



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**21.09.2022 Bulletin 2022/38**

(51) International Patent Classification (IPC):  
**D06F 34/34** <sup>(2020.01)</sup> **D06F 39/02** <sup>(2006.01)</sup>

(21) Application number: **22160238.6**

(52) Cooperative Patent Classification (CPC):  
**D06F 34/34; D06F 39/02; D06F 39/12**

(22) Date of filing: **04.03.2022**

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**  
Designated Extension States:  
**BA ME**  
Designated Validation States:  
**KH MA MD TN**

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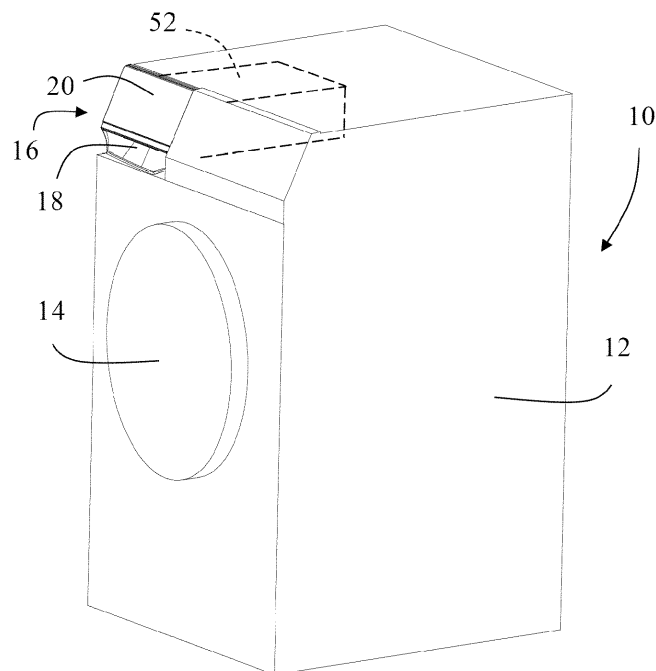
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(30) Priority: **19.03.2021 CN 202120584900 U**

(54) **CLOSING HANDLING DEVICE**

(57) A clothing handling device (10) includes: a main body portion (12), adapted to handle clothing; a door (14), adapted to open and close the main body portion (12); and a handle component (16), including a handle panel (18) disposed on the main body portion (12) and a decorative sheet (20) disposed on the handle panel (18). The handle panel (18) includes a handle surface (22) opposite to the decorative sheet (20), one of the handle panel (18) and the decorative sheet (20) includes an as-

sembly hole (24), the assembly hole (24) includes a first guide portion (26), a guide direction (X) of the first guide portion (26) is parallel to the handle surface (22), and the other one of the handle panel (18) and the decorative sheet (20) includes a buckle (28) matching the assembly hole (24). An embodiment of the present invention may facilitate sliding and blind installation of the handle panel (18), the decorative sheet (20), and the like.



**FIG. 1**

## Description

**[0001]** The present invention relates to a clothing handling device. There is room for improvement in assembly of a handle panel and a decorative sheet in an existing clothing handling device such as a washing machine, a washing and drying machine, or a drying machine. A purpose of the present invention is to provide an improved clothing handling device. In view of the above purpose, one aspect of an embodiment of the present invention relates to a clothing handling device, including: a main body portion, adapted to handle clothing; a door, adapted to open and close the main body portion; and a handle component, including a handle panel disposed on the main body portion and a decorative sheet disposed on the handle panel. The handle panel includes a handle surface opposite to the decorative sheet. One of the handle panel and the decorative sheet includes an assembly hole. The assembly hole includes a first guide portion, and a guide direction X of the first guide portion is parallel to the handle surface. The other one of the handle panel and the decorative sheet includes a buckle matching the assembly hole. This embodiment of the present invention may facilitate sliding and blind installation of the handle panel, the decorative sheet, and the like. Optionally, the buckle includes a second guide portion and a bonding portion connected to the second guide portion. In this way, sliding and blind installation between the handle panel and the decorative sheet may be facilitated.

**[0002]** Optionally, the buckle includes a reinforcing rib connected to the bonding portion. In this way, it can help that the buckle is not easily deformed, and the handle panel and the decorative sheet may be clamped without auxiliary means such as gluing, and the cost is low. Optionally, one of the handle panel and the decorative sheet includes a pointed rib adjacent to the assembly hole and protruding toward the bonding portion, and the pointed rib is bonded to the bonding portion. In this way, it can help to fine-tune the pointed rib as required according to an actual assembly situation of the handle panel and the decorative sheet in a later stage, without the need to adjust the handle panel and the decorative sheet extensively, which has a simple operation and low cost.

**[0003]** Optionally, the assembly hole includes a receiving portion, a matching portion, and the first guide portion connecting the receiving portion and the matching portion, a size of the receiving portion is greater than that of the matching portion, and the first guide portion obliquely extends between the receiving portion and the matching portion. In this way, sliding and blind installation between the handle panel and the decorative sheet may be facilitated. Optionally, a plurality of assembly holes and a plurality of buckles are disposed. In this way, the reliable assembly between the handle panel and the decorative sheet may be facilitated. Optionally, the other one of the handle panel and the decorative sheet includes a hanging rib adjacent to at least one of the buckles, the hanging rib is accommodated in the corresponding receiving por-

tion, and the buckle matches the matching portion. In this way, it can help to avoid a case that the handle panel and the decorative sheet relatively move during a sliding process, to the extent that the buckle cannot smoothly slide from the receiving portion into the matching portion.

**[0004]** Optionally, center surfaces of the matching portion of at least one of the assembly holes are in contact with center surfaces of the corresponding buckle. In this way, precise positioning of the handle panel and the decorative sheet at the at least one of the assembly holes and the corresponding buckle may be facilitated.

**[0005]** Optionally, one of the handle panel and the decorative sheet includes a first lateral clamping portion, the other one of the handle panel and the decorative sheet includes a second lateral clamping portion matching the first lateral clamping portion, an introduction angle defined by the first lateral clamping portion relative to the second lateral clamping portion is an obtuse angle, and a holding angle defined by the first lateral clamping portion relative to the second lateral clamping portion is an obtuse angle or approximately 90°. In this way, it can help to clamp the handle panel and the decorative sheet in a lateral direction, reduce the risk of decoupling, and the like.

**[0006]** Optionally, the handle panel includes a pre-positioning rib protruding from the handle surface, and the pre-positioning rib is close to an edge of the decorative sheet. In this way, pre-positioning and blind installation between the handle panel and the decorative sheet may be facilitated.

**[0007]** Optionally, the handle component is connected to an accommodation device, and the accommodation device is slidably disposed on the main body portion. In this way, it can help the handle component to decorate an appearance of the accommodation device.

**[0008]** If technical conditions permit, the above subject matter claimed by any independent claim can be combined with a single subject matter or a combination of a plurality of subject matters claimed by any dependent claims to form a novel subject matter.

**[0009]** The present invention is further described below with reference to the accompanying drawings. Same or similar labels are used in the accompanying drawings to denote same or similar elements in different embodiments, and the descriptions of the same or similar elements in different embodiments may also be omitted.

FIG. 1 is a schematic perspective view of a clothing handling device according to an embodiment of the present invention;

FIG. 2 is a schematic front view of a handle panel of the clothing handling device in FIG. 1;

FIG. 3 is a schematic rear view of a handle component of the clothing handling device in FIG. 1;

FIG. 4 is a schematic partial perspective view of a buckle of the handle component in FIG. 3;

FIG. 5 is a schematic partially enlarged diagram taken from a circle M in FIG. 3;

FIG. 6 is a schematic cross-sectional view taken along a line K-K in FIG. 3;

FIG. 7 is a schematic partially enlarged diagram taken from a circle L in FIG. 6;

FIG. 8 is a schematic rear view of the handle panel in FIG. 2;

FIG. 9 is a schematic rear view of a decorative sheet of the handle component in FIG. 3;

FIG. 10 and FIG. 11 are schematic cross-sectional views respectively taken along lines G-G and H-H in FIG. 2;

FIG. 12 and FIG. 13 are schematic cross-sectional views respectively taken along lines F-F and E-E in FIG. 9;

FIG. 14 is a schematic cross-sectional view of the handle component in FIG. 3;

FIG. 15 and FIG. 16 are schematic partially enlarged diagrams respectively taken from circles P and R in FIG. 14; and

FIG. 17 and FIG. 18 are respectively a schematic front view and a schematic rear view of the handle component in FIG. 3 before being assembled.

**[0010]** FIG. 1 is a schematic perspective view of a clothing handling device according to an embodiment of the present invention. As shown in FIG. 1, one aspect of an embodiment of the present invention relates to a clothing handling device 10, including: a main body portion 12, adapted to handle clothing (not shown); a door 14, adapted to open and close the main body portion 12; and a handle component 16, including a handle panel 18 disposed on the main body portion 12 and a decorative sheet 20 disposed on the handle panel 18.

**[0011]** FIG. 2 is a schematic front view of a handle panel of the clothing handling device in FIG. 1. FIG. 3 is a schematic rear view of a handle component of the clothing handling device in FIG. 1. Referring to FIG. 2 and FIG. 3, the handle panel 18 includes a handle surface 22 opposite to the decorative sheet 20. One of the handle panel 18 and the decorative sheet 20 includes an assembly hole 24. The assembly hole 24 includes a first guide portion 26, and a guide direction X of the first guide portion 26 is parallel to the handle surface 22. The other one of the handle panel 18 and the decorative sheet 20 includes a buckle 28 matching the assembly hole 24.

**[0012]** This embodiment of the present invention may facilitate sliding and blind installation of the handle panel 18, the decorative sheet 20, and the like.

**[0013]** The clothing handling device 10 may be a washing machine, a washing and drying machine, or a drying machine. When the door 14 is opened, the clothing may be placed in the main body portion 12 to be handled such as washed and/or dried therein, or the handled clothing may be taken out from the main body portion 12.

**[0014]** As shown in the figure, the handle panel 18 may include the assembly hole 24, and the decorative sheet 20 may include the buckle 28. In an embodiment not shown, the handle panel 18 may include the buckle 28,

and the decorative sheet 20 may include the assembly hole 24.

**[0015]** The match between the buckle 28 and the assembly hole 24 may facilitate the assembly of the handle panel 18 and the decorative sheet 20. The assembly hole 24 includes the first guide portion 26, and the guide direction X of the first guide portion 26 is parallel to the handle surface 22, which may facilitate relative sliding between the assembly hole 24 and the buckle 28 with the help of the guide of the first guide portion 26 during assembly, so that the handle panel 18 and the decorative sheet 20 relatively slide and are blindly installed along a direction parallel to the handle surface 22.

**[0016]** FIG. 4 is a schematic partial perspective view of the buckle of the handle component in FIG. 3. Referring to FIG. 4 together, optionally, the buckle 28 includes a second guide portion 30 and a bonding portion 32 connected to the second guide portion 30. In this way, sliding and blind installation between the handle panel 18 and the decorative sheet 20 may be facilitated. The second guide portion 30 may be an inclined surface extending from the outside to the inside of the buckle 28, and may be substantially L-shaped. The bonding portion 32 may be a surface extending from one L-shaped branch of the second guide portion 30. When the assembly hole 24 matches the buckle 28, a surface at an edge of the assembly hole 24 opposite to the handle surface 22 may first come into contact with the second guide portion 30, and then slide toward the bonding portion 32 along the second guide portion 30, and is disposed opposite to the bonding portion 32.

**[0017]** Optionally, the buckle 28 includes a reinforcing rib 34 connected to the bonding portion 32. In this way, it can help that the buckle 28 is not easily deformed, and the handle panel 18 and the decorative sheet 20 may be clamped without auxiliary means such as gluing, and the cost is low. The reinforcing rib 34 may be two wall portions extending in parallel in a direction away from the bonding portion 32.

**[0018]** FIG. 5 is a schematic partially enlarged diagram taken from a circle M in FIG. 3. FIG. 6 is a schematic cross-sectional view taken along a line K-K in FIG. 3. FIG. 7 is a schematic partially enlarged diagram taken from a circle L in FIG. 6. As shown in FIG. 5, FIG. 6, and FIG. 7, optionally, one of the handle panel 18 and the decorative sheet 20 includes a pointed rib 36 adjacent to the assembly hole 24 and protruding toward the bonding portion 32, and the pointed rib 36 is bonded to the bonding portion 32. In this way, it can help to fine-tune the pointed rib 36 as required according to an actual assembly situation of the handle panel 18 and the decorative sheet 20 in a later stage, without the need to adjust the handle panel 18 and the decorative sheet 20 extensively, which has a simple operation and low cost.

**[0019]** The pointed rib 36 may be a convex rib having a bonding area with the bonding portion 32 less than a surface area of the bonding portion 32. The buckle 28 is partially accommodated in the assembly hole 24, and

partially clamps the edge of the assembly hole 24, which may facilitate the fixation between the handle panel 18 and the decorative sheet 20 in a direction Y perpendicular to the handle surface 22.

**[0020]** FIG. 8 is a schematic rear view of the handle panel 18 in FIG. 2. As shown in FIG. 8, optionally, the assembly hole 24 includes a receiving portion 38, a matching portion 40, and the first guide portion 26 connecting the receiving portion 38 and the matching portion 40, a size of the receiving portion 38 is greater than that of the matching portion 40, and the first guide portion 26 obliquely extends between the receiving portion 38 and the matching portion 40. In this way, sliding and blind installation between the handle panel 18 and the decorative sheet 20 may be facilitated. The receiving portion 38 and the matching portion 40 may each be substantially square and may communicate end to end, so that a cross-section of the assembly hole 24 is substantially in a shape

of . During assembly, the buckle 28 may first enter the receiving portion 38, and enter the matching portion 40 along the inclined first guide portion 26, and is bonded

to the pointed rib 36 on the back of the handle panel 18. **[0021]** Optionally, a plurality of assembly holes 24 and a plurality of buckles 28 are disposed. In this way, the reliable assembly between the handle panel 18 and the decorative sheet 20 may be facilitated.

**[0022]** Optionally, the other one of the handle panel 18 and the decorative sheet 20 includes a hanging rib 42 adjacent to at least one of the buckles 28, the hanging rib 42 is accommodated in the corresponding receiving portion 38, and the buckle 28 matches the matching portion 40. In this way, it can help to avoid a case that the handle panel 18 and the decorative sheet 20 relatively move during a sliding process, to the extent that the buckle 28 cannot smoothly slide from the receiving portion 38 into the matching portion 40.

**[0023]** FIG. 9 is a schematic rear view of a decorative sheet of the handle component in FIG. 3. Referring to FIG. 9, the buckle 28 and the hanging rib 42 may be located on the decorative sheet 20. The decorative sheet 20 may be substantially rectangular. Two hanging ribs 42 may be disposed, and may be respectively adjacent to two buckles 28 at both ends of the decorative sheet 20 in a length direction. In an embodiment not shown, the buckle 28 and the hanging rib 42 may be located on the handle panel 18.

**[0024]** Optionally, center surfaces B1 and B2 of the matching portion 40 of at least one of the assembly holes 24 are in contact with center surfaces B3 and B4 of the corresponding buckle 28. In this way, precise positioning of the handle panel 18 and the decorative sheet 20 at the at least one of the assembly holes 24 and the corresponding buckle 28 may be facilitated.

**[0025]** FIG. 10 and FIG. 11 are schematic cross-sectional views respectively taken along lines G-G and H-H in FIG. 2. With reference to FIG. 2, FIG. 10, and FIG. 11, it can be seen that the handle panel 18 may be substan-

tially rectangular, and the center surfaces B1 and B2 may be center surfaces fitted by the matching portions 40 of the two assembly holes 24 close to both ends of the handle panel 18 in a length direction.

**[0026]** FIG. 12 and FIG. 13 are schematic cross-sectional views respectively taken along lines F-F and E-E in FIG. 9. With reference to FIG. 9, FIG. 12, and FIG. 13, it can be seen that the center surfaces B3 and B4 may respectively be center surfaces fitted by top surfaces 29 and bottom surfaces 31 of the two buckles 28 close to both ends of the decorative sheet 20 in a length direction.

**[0027]** In this way, precise positioning of the handle panel 18 and the decorative sheet 20 at both ends in a length direction may be facilitated.

**[0028]** Optionally, a side surface C of the matching portion 40 of at least one of the assembly holes 24 is in contact with a side surface C1 of the corresponding buckle 28. Referring to FIG. 2 and FIG. 9, one of the assembly holes 24 of the handle panel 18 may be close to the middle of the handle panel 18 in a length direction, and the side surface C may be a side surface of the matching portion 40 of one of the assembly holes 24 away from the receiving portion 38. In this way, precise positioning of the handle panel 18 and the decorative sheet 20 close to the middle in a length direction may be facilitated.

**[0029]** Optionally, the handle panel 18 includes first bosses A1, A2, A3, and A4 distributed on an edge of the handle surface 22 in a protruding manner, and the decorative sheet 20 includes second bosses D1, D2, D3, and D4 in contact with the first bosses A1, A2, A3, and A4. End faces of the first bosses A1, A2, A3, and A4 are coplanar, and end faces of the second bosses D1, D2, D3, and D4 are coplanar.

**[0030]** As shown in FIG. 2 and FIG. 9, the first bosses A1, A2, A3, and A4 and the second bosses D1, D2, D3, and D4 may be located at four corners of the handle panel 18 and four corners of the decorative sheet 20 respectively, which may facilitate precise positioning of edge parts of the handle panel 18 and the decorative sheet 20. Moreover, using a boss with a small area as a positioning reference may facilitate measurement and mold repair of the handle component 16 in a later stage.

**[0031]** Optionally, the first bosses A1, A2, A3, and A4 are different in size from the second bosses D1, D2, D3, and D4. In this way, the measurement and mold repair of the handle component 16 in a later stage may be further facilitated.

**[0032]** Optionally, one of the handle panel 18 and the decorative sheet 20 includes a first lateral clamping portion 44, the other one of the handle panel 18 and the decorative sheet 20 includes a second lateral clamping portion 46 matching the first lateral clamping portion 44, an introduction angle  $\theta$  defined by the first lateral clamping portion 44 relative to the second lateral clamping portion 46 is an obtuse angle, and a holding angle  $\alpha$  defined by the first lateral clamping portion relative to the second lateral clamping portion is an obtuse angle or approximately  $90^\circ$ . In this way, it can help to clamp the handle

panel 18 and the decorative sheet 20 in a lateral direction, reduce the risk of decoupling, and the like.

[0033] FIG. 14 is a schematic cross-sectional view of the handle component in FIG. 3. FIG. 15 and FIG. 16 are schematic partially enlarged diagrams respectively taken from circles P and R in FIG. 14. Referring to FIG. 14, FIG. 15, and FIG. 16, the first lateral clamping portion 44 may be a protrusion at a tail end of a cantilever. The introduction angle  $\theta$  and the holding angle  $\alpha$  may respectively be located on both sides of the first lateral clamping portion 44. The second lateral clamping portion 46 may be a hook portion corresponding to the first lateral clamping portion 44. During assembly, the second lateral clamping portion 46 may pass by a side of the first lateral clamping portion 44 defining the introduction angle  $\theta$  along an assembly direction Z, and then remain at a side defining the holding angle  $\alpha$ . The introduction angle  $\theta$  being an obtuse angle may help the second lateral clamping portion 46 to pass smoothly during the assembly process. As shown in FIG. 15, when the holding angle  $\alpha$  is an obtuse angle, it may facilitate the smooth rebound of the cantilever, and the first lateral clamping portion 44 and the second lateral clamping portion 46 may be in interference fit. As shown in FIG. 16, when the holding angle  $\alpha$  is approximately  $90^\circ$ , it may help to reduce the risk of decoupling between the first lateral clamping portion 44 and the second lateral clamping portion 46, and the first lateral clamping portion 44 and the second lateral clamping portion 46 may be in clearance fit.

[0034] Two or more first lateral clamping portions 44 may be disposed, and may be distributed on the handle panel 18 at intervals. Correspondingly, two or more second lateral clamping portions 46 may be disposed, and may be in a one-to-one correspondence to the first lateral clamping portions 44 in position. As shown in FIG. 14, when there is the first lateral clamping portion 44 with the holding angle  $\alpha$  being an obtuse angle and there is the first lateral clamping portion 44 with the holding angle  $\alpha$  of approximately  $90^\circ$ , the handle panel 18 and the decorative sheet 20 may be assembled smoothly and may be prevented from decoupling, which is reliable.

[0035] FIG. 17 and FIG. 18 are respectively a schematic front view and a schematic rear view of the handle component 16 before being assembled. Referring to FIG. 17 and FIG. 18, optionally, the handle panel 18 includes a pre-positioning rib 48 protruding from the handle surface 22, and the pre-positioning rib 48 is close to an edge 50 of the decorative sheet 20. In this way, pre-positioning and blind installation between the handle panel 18 and the decorative sheet 20 may be facilitated. Before assembly, the handle panel 18 may be aligned with an upper part of the decorative sheet 20, the edge 50 may be aligned with the pre-positioning rib 48, the buckle 28 may first enter the receiving portion 38 of the assembly hole 24, and then the decorative sheet 20 may slide along the assembly direction Z until the buckle 28 matches the matching portion 40.

[0036] The various specific implementations de-

scribed above and shown in the accompanying drawings are only used to illustrate the present invention, but are not all of the present invention. Any variation made by a person of ordinary skill in the art to the present invention within the scope of the basic technical concept of the present invention shall fall within the protection scope of the present invention.

## 10 Claims

1. A clothing handling device (10), **characterized by** comprising: a main body portion (12), adapted to handle clothing;

a door (14), adapted to open and close the main body portion (12); and

a handle component (16), comprising a handle panel (18) disposed on the main body portion (12) and a decorative sheet (20) disposed on the handle panel (18), wherein the handle panel (18) comprises a handle surface (22) opposite to the decorative sheet (20), one of the handle panel (18) and the decorative sheet (20) comprises an assembly hole (24), the assembly hole (24) comprises a first guide portion (26), a guide direction (X) of the first guide portion (26) is parallel to the handle surface (22), and the other one of the handle panel (18) and the decorative sheet (20) comprises a buckle (28) matching the assembly hole (24).

2. The clothing handling device (10) according to claim 1, **characterized in that** the buckle (28) comprises a second guide portion (30) and a bonding portion (32) connected to the second guide portion (30).
3. The clothing handling device (10) according to claims 1 or 2, **characterized in that** the buckle (28) comprises a reinforcing rib (34) connected to the bonding portion (32).
4. The clothing handling device (10) according to claims 2 or 3, **characterized in that** one of the handle panel (18) and the decorative sheet (20) comprises a pointed rib (36) adjacent to the assembly hole (24) and protruding toward the bonding portion (32), and the pointed rib (36) is bonded to the bonding portion (32).
5. The clothing handling device (10) according to any of the preceding claims, **characterized in that** the assembly hole (24) comprises a receiving portion (38), a matching portion (40), and the first guide portion (26) connecting the receiving portion (38) and the matching portion (40), a size of the receiving portion (38) is greater than that of the matching portion (40), and the first guide portion (26) obliquely ex-

tends between the receiving portion (38) and the matching portion (40).

6. The clothing handling device (10) according to any of the preceding claims, **characterized in that** a plurality of assembly holes (24) and a plurality of buckles (28) are disposed. 5
  
7. The clothing handling device (10) according to claims 5 or 6, **characterized in that** the other one of the handle panel (18) and the decorative sheet (20) comprises a hanging rib (42) adjacent to at least one of the buckles (28), the hanging rib (42) is accommodated in the corresponding receiving portion (38), and the buckle (28) matches the matching portion (40). 10 15
  
8. The clothing handling device (10) according to any of the claims 5 to 7, **characterized in that** center surfaces (B1) and (B2) of the matching portion (40) of at least one of the assembly holes (24) are in contact with center surfaces (B3) and (B4) of the corresponding buckle (28). 20
  
9. The clothing handling device (10) according to any of the preceding claims, **characterized in that** one of the handle panel (18) and the decorative sheet (20) comprises a first lateral clamping portion (44), the other one of the handle panel (18) and the decorative sheet (20) comprises a second lateral clamping portion (46) matching the first lateral clamping portion (44), an introduction angle ( $\theta$ ) defined by the first lateral clamping portion (44) relative to the second lateral clamping portion (46) is an obtuse angle, and a holding angle ( $\alpha$ ) defined by the first lateral clamping portion relative to the second lateral clamping portion is an obtuse angle or approximately 90°. 25 30 35
  
10. The clothing handling device (10) according to any of the preceding claims, **characterized in that** the handle panel (18) comprises a pre-positioning rib (48) protruding from the handle surface (22), and the pre-positioning rib (48) is close to an edge (50) of the decorative sheet (20). 40 45
  
11. The clothing handling device (10) according to any one of the preceding claims, **characterized in that** the handle component (16) is connected to an accommodation device (52), and the accommodation device (52) is slidably disposed on the main body portion (12). 50

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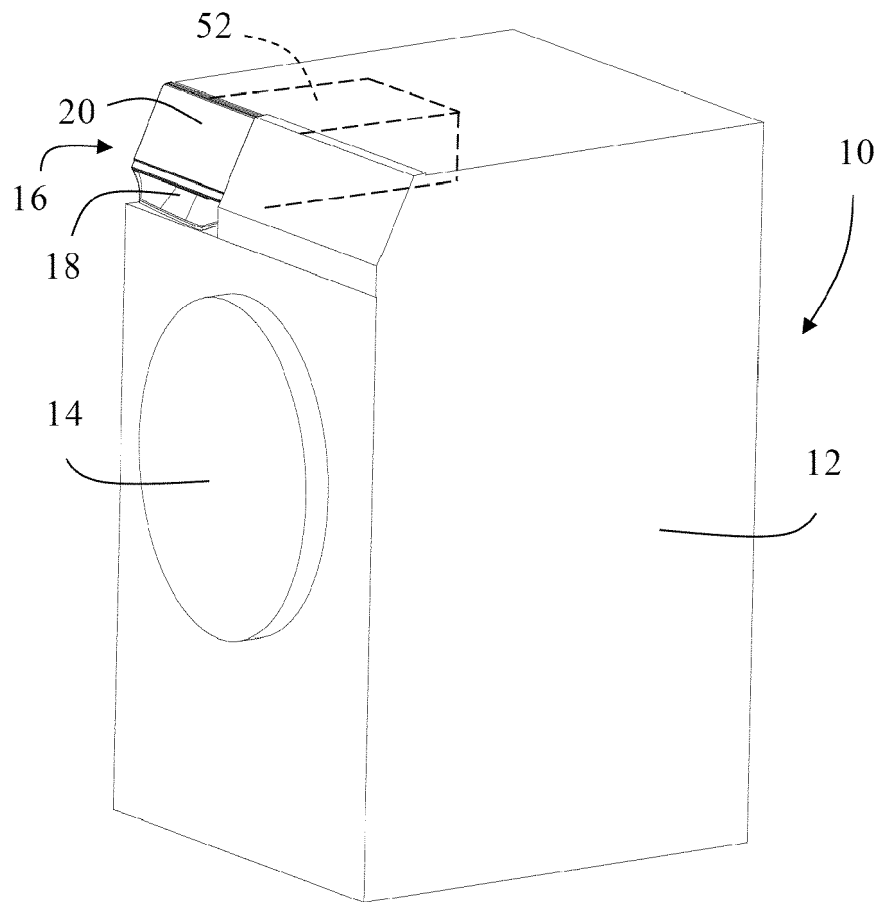


FIG. 1

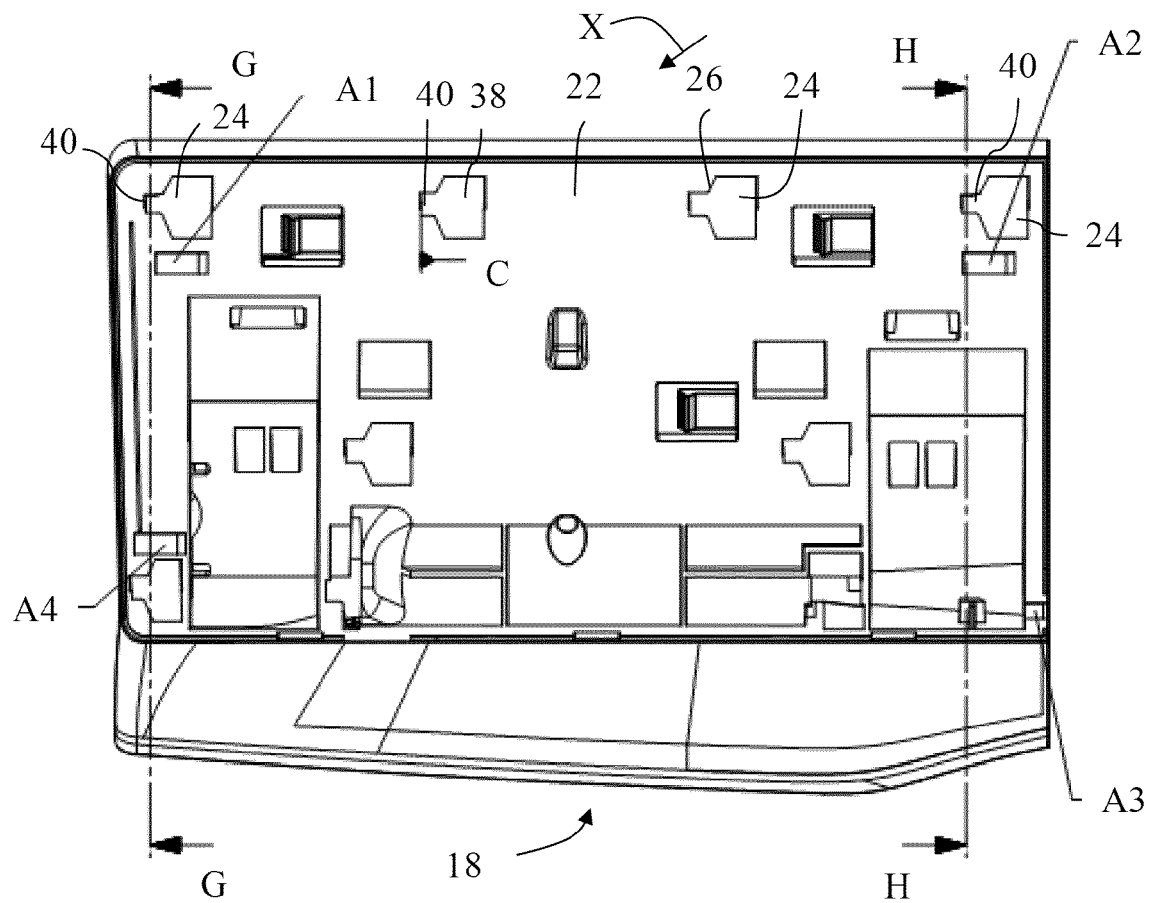


FIG. 2



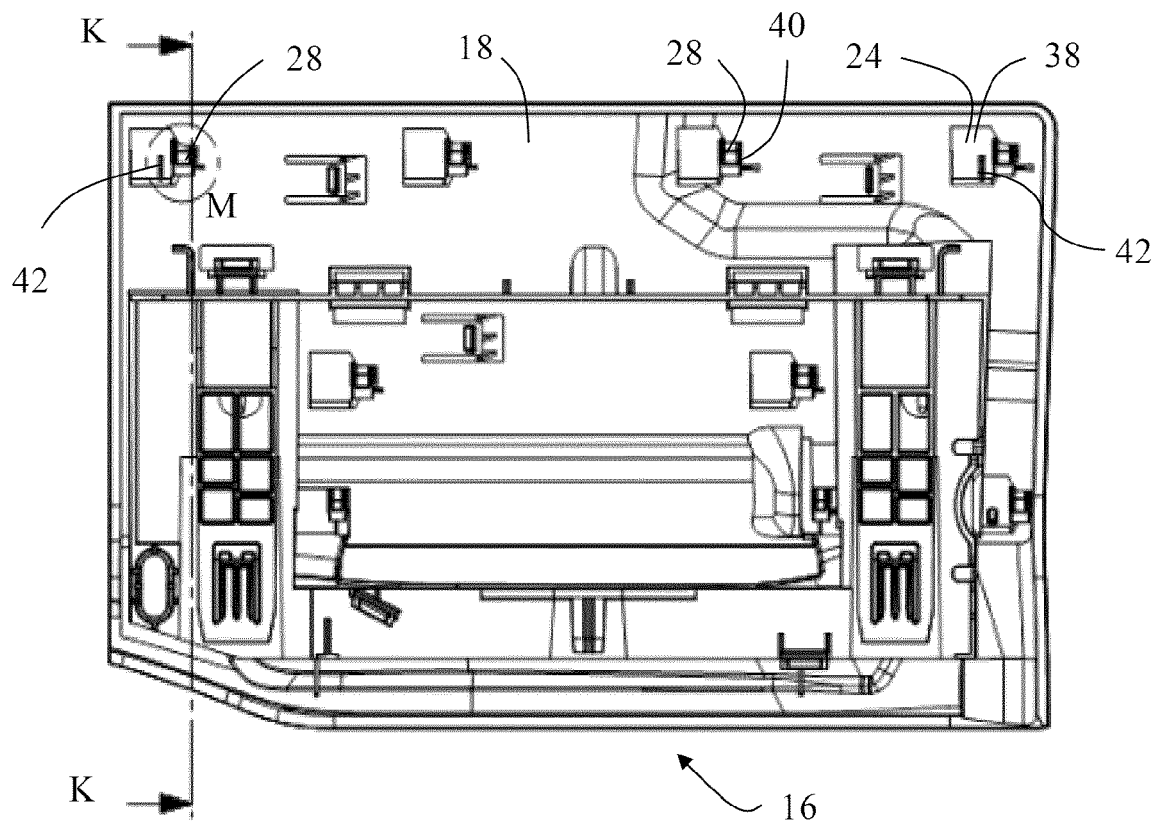


FIG. 3

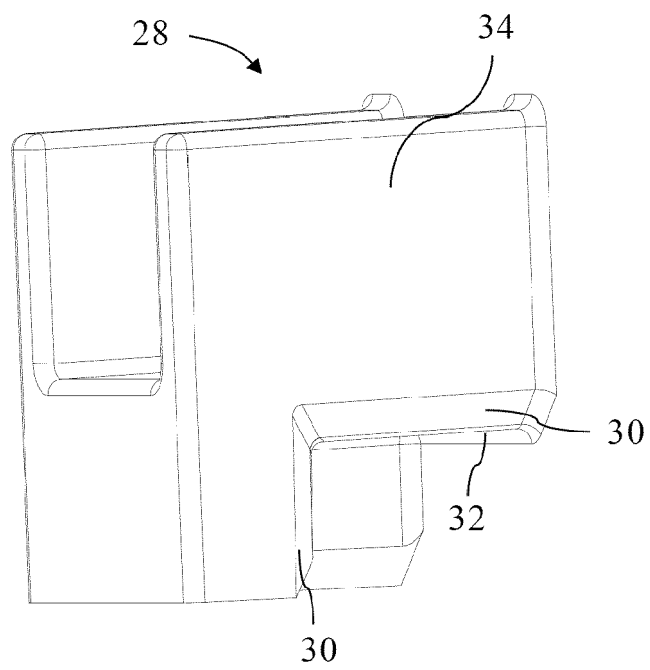


FIG. 4

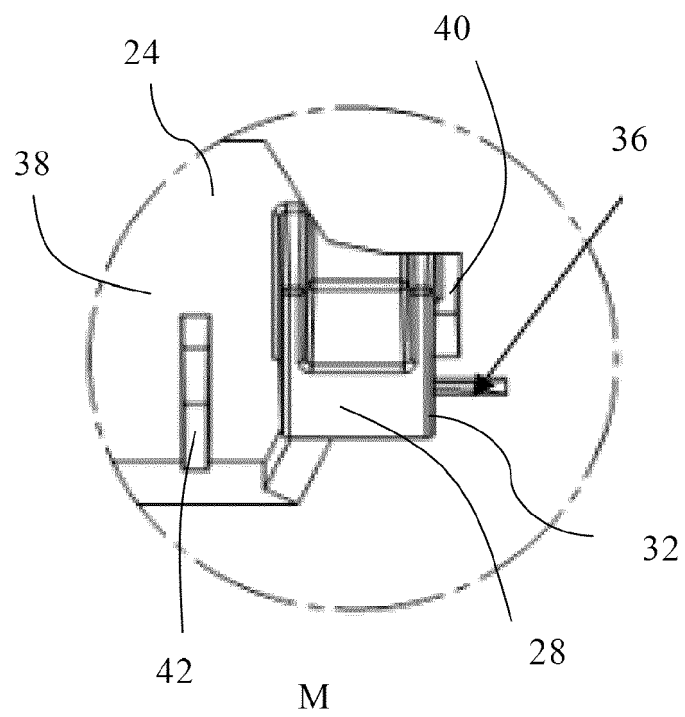
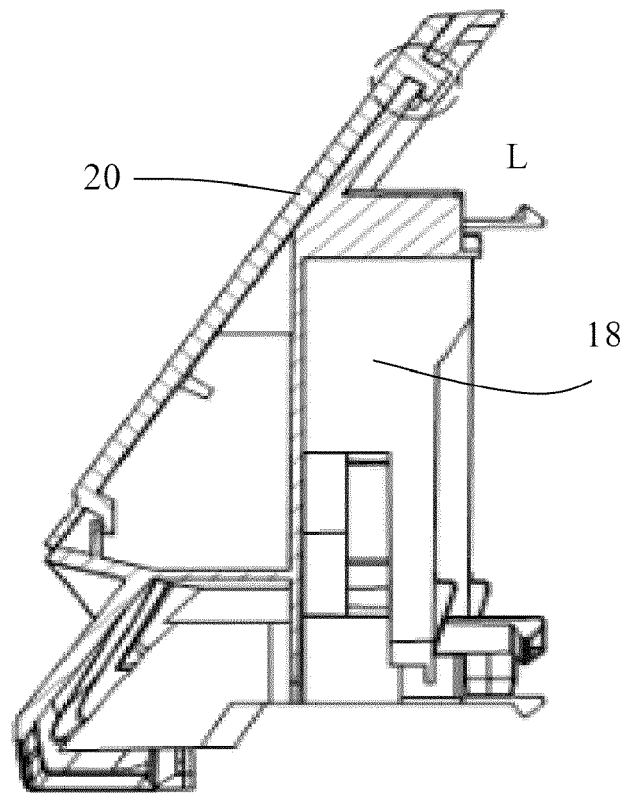


FIG. 5



K-K

FIG. 6

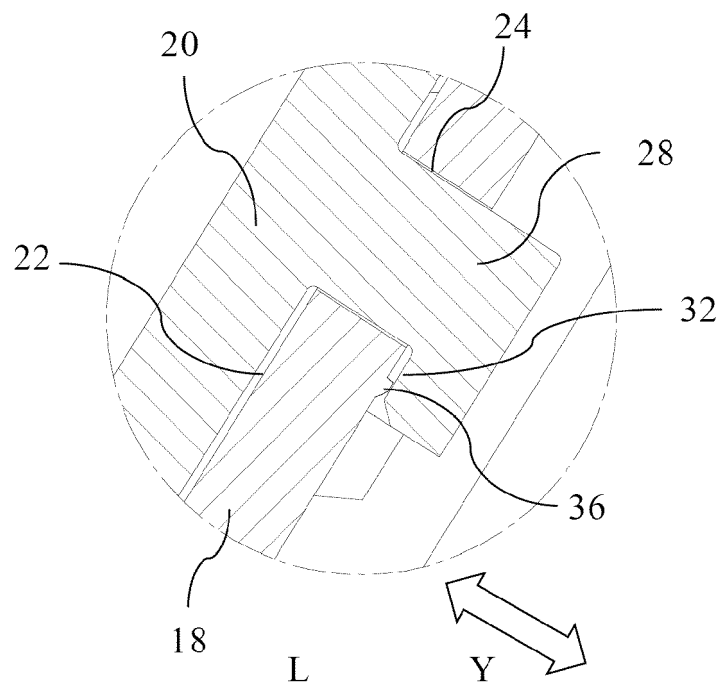


FIG. 7

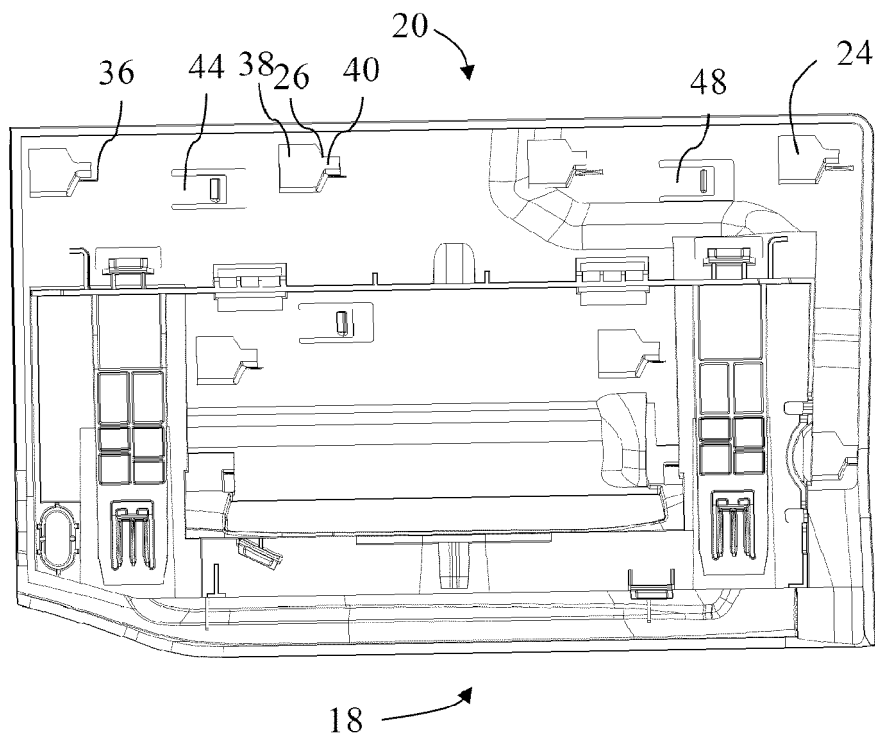


FIG. 8

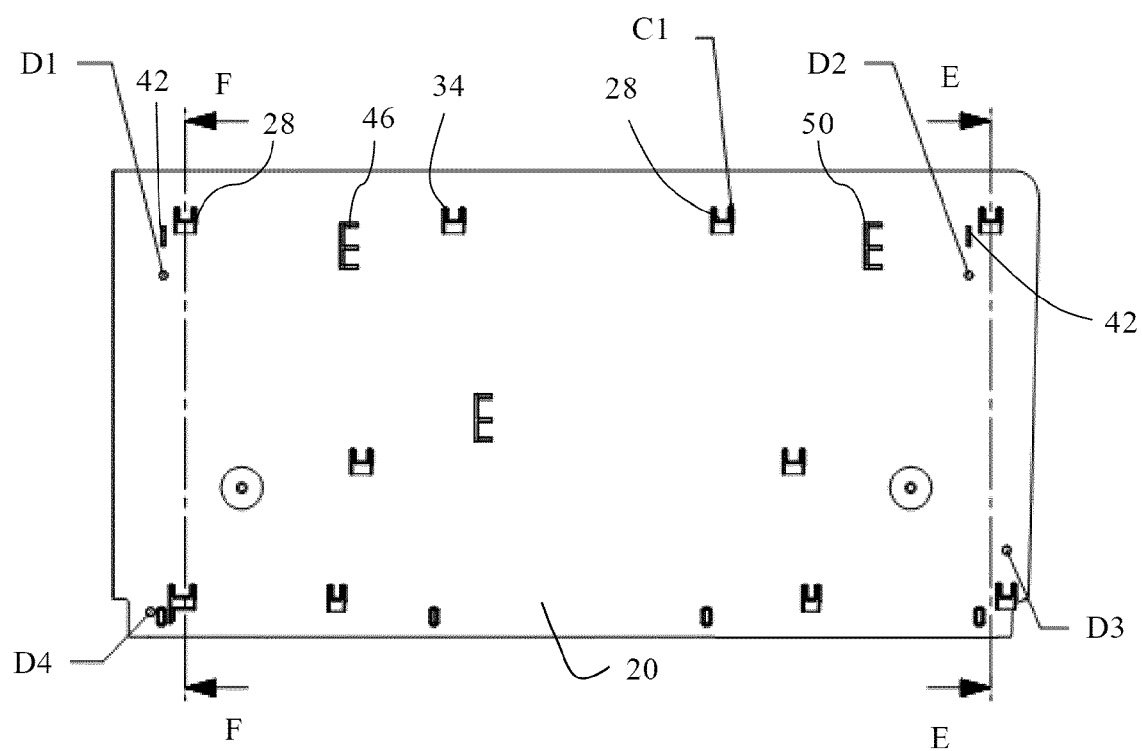


FIG. 9

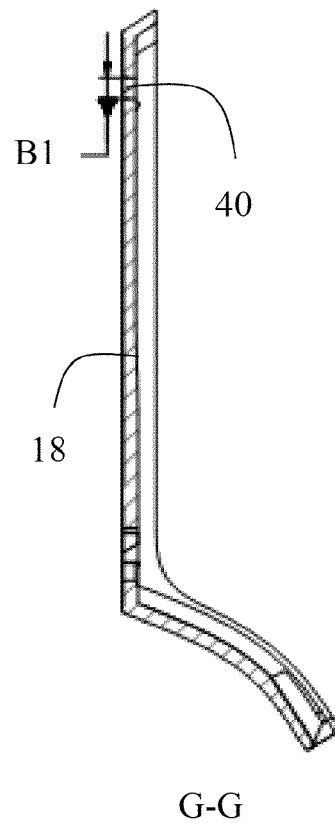
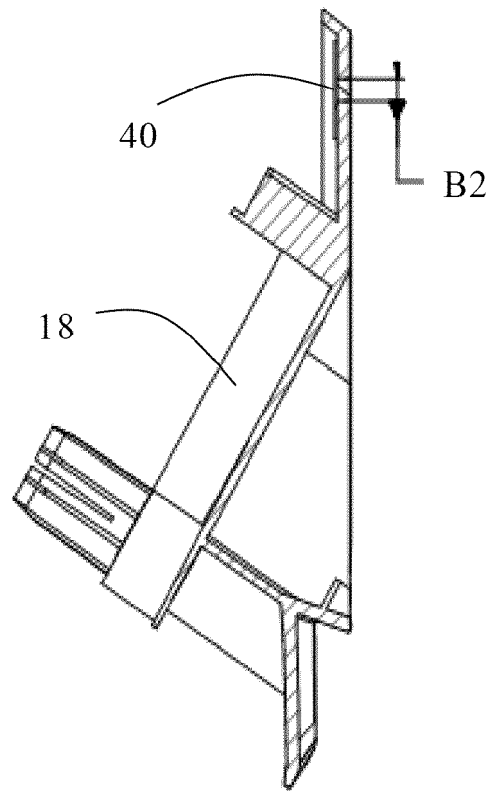


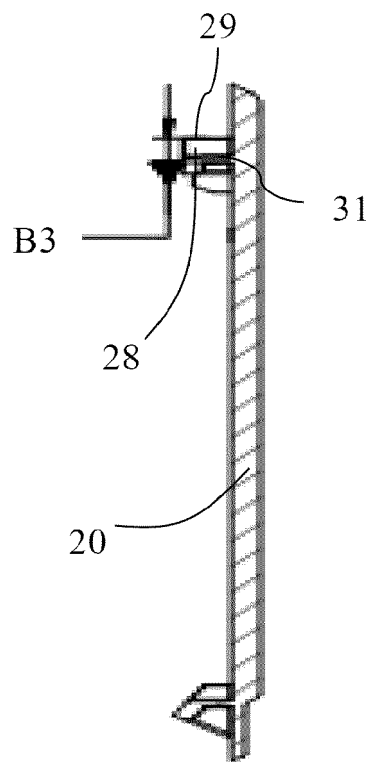
FIG. 10





H-H

FIG. 11



F-F

FIG. 12

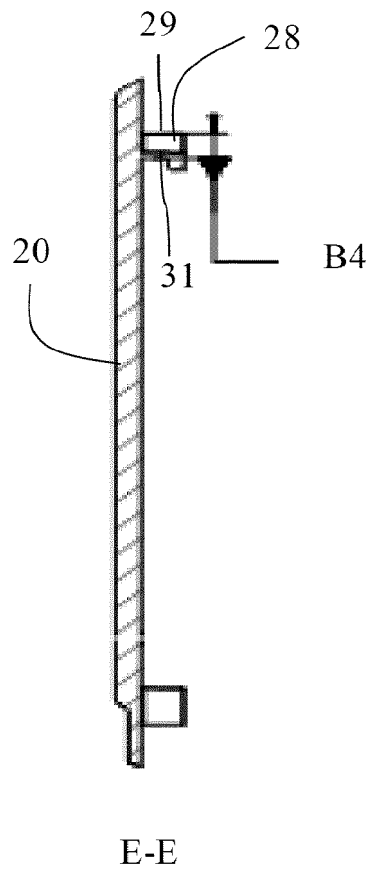


FIG. 13

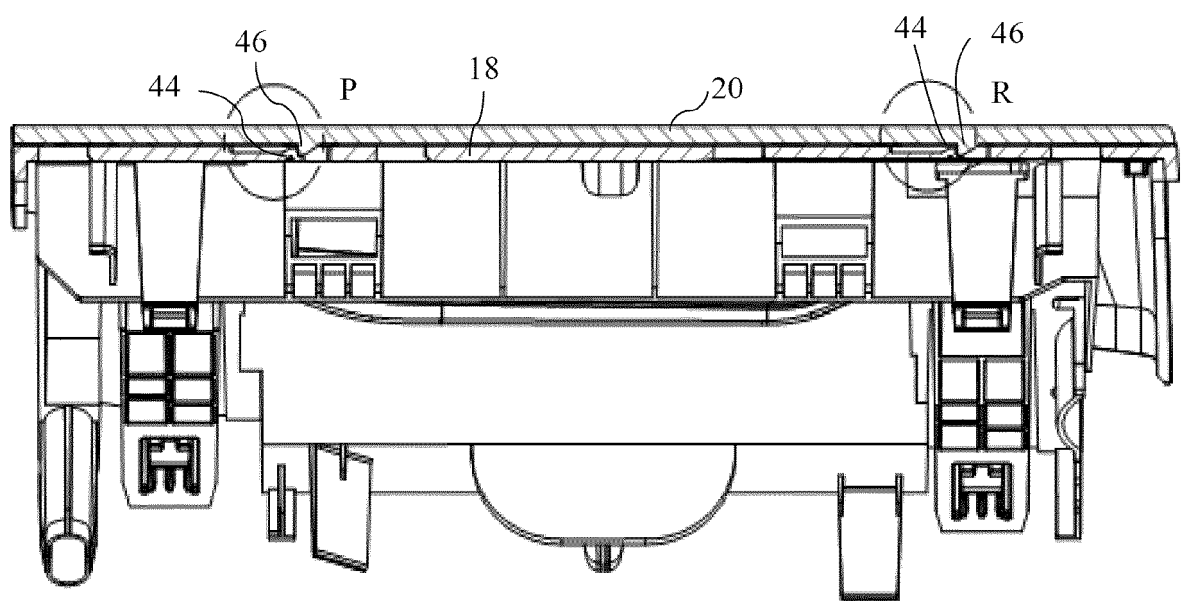


FIG. 14

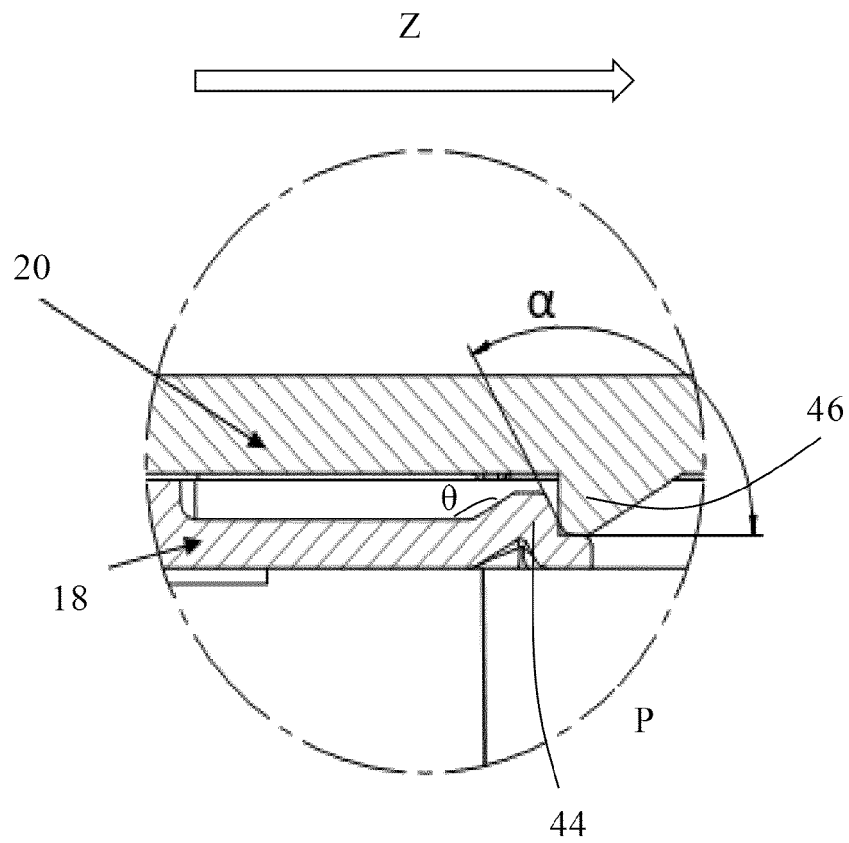


FIG. 15

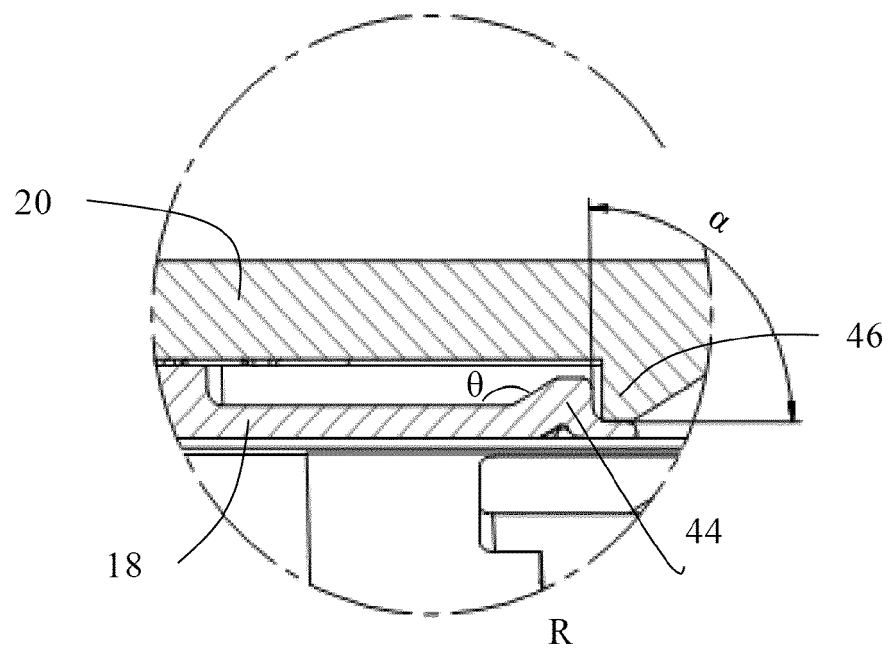


FIG. 16

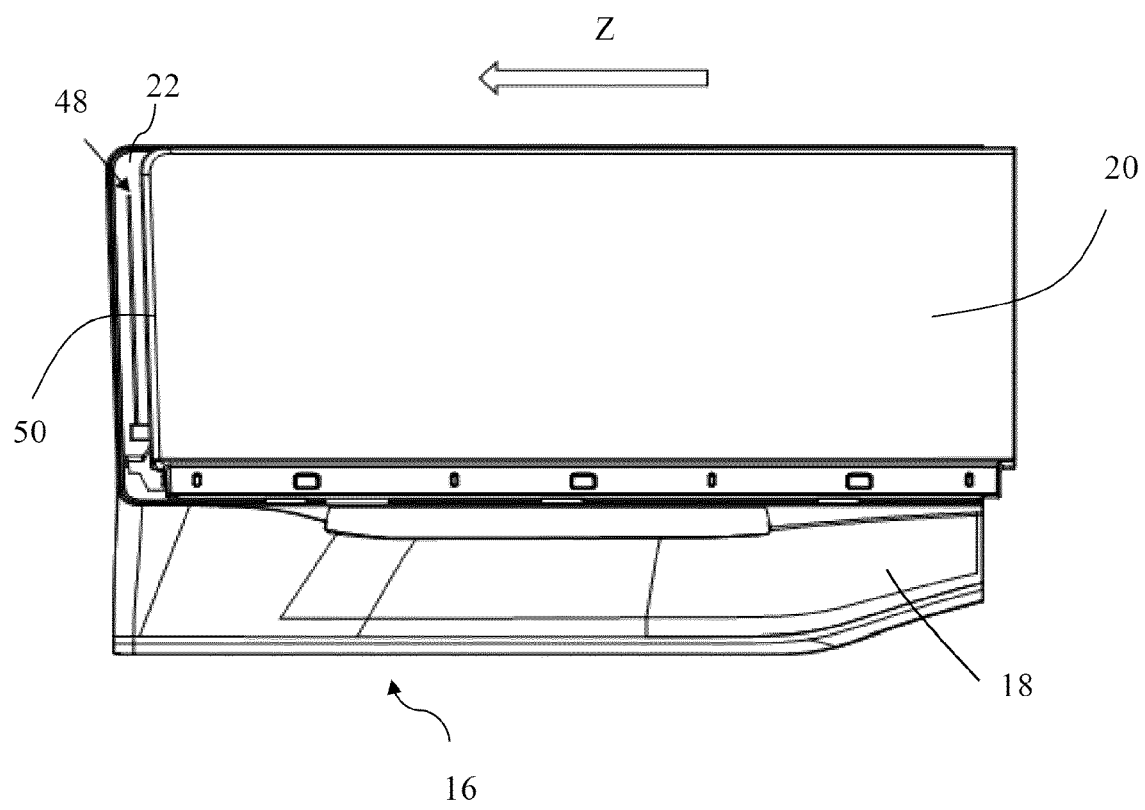


FIG. 17

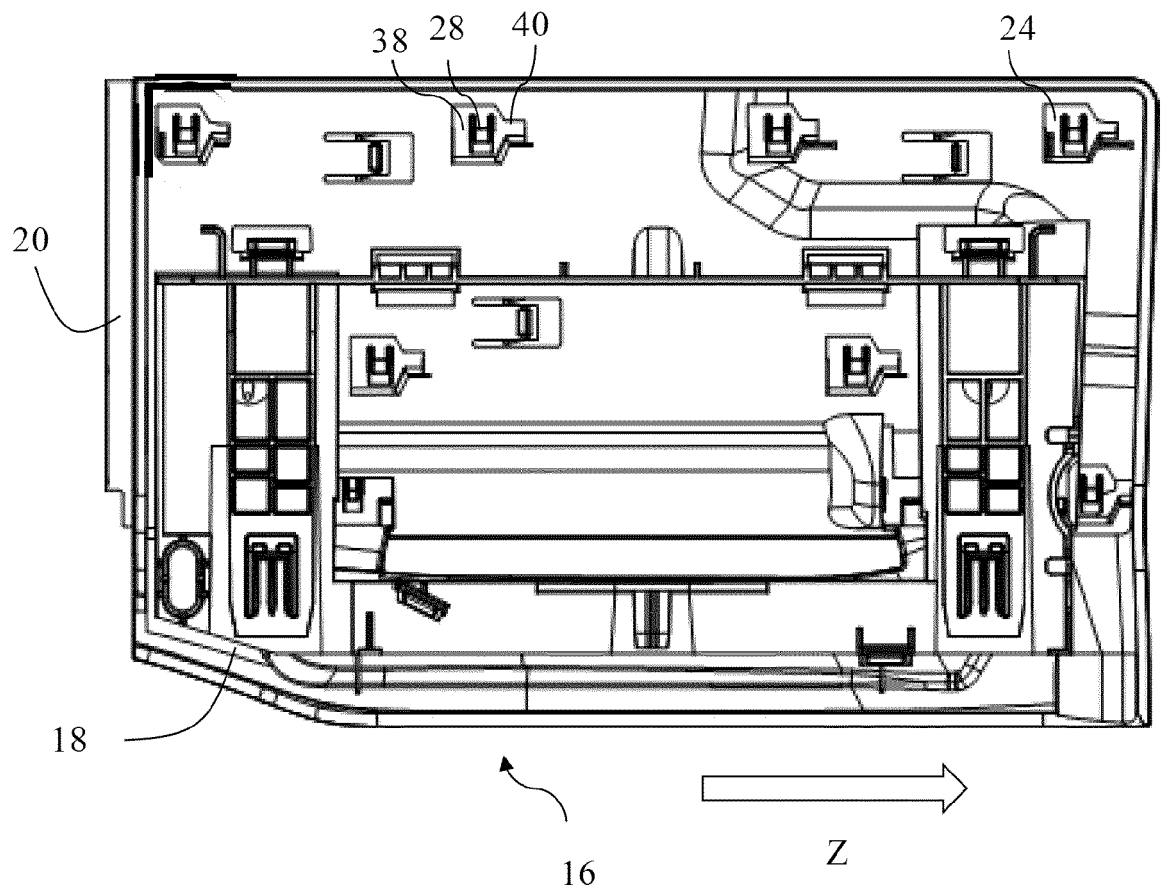


FIG. 18





## EUROPEAN SEARCH REPORT

Application Number

EP 22 16 0238

## DOCUMENTS CONSIDERED TO BE RELEVANT

| Category                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages                                                | Relevant to claim                                                                                                                                                                                                                                                                     | CLASSIFICATION OF THE APPLICATION (IPC) |
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| X                                                                                                                                                                                                                                                      | EP 3 511 464 A1 (WUXI LITTLE SWAN CO LTD [CN]) 17 July 2019 (2019-07-17)<br>* claims 12-15; figures *<br>-----               | 1-8, 10, 11                                                                                                                                                                                                                                                                           | INV.<br>D06F34/34<br>D06F39/02          |
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|                                                                                                                                                                                                                                                        |                                                                                                                              |                                                                                                                                                                                                                                                                                       | D06F                                    |
| The present search report has been drawn up for all claims                                                                                                                                                                                             |                                                                                                                              |                                                                                                                                                                                                                                                                                       |                                         |
| Place of search<br><b>Munich</b>                                                                                                                                                                                                                       |                                                                                                                              | Date of completion of the search<br><b>9 August 2022</b>                                                                                                                                                                                                                              | Examiner<br><b>Diaz y Diaz-Caneja</b>   |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document |                                                                                                                              | T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>.....<br>& : member of the same patent family, corresponding document |                                         |

EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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09-08-2022

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