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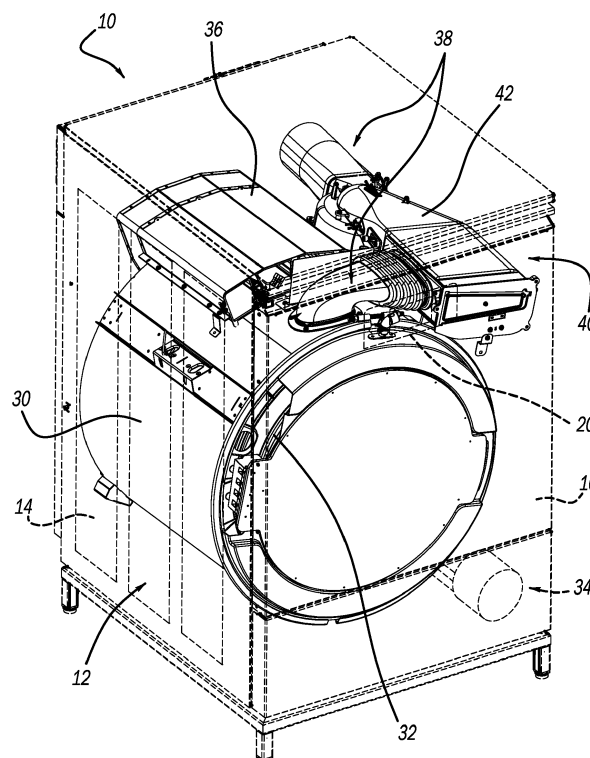
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(54) CUSTOMER ACCESSIBLE LINT FILTER

(57) A lint filter assembly (40) for a combination washer/dryer (10) has a housing (42) that couples with duct work (38) of the combination washer/dryer (10). A lint catcher (44) is receivable in the housing (42). The lint catcher (44) collects lint as it is moved through the duct work (38). A retention mechanism (90) is coupled with

the lint catcher (44) so that a user pushes the lint catcher (44) into the housing (42) to lock the lint catcher (44) in a first position and pushes the lint catcher (44) again to move the lint catcher (44) to a second position, releasing the positive lock, so that the lint catcher (44) can be removed from the housing (42).

**FIG - 1****EP 4 206 375 A1**

Description

FIELD

[0001] The present disclosure relates to household appliances, generally those including a combination washer/dryer and, more particularly, an accessible lint filter.

BACKGROUND

[0002] In household appliances, such as washers, dryers, and combination washer/dryers, it is desirable to remove lint during operating cycles from these machines. Particularly, in dryers, a lint screen or the like is present to catch the lint as it circulates within the drying appliance during operating cycles. Different types of lint screens have been provided by manufacturers. These types of screens are ones that are accessible upon opening the door of the dryer and those that can be removed from outside of the cabinet enabling withdrawal of the lint screen for cleaning. These types of lint screens are satisfactory for their intended purposes. However, designers strive to improve the art.

[0003] The present disclosure provides the art with a lint filter assembly that is positively held within the cabinet. The lint filter assembly provides an easily removable lint filter assembly with a positive action to maintain the lint filter assembly within the cabinet. The action may be mechanical or magnetic. The lint filter assembly provides a lid that enables easy removal of the lint from the filter. Additionally, the assembly provides a utility space for various items such as pods, dryer sheets, brushes or the like.

SUMMARY

[0004] Accordingly, it is an object of the disclosure to provide a lint filter assembly for a household appliance comprising a housing for coupling with duct work of the appliance. A filter assembly is receivable in the housing. The filter assembly collects lint as is moved through the duct work. A mechanism is coupled with the filter assembly so that a user pushes the filter assembly into the housing into a first position where the filter assembly is positively locked and retained by the mechanism. The filter assembly is moved to a second clean out position, releasing the positive lock so that lint can be removed from the lint filter assembly. The mechanism may be a push/push mechanism including a grab latch or a magnetic latch. Alternatively, the mechanism is a magnetic seal position on the filter assembly for magnetically locking the filter assembly in the first position. The filter assembly includes a cover with the magnetic seal for locking with a cabinet. The lint filter assembly includes a catch with a frame with a screen where the frame is two pieces with a bowl and a cover. The bowl or cover includes a metal piece and the other includes a magnet. The bowl and cover are co-molded. Additionally, the cover or lid includes a lint peeler. The frame also includes a storage

area for various items.

[0005] According to another aspect of the disclosure, a combination washer/dryer is provided comprising a cabinet, a tub positioned inside the cabinet, a rotatable drum positioned inside the tub, a washing circuit that is coupled with the tub, and a drying circuit that is coupled with the tub for moving heated air into the drum. The drying circuit includes duct work that directs the heated air through the cabinet. A lint filter assembly including a housing is coupled with the duct work and receives a lint catcher for collecting lint as it moves through the duct work. A retention mechanism is coupled with the lint filter assembly such that a user pushes the lint catcher into the housing for retaining the lint catcher in a first position where the lint catcher is positively locked in place by the retention mechanism and the user pushes the lint catcher further into the housing to a second position for releasing the retention mechanism so that the lint catcher can be removed from the lint filter assembly.

[0006] In accordance with other aspects of the present disclosure, the retention mechanism is a push/push mechanism that includes either a mechanism grab latch device or a magnetic device. For example, the retention mechanism may include a magnetic strip positioned on the lint filter assembly for magnetically locking the lint catcher in the first position. The lint catcher may include a cover with a seal and the seal may include a pocket that retains the magnetic strip. Thus, the magnetic strip provides a positive retention force that retains the lint catcher in the cabinet. The seal may also include an attachment portion that is secured in a channel in the cover and the seal may include a bulb portion that permits movement of the cover when the lint catcher is in the first position.

[0007] In accordance with another aspect of the present disclosure, the retention mechanism includes a base with a movable shaft and a magnet that is positioned to contact and be magnetically attracted to a striker plate on the cover of the lint catcher to lock the lint catcher in the first position.

[0008] In accordance with another aspect of the present disclosure, the retention mechanism includes fingers that receive a ball that is attached to the cover to lock the lint catcher in the first position. The retention mechanism (90) may also include a base and the fingers may be configured to retract into and be held by the base when the ball is pushed into the fingers in the first position. The retention mechanism may also be configured such that an additional push on the cover pushes the ball further into the base to release the ball from the fingers in the second position, enabling the lint catcher to be withdrawn from the cabinet.

[0009] In accordance with other aspects of the present disclosure, the lint catcher includes a frame with a screen for catching the lint. The frame may be two pieces with a bowl and a lid. The bowl and the lid may be co-molded, where either the bowl or the lid includes a metal piece and the other includes a magnet. The lid may also include

a lint peeler that is configured to move underneath lint in the bowl and lift the lint from the bowl as the lid is opened. The frame of the lint catcher may also include a storage bin. The lint catcher may also have a rectangular trapezoidal shape.

[0010] Further areas of applicability will become apparent from the description provided herein. The description and specific examples in this summary are intended for purposes of illustration only and are not intended to limit the scope of the present disclosure.

DRAWINGS

[0011] The drawings described herein are for illustrative purposes only of selected embodiments and not all possible implementations and are not intended to limit the scope of the present disclosure.

Fig. 1 is a front perspective view of a washer/dryer in accordance with the present disclosure,

Fig. 2 is a front perspective view of an exemplary lint catcher,

Fig. 3 is a front perspective view of another embodiment of the lint catcher,

Fig. 4 is a side view of an exemplary lint catcher seal,

Fig. 5A is a front perspective view of an exemplary lint filter assembly,

Fig. 5B is a partial, side cross-section view of the lint filter assembly shown in Fig. 5A,

Fig. 6 is a perspective view of an exemplary mechanical latch,

Fig. 7 is a perspective view of an exemplary magnetic latch,

Fig. 8A is a perspective view of an additional embodiment of the lint catcher,

Fig. 8B is a side cross-section view of the lint catcher shown in Fig. 8A, and

Fig. 9 is a top perspective view of another embodiment of the lint catcher.

DETAILED DESCRIPTION

[0012] Example embodiments will now be described more fully with reference to the accompanying drawings.

[0013] Turning to the figures, a combination washer/dryer is illustrated and designated with the reference numeral 10. The combination washer/dryer 10 includes a cabinet 12 with a plurality of panels 14. The controller panel 20 is illustrated on front panel 16 of the cabinet 12. The combination washer/dryer 10 includes a tub 30 and a drum 32 that is rotatably positioned inside of the tub 30. A washing circuit 34 is coupled with the tub 30. Additionally, a drying circuit 36 is illustrated coupled with the tub 30. Thus, heated air is moved into the drum 32 and exits through the desired duct work 38 to ambient.

[0014] A lint filter assembly 40 is positioned into the heating duct work 38. The lint filter assembly 40 includes a housing 42 that is positioned into and coupled with the

duct work 38. The housing 42 receives a lint catcher 44. The lint catcher 44 includes a frame 46 that has a two-piece design with a bowl 48 and a lid or cover 50. As illustrated, the lint catcher 44 has an overall rectangular trapezoidal design for sliding into the housing 42. The bowl 48 includes wall 52 that surrounds a lattice work 54 that includes a screen 56. The wall 52 includes an opening 58 that abuts a portion of the duct work 38 so that the housing 42 receives heated air from the tub 30. The heated air enters into the lint catcher 44, where the lint is retained in the lint catcher 44, then exits through the housing 42 to ambient.

[0015] The lid 50 includes lattice work 62 and a screen 64. The lid 50 is hinged to the bowl 48 to enable the lid 50 to be moved away from the bowl 48 to enable access into the lint catcher 44 to remove the lint. Thus, the lint can be removed from the bowl 48 and lid 50.

[0016] The bowl 48 and lid 50 are manufactured from a plastic material. Preferably, a metallic strip 66 is co-molded into the lid 50. Magnets 68 are likewise co-molded into the wall 52 to enable a magnetic closure between the lid 50 and the bowl 48. Thus, this retains the lid 50 onto the bowl 48 when it is positioned inside of the housing 42. Additionally, the magnets 68 and metallic strips 66 could be positioned into other elements of the lint catcher 44.

[0017] A cover 70 is positioned onto a front portion of the wall 52 of the lint catcher 44. The cover 70 is accessible from outside of the cabinet 12. This enables the lint catcher 44 to be withdrawn from the housing 42. As shown in Figs. 5A and 9, the cover 70 may include a handle 72 or opening that enables the user to grasp the cover 70 and remove the lint catcher 44 from the housing 42.

[0018] With reference to Figs. 3 and 4, the cover 70 is illustrated with a seal 80. The seal 80 includes an attachment portion 82, a bulb portion 84 and a pocket 86 to retain a magnetic strip 88. The attachment portion 82 is secured into the cover 70 via a channel in the cover 70. The bulb portion 84 permits movement of the cover 70 when the portion of the seal 80 with the magnetic strip 88 contacts the cabinet 12. The bulb portion 84 could have a different cross-section depending upon the desired fit of the seal 80 on the cover 70. The magnetic strip 88 provides a positive retention or locking force that holds/retains the lint catcher 44 in the cabinet 12.

[0019] In Figs. 5A-5B and Figs. 6-7, two different retention mechanisms 90, 100 are illustrated to retain the lint catcher 44 within the housing 42. The retention mechanisms 90, 100 can be a mechanical push/push grab latch device or a magnetic push/push latching device.

[0020] As illustrated in Fig. 6, the retention mechanism 90 is a mechanical latching device with a base 92, that attaches to the housing 42. The retention mechanism 90 includes fingers 94 that receive a ball 96, which is attached to the cover 70 of the lint catcher 44. As the ball 96 is pushed into the fingers 94, the fingers 94 retract into the base 92. The fingers 94 are held in the base 92

with the ball 96. Thus, the lint catcher 44 is retained or locked with the housing 42.

[0021] An additional push on the cover 70, in turn, pushes the ball 96 further into the base 92. This releases the fingers 94 which, in turn, releases the ball 96 from the fingers 94. Thus, this enables the lint catcher 44 to be withdrawn from the cabinet 12.

[0022] As illustrated in Fig. 7, the retention mechanism 90 is a magnetic push/push device that has a base 102 with a movable shaft 104. A metallic striker plate 106 is positioned on the lint catcher 44. As the lint catcher 44 is pushed into the housing 42, the shaft 104 retracts into the base 102, which is mounted on the housing 42. The base also has a magnet 108 that contacts the striker plate 106 on the cover 70 as the cover 70 is pushed in and the magnetic attractive force between the magnet 108 and the striker plate 106 retain the lint catcher 44 in the housing 42. An additional push on the cover plate 70 pushes the shaft 104 further into the device 100, which releases the magnet 108 to enable the lint catcher 44 to be withdrawn from the housing 42 and cabinet 12.

[0023] Figs. 8A and 8B illustrate another lint catcher 44'. The lint catcher 44' shown in Figs. 8A and 8B is substantially the same as that illustrated in Fig. 2 except for the addition of one or more lint peelers 110. The lint peelers 110 are positioned adjacent the area where the lid 50 attaches to the bowl 48. The lint peelers 110 may have an overall rectangular configuration and be ring shaped or solid. As illustrated in Fig. 8B, the lint peelers 110 move underneath the lint 112 to lift the lint from the bowl 48, lattice work 54 and screen 56 as the lid 50 is opened. Thus, the lint 112 is scraped from the lattice work 54 and screen 56 to provide a lifted leading edge to enable removal of the lint 112 from the bowl 48.

[0024] Turning to Fig. 9, another lint catcher 44" is illustrated. Here, a storage bin 120 is positioned on the cover 70 opposite the frame 46. The storage bin 120 enables detergent pods, dryer sheets, brushes or the like to be stored within the combination washer/dryer 10 in the storage bin 120. Upon removal of the lint catcher 44", the storage bin 120 would be accessible. Thus, a user would have access to the items in the storage bin 120. The storage bin 120 can have a box-like configuration with a cover 122 to enable access into the storage bin 120.

[0025] The foregoing description of the embodiments has been provided for purposes of illustration and description. It is not intended to be exhaustive or to limit the disclosure. Individual elements or features of a particular embodiment are generally not limited to that particular embodiment, but, where applicable, are interchangeable and can be used in a selected embodiment, even if not specifically shown or described. The same may also be varied in many ways. Such variations are not to be regarded as a departure from the disclosure, and all such modifications are intended to be included within the scope of the disclosure.

Claims

1. A combination washer/dryer (10), comprising:

a cabinet (12);
a tub (30) positioned inside the cabinet (12);
a rotatable drum (32) positioned inside the tub (30);
a washing circuit (34) coupled with the tub (30);
a drying circuit (36) coupled with the tub (30) for moving heated air into the drum (32), the drying circuit (36) including duct work (38) that directs the heated air through the cabinet (12);
a lint filter assembly (40) including a housing (42) that is coupled with the duct work (38) and receives a lint catcher (44) for collecting lint as it moves through the duct work (38); and
a retention mechanism (90, 100) that is coupled with the lint filter assembly (40) such that a user pushes the lint catcher (44) into the housing (42) for retaining the lint catcher (44) in a first position where the lint catcher (44) is positively locked in place by the retention mechanism (90, 100) and the user pushes the lint catcher (44) further into the housing (42) to a second position for releasing the retention mechanism (90, 100) so that the lint catcher (44) can be removed from the lint filter assembly (40).

2. The combination washer/dryer (10) of Claim 1, wherein the retention mechanism (90, 100) is a push/push mechanism (90, 100) including a mechanism grab latch device (90) or a magnetic device (100).

3. The combination washer/dryer (10) of Claims 1 or 2, wherein the retention mechanism (90) is a magnetic strip (88) positioned on the lint filter assembly (40) for magnetically locking the lint catcher (44) in the first position.

4. The combination washer/dryer (10) of Claim 3, wherein the lint catcher (44) includes a cover (70) with a seal (80), the seal (80) includes a pocket (86) that retains the magnetic strip (88), and the magnetic strip (88) provides a positive retention force that retains the lint catcher (44) in the cabinet (12).

5. The combination washer/dryer (10) of Claim 4, wherein the seal (80) further includes an attachment portion (82) that is secured in a channel in the cover (70) and a bulb portion (84) that permits movement of the cover (70) when the lint catcher (44) is in the first position.

6. The combination washer/dryer (10) of Claims 1 or 2, wherein the retention mechanism (100) includes a magnet (108) that is positioned to contact and be

magnetically attracted to a striker plate (106) on the cover (70) to lock the lint catcher (44) in the first position.

7. The combination washer/dryer (10) of Claim 6, 5
wherein the retention mechanism (100) further includes a base (102) with a movable shaft (104).
8. The combination washer/dryer (10) of Claims 1 or 2, 10
wherein the retention mechanism (90) includes fingers (94) that receive a ball (96) that is attached to the cover (70) to lock the lint catcher (44) in the first position.
9. The combination washer/dryer (10) of Claim 8, 15
wherein the retention mechanism (90) includes a base (92) and the fingers (94) are configured to retract into and be held by the base (92) when the ball (96) is pushed into the fingers (94) in the first position. 20
10. The combination washer/dryer (10) of Claim 9, 25
wherein the retention mechanism (90) is configured such that an additional push on the cover (70) pushes the ball (96) further into the base (92) to release the ball (96) from the fingers (94) in the second position, 30
enabling the lint catcher (44) to be withdrawn from the cabinet (12).
11. The combination washer/dryer (10) according to any 35
of the preceding Claims, wherein the lint catcher (44) includes a frame (46) with a screen (56) for catching the lint and wherein the frame (46) is two pieces with 40
a bowl (48) and a lid (50).
12. The combination washer/dryer (10) of Claim 11, 35
wherein the bowl (48) and the lid (50) are co-molded and wherein one of the bowl (48) and the lid (50) includes a metal piece and the other includes a magnet (68). 40
13. The combination washer/dryer (10) of Claim 11, 45
wherein the lid (50) includes a lint peeler (110) that is configured to move underneath lint in the bowl (48) and lift the lint from the bowl (48) as the lid (50) is opened.
14. The combination washer/dryer (10) of Claim 11,
wherein the frame (46) includes a storage bin (120).
15. The combination washer/dryer (10) of Claim 1, 50
wherein the lint catcher (44) has a rectangular trapezoidal shape.

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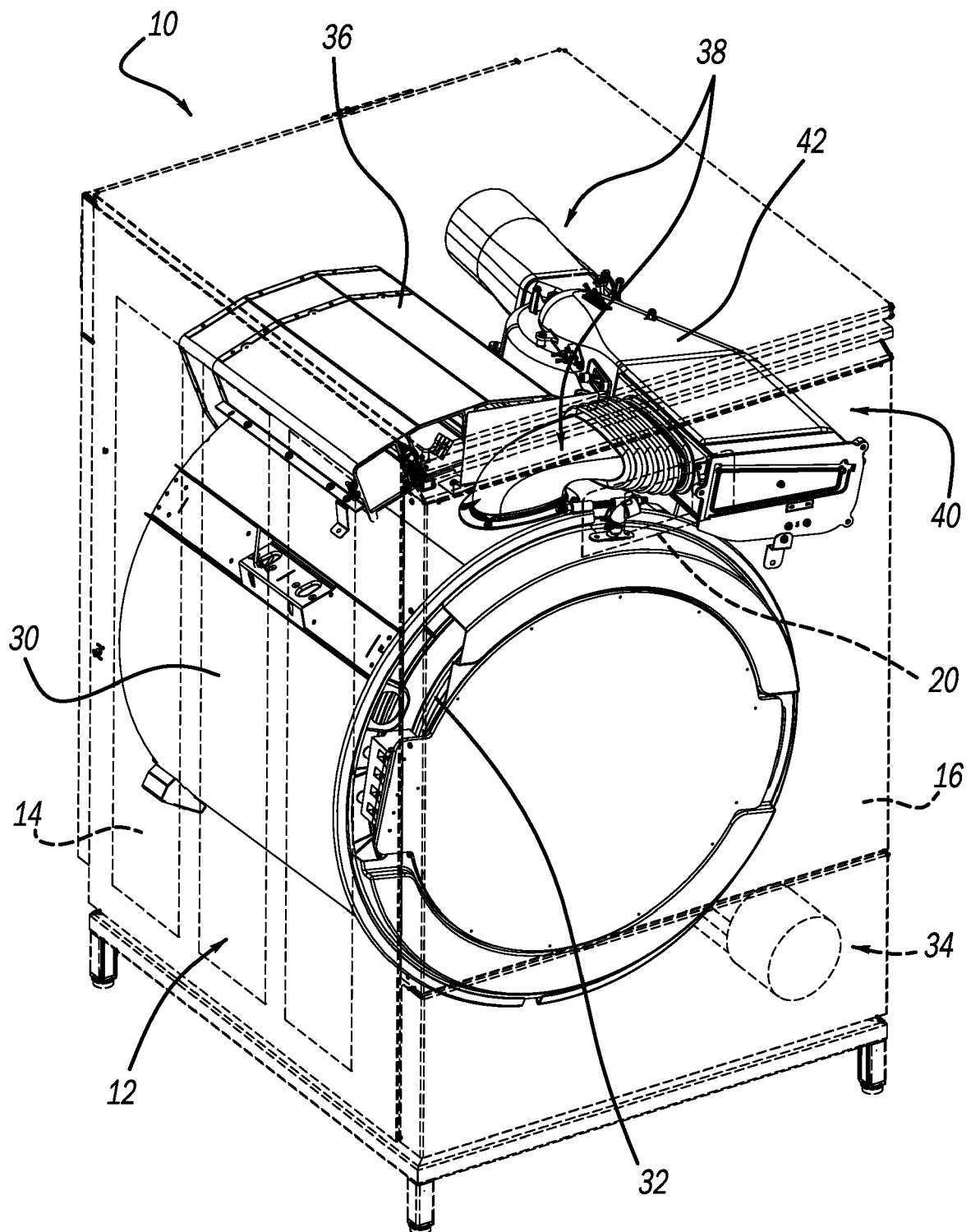
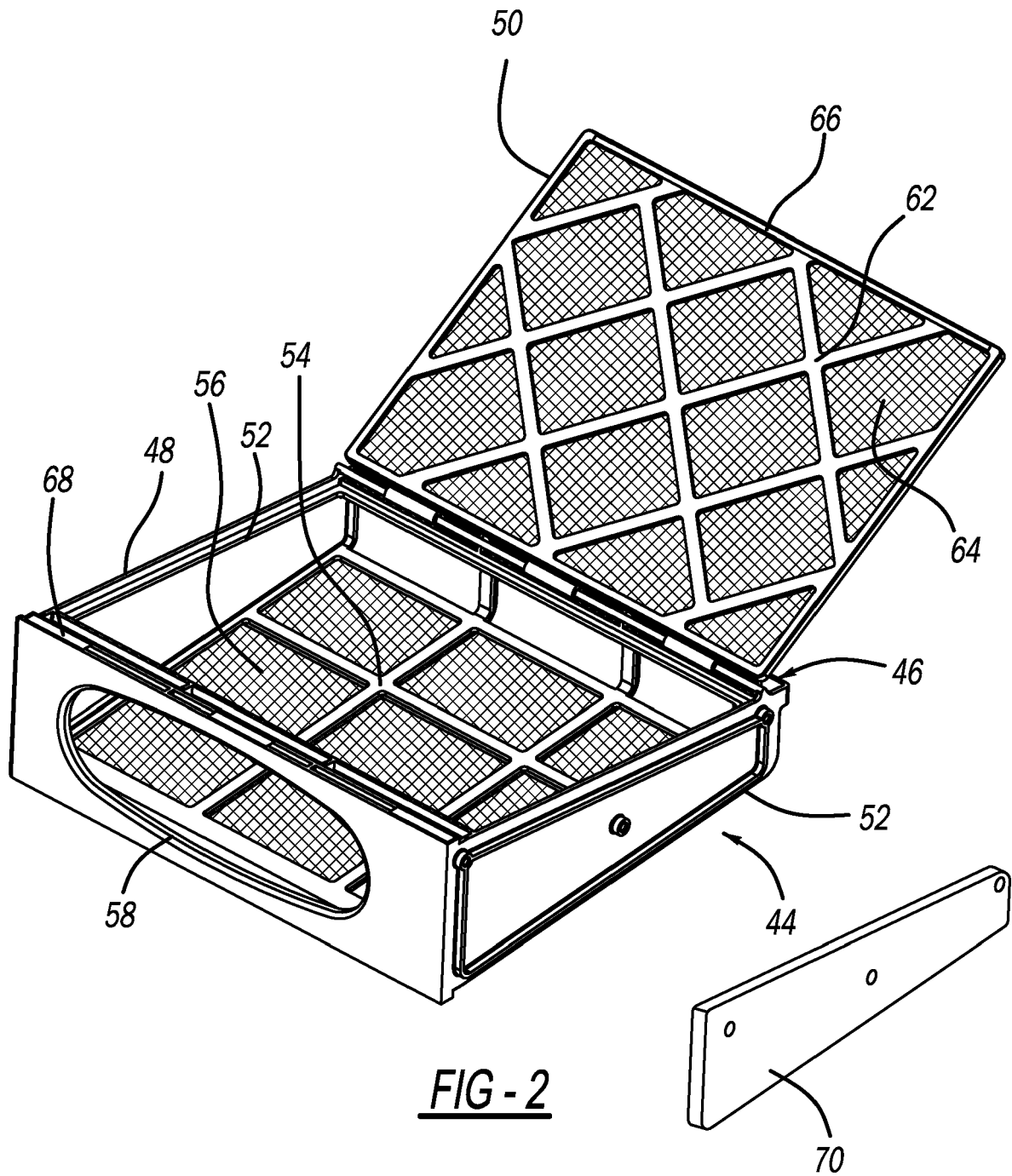
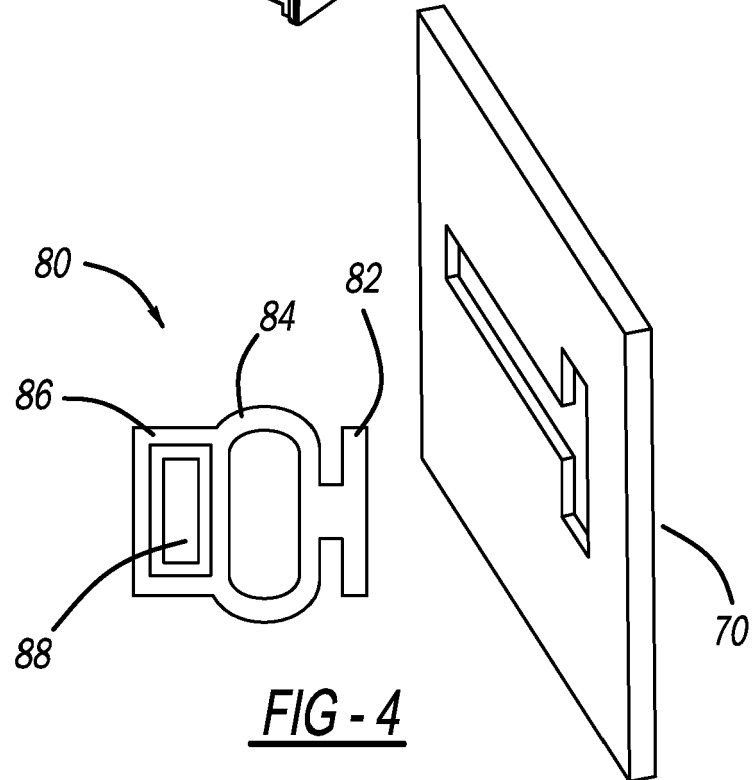
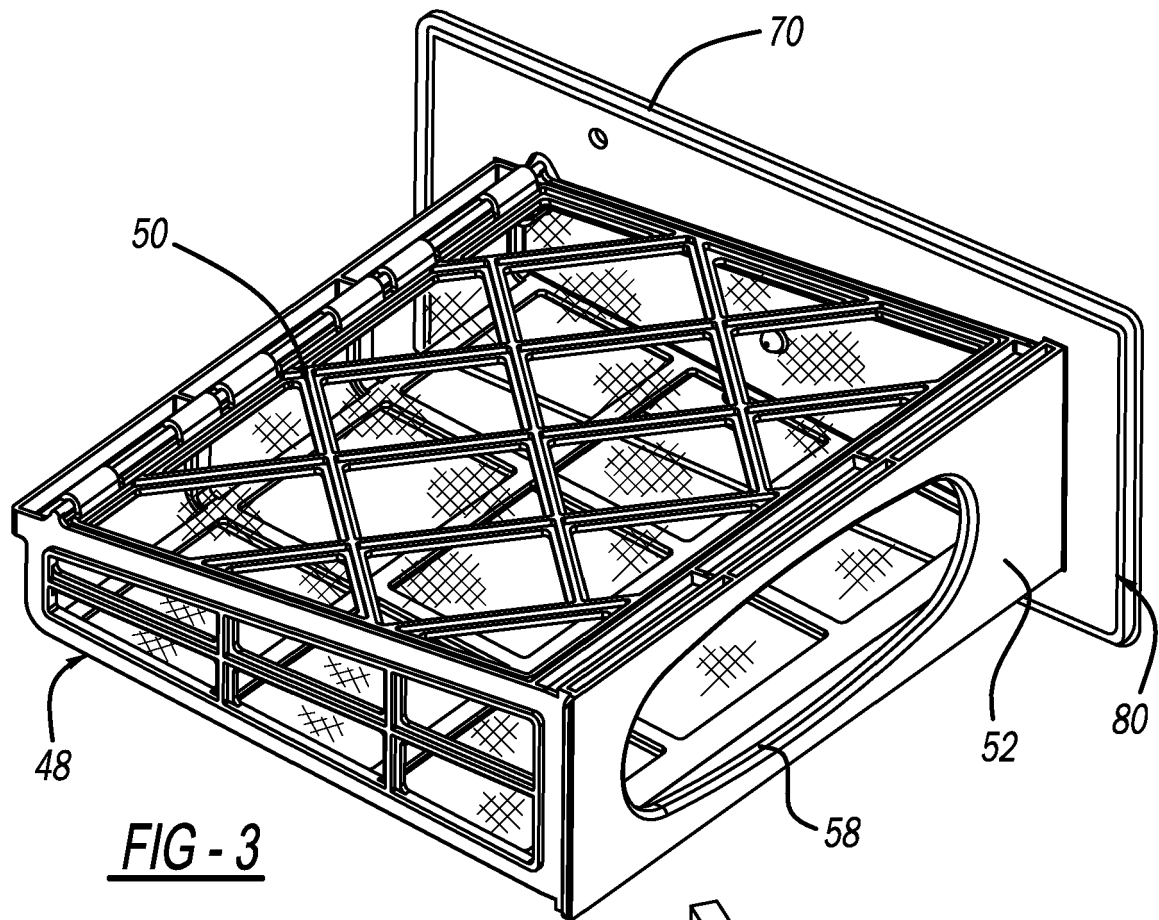
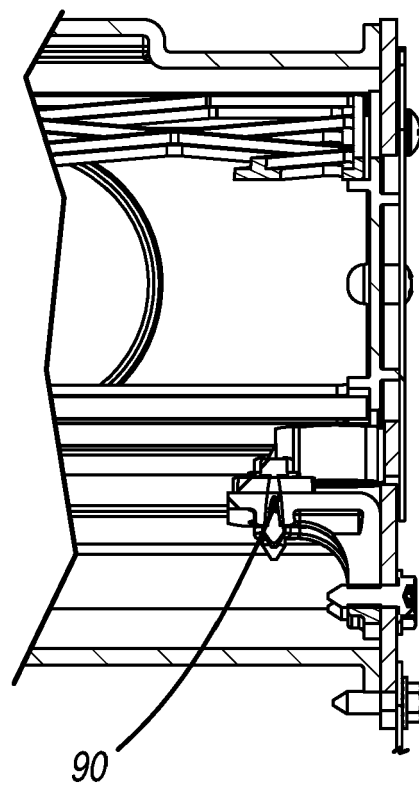
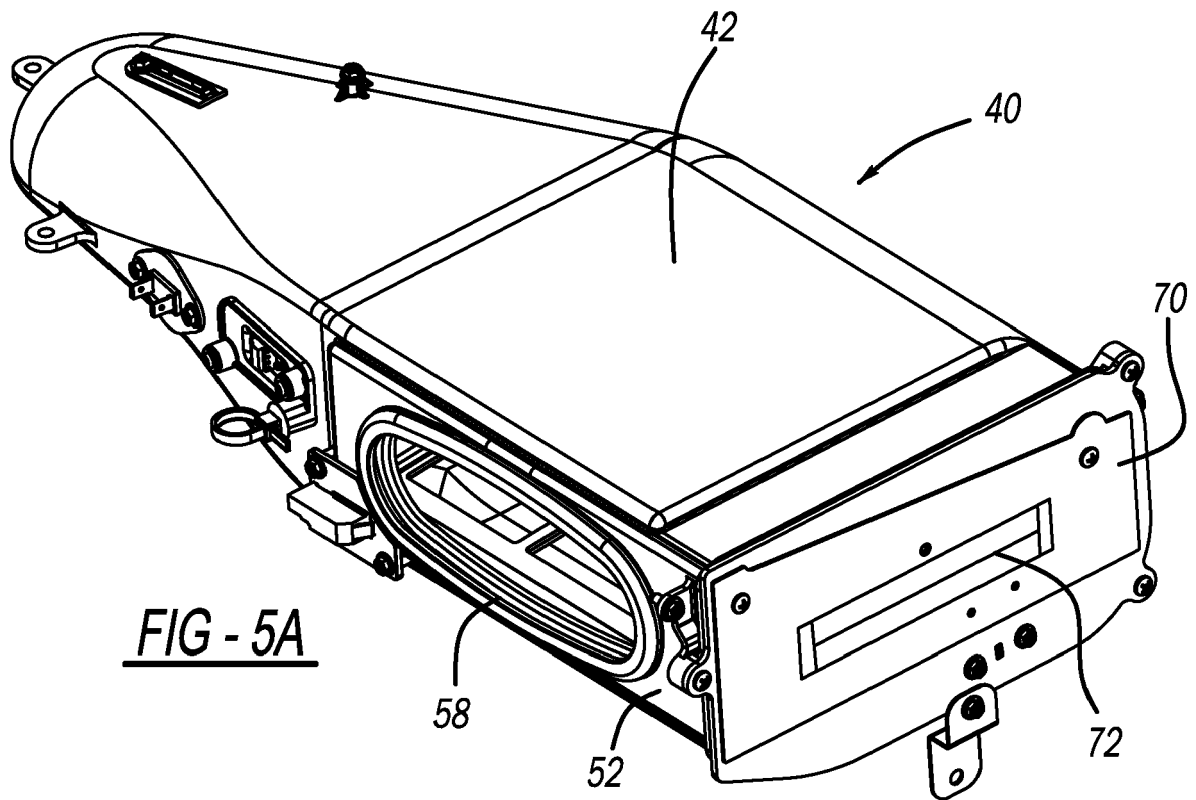
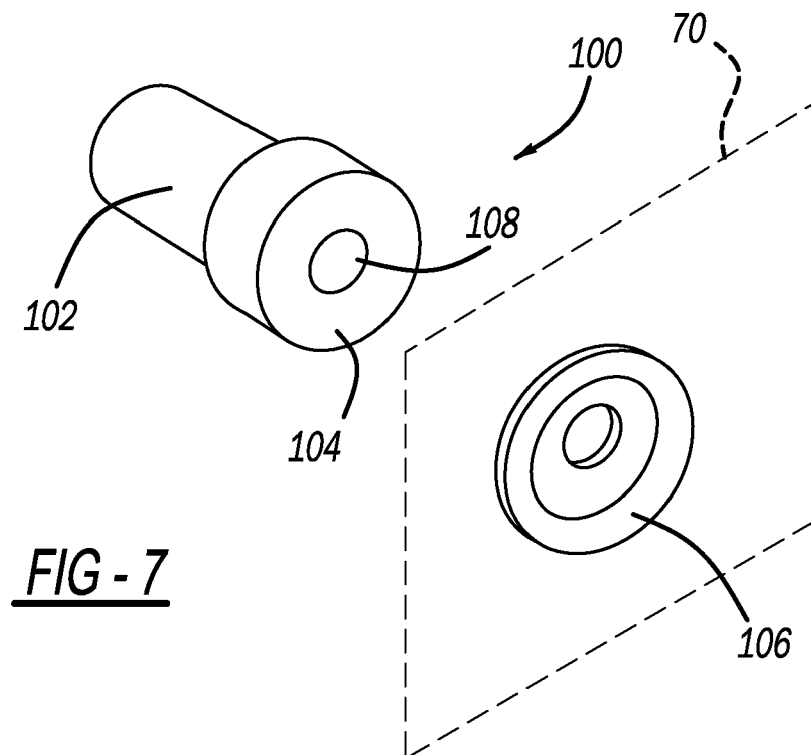
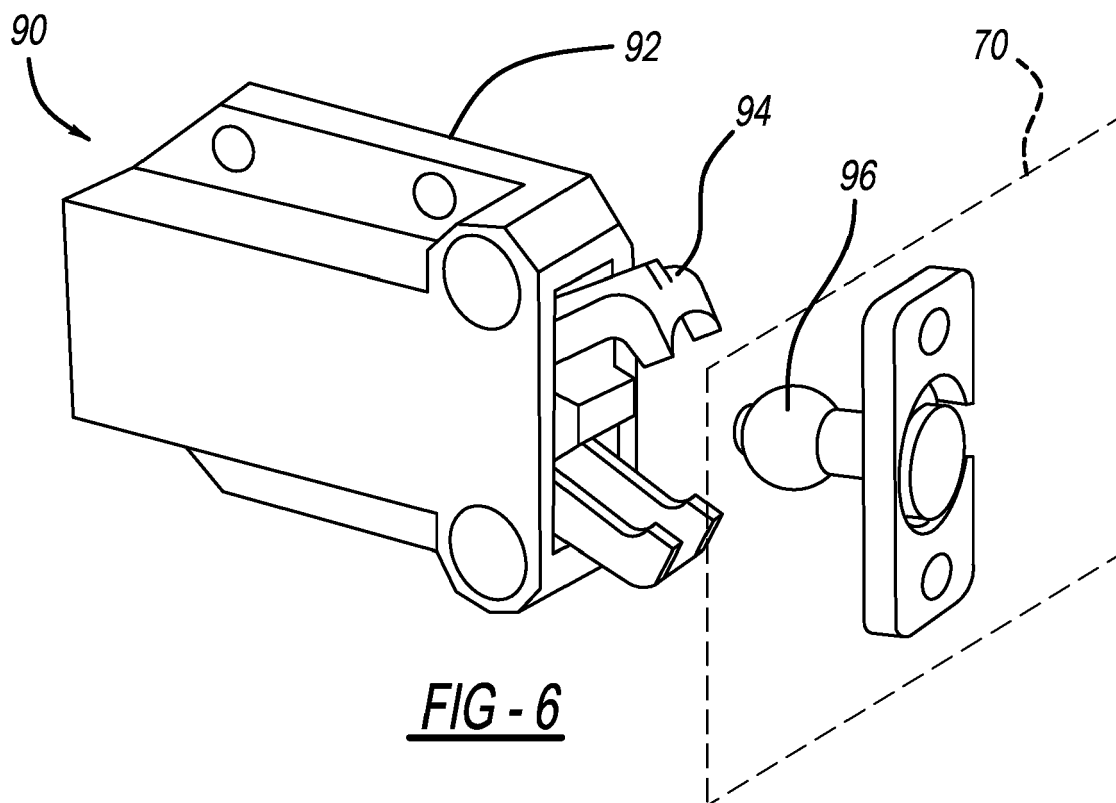


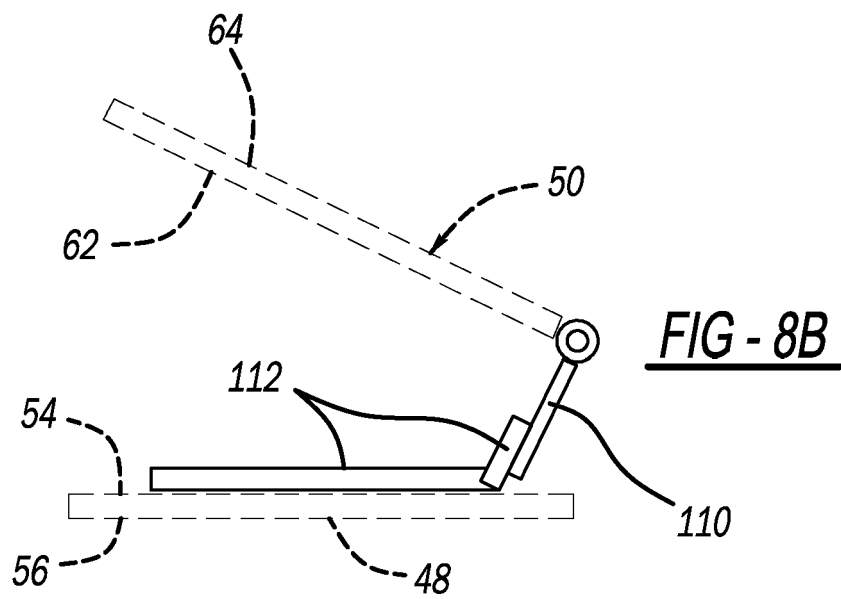
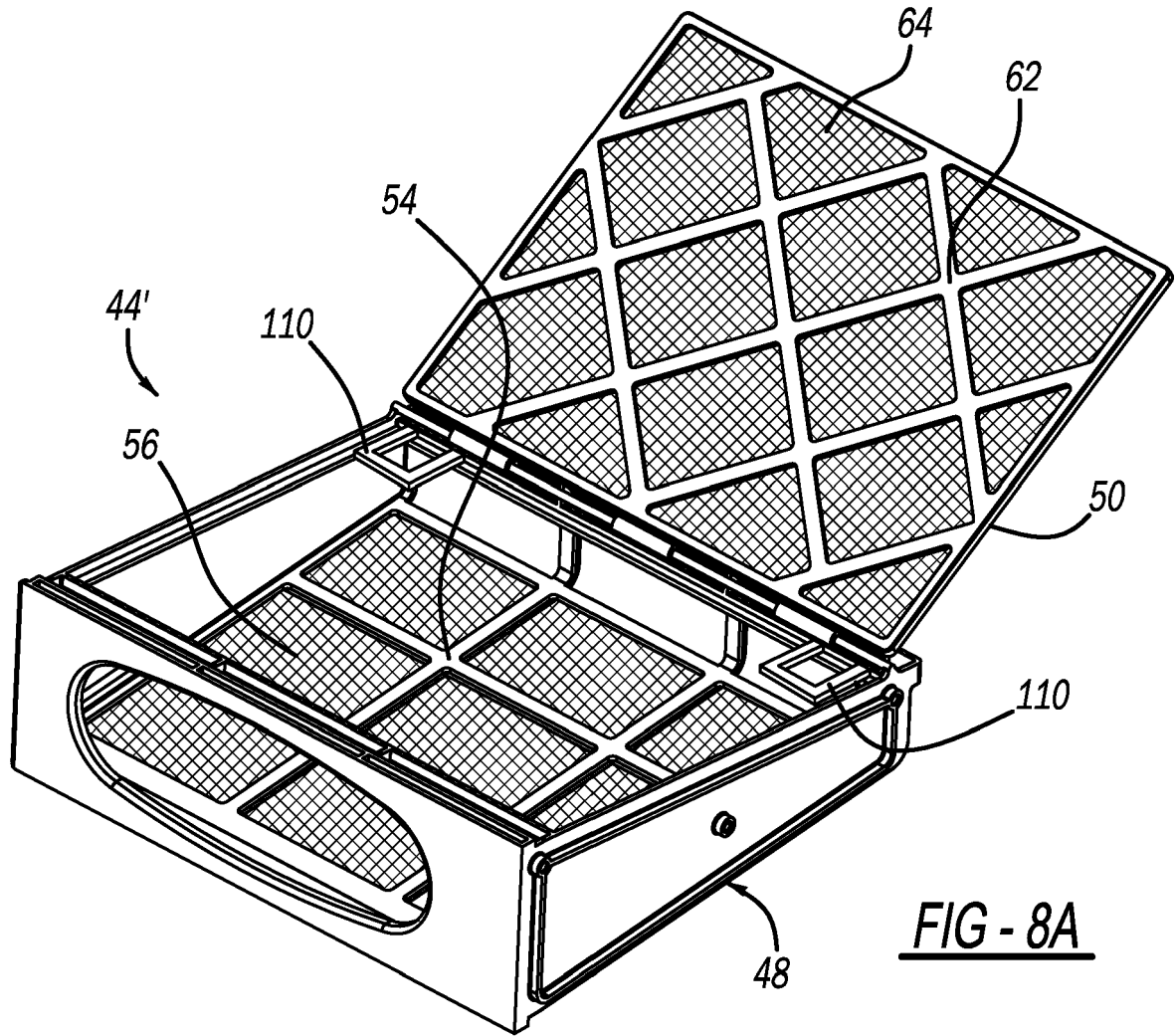
FIG - 1











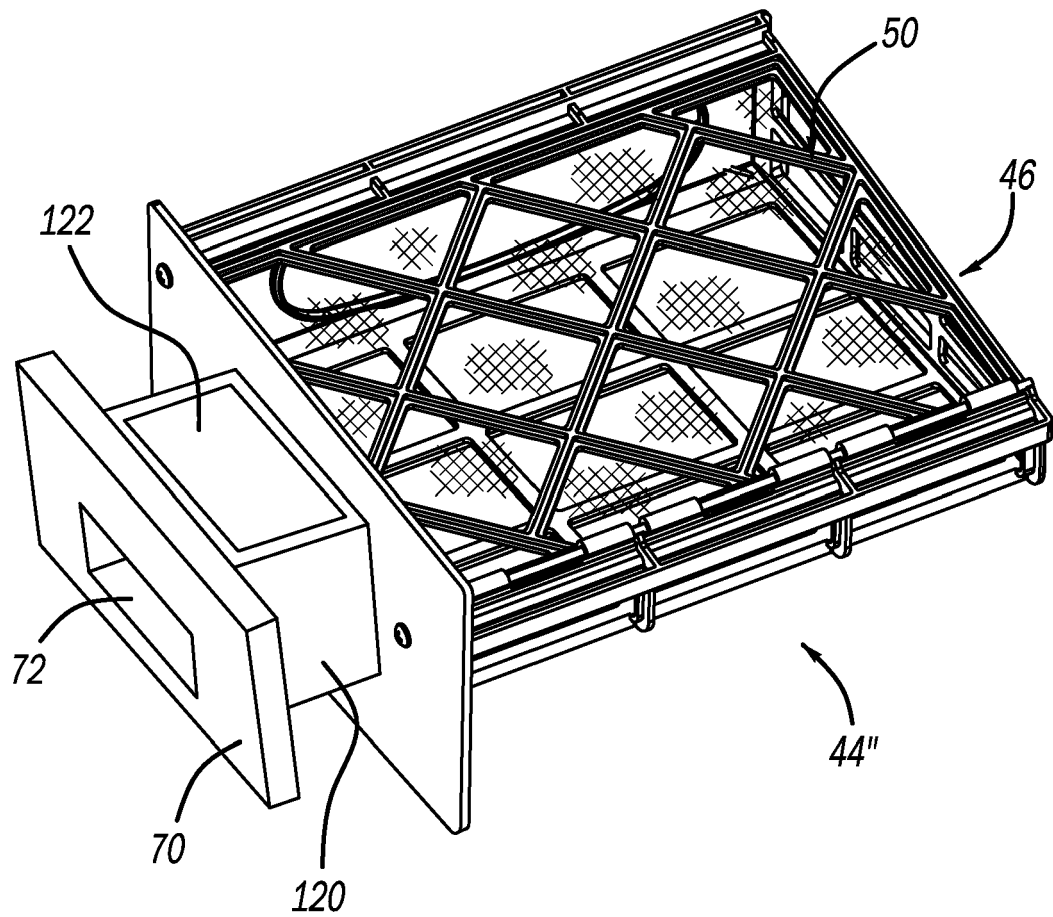


FIG - 9



EUROPEAN SEARCH REPORT

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 23 May 2023	Examiner Diaz y Diaz-Caneja
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

**ANNEX TO THE EUROPEAN SEARCH REPORT
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