As I describe in

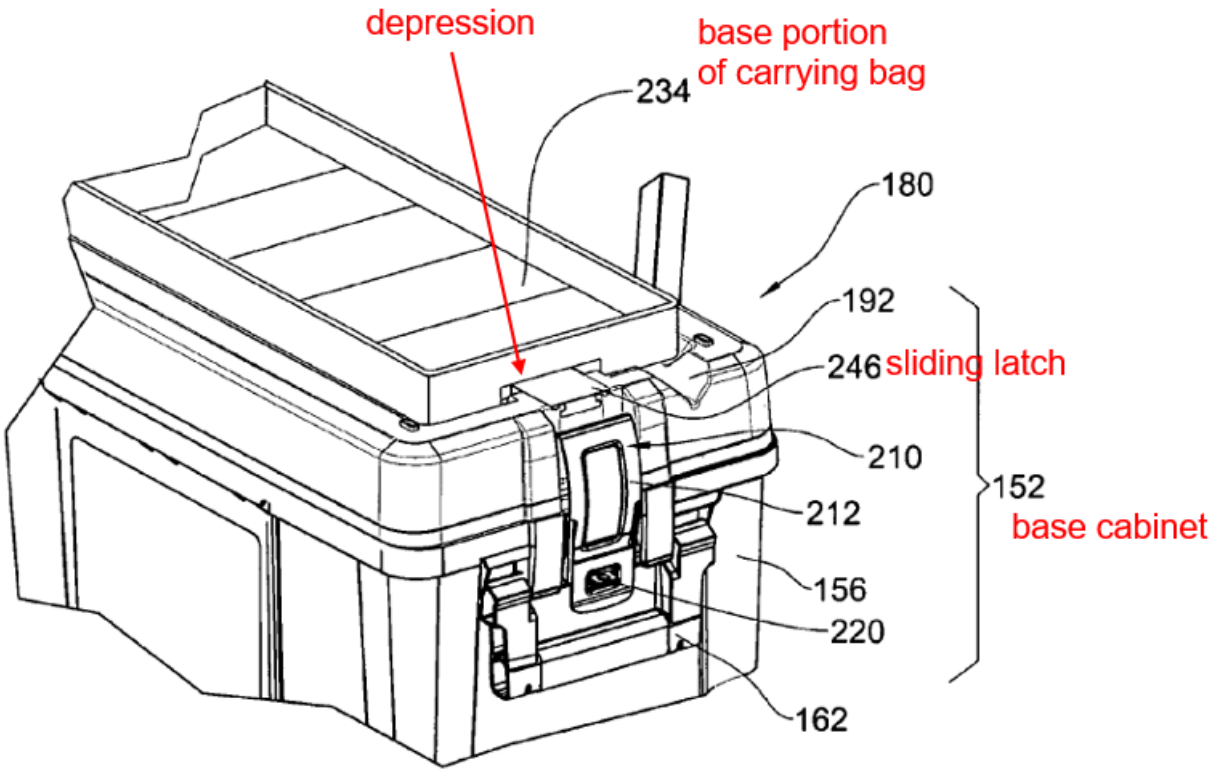
Section IX.A, this means that the sliding latch catches suddenly and engagingly to detachably join the carrying bag over the cover 180 of base cabinet 152.

155. The sliding latch *"connect[s] and hold[s]*" the carrying bag to the second container because Duvigneau discloses that "[d]isengagement of the carrying bag 230 from the base cabinet 152 is facilitated by slidingly displacing the latch 246 … so as to disengage from the depressions 240." EX1007, ¶57. Accordingly, it is my opinion that Duvigneau discloses "*a sliding mechanism*" (sliding latch 246) "*for selectively engaging the locking groove*" (depression 240) "*to connect and hold the first storage container*" (carrying bag 230) "*to the second storage container*" (base cabinet 152, including cover 180).

d. [1.C] wherein a portion of the sliding mechanism extends laterally away from a side surface of the second container when the sliding mechanism is disengaged from the locking groove and wherein the portion of the sliding mechanism is coplanar with the side surface of the second container when the sliding mechanism is engaged with the locking groove.

156. In my opinion, Duvigneau discloses [1.C].

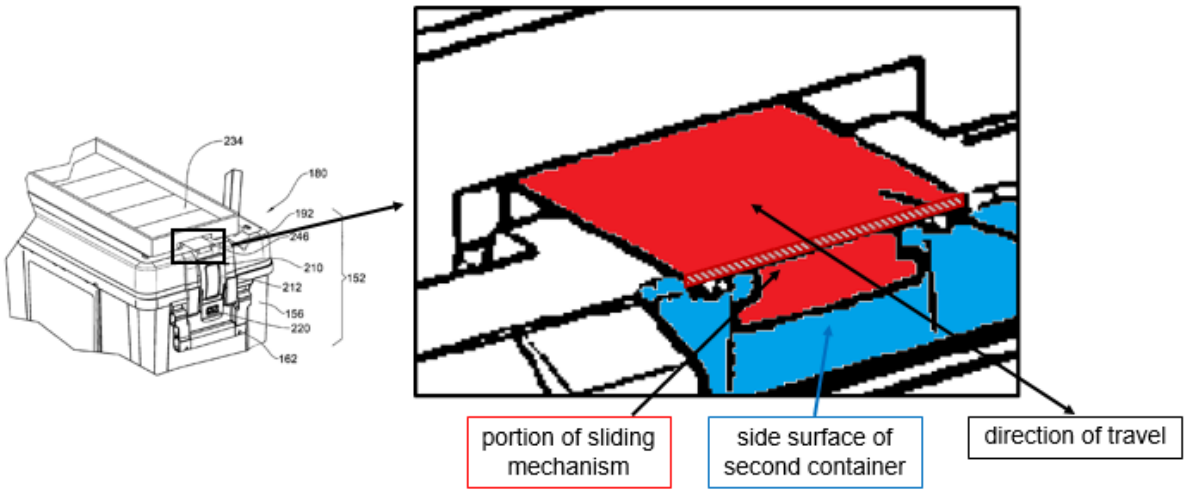
157. Figure 6 of Duvigneau, shown below, illustrates a sliding latch 246, which is a "*sliding mechanism*," engaged with depression 240 ("*locking groove*") so that base portion 234 of carrying bag 230 is attached to cover 180 of base cabinet 152. EX1007, ¶57, FIG. 6.



EX1007, FIG. 6 (annotated).

158. Duvigneau discloses "[d]isengagement of the carrying bag 230 from the base cabinet 152 is facilitated by slidingly displacing the latch 246 away from the base member 234 so as to disengage from the depressions 240." EX1007, ¶57. Accordingly, as shown in annotated Figure 6 below, "slidingly displacing the latch 246 away from base member 234" causes "*a portion of the sliding mechanism*" (latch 246) to "*extend[] laterally away from a side surface of the second container*" (the side surface of cover 180 of base cabinet 152) "*when the sliding mechanism is disengaged from the locking groove*." EX1007, ¶57, FIG. 6. In other words, latch 246 is pulled away from the rigid base portion 234 of carrying

container 230 to detach carrying bag 230 from base cabinet 152. Because the latch is pulled away from the container, a portion of the sliding mechanism extends laterally away from the side surface of cover 180 of base cabinet 152, shown in blue.



EX1007, FIG. 6 (cropped and annotated).

159. Figure 6 of Duvigneau further shows that "*when the sliding mechanism is engaged with the locking groove*" (depression 240), "*the portion of the sliding mechanism*" (indicated in the annotations of Figure 6) "*is coplanar with the side surface of the second container*." Specifically, Duvigneau discloses that the indicated portion of sliding latch 246, including its edge (shown in red hatch pattern) and lower portion, is coplanar with the side surface of cover 180 (shown in blue) when sliding the sliding latch 246 is engaged with depression 240 of the rigid base portion 234 of carrying bag 230. EX1007, ¶57, FIG. 6.

160. In my opinion, a POSA would have understood from Duvigneau's figures that the depiction of the coplanar arrangement was a deliberate design choice. A POSA would have known that the use of coplanar components improves design and is preferred for positioning of a latching mechanism when engaged. For example, Christopher (which I understand from counsel is a prior application by Meridian) describes a latch 136 for interconnecting storage containers that "is substantially flush with the side of" a container 102 in its engaged position. EX1016, ¶24, FIG. 5. Meier describes the benefits of closure mechanisms not protruding from a side surface of a container: "The closures are advantageously recessed relative to the outer contour of the tool box in the closed state. This prevents that the closures are accidentally impacted or torn off and also contributes to the reduction of the required storage space when in the stacked state." EX1019, ¶14. Dur also discloses that its connection element 4 "is embedded in a recess 9 on the side wall 5 and does not project beyond the outer contour of side wall 5" (in other words, a coplanar arrangement). EX1027, ¶29. Therefore, the concept of placing a portion of a sliding mechanism flush with the side surface of a container supporting the lock was well-known.

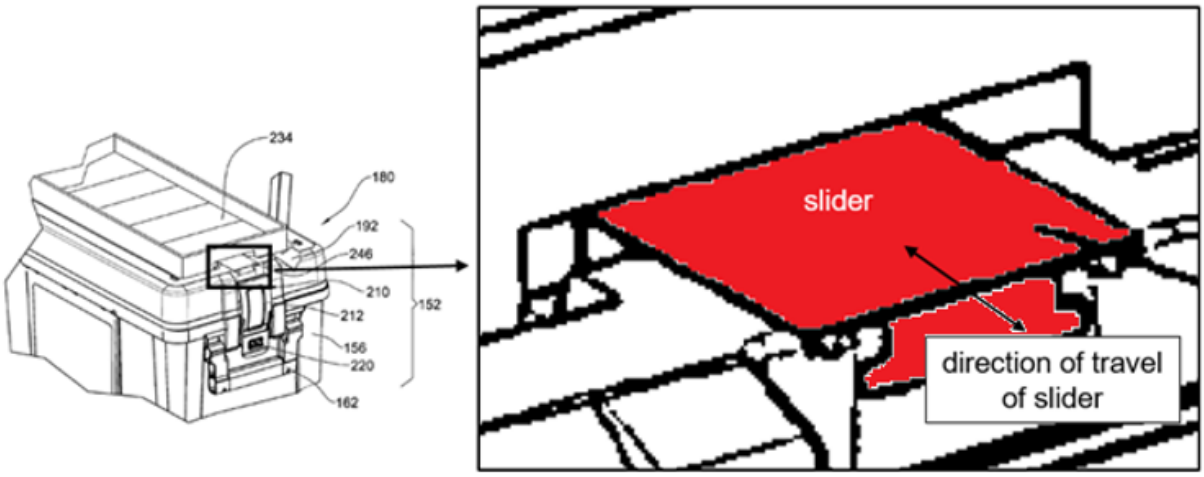
2. Claim 2

161. Claim 2 depends from claim 1 and further recites, "*wherein the sliding mechanism further comprises of a slider that moves between the engaged and*

disengaged position with respect to the locking groove."

162. In my opinion, Duvigneau discloses claim 2. Duvigneau discloses that cover 180 of base cabinet 152 includes "a sliding latch 246" ("*sliding mechanism*"), which comprises "*a slider*." As I will describe below in the analysis of additional dependent claims of the '689 patent, a POSA would have understood from Duvigneau's description and figures, and from the design of sliding latch mechanisms, that sliding latch 246 includes components other the slider illustrated in Figure 6.

163. Duvigneau discloses that depression 240 ("*locking groove*") "[is] fitted for arresting by [the] sliding latch 246 … for detachably articulating the carrying bag 230 over the base cabinet 152," which is "*the engaged ... position with respect to the locking groove*". EX1007, ¶57. Duvigneau further discloses that the carrying bag is detached from cover 180 of base cabinet 152 "by slidingly displacing the latch 246 away from base member 234, so as to disengage from the depressions 240." EX1007, ¶57. In other words, as shown in the annotations of Figure 6 below, Duvigneau discloses the slider (shown in red) "*moves between the engaged and disengaged position with respect to the locking groove*."



EX1007, FIG. 6 (cropped and annotated).

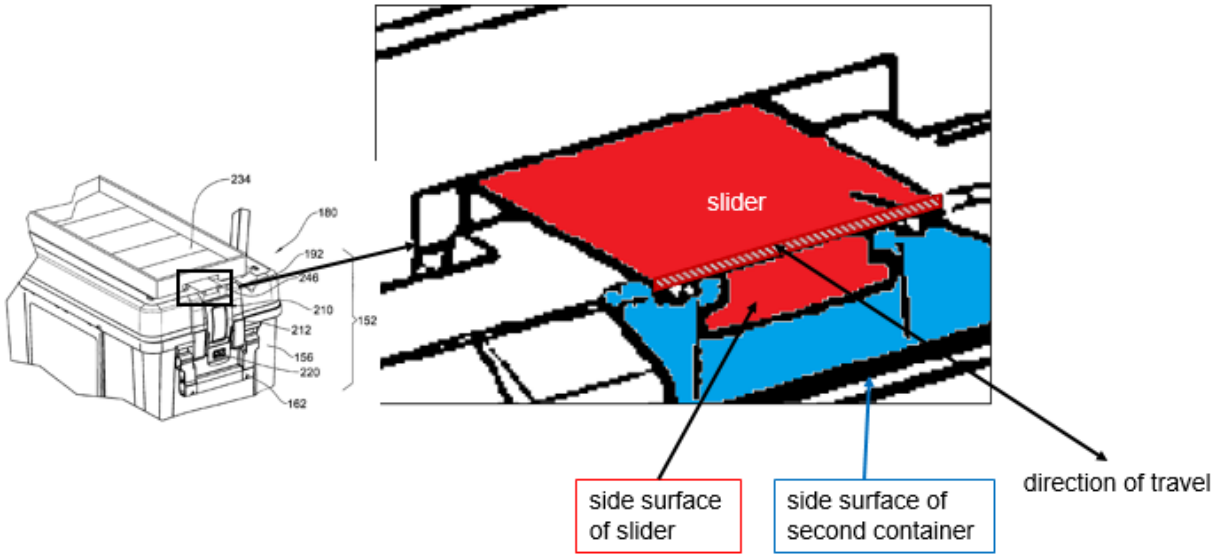
3. Claim 3

164. Claim 3 depends from claim 2 and further recites "*wherein the slider has a side surface that is perpendicular to the direction of travel of the slider between the engaged and disengaged position with respect to the locking groove and the side surface of the slider is coplanar with the side surface of the second container when the slider is engaged with the locking groove.*"

165. In my opinion, Duvigneau discloses claim 3. For the reasons I discuss in Section X.A.1.d (addressing [1.C]), Duvigneau discloses "*the sliding mechanism extends laterally away from a side surface of the second container and the portion of the sliding mechanism is coplanar with the side surface when the sliding mechanism is engaged with the locking groove.*"

166. Similarly, as shown in annotated Figure 6 below, Duvigneau's "*slider*

has a side surface that is perpendicular to the direction of travel of the slider between the engaged and disengaged position with respect to the locking groove." EX1007, FIG. 6. The side surface of the slider is indicated in the annotations of Figure 6 and includes its edge, which is shown in red hatched pattern. Duvigneau's Figure 6 also shows that "*the side surface of the slider is coplanar with the side surface of the second container when the slider is engaged with the locking groove*" (surface of cover 180, shown in blue, is coplanar with the indicted side surface of sliding latch 246, including its edge, when sliding latch 246 is engaged with depression 240). EX1007, FIG. 6, ¶57 (describing that "slidingly displacing the latch 246 away from the base member 234" disengages the carrying bag 230 from base cabinet 152). As I explain above in Section X.A.1.d (in reference to [1.C], the use of the coplanar arrangement was well-known to be advantageous and, in my opinion, was a deliberate design choice made by Duvigneau (as evident from Figure 6). I provide examples of other prior art that discloses coplanar arrangement in Section VI.C.4 of the Technical Background.



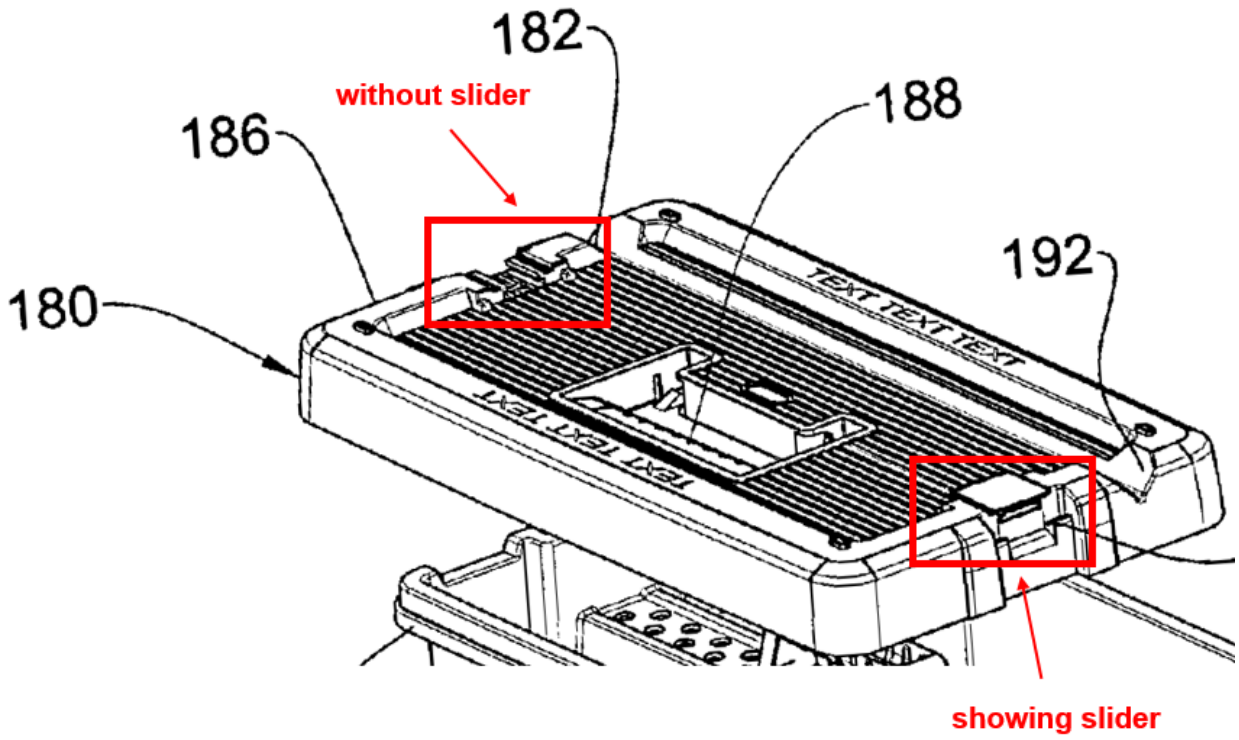
EX1007, FIG. 6 (cropped and annotated).

4. Claim 4

167. Claim 4 depends from claim 3 and further recites "*wherein the second storage container further comprises of a slot in the side surface of the container with a support arm extending across the slot, wherein the slider is engaged with the support arm to move between a locked position that corresponds to the engaged position of the locking groove and an unlocked position that corresponds to the disengaged position of the locking groove.*"

168. In my opinion, Duvigneau discloses claim 4. Duvigneau discloses that carrying bag 230 includes a depression 240 at each of its two side edges, and shows in Figure 5 (below) two locations on cover 180 of base cabinet 152 for corresponding sliding latches 246. EX1007, ¶57, FIG. 5. As shown in annotated

Figure 5 below, the right end of cover 180 shows sliding latch 246, whereas the left end of cover 180 shows the location of a second sliding latch 246 in which the slider has been removed to show the underlying elements of cover 180.



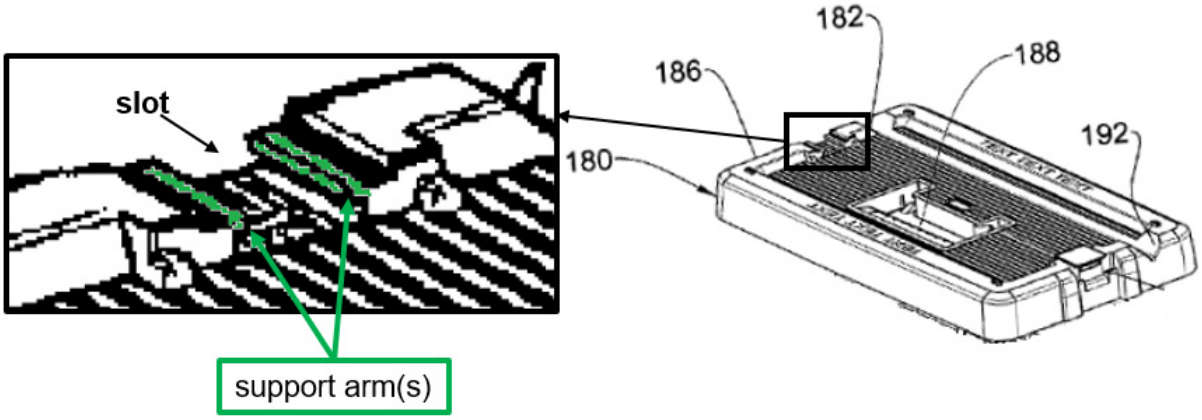
EX1007, FIG. 5 (cropped to show cover 180 and annotated).

169. Below, Figures 5 and 6 of Duvigneau are cropped and annotated to show the elements of claim 4. Specifically, as shown in Figure 6 (below), Duvigneau discloses a "*slot in the side surface of the container*" where there is a break in the upper surface 186 of base cabinet's cover 180 (defining a slot at the cavity where its latch mechanism 146 is located). EX1007, ¶¶52, 57, FIG. 5. Duvigneau further discloses "*a support arm extending across the slot*." As shown in the annotations below, Duvigneau depicts at least one support arm (shown in

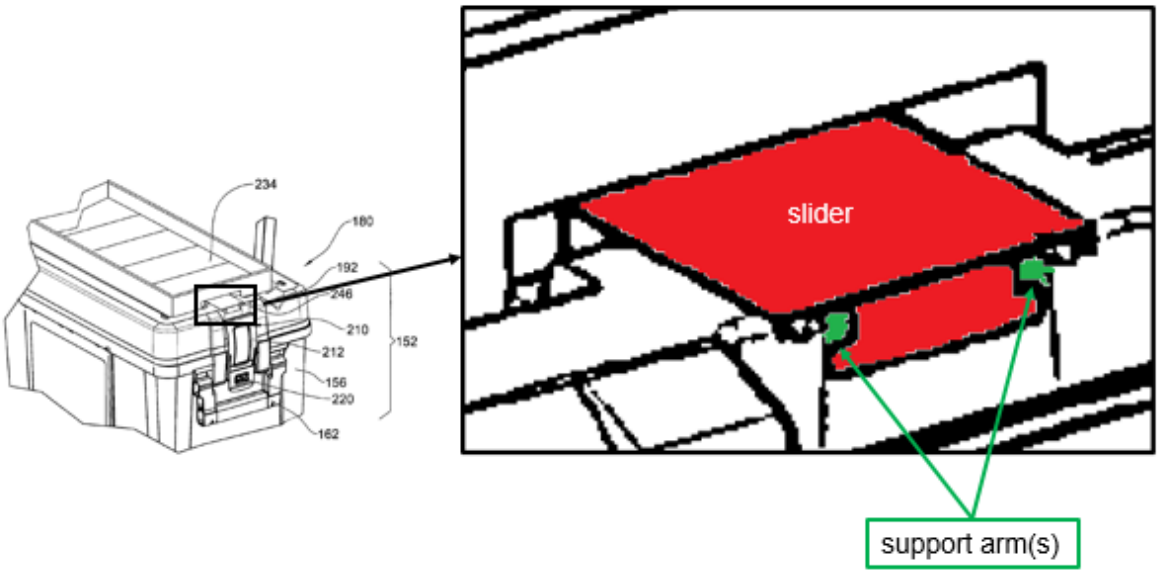
green) that extends into and across a slot or cavity beneath the slider of sliding latch 246. EX1007, ¶57, FIGs. 5-6. In my opinion, the protrusions in Figure 5 may be considered a single support arm or separate support arms. Duvigneau clearly depicts the presence of a slot (with the protrusions shown in green extending across the slot) because the slot enables sliding latch 246 to be fitted onto cover 180 of base cabinet 152. This is clearly shown on the left side of Duvigneau's Figure 5 by the break of upper surface 186 of the cover where the sliding mechanism is located. EX1007, ¶56, FIG. 5.

170. Duvigneau further discloses that "the slider is engaged with the support arm to move between a locked position that corresponds to the engaged position of the locking groove and an unlocked position that corresponds to the disengaged position of the locking groove." As shown below, the slider rests on and is engaged with the support arm(s), and slides along the support arm(s) to move between the locked and unlocked positions. EX1007, ¶57, FIGs. 5-6. In my opinion, Figures 5 and 6 clearly depicts the protrusion(s) is a support arm that engages with the slider (particularly when the figures are compared side-by-side). Without such an engaging structure shown in Figures 5 and 6, the latch would fail to secure a container on top of base cabinet 152 as it would detach as soon as any upward force was exerted on the attached container. Duvigneau makes clear in the illustrations shown in Figures 5 and 6 (along with the function of the sliding latch

246 described in paragraph 57) that the engagement structure includes protrusions (shown in green in the annotated Figures below).



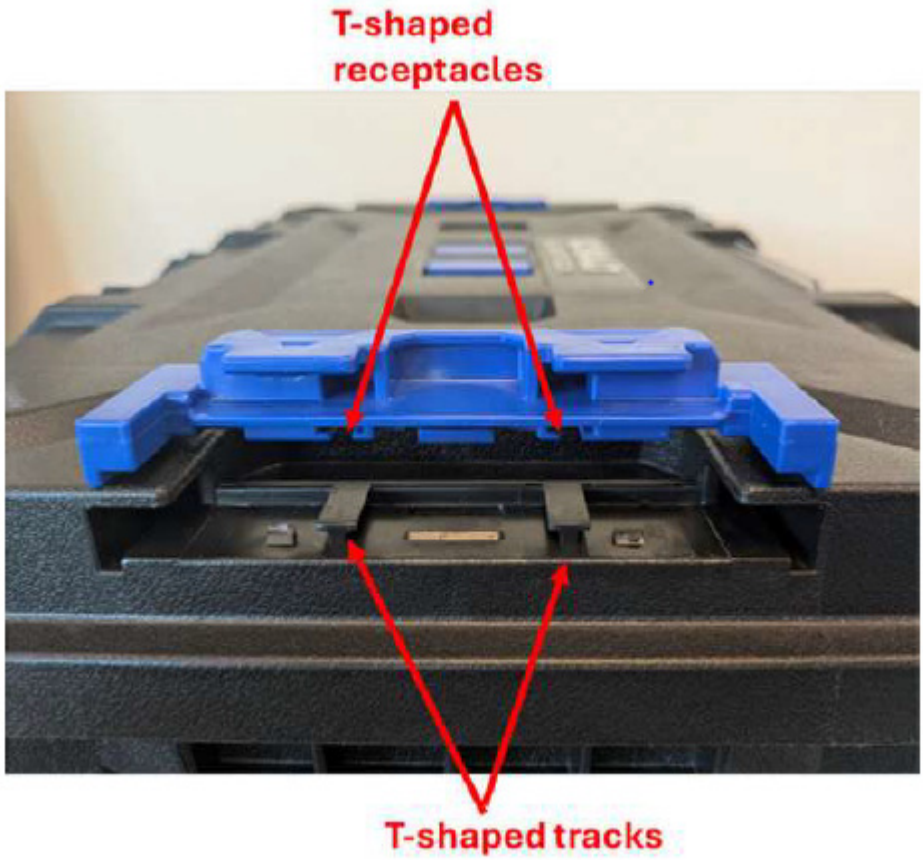
EX1007, FIG. 5 (cropped to show top 180 and annotated).



EX1007, FIG. 6 (cropped and annotated).

171. I understand from counsel that Meridian's infringement contentions assert, as shown in the illustration below, that "the support arm includes T-shaped tracks" (which is similar to the protrusions depicted in Figure 6 of Duvigneau) and

"the blue slider engage each to control the direction of the blue slider's movement." EX1013, B-1, 19.



EX1013, B-1, 19.

5. Independent Claim 14

a. [14.P] A stackable storage container comprising:

172. To the extent the preamble is determined to be limiting, it is my opinion that Duvigneau discloses [14.P] for the reasons I discuss above in Section X.A.1.a.

b. [14.A] a second storage container configured and arranged to be selectively connected to a locking groove of a first storage container,

173. In my opinion, Duvigneau discloses [14.A] for the reasons I discuss in Sections X.A.1.b and X.A.1.c.

c. [14.B] wherein the second container comprises a sliding mechanism for selectively engaging the locking groove of the first storage container to connect and hold the first storage container to the second storage container, and

174. In my opinion, Duvigneau discloses [14.B] for the reasons I discuss in Section X.A.1.c.

d. [14.C] wherein a portion of the sliding mechanism extends laterally away from a side surface of the second container when the sliding mechanism is disengaged from the locking groove and wherein the portion of the sliding mechanism is coplanar with the side surface of the second container when the sliding mechanism is engaged with the locking groove.

175. In my opinion, Duvigneau discloses [14.C] for the reasons I discuss in Section X.A.1.d.

6. Claim 15

Claim 15 sets forth limitations that are the same as limitations set forth in claims 2, 3, 4. In particular, [15.1] sets forth the same limitation as claim 2, [15.2] sets forth the same limitation as claim 3, and [15.3] sets forth the same limitation as claim 4.

a. [15.1] The storage container of claim 14, wherein the sliding mechanism further comprises of a slider that moves between the engaged and disengaged position with respect to the locking groove,

176. In my opinion, Duvigneau discloses [15.1] for the reason I discuss for claim 2 in this ground (Section X.A.2).

b. [15.2] wherein the slider has a side surface that is perpendicular to the direction of travel of the slider between the engaged and disengaged position with respect to the locking groove and the side surface of the slider is coplanar with the side surface of the second storage container when the slider is engaged with the locking groove,

177. In my opinion, Duvigneau discloses claim [15.2] for the reasons I discuss for claim 3 in this ground (Section X.A.3).

c. [15.3] and wherein the second storage container further comprises of a slot in the side surface of the container with a support arm extending across the slot, wherein the slider is engaged with the support arm to move between a locked position that corresponds to the engaged position of the locking groove and an unlocked position that corresponds to the disengaged position of the locking groove.

178. In my opinion, Duvigneau discloses claim [15.3] for the reasons I discuss for claim 4 in this ground (Section X.A.4).

B. Ground 1B: Duvigneau renders obvious claims 1-4 and 14-15.

179. In my opinion, Claims 1-4 and 14-15 would have been obvious over Duvigneau.

180. As I will explain in further detail below, the ’689 patent claims

nothing more than a sliding latch mechanism that comprises well-known components implemented in a predictable way. These components include a slider that is coplanar (does not protrude and catch on things) and moves between a locked/engaged position and an unlocked disengaged position, an elastic arm to facilitate disengagement of the slider from a locked position, a block with a bevel to keep the slider from being completely disengaged, guiding grooves and support ribs to constrain lateral movement so that the slider remains in position to perform its intended latching function, and a slot that can be used for gripping and carrying the container. As I describe in Section VI in the Background of the Technology, and below, these components were all well-known. They are simple mechanisms and the '689 patent claims nothing more than the predictable use of these well-known elements in their intended function.

1. Independent Claim 1

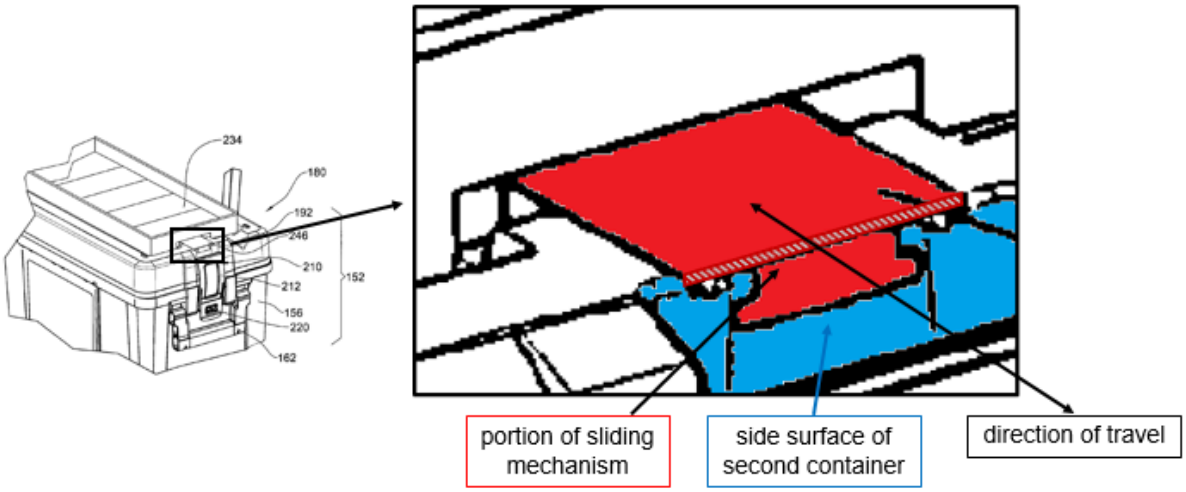
181. In my opinion, Duvigneau anticipates, and thus, renders obvious claim 1. Duvigneau discloses each element of claim 1 for the reasons I discuss in Sections X.A.1.

182. To the extent any element is not disclosed by Duvigneau, it is my opinion it was obvious.

183. For example, regarding [1.C], Duvigneau discloses "[d]isengagement of the carrying bag 230 from the base cabinet 152 is facilitated by slidingly

displacing the latch 246 away from the base member 234, so as to disengage from the depressions 240." EX1007, ¶57. Figure 6 of Duvigneau does not label the direction of movement when latch 246 is slidingly displaced from base member 234 of carrying bag 230. But a POSA would have understood or found obvious from Duvigneau's description in paragraph 57 that "slidingly displacing the latch 246" would cause a portion of latch 246 to extend laterally away from a side surface of the cover 180 because Duvigneau discloses the latch 246 is displaced "away from base member 234," which is connected to cover 180 of base cabinet 152. In the annotations of Figure 6 of Duvigneau below, I show this lateral displacement from the side surface of the second container (shown in blue). Thus, in my opinion, Duvigneau at least renders obvious that "*a portion of the sliding mechanism extends laterally away from a side surface of the second container*" (the side surface of cover 180 of base cabinet 152) "*when the sliding mechanism is disengaged from the locking groove*" (depression 240).

184. Additionally, although Duvigneau does not state in prose that "*the portion of the sliding mechanism is coplanar with the side surface of the second container when the sliding mechanism is engaged with the locking groove*," Duvigneau renders obvious this limitation because Figure 6 illustrates, or at least suggests, that a portion of latch 246 (including its edge) is coplanar with a side surface of the cover 180 of base cabinet 152. EX1007, FIG. 6.



EX1007, FIG. 6 (cropped and annotated).

185. Indeed, it would have been obvious to make a portion of sliding mechanism (indicated in annotations above) coplanar with the side surface of the second container (shown in blue above) in order to protect the sliding mechanism from accidental disengagement and damage. As I describe above in Section X.A.1.d, a POSA would have understood that the well-known use of coplanar components improves design and is preferred for positioning of a latch mechanism when engaged and the concept of placing a portion of a sliding mechanism flush with the side surface of a container supporting the lock was well-known. For example, Meier describes the benefits of closure mechanisms not protruding from a side surface of a container: "The closures are advantageously recessed relative to the outer contour of the tool box in the closed state. **This prevents that the closures are accidentally impacted or torn off and also contributes to the**

reduction of the required storage space when in the stacked state." EX1019, ¶14 (emphasis added). Brunner also describes that its locking lugs 90 "does not project below a corresponding bottom most portion 89 of the respective second container" and that "the top most portion of the arresting elements 66 does not project over a corresponding top most portion of the respective first container, **minimizing potential damage to the arresting elements and the locking lugs**." EX1010, ¶117 (emphasis added). Christopher describes a latch 136 for interconnecting storage containers that "is substantially flush with the side of" a container 102 in its engaged position. EX1016, ¶24, FIG. 5. And Dur also describes its latch "does not project beyond the outer contours of side wall 5." EX1027, ¶29.

186. A POSA would have been motivated to make a portion of sliding mechanism coplanar with the side surface of the second container because such a coplanar arrangement advantageously prevents the latch from protruding, which increases the risk of snagging on unwanted objects (including human skin) and causing accidental disengagement or damage to the latch. As I describe above, these were well-known advantages of a coplanar arrangement. *See e.g.,* EX1010, ¶117; EX1016, ¶24; EX1019, ¶14. A POSA would have been further motivated and reasonably expected success in using such a coplanar arrangement because it requires nothing more than the predictable use of prior art elements (e.g., latch and

container cover) according to their known functions.

2. Claim 2

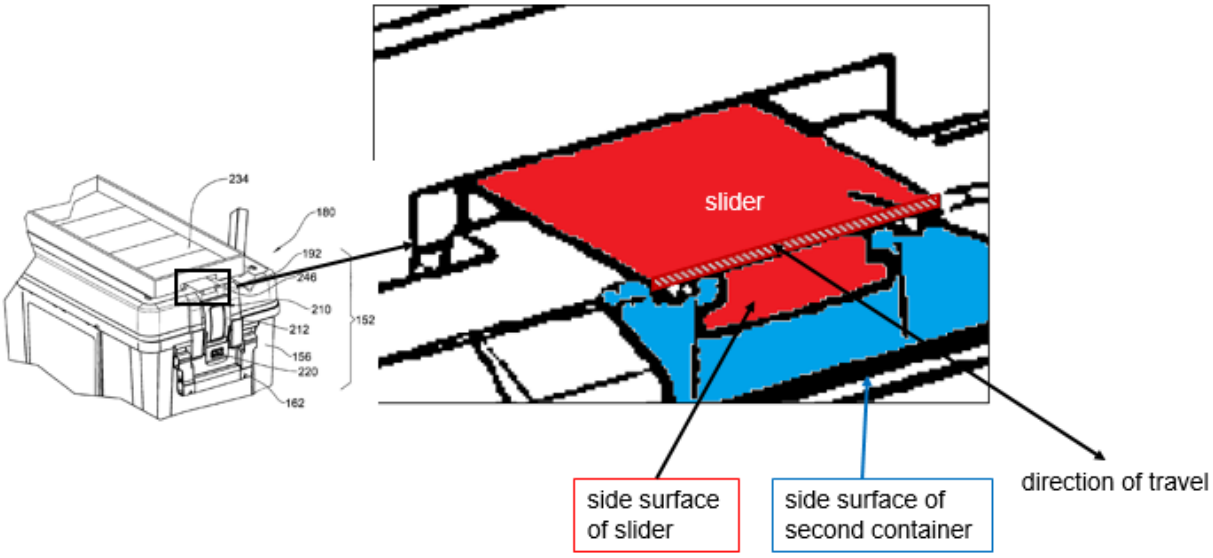
187. In my opinion, Duvigneau discloses claim 2 for the reasons I discuss in Section X.A.2.

3. Claim 3

188. In my opinion, Duvigneau also renders obvious claim 3.

189. For the reasons I discuss Sections X.A.1.d and X.B.1 (addressing [1.C]), Duvigneau discloses or renders obvious "*the sliding mechanism extends laterally away from a side surface of the second container"* and "*the portion of the sliding mechanism is coplanar with the side surface of the second container when the sliding mechanism is engaged with the locking groove.*" Similarly, a POSA would have understood, or found obvious from Duvigneau's Figure 6 and description in paragraph 57 that "slidingly displacing the latch 246" would cause a "*side surface*" of the "*slider*" (the surface of the slider indicated in annotated Figure 6 below, including its edge (shown in red hatched pattern)) to be "*perpendicular to the direction of travel of the slider between the engaged and disengaged position with respect to the locking groove*" (depression 240) because Duvigneau discloses the latch 246 is displaced "away from the base member 234." EX1007, ¶57, FIG. 6. In other words, Duvigneau describes that to detach carrying bag 230 from base cabinet 152, the latch 246 is pulled away from the base member

of carrying bag 230, which means it is also pulled away from the top cover 180 of base cabinet 152 and that the direction of travel is perpendicular to the indicated side surface of the slider. And for the reasons I discuss in Section X.B.1, a POSA would have understood, or found obvious, that Figure 6 illustrates, or at least suggests, "*the side surface of the slider is coplanar with the side surface of the second container when the slider is engaged with the locking groove*." EX1007, FIG. 6.



EX1007, FIG. 6 (cropped and annotated).

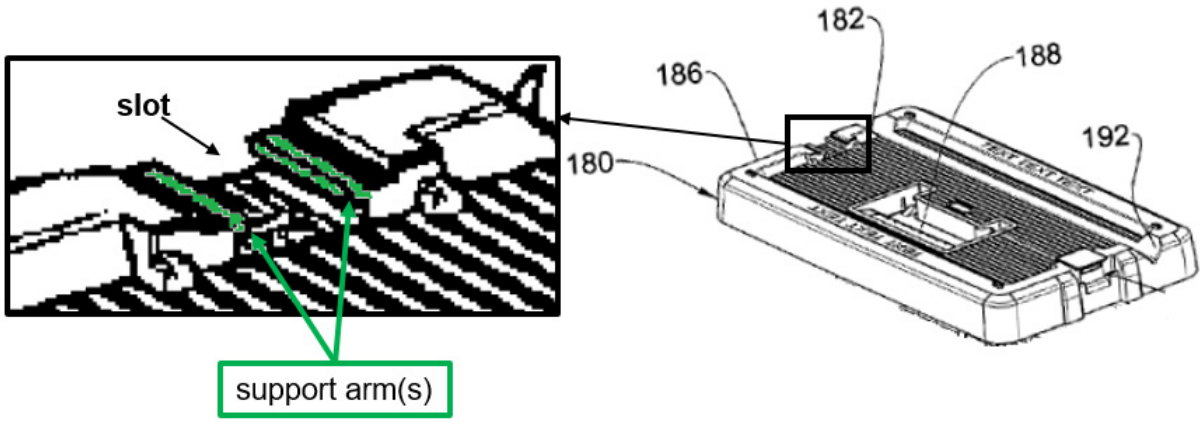
4. Claim 4

190. In my opinion, Duvigneau also renders obvious claim 4.

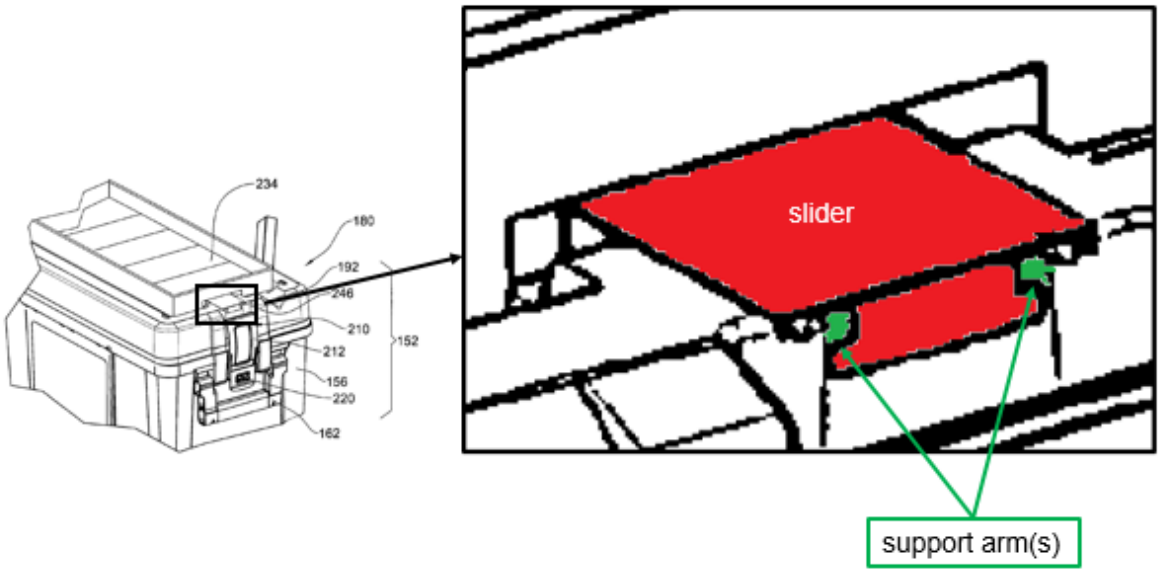
191. Figure 5 does not label that the left end of cover 180 shows the location of a second sliding latch 246. But, for the reasons I discuss in Section

X.A.4, a POSA would have understood from Duvigneau's figures and description that the left end of cover 180 in Figure 5 shows a second location of a slider mechanism (in which the slider has been removed to show the underlying elements of cover 180) because Duvigneau describes that carrying bag 230 comprises at **each of its two side edges** depression 240 ("*locking groove*") for detachably attaching the bag to a sliding latch 246 on cover 180. EX1007, ¶57. Thus, a POSA would have understood Figure 5 shows the two locations on cover 180 of base cabinet 152 for the corresponding sliding latches 246. EX1007, ¶57.

192. Figure 5 also does not label "*a slot in the side surface of the container with a support arm extending across the slot*" and Duvigneau does not describe in prose that "*the slider is engaged with the support arm*" to move between the locked and unlocked positions. But, a POSA would have understood or found obvious from Figures 5 and 6 that Duvigneau's cover 180 (part of base cabinet 152) includes a slot and support arm(s) that engage with the slider because Duvigneau discloses sliding latch 246 "is fitted on cover 180." EX1007, ¶57. In my opinion, a POSA would have understood that Figures 5 and 6 clearly illustrate this arrangement (particularly when comparing the figures side-by-side), including showing the slider engaged with the protrusions that are the support arm(s) and Figure 5 also shows the break in upper surface 186 of base cabinet's cover 180 where the slot is located. EX1007, ¶57, FIGs. 5, 6.



EX1007, FIG. 5 (cropped to show top 180 and annotated).



EX1007, FIG. 6 (cropped and annotated).

193. Indeed, it would have been obvious to include the support arm(s) in order to retain the slider in place. A POSA would have understood that vertical displacement of the sliding latch 246 would inhibit its function of securing carrying bag 230 to base cabinet 152 because it would detach as soon as any upward force was exerted on carrying bag 230. A POSA would have understood

from Duvigneau's illustrations shown in Figures 5 and 6, and the description of the sliding latch in paragraph 57, that an engagement structure exists to limit the potential for vertical displacement. That engagement structure includes protrusions (shown in green in the annotated Figures below).

194. A POSA would have been motivated to use this well-known structure to facilitate its described function to arrest with depression 240 and to "slidingly displacing the latch 246" to disengage from the depressions 240. EX1007, ¶57. For example, Dur discloses an engagement structure that uses "lateral guidances," which engage with "lateral grooves 46 on slide 40" to prevent lateral displacement. EX1027, ¶33, FIG. 6. A POSA would have been further motivated and reasonably expected success in using such an arrangement because it requires nothing more than predictable use of prior art elements (e.g., support arm, slider) according to their known functions, as for example, evidenced by Dur.

195. And, in my opinion, a POSA would have further found it obvious to include a slot in the side surface of the second container (as explicitly shown in Figure 5) to provide an area for the sliding mechanism. A POSA would have recognized a slot enables sliding latch 246 to be fitted into cover 180 of base cabinet 152. As I discuss in Section X.A.4, the left side of Duvigneau's Figure 5 clearly shows a break of upper surface 186 of the cover where the sliding mechanism is located. EX1007, ¶56, FIG. 5. A POSA would have been motivated

to include a slot to provide space for the components of slider mechanism. And a POSA would have been further motivated in including a slot because it requires nothing more than the predictable use of a known element (a slot for a latch mechanism) according to its known function. For example, as I discuss in more detail in Section VIII.E, Brunner also discloses a slot in a side surface of a container for a latching mechanism and handle. EX1010, ¶¶133, 135, FIGs. 11E, 13A-13C.

5. Independent Claim 14

196. In my opinion, Duvigneau renders obvious claim 14 for the reasons I discuss for claim 1 of this ground (Section X.B.1).

6. Claim 15

197. In my opinion, Duvigneau discloses [15.1] for the reasons I discuss in claim 2 (Section X.B.2). Duvigneau renders obvious [15.2] for the reasons I discuss in claim 3 (Section X.B.3). And Duvigneau renders obvious [15.3] for the reasons I discuss in claim 4 (Section X.B.4) of this ground.

C. Ground 1C: The combination of Duvigneau and Niles renders obvious claims 5-7 and 16.

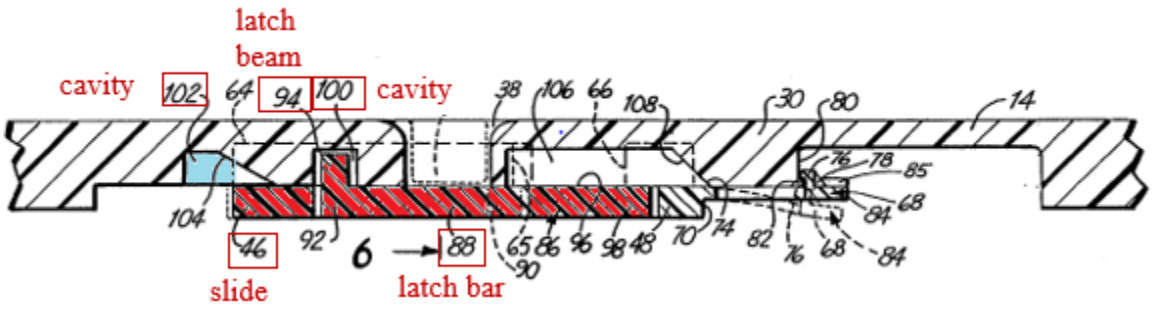
1. Claim 5

198. In my opinion, the Duvigneau-Niles combination renders obvious claim 5, which depends from claim 4 and recites "*wherein the support arm further comprises of a first engaging groove for holding the slider in the unlocked position*

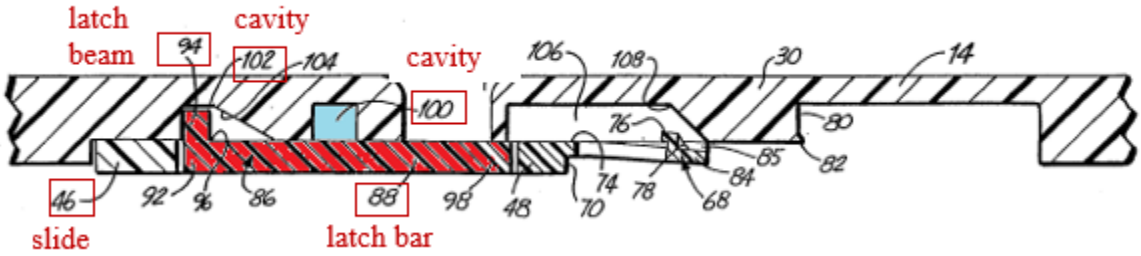
and a second engaging groove for holding the slider in the locked position."

199. For the reasons I discuss for claim 4 in Sections X.A.4 and X.B.4, Duvigneau discloses, or renders obvious, "*a support arm … wherein the slider is engaged with the support arm to move between a locked position … and an unlocked position*." EX1007, ¶57, FIGs. 5, 6. Duvigneau does not disclose a mechanism used to retain the slider in the locked and unlocked positions.

200. Niles discloses such a mechanism. As shown in the annotations of Figures 3 and 5 below, Niles discloses a latch assembly 12 that includes flexible slide 46 to latch together first and second housing members 14/18 of case 10 (i.e., two separable container portions). EX1012, 4:31-35, FIGs. 1-2. Niles discloses flexible slide 46 has a latch bar 88 with an outwardly extending latch beam 94. EX1012, 5:56-65. When the slide 46 is in a locked state, latch beam 94 is received in first cavity 100 "to secure the slide 46 against movement." EX1012, 6:6-9, 7:21-25; FIG. 3. When the slide is in an open (unlocked) state, latch beam 94 engages "second cavity 102 adjacent the first cavity 100." EX1012, 6:14-24, 7:31-39; FIG. 5. Thus, in my opinion, Niles teaches "*a first engaging groove for holding the slider in the unlocked position*" (cavity 102) and "*a second engaging groove for holding the slider in the locked position*" (cavity 100).



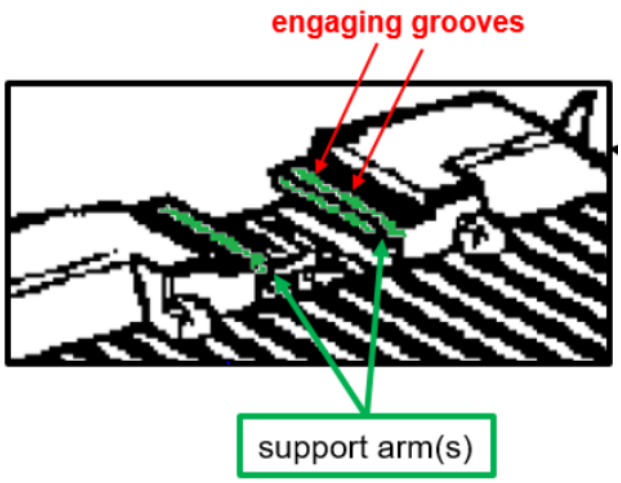
EX1012, FIG. 3.



EX1012, FIG. 5.

201. In my opinion, because Duvigneau does not explicitly disclose how its sliding mechanism remains locked in place, a POSA would have been motivated to look for a mechanism to provide a solution to this problem. This is because it would have been evident to a POSA that without such a locking mechanism, Duvigneau's sliding latch 246 would not stay engaged with depression 240 if base cabinet 152 is jostled or tilted, which would result in the unintentional detachment of carrying bag 230 from base cabinet 152. As I discuss in Section VI.C.1 of the Technical Background, using grooves to hold a locking mechanism in locked/unlocked positions was well-known. A POSA would have recognized Niles suggests the well-known solution of using grooves through its description of a

simple mechanism that uses "*a first engaging groove for holding the slider in the unlocked position*" (cavity 102) and "*a second engaging groove for holding the slider in the locked position*" (cavity 100). A POSA would have understood the suggested solution need not be bodily incorporated and could have readily been able to implement the suggested grooves on an upward facing surface of the support arm (which engages with the slider for the reasons I discuss for claim 4 in Sections X.A.4 and X.B.4) as shown in the annotations of Figure 5 (below). The annotations and edited figures are for illustrating the modifications/combinations and not for suggesting bodily incorporation of Niles' teachings is required.



EX1007, FIG. 5 (cropped and edited to show example engaging grooves).

202. Accordingly, a POSA would have found it obvious to include engaging grooves on Duvigneau's support arm (as suggested by Niles) in order to retain the slider at the unlocked and locked positions. A POSA would have been

motivated to include "*a second engaging groove*" because the groove (when engaged with a projection on the slider) locks the slider in the locked position with depression 240 and ensures carrying bag 230 remains attached to cover 180 of base cabinet 152 when it is in an engaged (locked) position. Additionally, a POSA would have been further motivated to include "*a first engaging groove* (to engage with a projection on the slider) to advantageously keep the slider in a fixed position and prevent it from unwanted sliding when it is in the unlocked position. The details of the engaging grooves, such as size, shape, locations on the support arm, spacing between, etc., were obvious design considerations within skill of a POSA to implement in order to achieve the locking/unlocking functionality of Duvigneau's slider. A POSA would have had a reasonable expectation of success in making the modification because the combination requires no more than combining known elements (adding grooves) according to known methods to yield predictable results (grooves that would hold the slider in the "*unlocked*" disengaged position and the "*locked*" engaged position).

203. Therefore, it is my opinion that the Duvigneau-Niles combination renders obvious claim 5.

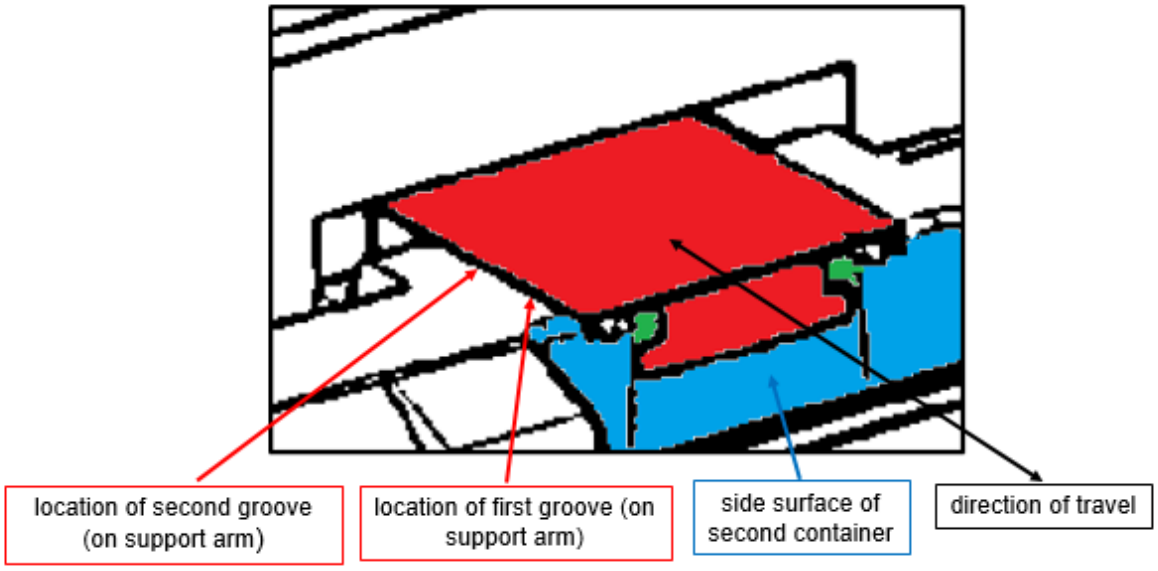
2. Claim 6

204. Claim 6 depends from claim 5 and further recites "*wherein the first engaging groove is closer to the side surface of the second container than the*

second engaging groove."

205. In my opinion, the Duvigneau-Niles combination renders obvious claim 6.

206. Duvigneau discloses that latch 246 is inserted into depression 240 to engage or lock carrying bag 260 to base cabinet 152 and that "[d]isengagement of the carrying bag 230 from the base cabinet 152 is facilitated by slidingly displacing the latch 246 **away from the base member 234**, so as to disengage from the depressions 240." EX1007, ¶57 (emphasis added). A POSA would thus have understood that Duvigneau's slider is in (i) the locked position when inserted into depression 240 and (ii) the unlocked position when moved out of depression 240 in a direction away from the side of base cabinet 152, which means the unlocked position is further from the side surface of the second container than the locked position. Accordingly, it would have been obvious to locate the "*first engaging groove*" that corresponds to the unlocked position "*closer to the side surface of the second container than the second engaging groove*" that corresponds to the locked position in order to achieve the locking/engagement and unlocking/disengagement that Duvigneau discloses. Annotated Figure 6 below illustrates example locations of the "*first and second engaging grooves*" on the underlying support arm (not shown).



EX1007, FIG. 6 (cropped and annotated).

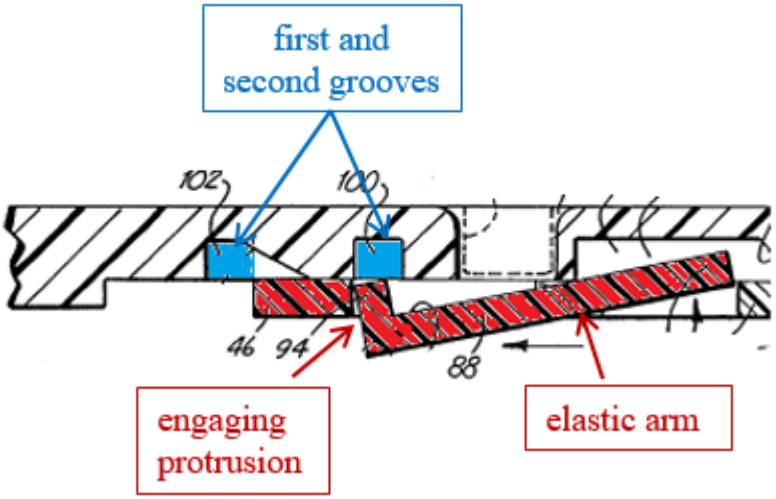
3. Claim 7

207. In my opinion, the Duvigneau-Niles combination renders obvious claim 7.

208. As I discuss for claim 5 in Section X.C.1, it is my opinion that the Duvigneau-Niles combination renders obvious "*first*" and "*second engaging groove[s] for holding the slider in*" "*the unlocked*" and "*locked*" positions, respectively. As I also discuss for claim 5 in Section X.C.1, Niles discloses its latch bar 88 has "an outwardly extending latch beam 94" (which is "*an engaging protrusion*") that is received in cavities 100, 102 to secure the slide in the locked/unlocked positions. EX1012, 5:56-65, 6:6-24, 7:21-59; FIGs. 4-6. In other words, Niles discloses its engaging protrusion (latch beam 94) "*selectively engages*

the first engaging groove and the second engaging groove."

209. Niles further discloses its latch assembly 12—which includes "U-shaped **flexible** slide 46" and its latch bar 88 component—is "made of plastic such as polyethylene." EX1012, 4:61, 7:64-66 (emphasis added). A POSA would understand that polyethylene is an elastic material because it is flexible. Thus, Niles teaches its latch bar 88 (with its *engaging protrusion* (latch beam 94)) is "*an elastic arm*." As shown below in the annotations of Figure 4, Niles discloses "*an elastic arm with an engaging protrusion*."



EX1012, FIG. 4 (cropped and annotated).

210. In addition to incorporating grooves (for the reasons I discuss for claim 5 of this ground), a POSA would have found it obvious, and been motivated, to also incorporate "*an elastic arm with an engaging protrusion*" (as taught by Niles) on a lateral underside portion of Duvigneau's slider for the same reasons

discussed for claim 5 (VI.C.1) to "*selectively engage the first engaging groove and the second engaging groove*" because Niles teaches both components of its mechanism are used together to "*hold[] the slider*" in place (i.e., in the "*unlocked*" and "*locked*" positions as recited in claim 5. EX1012, 7:3-43. A POSA would have also been motivated to include Niles' teachings of an *elastic* arm (or similar elastic component) to assist with the movement of the slider from the unlocked/disengaged position with locking groove to the locked/ engaged position with the locking groove. A POSA would have understood that in any sliding latch mechanism, such as the sliding latch mechanisms in Duvigneau and Niles, the use of an elastic member facilitates the engaging grooves to be *selectively* engaged. That is, if there were no elasticity, a POSA would have understood that it would be difficult to disengage a protrusion on the slider from the engaging grooves. For example, Morel discloses the locking member itself "can be made of elastomer or some other flexible material having the elasticity/stiffness which allow obtaining the desired compromise between the force required to release the partition member and the force required to maintain the partition member in the locked position." EX1008, ¶31.

211. A POSA would have readily been able to incorporate an elastic arm with an engaging protrusion (as taught by Niles) on the underside of a lateral portion of Duvigneau's slider (the portion that engages Duvigneau's support

arm(s)) and would have had a reasonable expectation of success in making the modification because the combination is no more than combining known elements according to known methods to yield predictable results (a sliding mechanism with an "*engaging protrusion*" used "*for holding the slider in the unlocked position*" (using "*first engaging groove*") and "*the locked position*" (using "*second engaging groove*")).

4. Claim 16

212. In my opinion, the Duvigneau-Niles combination renders obvious claim 16 for the reasons I discuss for claims 5, 6, and 7 of this ground (Sections X.C.1, X.C.2, and X.C.3).

D. Ground 1D: The combination of Duvigneau and Morel renders obvious claims 5-7 and 16.

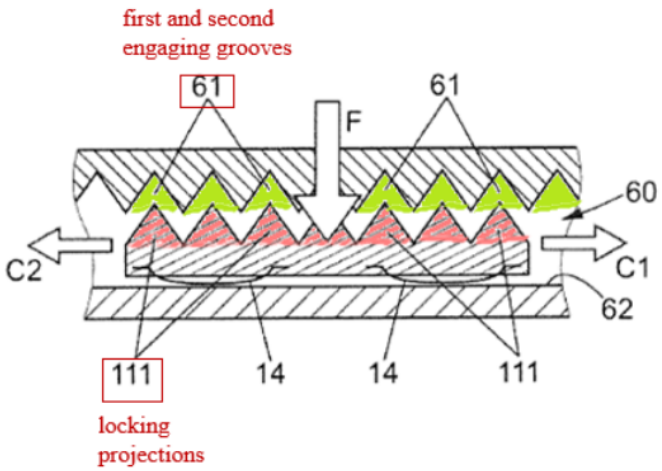
1. Claim 5

213. In my opinion, the Duvigneau-Morel combination renders obvious claim 5.

214. For the reasons I discuss for claim 4 in Sections X.A.4 and X.B.4, Duvigneau discloses, or renders obvious, *a support arm … wherein the slider is engaged with the support arm to move between a locked position … and an unlocked position*. However, Duvigneau does not describe the mechanism used to retain the slider in the locked and unlocked positions.

215. Morel discloses such a mechanism. Morel discloses a locking device

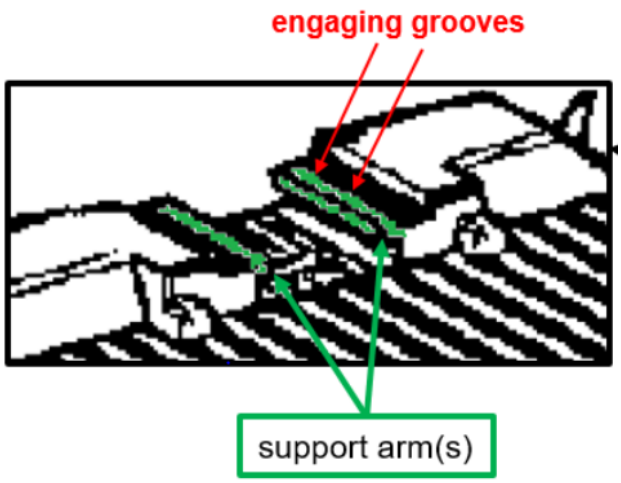
for locking partition member 10, arranged to be moveable in a sliding direction, "relative to the receptacle 2 in the sliding direction X, which allows immobilizing said partition member 10." EX1008, ¶¶49, 52. The locking device comprises a series of adjacent locking notches 61, 71 ("*engaging groove[s]*") formed on the upper face of each guide groove 60, 70, which are adapted to engage with second locking members in the form of locking projections 111, 121 provided on the partitioning plate 10 (*slider*). EX1008, ¶53 Morel further describes that although it illustrates multiple locking projections, fewer projections may be provided to lock partition 10. EX1008, ¶55. Figure 1B, shown below, illustrates Morel's locking device to hold a sliding element in place with locking notches ("*engaging groove[s]*"). EX1008, FIG. 1B.



EX1008, FIG. 1B (cropped and annotated).

216. Because Duvigneau does not explicitly disclose how its sliding mechanism remains locked in place, a POSA would have been motivated to look to

Morel's locking mechanism to provide a solution to this problem. As I discuss in Section VI.C.1 of the Technical Background, using grooves to hold a locking mechanism in locked/unlocked positions was well-known. A POSA would have readily been able to implement locking notches 61 ("*first*" and "*second engaging groove[s]*") on an upward facing surface of the support arm (which engages with the slider for the reasons I discuss for claim 4 in Section X.B.4) identified in annotated Figure 5 below. The annotations and edited figures are for illustrating the modifications/combinations and not for suggesting bodily incorporation of Niles' teachings is required.



EX1007, FIG. 5 (cropped and annotated).

217. A POSA would have found it obvious to include Morel's engaging grooves on Duvigneau's support arm in order to retain the slider at the unlocked and locked positions. I discuss the reasons why a POSA would understand the

importance of retaining the slider in the latched position in Section X.C.1 above. As explained, it would have been evident to a POSA that without such a locking mechanism, Duvigneau's sliding latch 246 would not stay engaged with depression 240 if base cabinet 152 is jostled or tilted, which would result in the unintentional detachment of carrying bag 230 from base cabinet 152. A POSA would have been motivated to include "*a second engaging groove*" because the groove (when engaged with a projection on the slider) locks the slider in the locked position with depression 240 and ensures the carrying bag stays attached to the base cabinet. A POSA would have been motivated to include "*a first engaging groove*" (to engage with a projection on the slider) to advantageously keep the slider in a fixed position and prevent it from unwanted sliding when it is in the unlocked position. The details of the engaging grooves, such as size, shape, locations on the support arm, spacing between, etc., were obvious design considerations within skill of a POSA to implement in order to achieve the locking/unlocking functionality of Duvigneau's slider. And a POSA would have had a reasonable expectation of success in making the modification because the combination is no more than combining known elements according to known methods to yield predictable results (grooves that would hold the slider in the *unlocked* disengaged position and the *locked* engaged position).

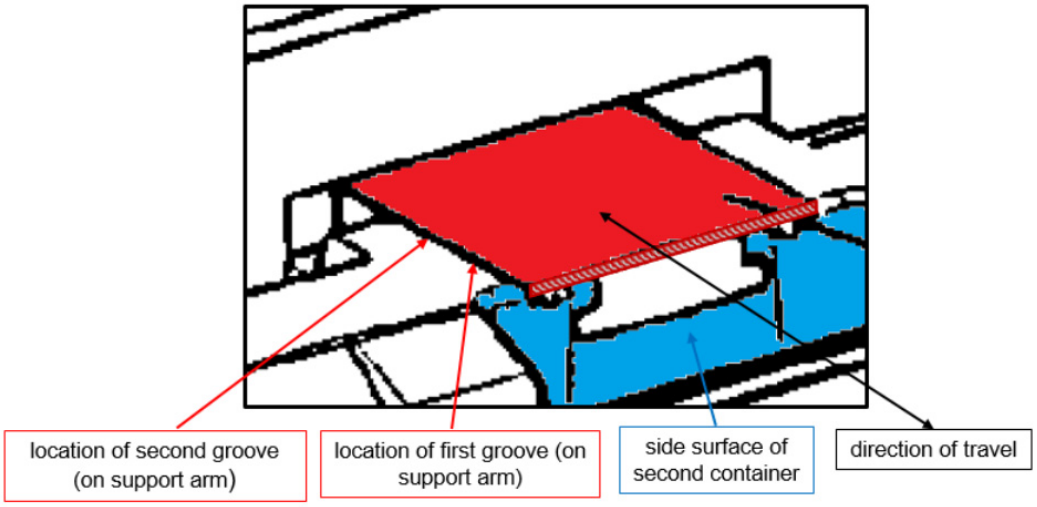
218. Thus, it is my opinion that the Duvigneau-Morel combination renders

obvious claim 5.

2. Claim 6

219. In my opinion, the Duvigneau-Morel combination renders obvious claim 6.

220. Duvigneau discloses that latch 246 is inserted into depression 240 to engage or lock carrying bag 260 to base cabinet 152 and that "[d]isengagement of the carrying bag 230 from the base cabinet 152 is facilitated by slidingly displacing the latch 246 **away from the base member 234**, so as to disengage from the depressions 240." EX1007, ¶57 (emphasis added). A POSA would thus have understood that Duvigneau's slider is in (i) the locked position when inserted into depression 240 and (ii) the unlocked position when moved out of depression 240 in a direction away from the side of base cabinet 152, which means the unlocked position is further from the side surface of the second container than the locked position. Accordingly, it would have been obvious to locate the "*first engaging groove*" that corresponds to the unlocked position "*closer to the side surface of the second container than the second engaging groove*" that corresponds to the locked position in order to achieve the locking/engagement and unlocking/disengagement that Duvigneau discloses. Annotated Figure 6 below illustrates example locations of the "*first and second engaging grooves*" on the underlying support arm (not shown).



EX1007, FIG. 6 (cropped and annotated).

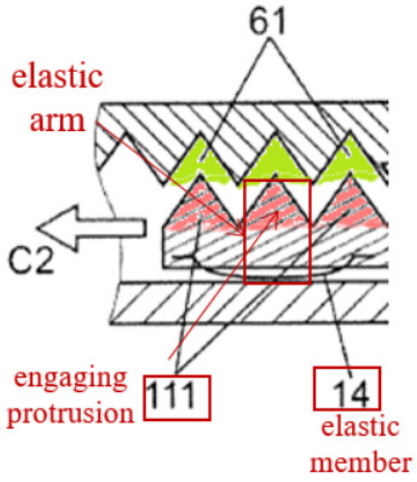
3. Claim 7

221. Claim 7 depends from claim 6 and further recites "*wherein the slider further comprises of an elastic arm with an engaging protrusion that selectively engages the first engaging groove and the second engaging groove.*"

222. In my opinion, the Duvigneau-Morel combination renders obvious claim 7. For the reasons I discuss for claim 5 of this ground (Section X.D.1), the Duvigneau-Morel combination renders obvious "*first*" and "*second engaging groove[s] for holding the slider in*" "*the unlocked*" and "*locked*" positions, respectively.

223. As I explain for claim 5, Morel discloses its locking mechanism includes locking projection 111 that engages with the locking notches 61 ("*engaging groove[s]*"). EX1008, ¶53; FIG. 1B. Morel further discloses the lower

face of the lateral portion of partitioning plate 10 is equipped with elastic member 14 biasing the partitioning plate towards the locked position. EX1008, ¶¶13, 57. To move the partition member, the user exerts a force on the partition member against the force exerted by the elastic member in order to move it to the locked position to the sliding position. EX1008, ¶19. Thus, as shown below in an annotated version of Morel's Figure 1B, Morel teaches "*an elastic arm with an engaging protrusion*" (locking projection 111).



EX1008, FIG. 1B (cropped and annotated).

224. In addition to incorporating grooves (for the reasons I discuss for claim 5 in this ground), a POSA would have found it obvious, and been motivated, to also incorporate a locking projection as taught by Morel ("*engaging protrusion*") on a lateral underside portion of Duvigneau's slider to "*selectively engage the first engaging groove and the second engaging groove*" because Morel

teaches both components of its mechanism are used together to "*hold the slider*" (partitioning plate) in place (i.e., in the "*unlocked*" and "*locked*" positions as recited in claim 5). EX1008, ¶¶53, 55-56. A POSA would have also been motivated to include Morel's elastic member (or similar elastic component) to assist with the movement of the slider from the unlocked/disengaged position with locking groove to the locked/ engaged position with the locking groove. A POSA would have understood that in any sliding latch mechanism like Duvigneau's or Morel's, the use of an elastic member facilitates the locking notches to be *selectively* engaged. That is, if there were no such elastic component, a POSA would have understood that it would be difficult to disengage a protrusion on the slider from the locking notches and the sliding component would not be able to slide. Morel shows this elastic component as including elastic member 14, but many other forms and shapes of such an elastic component are known and are trivial. For example, Morel discloses the locking member itself "can be made of elastomer or some other flexible material having the elasticity/stiffness which allow obtaining the desired compromise between the force required to release the partition member and the force required to maintain the partition member in the locked position." EX1008, ¶31. Morel also discloses other examples of an elastic member, including a leaf spring, a flexible strip, a deformable hollow chamber, and a coil spring. EX1008, ¶¶27-30, 80-94.

225. A POSA would have readily been able to incorporate Morel's locking projection on the underside of a lateral portion of Duvigneau's slider, which is the portion that engages Duvigneau's support arm(s). A POSA would have had a reasonable expectation of success in making the modification because the combination is no more than combining known elements (adding a locking projection to a slider) according to known methods to yield predictable results (a sliding mechanism with an "*engaging protrusion*" used "*for holding the slider in the unlocked position*" (using "*first engaging groove*") and "*the locked position*" (using "*second engaging groove*")).

4. Claim 16

226. Claim 16 depends from claim 15 and further recites "*wherein the support arm further comprises of a first engaging groove for holding the slider in the unlocked position and a second engaging groove for holding the slider in the locked position, wherein the first engaging groove is closer to the side surface of the second container than the second engaging groove, and wherein the slider further comprises of an elastic arm with an engaging protrusion that selectively engages the first engaging groove and the second engaging groove.*"

227. Claim 16 sets forth limitations that are the same as limitations set forth in claim 5 ("*wherein the support arm further comprises of a first engaging groove for holding the slider in the unlocked position and a second engaging*

groove for holding the slider in the locked position"); claim 6 ("*wherein the first engaging groove is closer to the side surface of the second container than the second engaging groove*"); and claim 7 ("*wherein the slider further comprises of an elastic arm with an engaging protrusion that selectively engages the first engaging groove and the second engaging groove.*").

228. In my opinion, the Duvigneau-Morel combination renders obvious claim 16 for the reasons I discuss for claims 5, 6, and 7 of this ground (Sections X.D.1-X.D.3).

E. Ground 1E: The combination of Duvigneau, Morel, and Weng renders obvious claims 8 and 17.

1. Claim 8

229. Claim 8 depends from claim 7 and further recites "*wherein the support arm further comprises at least one block comprising a bevel, and the slider further comprises of a recess with a sloped entry surface and a stopping surface for receiving the bevel and arresting outward movement of the slider wherein the stopping surface of the recess is parallel with the engaging protrusion of the elastic arm of the slider.*"

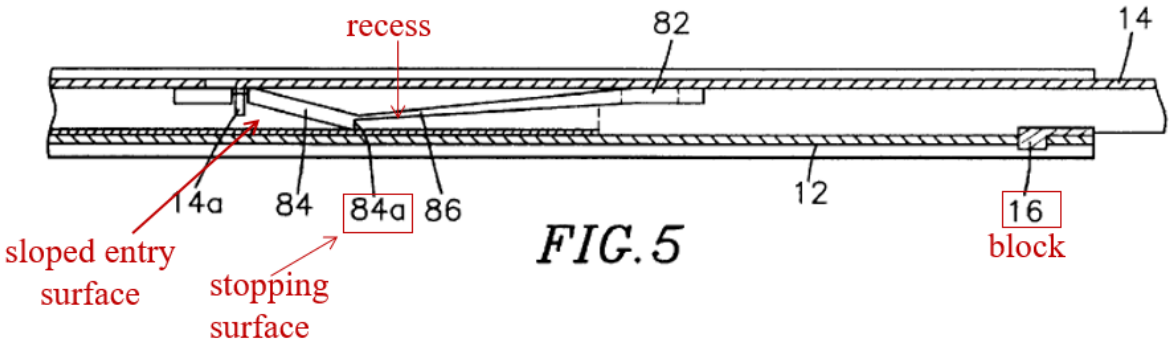
230. In my opinion, the Duvigneau-Morel-Weng combination renders claim 8 obvious.

231. Duvigneau discloses its carrying bag 230 (*first storage device*) is disengaged from cover 180 of the base cabinet 152 (*second storage device*) "by

slidingly displacing the latch 246" away from the base portion of carrying bag 230. EX1007, ¶57. But Duvigneau does not explicitly disclose any mechanism that would prevent a user from continuing to "slidingly displac[e]" the sliding mechanism past the *first engaging groove* (holding the slider in the unlocked position in the Duvigneau-Morel combination) and detach from cover 180 of the storage device (for example, inadvertently removed by the user). A POSA would have recognized this problem and would have been motivated to find a solution to prevent the slider from detaching completely from cover 180.

232. Such a solution is disclosed in Weng. Weng describes "a sliding track assembly for drawers, which can truly stop the drawer when drawn out." EX1009, 2:1-5. Weng discloses a sliding track assembly for drawers comprising an inner rail 14, which is a channel body. EX1009, 2:40-45, 2:66-67. An "outer stop section 16 is disposed at the end of intermediate rail." EX1009, 3:5-12. Inner engaging section 18 is formed within inner rail 14 and has a slope face 86 and an inner engaging face 84a for engaging with outer stop section 16. EX1009, 3:14-27. When the drawer is drawn out to a position where inner engaging face 84a collides and engages with the outer stop 16, a stopping effect is achieved. In other words, Weng's components and arrangement prevent the drawer, which is a sliding element, from being pulled completely out and detaching from its cabinet. EX1009, 3:28-38. Thus, a POSA would have understood from Weng's description

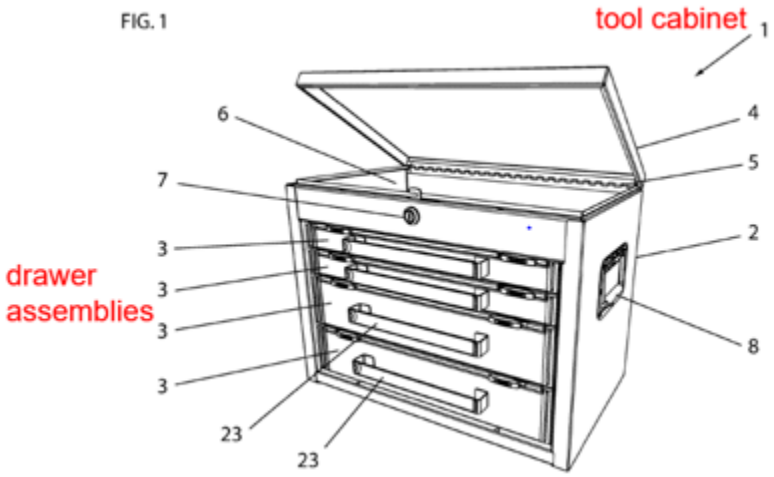
and figures, that Weng teaches (i) "*one block*" (outer stop section 16) and (ii) "*a recess with a sloped entry surface*" (the underside of engaging face 84a as indicated in the annotations below) "*and a stopping surface*" (inner engaging face 84a). Weng further teaches the "*stopping surface*" (inner engaging face 84a) of its recess is for "*arresting outward movement of the slider*" because it arrests the movement of the drawer sliding on the track. Figure 5 of Weng, depicted below, illustrates the claimed arrangement.



EX1009, FIG. 5 (annotated).

233. Further, it is my opinion that Weng's arrangement used to stop a sliding mechanism (a drawer) from being inadvertently removed is reasonably pertinent to the problem faced in the Duvigneau-Morel combination to prevent its slider from detaching from cover 180 of the storage device. A POSA would have understood that, barring the use of a stopper device, sliding latch 246 of Duvigneau could be completely removed from cover 180 of base cabinet 152, which may result in loss of the slider. Accordingly, a POSA would have sought to find a way

to secure sliding latch 246 on cover 180, and would have looked to teachings related to other sliding components that are protected from inadvertent removal from a supporting structure. A POSA would have understood that sliding drawers provide an evident solution because they are a common household object that demonstrate a sliding component having protection against complete removal. Additionally, sliding drawer systems are related and indeed overlap with storage systems. For example, Surridge discloses a tool cabinet 1 that includes a plurality of sliding drawer assemblies 3. EX1026, 2:65-3:14, FIG. 1.

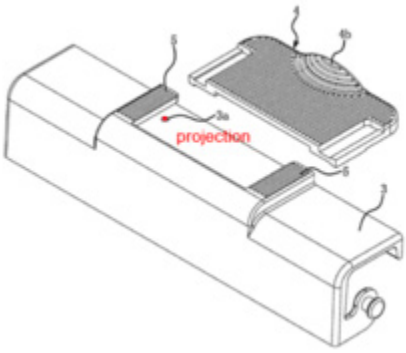


EX1026, FIG. 1 (annotated).

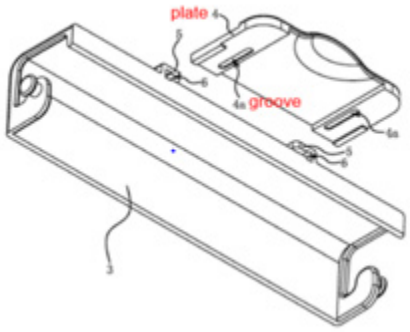
234. It would have been obvious for a POSA to incorporate components used in one sliding device (sliding track assembly 1 of Weng) to secure the sliding latch 246 on cover 180 of base cabinet 152. A POSA would have been motivated to include the components (block comprising a bevel as I discuss below, and slider comprising recess with sloped entry surface and stopping surface) to prevent

complete removal of the slider from the cover 180 of base container.

235. Positioning a recess on a slider for engaging with a block to prevent complete detachment of the slider is not a new concept. As I discuss in Section VI.C.1, stopping structures were well-known, as evidenced, for example by Wang. Wang shows a circular projection 3a (*block*) that travels within a groove 4a (*recess*) on plate 4 to limit the extent plate 4 can be slid. I have been informed by counsel that, during prosecution of the '689 patent, Meridian acknowledged that "[t]he locking mechanism of Wang has its movement constrained by a protrusion 3a and a corresponding groove 4a." EX1002, 117-121, 154. As shown in FIGs. 4-5 of Wang, depicted below, the groove 4a has a curved wall profile and stopping surface for receiving projection 3a. EX1020, FIGs. 4, 5.



EX1020, FIG. 4 (annotated).



EX1020, FIG. 5 (annotated).

236. A POSA would have been further motivated and had a reasonable expectation of success because such a modification would have been merely combining known elements (Duvigneau's slider and support arm) with other

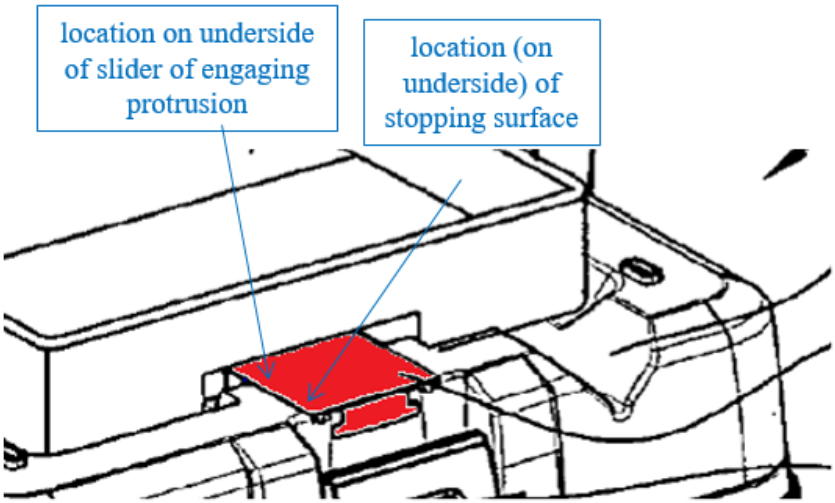
known elements (block, sloped entry surface, recess, and stopping surfaces) to achieve predictable results (a mechanism that prevents a user from inadvertently removing slider from storage device).

237. In the Duvigneau-Morel-Weng combination, a POSA would have understood Weng's block 16 would be located on support arm (which engages with slider for the reasons I discuss for claim 4 in Sections X.A.4 and X.B.4) to prevent the slider from being pulled out of the cover. A POSA would have also understood, in light of Weng's teachings, to place Weng's recess with *sloped entry surface and stopping surface* 84a on a lateral underside portion of the modified Duvigneau-Morel slider (as I discuss for claim 7 in X.D.3) to engage with the block to *arrest outward movement of the slider*.

238. Additionally, Figure 2 of Weng illustrates that block 16 "*comprises a bevel*" (shown on the lateral sides of block 16). And, in my opinion, the Duvigneau-Morel-Weng combination renders obvious "*[a recess on the slider] for receiving the bevel*." It would have been obvious to a POSA that the well-known bevel would more easily receive the recess on the slider. A POSA would have been motivated to position the bevel on an outer surface of block 16 to facilitate the installation of the sliding latch mechanism on cover 180 of base container 152. Specifically, as a POSA would have known, the bevel on an outer surface of block 16 would more easily receive the recess on the slider to allow the slider to be

pushed over the outer (beveled) surface of block during installation of the slider on the base container 152. A POSA would have been further motivated and had a reasonable expectation of success of positioning Weng's block 16 as described because it is nothing more than a predictable use of prior art elements (a bevel surface). After installation, the non-beveled surface of block 16 then engages with the stopping surface of the slider, as discussed above, to achieve the goal of preventing unintentional removal of the slider.

239. As illustrated in the below annotated version of Duvigneau's Figure 6, in the Duvigneau-Morel-Weng combination *the stopping surface of the recess is parallel* (depicted with blue parallel line) *with the engaging protrusion of the elastic arm of the slider* because both elements are located on the lateral underside edge of the slider and engage with parallel elements (*first and second engaging grooves* and *block*) located in parallel on underside of the protrusion.



EX1007, FIG. 6 (cropped and annotated).

240. Therefore, it is my opinion that the Duvigneau-Morel-Weng combination renders obvious claim 8.

2. Claim 17

241. Claim 17 depends from claim 16 and further recites "*wherein the support arm further comprises at least one block comprising a bevel, and the slider further comprises of a recess with a sloped entry surface and a stopping surface for receiving the bevel and arresting outward movement of the slider wherein the stopping surface of the recess is parallel with the engaging protrusion of the elastic arm of the slider.*"

242. Claim 17 sets forth the same limitation as claim 8. In my opinion, the Duvigneau-Morel-Weng combination renders obvious claim 17 for the reasons I

discuss in claim 8 (Section X.E.1).

F. Ground 1F: The combination of Duvigneau and Frydenberg renders obvious claims 9-11.

1. Claims 9 and 10

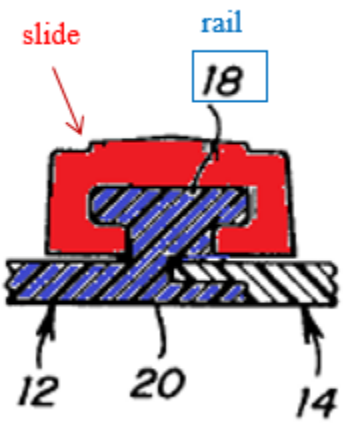
243. Claim 9 depends from claim 4 and further recites "*wherein the support arm and the slider further comprise a cooperating guide to constrain lateral movement of the slider with respect to the support arm.*" Claim 10 depends from claim 9 and further recites "*wherein the cooperating guide is a guiding rib on the support arm that cooperates with a guiding slot on the slider which to constrain lateral movement of the slider with respect to the support arm.*"

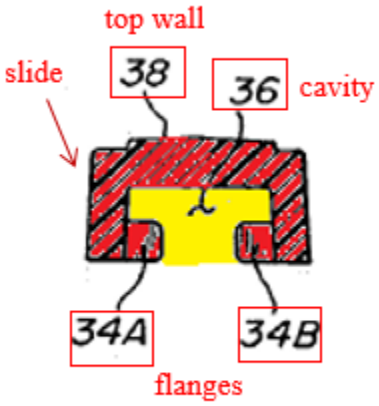
244. In my opinion, the Duvigneau-Frydenberg combination renders obvious claims 9 and 10.

245. A POSA would have found obvious from Duvigneau's Figure 6, and description of its slider, for the slider and support arm to have components to engage with each other to constrain lateral movement. These components are necessary in order for the slider to perform its intended function of arresting with depression 280 to attach carrying bag to cover 180 of base cabinet 152 and to be sliding displaced to disengage from depression 240. EX1007, ¶57, FIG. 6. As a POSA would have recognized that, without such components, the slider would may become laterally displaced from the support arm and unable to arrest with depression 280, particularly under the conditions in which the containers are

designed to be used, such as construction. But Duvigneau does not disclose the mechanism used to restrict lateral movement of the slider with respect to the support arm.

246. Frydenberg discloses "a slide-type latching mechanism" for selectively joining two separable elements (e.g., first and second container portions 12/14). EX1011, 1:11-20, 2:60-3:16. As shown in Figures 3 and 6 below, Frydenberg discloses a "T-shaped rail is mounted above a base 20 … constituting a structural part" of a container portion. EX1011, 3:16-23; FIGs. 3-4; *see also* EX1011, 6:31-47 (disclosing other rail shapes). Frydenberg also discloses an elongated slide with a longitudinal cavity 36, bound by top wall 38 that extends for the full length of the slide. EX1011, 4:22-42; FIGs. 5, 6. Two flanges 34A, 34B extend inwardly below the longitudinal cavity and the gap between them is sufficiently wide "as to foster sliding movement of the slide 30 with respect to the rail 18." EX1007, 4:43-48.





EX1011, FIG. 3 (annotated). EX1011, FIG. 6 (annotated).

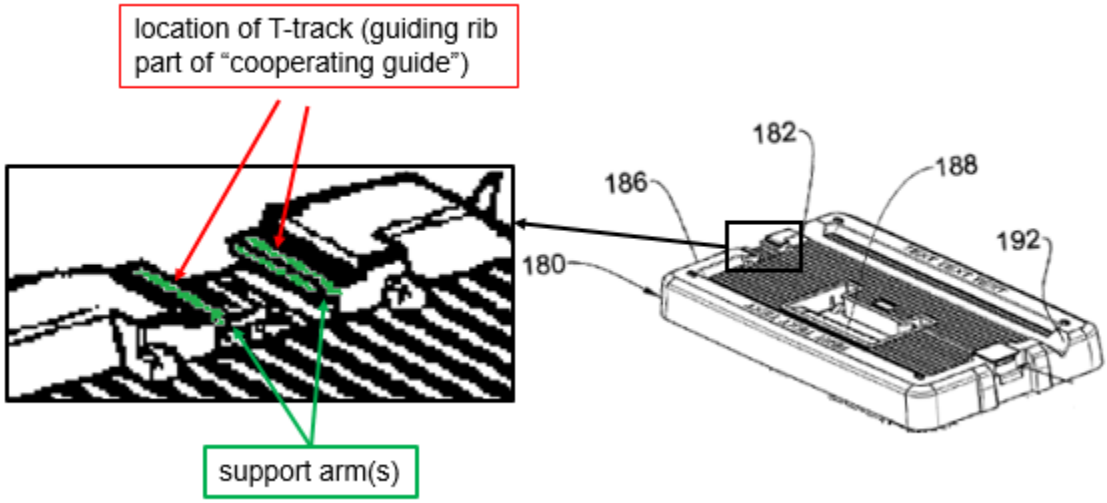
247. In my opinion, a POSA would have found it obvious to modify Duvigneau's (i) support arm to add Frydenberg's T-rail 18 and (ii) slider to add Frydenberg's corresponding cavity 36, thus forming "*a cooperating guide to constrain lateral movement of the slider"* as recited in claim 9.

248. Frydenberg recognized that, even in 1984 (Frydenberg's filing date), the rail/cavity arrangement was well-known. EX1011, 3:66-4:7. I discuss other examples in Section VI.C.3 of the Technical Background. For instance, Dur discloses a similar arrangement and specifically describes its components as "lateral guidances" (ribs) and "lateral guide grooves." EX1027, ¶33, FIG. 6. Owens also describes the well-known arrangement of a rib and groove to constrain the movement of a slider. EX1028, 2:65-3:5; FIGs. 3, 5. A POSA would have understood that lateral displacement of Duvigneau's slider would inhibit its function of engaging with depression 180 on carrying bag 230 and frustrate users. Thus, a POSA would have been motivated to implement Frydenberg's well-known rail/cavity arrangement in order to present such displacement.

249. Regarding claim 10, in my opinion, it would have been obvious to place (i) Frydenberg's cavity ("*guiding slot*") on Duvigneau's "slider" because Frydenberg discloses a slide that includes a cavity, EX1011, 4:22-54; and (ii) Frydenberg's rail ("*guiding rib*") on Duvigneau's "*support arm*" because

Frydenberg discloses that the rail can be "attached to the edge of most any kind of structure," EX1011, 7:28-31. A POSA would have understood such placement of a guiding rib and corresponding guiding slot would ensure Duvigneau's disclosed movement of the slider along the support arm, as illustrated in Figure 5 below.

250. A POSA would have had a reasonable expectation of success in using such an arrangement because it is nothing more than the predictable use of known components (rail/cavity arrangement on a slider) according to their know functions to yield a predictable result (restriction of lateral movement). *See e.g.,* EX1011, 3:66-4:7.



EX1007, FIG. 5 (cropped and annotated).

251. Thus, it is my opinion that the Duvigneau-Fyrdenberg combination renders obvious claim 9 and 10 (a "*cooperating guide*" which "*is a guiding rib on the support arm that cooperates with a guiding slot on the slider which to*

constrain lateral movement of the slider with respect to the support arm."

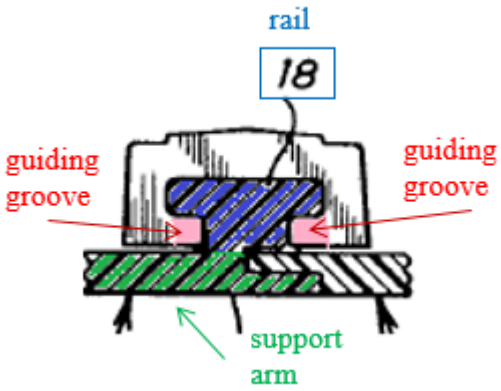
2. Claim 11

252. Claim 11 depends from claim 4 and further recites "*wherein the second storage container further comprises of a guiding groove on each side of the support arm for receiving the slider and constraining lateral movement of the slider with respect to the support arm.*"

253. In my opinion, the Duvigneau-Frydenberg combination renders obvious claim 11. For the reasons I discuss for claims 9 and 10, a POSA would have found it obvious and been motivated to modify Duvigneau to include Frydenbert's T-rail, and would have had a reasonable expectation of success, to "*constrain lateral movement of the slider with respect to the support arm*." For the reasons I discussed for claim 9, a POSA would have understood the importance of preventing the slider from displacing from support arm.

254. Thus, for the same reasons I discuss for claims 9 and 10, a POSA would have had reason to modify Duvigneau's support arm to include Frydenberg's T-rail for "*constraining lateral movement of the slider with respect to the support arm*" (as recited in claim 11). As shown in Frydenberg's Figure 3 (below), in the modified Duvigneau-Frydenberg combination, the T-rail defines "*a groove on each side of the support arm for receiving the slider*" (and constrains lateral movement as discussed in claim 9). EX1011, FIG. 3. Thus, in my opinion,

Duvigneau-Frydenberg renders obvious claim 11.



EX1011, FIG. 3 (cropped and annotated).

G. Ground 1G: The combination of Duvigneau and Brunner renders obvious claims 12-13 and 19-20

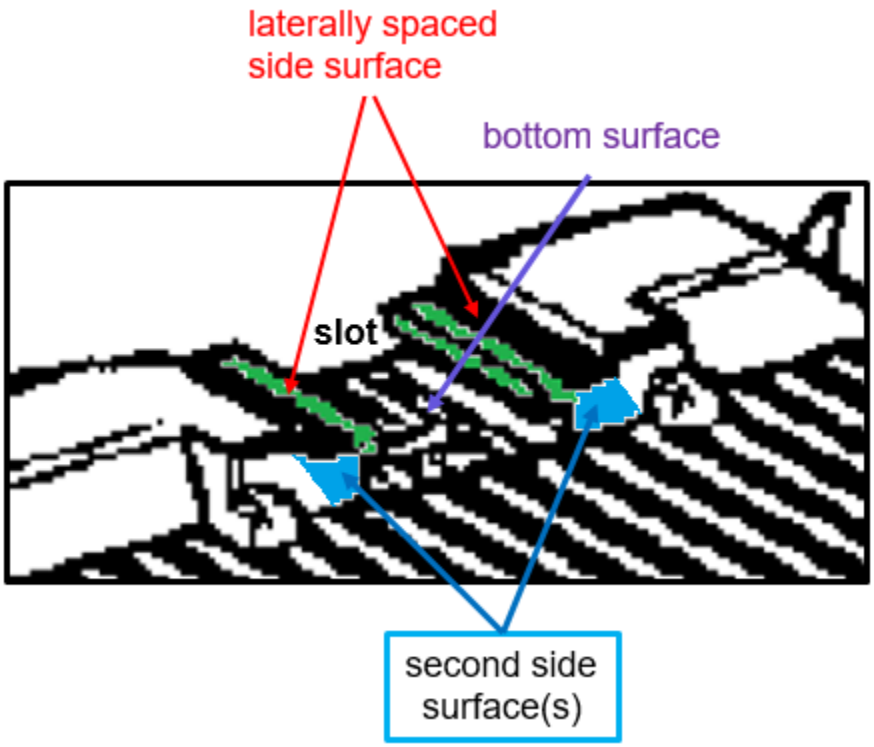
1. Claim 12

255. Claim 12 depends from claim 4 and further recites "*wherein the slot in the side surface of the container is described by two laterally spaced apart side surfaces, a second side surface perpendicular thereto, and a bottom surface perpendicular thereto, wherein the support arm is located across the slot between the two laterally spaced apart side surfaces and above the bottom surface and spaced apart from the second side surface for gripping and carrying the second storage container.*"

256. In my opinion, the Duvigneau-Brunner combination renders obvious claim 12. For the reasons I discuss for claim 4 in Sections X.A.4 and X.B.4,

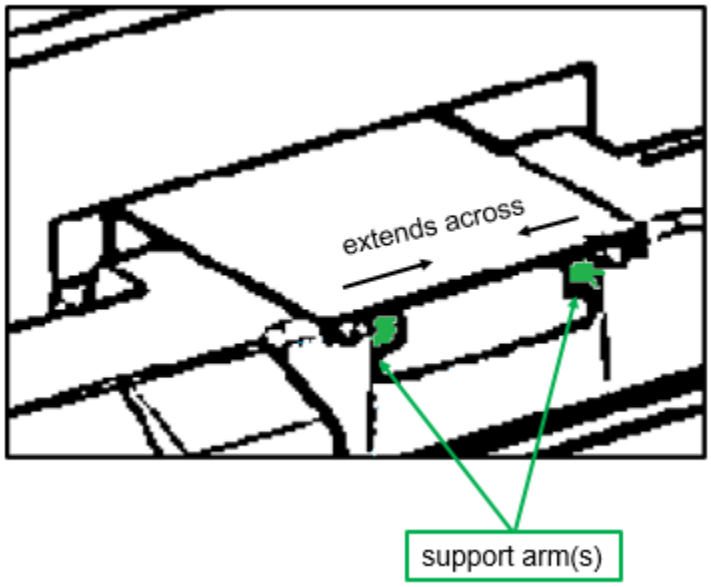
Duvigneau discloses, or renders obvious, *a slot in the side surface of the container*.

257. As shown in the annotations of Figure 5 below, Duvigneau teaches or renders obvious "*the slot in the side surface of the container is described by two laterally spaced apart side surfaces,*" (the sides of the slot that are perpendicular to the bottom surface), "*a second side surface perpendicular thereto*" (at least the portion of the back surface of the slot shown in blue). Duvigneau also teaches or renders obvious "*and a bottom surface perpendicular thereto*," which is the portion of the upper surface 186 of cover 180 that extends across the slot location. EX1007, FIG. 5.



EX1007, FIG. 5 (cropped and annotated).

258. As shown in the annotations of Figure 5 above, Duvigneau also teaches "*wherein the support arm is located across the slot between the two laterally spaced apart side surfaces and above the bottom surface and spaced apart from the second side surface*." Specifically, the annotations of Figure 5 (above) and Figure 6 (below) show the support arm (protrusion(s) shown in green) is located between the laterally spaced apart side surface(s) (the sides of the slot perpendicular to the bottom surface) and the support arm extends laterally "across" and into the slot and is spaced apart from the second side surface. EX1007, FIGs. 5, 6. I note that a POSA would not understand "across" to require the support arm to extend fully across the slot.



EX1005, FIG. 6 (cropped and annotated).

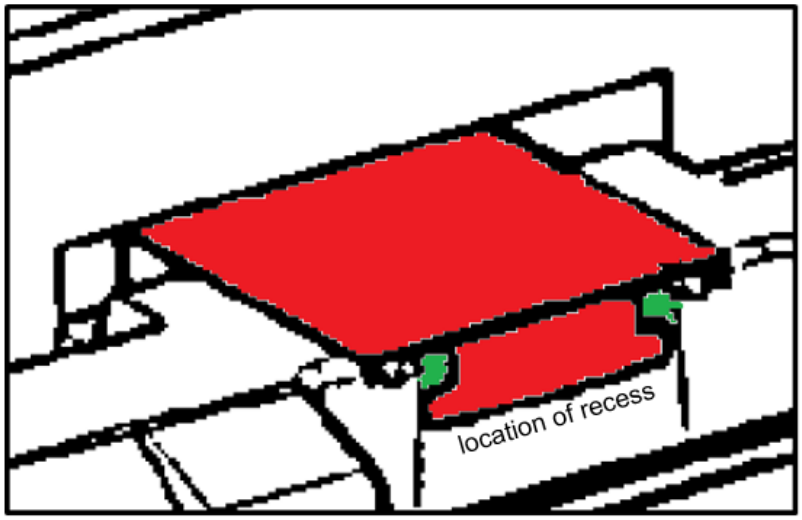
259. It is my opinion that Duvigneau-Brunner renders obvious the support

arm is "*for gripping and carrying the second storage container*." Similar to Duvigneau, Brunner discloses a locking system for detachably attaching storage containers to one another. EX1010, ¶1. Brunner describes a recess 268 formed in the side wall of the container; the recess is immediately below a locking member 248 for locking engagement with a locking receptacle of a second container. EX1010, ¶¶135, 140, FIG. 13A. Brunner further discloses locking member 248 has a carrying handle 266 that "extends within a recess 268 … thus providing to a griping space facilitating an individual to insert his fingers for gripping said gripping portion." EX1010, ¶140.

260. I observe that Duvigneau recognizes the well-known benefits of providing multiple handles in convenient locations for carrying the storage containers, such as "carrying handles 162"; "locomoting handle 198"; and "central handle 188 to facilitate transporting the base cabinet, at its closed position, e.g. over obstacles … by lifting." EX1007, ¶¶50, 52, 54. But Duvigneau's "central handle 188" is not accessible when its carrying bag 230 is attached to base cabinet 152 because it is located in the top wall of cover 180 and carrying bag covers the handle 188 when attached. EX1007, ¶52, FIG. 4B.

261. A POSA would have found it obvious to include Brunner's teaching of a recess underneath Duvigneau's sliding latch, as shown below in Figure 6, by (i) lowering the bottom surface of the slot to from a recess in the side surface of the

second container and (ii) extend the bottom surface vertically down (similar to the cavity shown for handle 188 in Figure 5) so that the bottom surface of the slot is the bottom surface of the recess. Once modified to include such a recess (as taught by Brunner), the Duvigneau-Brunner combination renders obvious "*the support arm … for gripping and carrying the second storage container*" (e.g., by gripping the lower surface of the support arm).



EX1007, FIG. 6 (cropped and annotated to show recess after modified).

262. A POSA would have found it obvious that, after incorporating a recess for a handle (as taught by Brunner), a person could grip the lower protrusions (support arm(s)) and carry the second storage container. Although not required, a POSA would have understood it to be an obvious design modification, in view of Brunner's teachings, to further extend at least a portion of the outer end of the support arms across the slot to facilitate gripping/carrying. A POSA would

have been motivated to incorporate the recess (and optionally extend the support arm) to enable easier carrying of the combined storage system over obstacles (when Duvigneau's central handle 188 is not available) because a POSA would have understood the "handle" formed by the recess/support arm(s) would be at a location more accessible than carrying handles 162 and at a higher center of gravity to more easily lift the combined containers. A POSA would have had a reasonable expectation of success because it a simple design modification to create a recess in second container and vertically extend (lower) the top surface of cover 180 (as indeed is already done for carrying handle 188) and to, optionally, extend at least a portion of the outer edge of the support arm(s) further across the slot.

263. Therefore, it is my opinion that the combination of Duvigneau and Brunner renders obvious claim 12.

2. Claim 13

264. Claim 13 depends from claim 12 and further recites "*wherein the slot is in a lid of the second storage container.*"

265. In my opinion, the Duvigneau-Brunner combination renders obvious claim 13.

266. For the reasons I discuss for claim 4 in Sections X.A.4 and X.B.4, Duvigneau discloses, or renders obvious, "*a slot*." Duvigneau also renders obvious "*the slot is in a lid of the second storage container*" because Duvigneau's slot is

located in cover 180 (which is "*a lid*") of base container 156. EX1007, FIG. 5.

3. Claim 19

267. Claim 19 depends from claim 15 and further recites "*wherein the slot in the side surface of the container is described by two laterally spaced apart side surfaces, a second side surface perpendicular thereto, and a bottom surface perpendicular thereto, wherein the support arm is located across the slot between the two laterally spaced apart side surfaces and above the bottom surface and spaced apart from the second side surface for gripping and carrying the second storage container.*" This limitation is the same as the limitation set forth in claim 12.

268. In my opinion, Duvigneau renders obvious claim 19 for the reasons I discuss for claim 12.

4. Claim 20

269. Claim 20 depends from claim 15 and further recites "*wherein the slot is in a lid of the second storage container.*" This limitation is the same as the limitation set forth in claim 13. In my opinion, Duvigneau teaches claim 20 for the reasons I discuss for claim 13.

H. Ground 1H: The combination of Duvigneau, Morel, Weng, and Frydenberg renders obvious claim 18.

1. Claim 18

270. Claim 18 depends from claim 17 and further recites "*wherein the*

support arm and the slider further comprise a cooperating guide to constrain lateral movement of the slider with respect to the support arm, wherein the cooperating guide is a guiding rib on the support arm that cooperates with a guiding slot on the slider which to constrain lateral movement of the slider with respect to the support arm."

271. Claim 18 sets forth the same limitations as claim 9 and also, unlike claim 9, by virtue of its dependency, sets forth the limitations recited in claim 17 (which, as I note above recites limitations the same as claim 8).

272. For the reasons I discuss in Section X.E.1, the combination of Duvigneau, Morel, and Weng renders obvious claim 8. And the Duvigneau-Frydenberg combination renders obvious the limitations recited in claim 18 for the reasons I discuss for claims 9 and 10 in Section X.F.1. For the reasons explained for claims 9 and 10, a POSA would have found it obvious, and had reason, to incorporate Frydenberg's rail/cavity arrangement in Duvigneau with a reasonable expectation of success. For the same reasons, a POSA would have found it obvious to incorporate Frydenberg's well-known slot and rib structure into the Duvigneau-Morel-Weng combination. A POSA would have understood Morel's engaging grooves would be placed on the portion of the modified support arm that engages with the slider because that is the portion that would engage with a corresponding protrusion on the slider. And a POSA would have the same expectation of success.

273. Thus, it is my opinion that the Duvigneau-Morel-Weng-Frydenberg combination renders obvious claim 18.

I. Ground 2A: The combination of Brocket and Heinrichs renders obvious claims 1-4 and 14-15.

1. Independent Claim 1

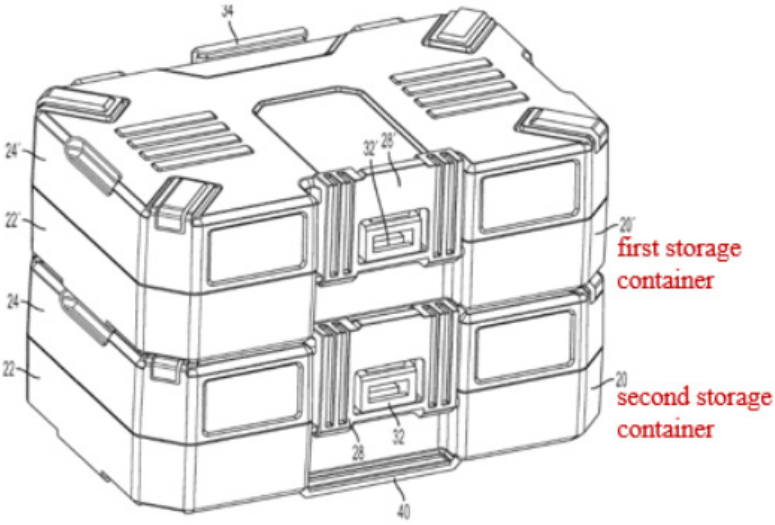
a. [1.P]

274. To the extent the preamble is determined to be limiting, it is my opinion that Brocket discloses [1.P].

275. Brocket discloses a tool container system 10 ("*a stackable storage system*"), which includes a first and second tool containers (such as containers 20 and 20' of Figures 3-4). EX1005, ¶12; FIGs. 3-5B. Brocket discloses that the "second tool container is stackable on the first cover of the first container" and is "lockable to the first tool container." EX1005, ¶3; *see also* EX1005, ¶14.

b. [1.A]

276. It is my opinion that Brocket discloses [1.A]. Brocket discloses a container 20' ("*a second storage container*") "may be stacked on and removably locked" "*selectively connected*") to container 20 ("*a first storage container*"). EX1005, ¶14. Figure 4, illustrated below, shows Brocket's storage assembly.



EX1004, FIG. 4 (annotated).

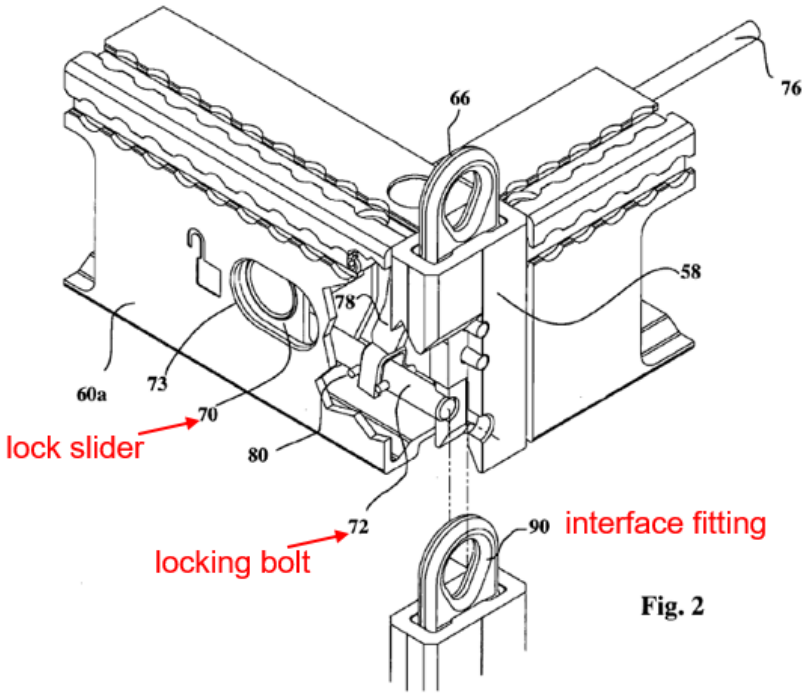
c. [1.B]

277. It is my opinion that the Brocket-Heinrichs combination teaches, or renders obvious, [1.B].

278. Brocket discloses that container 20 includes a latch 28 engageable with a locking member 40' on the other container 20' to lock the two containers together. EX1005, ¶14. However, Brocket does not disclose that its locking mechanism is "*a sliding mechanism*."

279. Heinrichs discloses "*a sliding mechanism for selectively engaging [a] locking groove to connect and hold*" a first container to a pallet. EX1006, ¶¶51-62, FIGs. 2-4, 6. Heinrichs discloses "a locking arrangement for respectively engaging and disengaging an interface fitting of a storage assembly." EX1006, ¶10. Figure 2 below illustrates Heinrichs' locking mechanism, which includes at least a lock

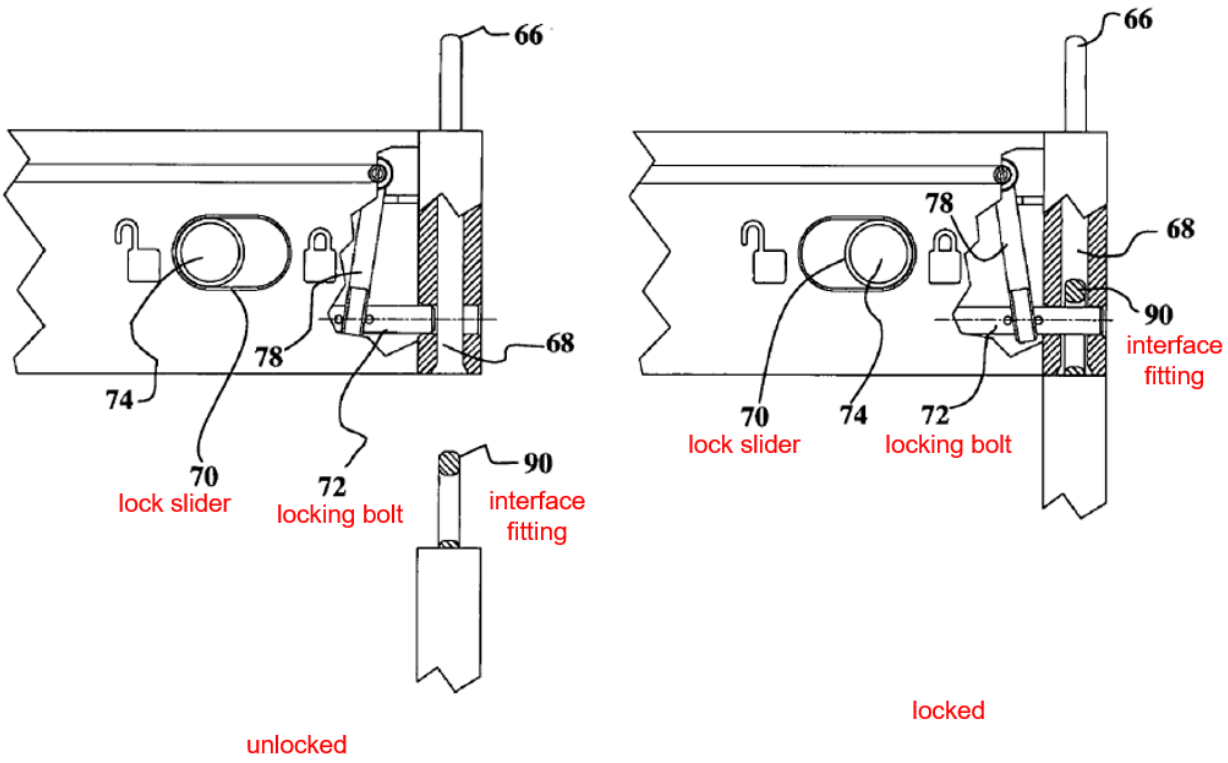
slider 70 and a locking bolt 72 ("*a sliding mechanism*"). EX1006, ¶¶52-53. Heinrichs discloses that the locking mechanism may be included, for example, on a pallet 50 or on a container "having interface fittings substantially identical." EX1006, ¶56.



EX1006, FIG. 2 (annotated).

280. In operation, shown in Figures 3 and 4 below, Heinrich's pallet 50 is stacked on a structure having substantially identical interface fittings. EX1005, ¶56. Interface fitting 90 ("*a locking groove*") is received through cavity 68 so that it aligns with locking bolt 72. EX1006, ¶56. A key is inserted into keyhole 74 and "[l]ock slider 70 is manually translated, i.e., slid, from an unlocked position to a locked position so that locking bolt 72 attached to lock slider 70" travels through

cavity 62 to engage the interface fitting 90. EX1006, ¶56. Figure 3 shows Heinrichs' locking mechanism in an unlocked state; Figure 4 shows the locked state. Thus, in my opinion, Heinrichs teaches "*a sliding mechanism*" (lock slider 70 and locking bolt 72) "*for selectively engaging the locking groove*" (interface 90) "*to connect and hold the*" first container (container with interface attachment 90) to pallet 50.



EX1006, FIGs. 3-4 (annotated).

281. A POSA would have had reason to modify Brocket to replace its locking mechanism with the locking mechanism taught by Heinrichs. First, a POSA would have understood that the choice of locking mechanism would have been a matter of simple design choice because a "pivotable latch" (Brocket) and a

"sliding catch" (Heinrichs) were both well-known alternatives. For example, Duvigneau discusses a variety of known arrangements of attaching mechanisms. EX1007, ¶24. Additionally, as I discuss in Section VI, a variety of locking mechanisms were well-known before November 2019. For example, each of Loeffler, Ben-Gigi, Baruch, Brocket, Duvigneau, Heinrichs, and Meier disclose locking mechanism for selectively coupling two stacked containers. *See* Section VI. I agree with the European Examiner's statement in the prosecution of the related EP patent that "[n]o particular technical effect can be derived" from the difference in locking mechanisms. EX1014, 6.

282. Next, a POSA would have had further motivation because a POSA would have understood that it would have been a simple substitution, readily implementable by a POSA with a reasonable expectation of success, to replace Brocket's latching mechanism (one known element) with Heinrich's mechanism (another known element) to obtain predictable results (a locking mechanism that uses a sliding catch to attach the containers).

283. And a POSA would have had further motivation to make the combination because, in my opinion, a POSA would have understood that Heinrichs' locking mechanism is a more compact design and provides the ability to lock its mechanism in place using a key insertable into keyhole 74. EX1006, ¶52. A POSA would have been motivated to make the combination because the ability

to lock the mechanism prevents removal of the second container from the first container. And a POSA would have a reasonable expectation of success because it is no more than a predictable use of a known prior art element (Heinrichs' locking mechanism).

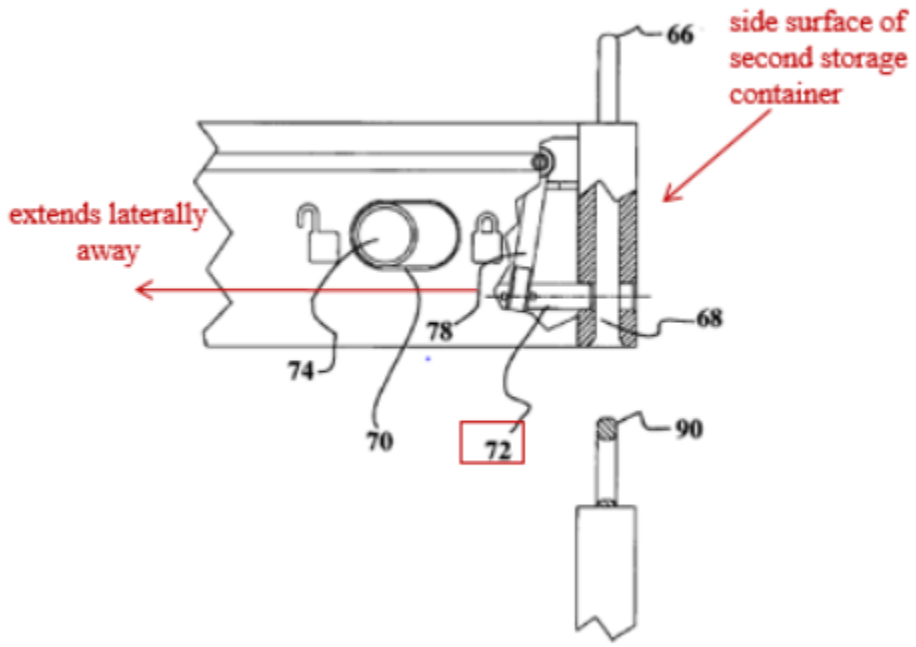
284. In the Brocket-Heinrich combination, the "*first storage container*" (Brockett's bottom container 20) includes a "locking groove" (Heinrichs' interface 90) and the "*second storage container*" (Brockett's top container 20') includes a "*sliding mechanism*" (which includes at least Heinrichs' lock slider 70 and locking bolt 72). Thus, it is my opinion that the Brocket-Heinrichs combination teaches *"the first storage container comprises … a locking groove*" and the "*second container comprises … a sliding mechanism for selectively engaging the locking groove to connect and hold*" the storage containers together.

d. [1.C]

285. In my opinion, the Brocket-Heinrichs combination teaches, or renders obvious, [1.C].

286. First, Heinrichs teaches locking bolt 72, which is "*a portion of the sliding mechanism*," "*extends laterally away from a side surface when the sliding mechanism is disengaged from the locking groove*" (interface 90). EX1005, Fig. 3. In particular, the Brocket-Heinrichs' combination teaches "*a portion of the sliding mechanism*" (locking bolt 72) "*extends laterally away from a side surface of the*

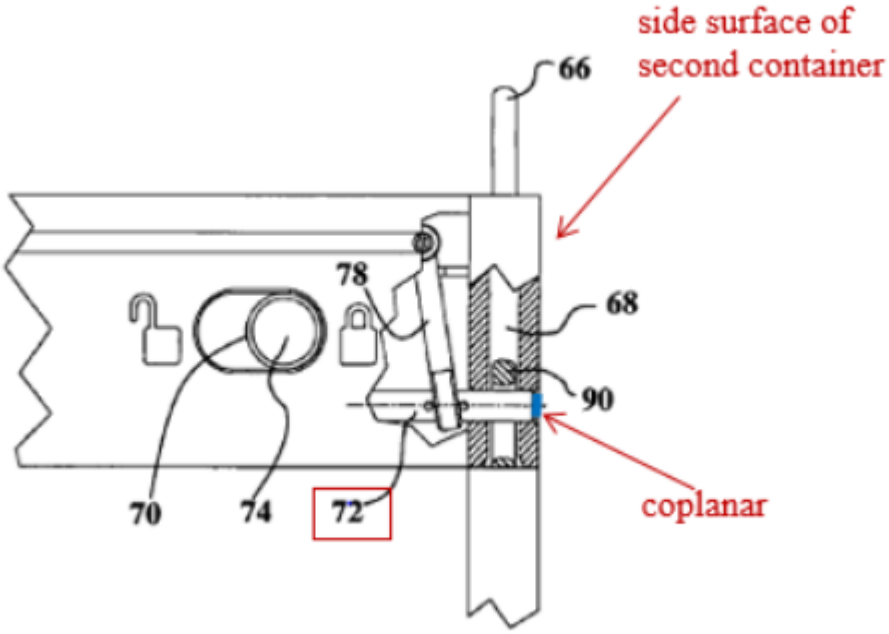
second container" (Brocket's container 20') when the mechanism "is disengaged." The annotated version of Heinrichs' Figure 3, depicted below, illustrates this claimed arrangement. It is clear based on annotated FIG. 3 of Heinrichs above that locking bolt 72 extends laterally away from the identified side surface when disengaged from interface fitting 90.



EX1006, FIG. 3 (annotated).

287. Next, Heinrichs teaches "*the portion of the sliding mechanism*" (locking bolt 72) "*is coplanar with the side surface of the second container when the sliding mechanism is engaged with the locking groove*" (interface 90). EX1006, FIG. 4. As shown below in the annotated version of Heinrichs' Figure 4, a POSA would have understood that in the Brocket-Heinrichs combination, the locking bolt

72 ("portion of the sliding mechanism") "is coplanar with the side surface of the second container" (container 20') when the mechanism is engaged. EX1005, FIG. 4.



EX1006, FIG. 4 (annotated).

288. First, a POSA would have understood the locking bolt 72 not extending past the side surface of the second container (container 20') prevents the unnecessary protrusion of a part that could get caught on external objects or interfere with the side-by-side positioning of storage elements of Heinrichs, which would be common in shipping and storing contexts. EX1006, ¶59 ("Pallet 50 is particularly useful as the support base of shipping and storage systems."). Second, locking bolt 72 (portion of sliding mechanism) extending up to the side surface of

the second container (container 20') when in its engaged position maximizes the amount of supporting material locking bolt 72 rests upon when supporting the weight of a component attached to interface fitting 90. Pallet 50 includes "a pallet frame having a forklift tine opening," so it is easily understood that locking bolt 72 will bear the weight of a lower storage container if the corner of pallet 50 shown in FIG. 4 of Heinrichs is lifted by the forklift tines while being attached to a lower container. EX1006, ¶63. Accordingly, locking bolt 72 being coplanar with the side surface of the container is simply the configuration that maximizes weight-bearing functionality and durability while avoiding the use of excess materials and protruding parts.

289. Additionally, as I discuss in Sections X.A.1.d and X.B.1, the concept of placing a portion of a sliding mechanism flush with the side surface of a container supporting the lock was well-known. For example, Christopher describes a latch 136 for interconnecting storage containers that "is substantially flush with the side of" a container 102 in its engaged position. EX1016, ¶24, FIG. 5.

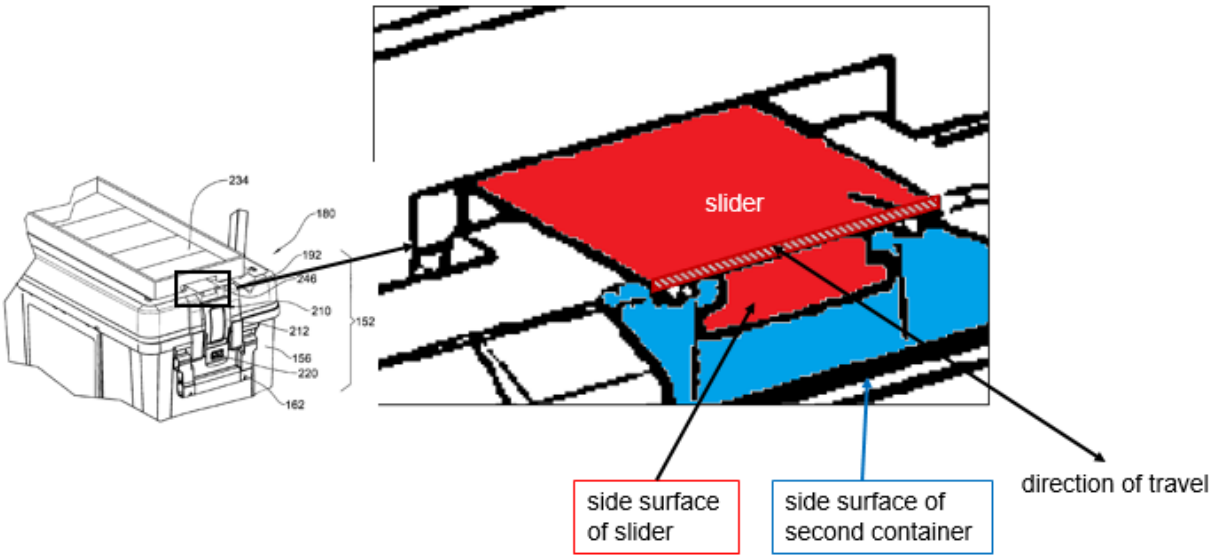
290. Thus, it is my opinion that Brocket-Heinrichs teaches, or renders obvious, element [1.C].

2. Claim 2

291. In my opinion, the Brocket-Heinrichs combination teaches, or renders obvious, claim 2.

292. Heinrichs describes its locking mechanism includes locking bolt 72 that moves between an engaged position with interface 90 ("*locking groove*") and a disengaged position. EX1006, ¶56; FIGs. 3, 4. A POSA would have understood locking bolt 72 teaches the claimed "*slider*" because the bolt slidingly engages with the "*locking groove*" (interface 90). I note that the '689 patent does not define the slider to have any specific form and, therefore, a sliding bolt discloses the claimed "slider."

293. Multiple types of "sliders" existed well before November 2019. For example, Duvigneau shows sliding latch 246 including a plate-like structure that engages with depression 240 on base portion 234 of carrying bag 230.



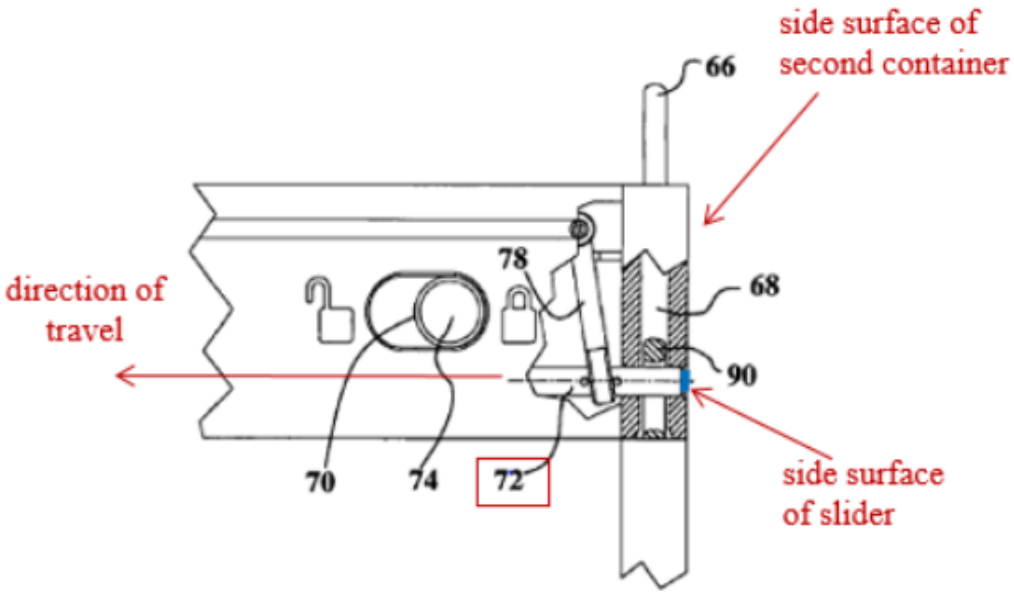
EX1007, FIG. 6 (cropped and annotated).

294. Like Heinrichs, Duvigneau's sliding latch 246 engages with an

aperture on another container and slides linearly between an engaged and disengaged position. A POSA would have recognized the similarity and understood that Heinrichs' locking bolt 72 would not be limited to a cylindrical bolt, but could be replaced with any resilient structure of different shape (matching, for example, a different shape interface fitting 90).

3. Claim 3

295. In my opinion, the Brocket-Heinrichs combination teaches claim 3. For the reasons I discuss in [1.C] of this ground (Section G.1.d), the Brocket-Heinrichs combination teaches, or renders obvious, "*the sliding mechanism extends laterally away from a side surface of the second container*" and "*the portion of the sliding mechanism is coplanar with the side surface of the second container when the sliding mechanism is engaged with the locking groove.*" Similarly, as I show in the annotated version of Figure 4 of Heinrichs, depicted below, the "*slider*" (locking bolt 72) "*has a side surface that is perpendicular to the direction of travel of the slider between the engaged and disengaged position with respect to the locking groove*" (interface 90) "*and the side surface of the slider is coplanar with the side surface of the second container*" (a side surface of container 20' in the Brocket-Heinrichs combination) "*when the slider is engaged with the locking groove*" (as shown in the locked position of Figure 4). EX1006, FIG. 4.



EX1006, FIG. 4.

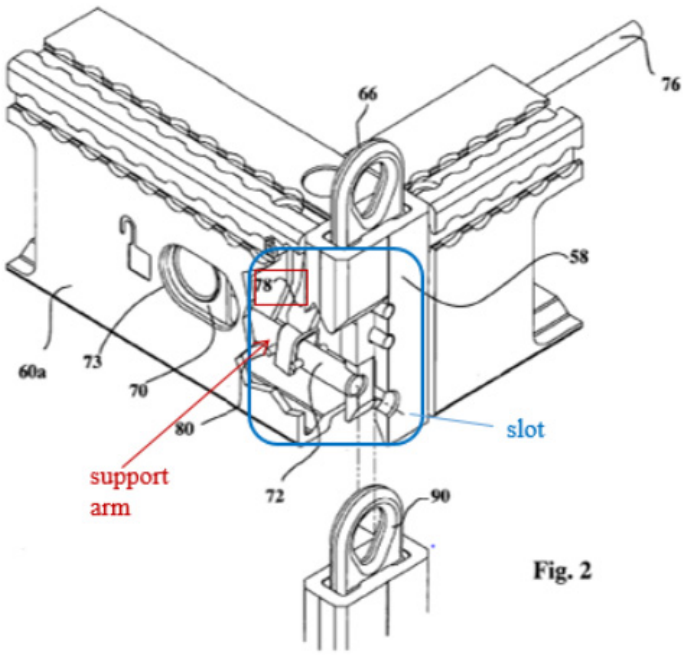
4. Claim 4

296. In my opinion, the Brocket-Heinrichs combination teaches, or renders obvious, claim 4.

297. Heinrichs discloses the translational movement of lock slider 70 causes device 78[1] to pivot, thereby moving locking bolt 72 (the claimed "*slider*") so that device 78 and locking bolt 72 move in unison with one another into locking/unlocking engagement with interface fitting 90. EX1006, ¶56, FIGs. 3, 4.

[1] I note that there appears to be a typo in paragraph 56 of Heinrichs when it refers to "clevis 78" because 78 is earlier referred to as "devises [sic] 78." EX1006, ¶¶54, 56. I will refer to 78 as device 78 because that is how it is first described.

A POSA would have understood that incorporating Heinrichs' locking mechanism into Brocket would have also included incorporation of device 78 because Heinrichs teaches device 78 is used to move its slider (bolt 72). Figure 2, depicted below with annotations, illustrates that the Brocket-Heinrichs combination renders obvious claim 4 for the reasons I discuss below.

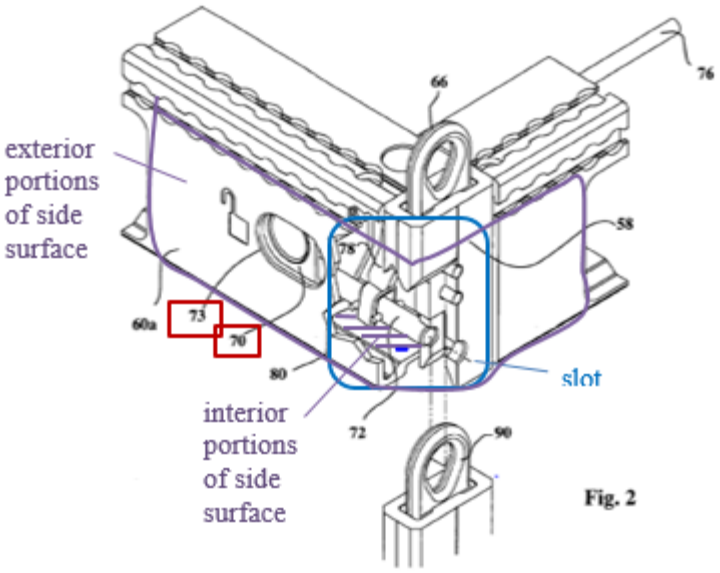


EX1006, FIG. 2. (annotated).

298. First, the Brocket-Heinrichs combination teaches "*a slot in the side surface of the container*." The '689 patent describes its slot 21 "by two first side surfaces 211, a second side surface 212, and a bottom surface 213." EX1001, 3:30-36. As can be seen in annotated Figure 2, a similar slot is defined by the cavity containing Heinrichs' locking mechanism (including at least locking bolt 72 and

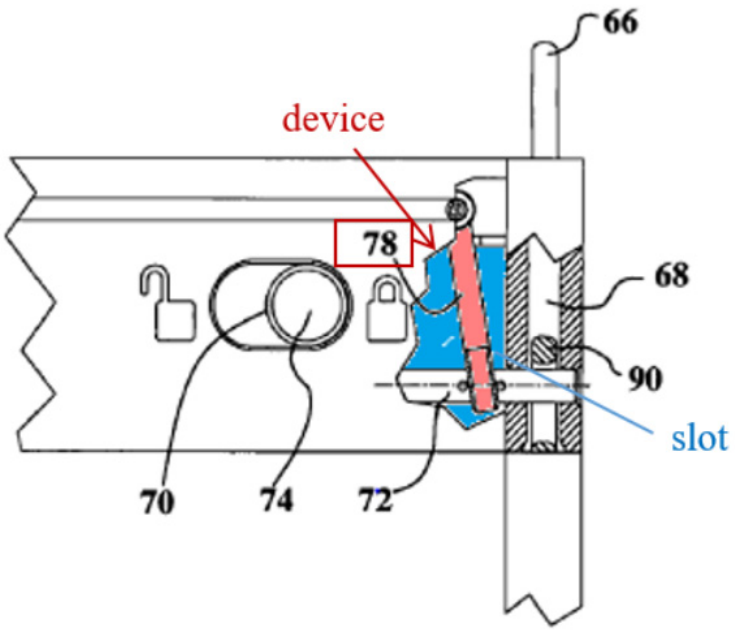
device 78). EX1006, FIG. 2.

299. In the Brocket-Heinrichs combination, the "*slot*" is "*in the side surface of the container*" (Brocket's container 20'). This is at least because the slot identified in annotated FIG. 2 of Heinrichs above includes an access opening 73 for providing access to lock slider 70 (e.g., by grasping keyhole 74 shown in FIG. 4 of Heinrichs above). The identified slot is *in the side surface of the container* because access opening 73 joins exterior portions of a surface of Heinrichs' pallet 50 with interior portions. Since these exterior and interior portions are each at the side of Heinrichs' pallet 50 and joined by access opening 73, they make up a continuous *side surface* in which the *slot* resides. As shown in annotated Figure 2 below, the slot includes a back surface, hidden by sliding bolt 72 and device 78, that faces outward from pallet 50 in the same direction as second side surface 212 faces in the '689 patent. Accordingly, this structure is similar to slot 21 of the '689 patent.



EX1006, FIG. 2 (annotated).

300. Next, Heinrichs teaches the claimed "*support arm extending across the slot, wherein the slider is engaged with the support arm to move between a locked position*" (corresponding to the "*engaged position*" discussed in claim 3 of this ground) "and an unlocked position" (corresponding to the "disengaged position" discussed in claim 3). As shown in annotated Figure 4 (below), device 78 extends across the slot. EX1006, FIG. 4.



EX1006, FIG. 4.

301. Further, for the reasons I discuss above, Heinrichs discloses device 78 engages with locking bolt 72 ("*slider*") to move the slider between "*a locked/engaged position* and *an unlocked/disengaged position*." EX1006, ¶56, FIGs. 3, 4. Thus, Heinrich's device 78 teaches the claimed "*support arm*."

5. Independent Claim 14

302. In my opinion, the Brocket-Heinrichs combination renders obvious claim 14 for the reasons I discuss for claim 1 in this ground (Section X.I).

6. Claim 15

303. In my opinion, the Brocket-Heinrichs combination renders obvious [15.1] for the reasons I discuss in claim 2, [15.2] for the reasons I discuss in claim 3, and [15.3] for the reasons I discuss in claim 4 of this ground (Sections X.I.2,

X.I.3, and X.I.4).

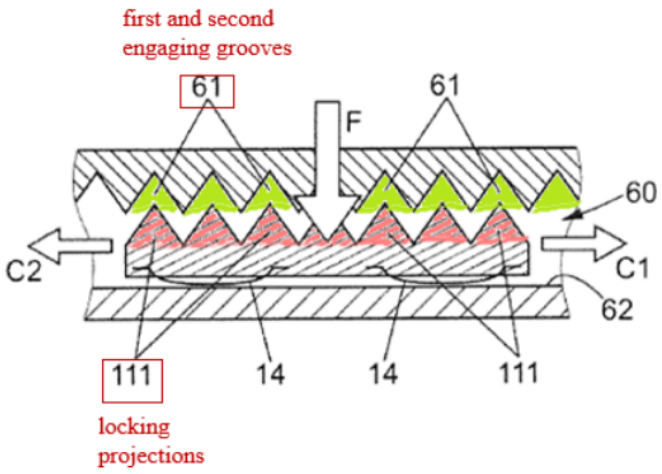
J. Ground 2B: The combination of Brocket, Heinrichs and Morel renders obvious claims 5 and 6.

1. Claim 5

304. In my opinion, the Brocket-Heinrichs-Morel combination renders obvious claim 5.

305. For the reasons I discuss for claim 4 in Section X.G.4, the Brocket-Heinrichs combination teaches "*a support arm … wherein the slider is engaged with the support arm to move between a locked position … and an unlocked position*." EX1006, ¶56, FIG. 2. Heinrichs does not describe the mechanism in the relied upon embodiment used to retain its slider (locking bolt 72) in the locked and unlocked positions.

306. As I discuss in claim 5 of Ground 1D (Section X.D.1), Morel discloses a locking device that comprises a series of adjacent locking notches 61, 71 (i.e., "*engaging groove[s]*") formed on the upper face of each guide groove 60, 70, which are adapted to engage with second locking members in the form of locking projections 111, 121 provided on the partitioning plate 10 (slider). EX1008, ¶53. Figure 1B, shown below, illustrates Morel's locking device to hold a sliding element in place with locking notches ("*engaging grooves*"). EX1008, FIG. 1B.



EX1008, FIG. 1B (cropped and annotated).

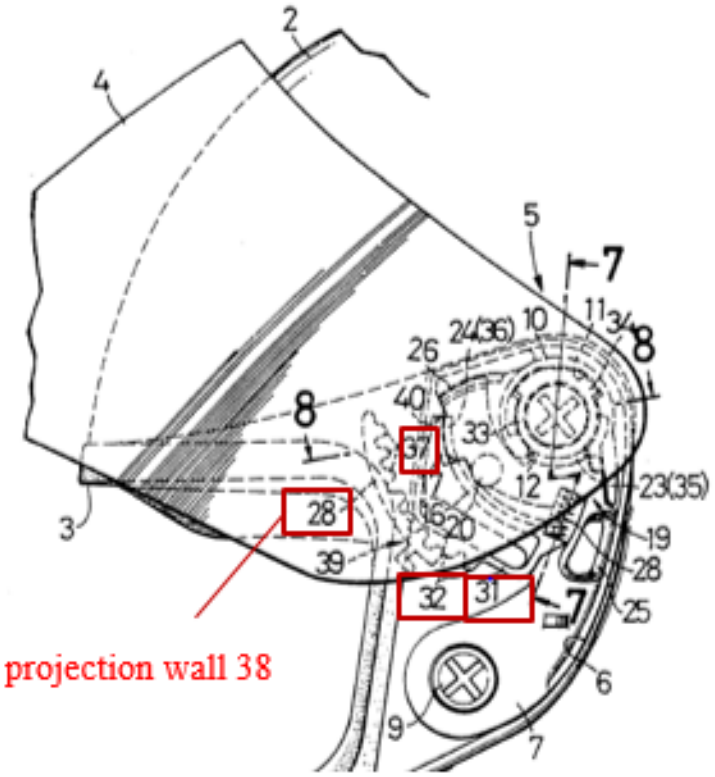
307. A POSA would have readily been able to implement locking notches 61 or grooves ("*first and second engaging grooves*") on a lower surface of device 78 (the claimed "*support arm*").

308. A POSA would have found it obvious to use Morel's well known locking arrangement (locking projection engaged with a groove), or a similar mechanism to retain device 78 in place in the unlocked and locked positions when engaged with a protrusion, thus "*holding the slider*" (locking bolt 72) "*in the unlocked and locked positions*." This is because the lack of such a locking mechanism could cause Heinrichs' locking bolt 72 to slide and disengage from an interface fitting 90 if pallet is jostled or tilted during shipping and storage applications. EX1006, Abstract. The danger of this would have been evident to a POSA.

309. Morel is just one reference that describes using locking notches to

constrain the movement of a sliding and/or rotating component. For example, Shida also describes such components. While Shida's design is implemented in a helmet and face shield context, it is representative of common components used to constrain the movement of a structure at a pivot point (e.g., of device 78) that would have been well-known to a POSA. EX1017, 1:56-60. Therefore, it is the sort of device that a POSA would have looked to when solving the problem of how to constrain movement of a structure at a pivot point. Shida discloses a projection wall 38[2] that is integrally formed with a pivoting shield plate 4 (analogous to device 78). EX1017, 1:56-60, 4:1-3. The projection wall 38 includes a number of click teeth 37 that form grooves for engaging "a single or a plurality of stationary click teeth 32" of a resilient arm 31 disposed on the helmet. EX1017, 4:3-5, 4:24-32. With this arrangement, "the resilient arm 31 and the projection wall 38 constitute a click stop mechanism 39 **for stopping the shield plate 4 at each of turned positions**." EX1017, 4:24-32, FIG. 6 (emphasis added).

[2] I note that Shida mislabels the projection wall as numeral 28 in Figure 6.

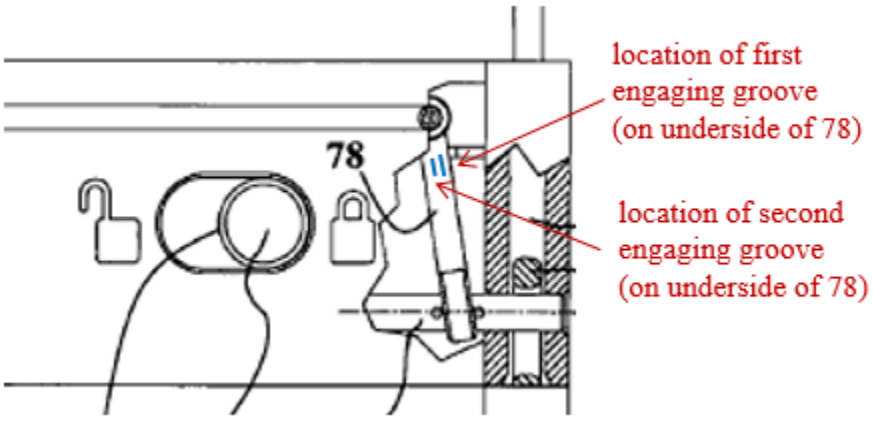


EX1017, FIG. 6 (cropped, annotated).

310. Accordingly, the concept of engaging grooves to constrain the movement of a pivoting component along a track was well-known in both sliding and rotating mechanisms. A POSA would have immediately recognized the need for some constraint on the movement of Heinrichs' pivoting device 78.

311. A POSA would have been motivated to include "*a second engaging groove*" because the groove (when engaged with a projection on device 78) locks the slider (locking bolt 72) in position and ensures the bags stay attached (i.e., do not accidentally become detached because of displacement of locking bolt 72). A POSA would have been motivated to include "*a first engaging groove"* (to engage

with a projection on the device 78) to advantageously keep the locking bolt 72 in a fixed position and prevent it from unwanted sliding when it is in the unlocked position. A POSA would have had a reasonable expectation of success in making the modification because the combination is no more than combining one known element (Heinrich's device 78 ("*support arm*")) with another known element (grooves) according to known methods to yield predictable results (grooves that would hold device 78—and by extension the slider—in the "*unlocked*" disengaged position and the "*locked*" engaged position). The location of the "*first and second engaging grooves*" on device 78 ("*support arm*") in the Brocket-Heinrichs-Morel combination is shown below in annotated Figure 4 of Heinrichs (the location would be on the underside of device 78 and would engage with projections or teeth to retain the pivoting device in place in a similar manner as Shida).



EX1006, FIG. 4 (cropped and annotated)).

312. Thus, in my opinion, the combination of Brocket-Heinricks-Morel

combination renders obvious claim 5.

2. Claim 6

313. In my opinion, the Brocket-Heinrichs-Morel combination renders obvious claim 6.

314. For the reasons I discuss in claim 5 of this ground, the Brocket-Heinrichs-Morel combination renders obvious *"the first engaging groove*" (corresponding to the "*unlocked position*") and "*the second engaging groove*" (corresponding to the "*locked position*"). Device 78 (shown in unlocked position in Figure 3) pivots to the left, which is away from "*the side surface*" that I discuss in Section X.G.d for [1.C] and Section X.G.3 for claim 3), to move slider to the locked position. Thus, a POSA would have understood that in the Brocket-Heinrichs-Morel combination the "*first engaging groove*" (placed on underside of device 78 to couple with a protrusion to retain device 78 / slider in an unlocked position) "*is closer to the side surface than the second engaging groove*" for holding device 78 in the locked position, which correspondingly holds locking bolt 72 ("*the slider*") in the "*locked position*." EX1006, FIGs. 3, 4.

XI. CONCLUSION

315. In signing this declaration, I recognize that the declaration will be filed as evidence in an *inter partes* review before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I

may be subject to cross-examination in the case and that cross-examination will take place within the United States. If cross-examination is required, I will appear for cross-examination within the United States during the time allotted.

316. I hereby 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 Title 18 of the United States Code.

Executed on this 28th day of August, in Irvine, California.

J. Michael McCarthy, Ph.D.