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(54) Title: A HOB WITH REINFORCEMENT ELEMENT OF A BASE PLATE

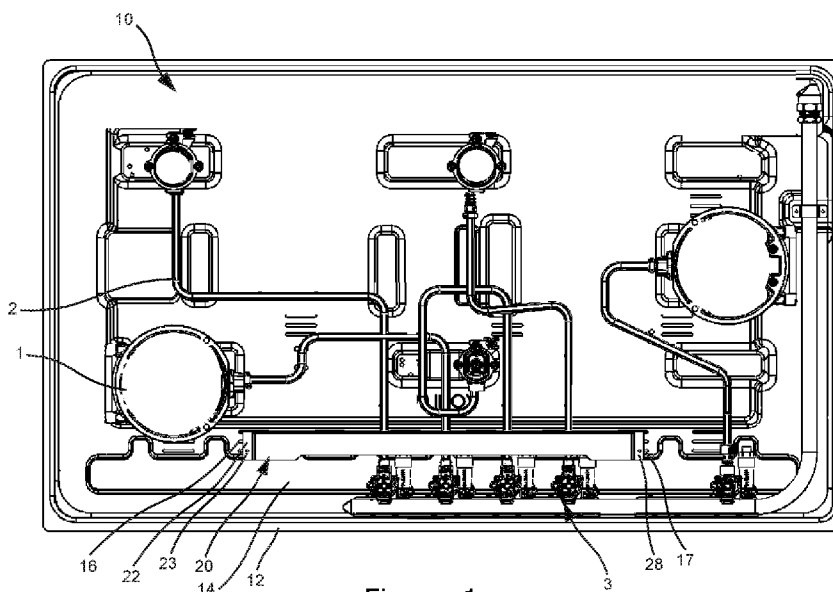


Figure 1

(57) Abstract: The invention relates to a hob comprising a metal sheet base plate (10) having a peripheral wall (12) elevated to confine a housing (14). A rigid reinforcement element (20) in the form of a bridge having a transversely extending bridge arm (21) is arranged above the base plate (10) and a first and a second leg (24, 28) are directly attached to the housing (14) from the respective corresponding contact part at the opposite ends.



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A HOB WITH REINFORCEMENT ELEMENT OF A BASE PLATE

5 TECHNICAL FIELD

The invention relates to a hob with a metal base plate on which the heating elements and a control panel are located.

10 BACKGROUND OF THE ART

A hob with a control panel comprises a base plate confining a cavity by its peripheral elevated side edges and a top plate covering from the top. Depending on the type of hob, electric switches or gas taps are arranged on the base plate and are controlled by adjustment
15 knobs extending from the top plate, accessible from the outside, on the control panel. The base sheet is generally obtained by plastic shaping in a mold that allows the cavity of a thin and flat metal sheet plate in a way that forms raising edges. The top plate is also formed by drilling a flat and flat sheet and is secured on the base plate over the edge flange in a way that delimits a room. Since the base plate is thin sheet metal, it is reinforced against
20 deformation by a strip mounted below the base plate or forming shapes on the surface of the base part.

EP2202463 describes a hob having a lower carrier element i.e. cooking hob cavity, connected with an upper carrier element i.e. cooking hob cover plate, and comprising a
25 support element i.e. supporting screw for supporting the upper element. The support element is sectionally arranged at the hob and vertically extends towards the upper element. A reinforcing element e.g. strip, is arranged at the side of the upper element, extends horizontally and reinforces the upper element, where the side is turned towards the lower element. The reinforcing element is supported on the support element.

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BRIEF DESCRIPTION OF THE INVENTION

The object of the invention is to prevent the deformation of the base plate in cooking appliances with a thin and flat metal sheet base plate.

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In order to achieve the above objective, the invention comprises a hob comprising a metal sheet base plate having a peripheral wall elevated to confine a housing. A rigid reinforcement

element in the form of a bridge has a transversely extending bridge arm arranged above the base plate and a first and second leg directly attached to the housing from the respective corresponding contact part at the opposite ends. The rigid reinforcement element creates a counter resistance over the first and second legs against the bending of the metal sheet base plate, which may occur due to the heating during cooking with the hob or the stresses created by the functional elements attached to the housing. The endurance of the hob is increased accordingly. A chamber of the hob is formed by the housing by molding or bending a one-piece metal sheet. In this case, the peripheral edges rise to completely surround the housing.

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In a preferred embodiment of the invention, the reinforcement element is in the form of an inverted U-like monolithic metal strip comprising an elongated bridge arm between the opposite first and second legs. Thus, it is possible to pass elements such as gas distribution pipes or electrical harnesses under the reinforcement bridge structure disposed on the cavity, and the reinforcement element can be easily adapted to different hob design variants.

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In a preferred embodiment of the invention, the reinforcement element is aligned parallel to and near a long peripheral wall of the base plate. In this way, the reinforcement element increases the structural strength by being fixed close to the ends of the long side where the metal sheet can deflect the most.

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In a preferred embodiment of the invention, the first and second legs are in an L-like form facing outwards opposite to each other and pressing flat against the housing from the lower end thereof. In this case, the position of the feet can be easily seen during the insertion of the reinforcement element into the housing and can be aligned accordingly.

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A preferred embodiment of the invention an opening and a counter opening are provided on the cavity in an alignment with the corresponding first and second legs respectively, and the first and second legs comprise a first tab and a second tab extending through the openings. In this case, when the first and second feet are seated on the housing, the first and second tabs pass through the corresponding openings, ensuring that the reinforcement member is fixed with the first and second feet.

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In a preferred embodiment of the invention, a neck portion is provided at the lower ends of the corresponding first and second legs in a way that allows bending the first tab and the second tab. The neck portion allows simple bending of the first and second tabs by hand. In

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this way, it is possible to secure the reinforcement element to the housing even by bending with a hand from the lower part of the housing after the tab passes through the opening.

5 In a preferred embodiment of the invention, the height of the neck part is substantially equal to the thickness of the base plate. Thus, when the tab passes through the opening, it can be rotated and fixed adjacent to the lower end of the base plate.

10 In a preferred embodiment of the invention, a connection hole aligned with a corresponding opening on the housing is provided on the first and second legs and a fastening element passes through the connection hole. In this case, the reinforcing element can be fixed to the base plate by inserting the fastening element in the hole through the corresponding first and second legs.

15 In a preferred embodiment of the invention, a depression is extending parallel to the bridge arm on the front part of the housing, and the first and second legs are provided close to opposite ends of the corresponding depression. Depression increases the structural strength of the metal sheet base plate against stress. On the other hand, the resistance of depression against a movement in the bending direction is increased with the reinforcing element extending in the transverse direction.

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BRIEF DESCRIPTION OF THE FIGURES

Figure 1 is the top view of a representative embodiment of the inventive hob before the top plate is mounted.

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Figure 2 is a perspective illustration of a reinforcement element inserted transversely into the base plate.

Figure 3 is an angled front view of the hob shown in Figure 1.

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Figure 4 is an enlarged view of the opposing first and second tabs of the reinforcement member mounted on the base plate.

DETAILED DESCRIPTION OF THE INVENTION

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In this detailed explanation, the invention is explained without any limitation and only with reference to examples to better explain the subject matter.

Figure 1 shows a gas hob from the top where the top plate is removed. The hob has a base plate (10) obtained by molding a flat and thin steel metal sheet. The base plate (10) is in a rectangular-like form obtained by cutting from a roll. The base plate (10) has been shaped in a drawing mold and its edges have been elevated to form a surrounding peripheral wall (12). A housing (14) is confined by the peripheral wall (12). The peripheral wall (12) is bent outwardly at its upper end to form a flange. A burner (1) is mounted inside the housing (14) by means of supporting elements (not shown). The burner (1) is connected to a gas distribution pipe (2) in such a way as to provide fluid transmission. The gas distribution pipe (2) is connected at one end with a corresponding gas tap (3) to control the flow rate. The gas tap (3) is connected to each burner (1) by means of the gas distribution pipe (2) between them. The gas taps (3) are arranged in a row and at a distance in the front part of the housing (14). The gas taps (3) are aligned on a depression (18) that extends transversely to and near the front of the housing (14). A reinforcing element (20) obtained by bending a thin and flat metal strip is mounted on the upper face of the housing (14) extending in the form of a bridge, passing under the gas distribution pipe (2) extends from the gas taps (3). The reinforcement element (20) is in an inverted U-like form. As shown in Figure 2, a flat and elongated bridge arm (21) extends vertically down from its opposite ends, forming a first leg (24) and a second leg (28) respectively. The first and second legs (24, 28) are in the same form and adjusted to each other in mirror symmetry. At the lower end of the first leg (24), a support wall (22) bends vertically and extends outward. A hole (23) is provided in the middle of the support wall (22). The bridge arm (21) includes a sidewall (26) obtained by bending down the two long sides of a strip. The sidewall (26) has a U-like form following the first and second legs (24, 28). The lower end of the side wall (26) is narrowed in the first leg (24) to form a neck part (27) and from there, an L-like first tab (25) is extended towards the support wall (22). On the other hand, an opposite second tab (29) extends under the corresponding second leg (28).

An opening (16) corresponding to the first leg (24) and a counter opening (17) corresponding to the second leg (28) is provided on the housing (14) adjacent to the channel-like depression (18). The opening (16) and the counter opening (17) are uniform and extend transversely in a short cut-out pattern obtained by cutting the housing (14). The reinforcement element (20) is disposed on the upper wall of the housing (14) so that the first tab (25) on the first leg (24) passes into the opening (16). In this way, the second tab (29) on the second leg (28) engages the opposite opening (17). When the reinforcement element (20) is seated on the upper wall of the housing (14), the neck portions (27) are aligned with the thickness of the opening (16, 17). Thus, the first and second tabs (25, 29) come to a freely

rotatable position on the rear wall of the housing (14). As shown in Figure 3 and Figure 4, it is possible for an operator to easily rotate the first tab (25) and second tab (29), which are in the strip structure and supported only from the neck part (27), by pressing by hand. In this case, the first tab (25) stays locked in the opening (16), and the second tab (29) in the opposite opening (17) at the ends (161, 171) where it is received. In this way, the removal of the reinforcement element (20) by pulling over the housing (14) is prevented. On the other hand, a fastening element (30) in the form of a screw is used to secure the first and second legs (24, 28) axially on the housing (14). A connection hole (23) is provided on the support wall (22), which sits on the upper face of the housing (14) by extending opposite each other on each leg (24, 28). The connection hole (23) position is adjusted on the support wall (22) so that it aligns with the opening (16) when the neck portion (27) is disposed of on the corresponding end portion (161, 171). Since the opening (16) and the counter opening (17) are in the form of multiple holes in a grid-like structure, the first tab (25) is arranged so that when the connecting hole (23) is aligned with the upper hole, the first tab (25) passes through the lower hole. An operator places the reinforcement member (20) on the housing (14) in such a way that it passes through the opening (16) from the first leg (24) and from the second leg (28) to the opposite opening (17). Then the first tab (25) and the second tab (20) are bent from the outer wall of the housing (14). However, the fixing element (30) passes through the connection hole (23) and passes into the opening (14) on the housing (14), and fixes the support wall (22) on the upper wall of the housing (14).

Since the gas distribution pipes (2) pass under the reinforcement element (20) due to the greater height of the bridge arm (21), the reinforcement element (20) in a rigid metal bar structure is fixed to the appropriate parts over the openings (16) and counter openings (17) without changing the location of the functional elements of the hob. In this case, the connections of the elements on the metal sheet base plate (10) or the stresses applied during transport are covered by the first leg (24) and the second leg (28) connections and the bridge arm (21) that keeps the distance between them constant therefore deformation possibility is eliminated.

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REFERENCE NUMBERS

1 Burner	20 Reinforcement element
2 Gas distribution pipe	21 Bridge arm
3 Gas tap	22 Support wall
10 Base plate	23 Connection hole
12 Peripheral wall	24 First leg

14 Housing
16 Opening
161 End part
17 Counter opening
171 End part
18 Depression

25 First tab
26 Sidewall
27 Neck portion
28 Second leg
29 Second tab
30 Fastening element

CLAIMS

- 1- A hob comprising a metal sheet base plate (10) having a peripheral wall (12) elevated to confine a housing (14) characterized by a rigid reinforcement element (20) in the form of a bridge having a transversely extending bridge arm (21) arranged above the base plate (10) and a first and a second leg (24, 28) directly attached to the housing (14) from the respective corresponding contact part at the opposite ends.
- 2- A hob according to claim 1, wherein the reinforcement element (20) is in the form of an inverted U-like monolithic metal strip comprising an elongated bridge arm (21) between the opposite first and second legs (24, 28).
- 3- A hob according to any one of the preceding claims, wherein the reinforcement element (20) is aligned parallel to and near a long peripheral wall (12) of the base plate (10).
- 4- A hob according to any one of the preceding claims, wherein the first and second legs (24, 28) are in an L-like form facing outwards opposite to each other and pressing flat against the housing (14) from the lower end thereof.
- 5- A hob according to any one of the preceding claims, wherein an opening (16) and a counter opening (17) are provided on the cavity in an alignment with the corresponding first and second legs (24, 28) respectively, and the first and second legs (24, 28) comprising a first tab (25) and a second tab (29) extending through the openings (16, 17).
- 6- A hob according to claim 5, wherein a neck portion (27) is provided at the lower ends of the corresponding first and second legs (24) in a way that allows bending the first tab (25) and the second tab (29).
- 7- A hob in accordance with claim 6, wherein the height of the neck part (27) is substantially equal to the thickness of the base plate (10).
- 8- A hob according to any one of the preceding claims, wherein a connection hole (23) aligned with a corresponding opening (16) on the housing (14) is provided on the first and second legs (24, 28) and a fastening element (30) passes through the connection hole (23).
9. A hob according to any one of the preceding claims, wherein a depression (18) is extending parallel to the bridge arm (21) on a front part of the housing (14), and the first and

second legs (24, 28) are provided close to opposite ends of the corresponding depression (18).

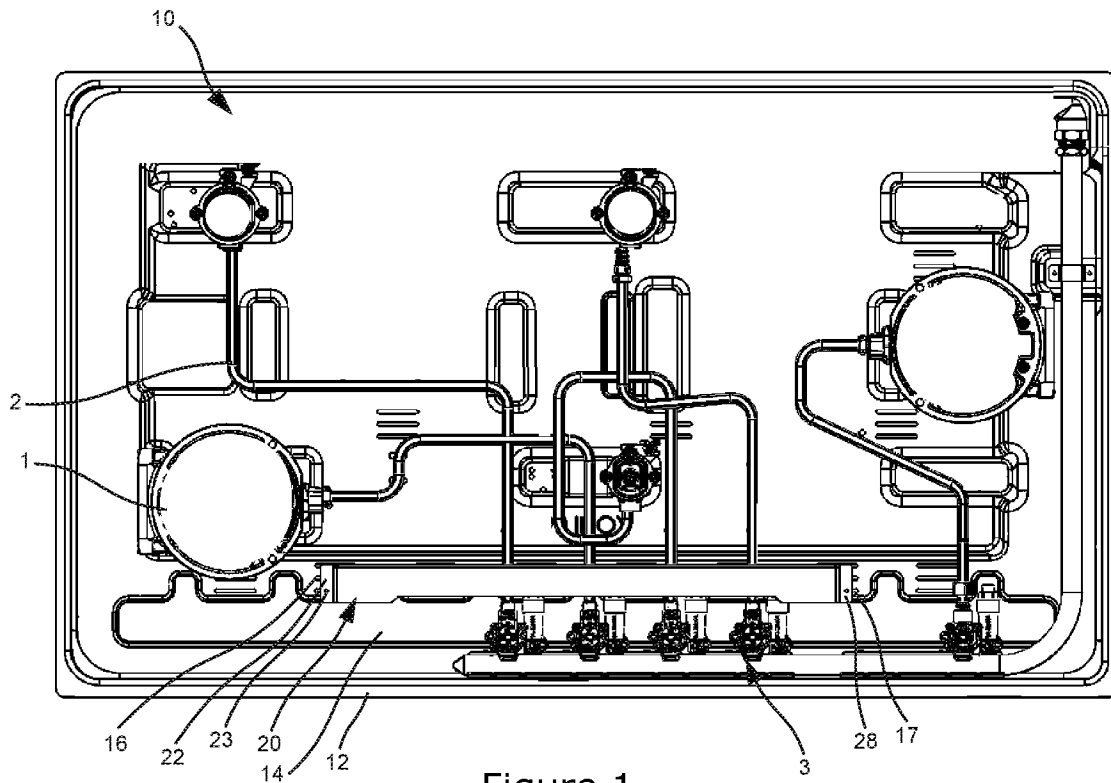


Figure 1

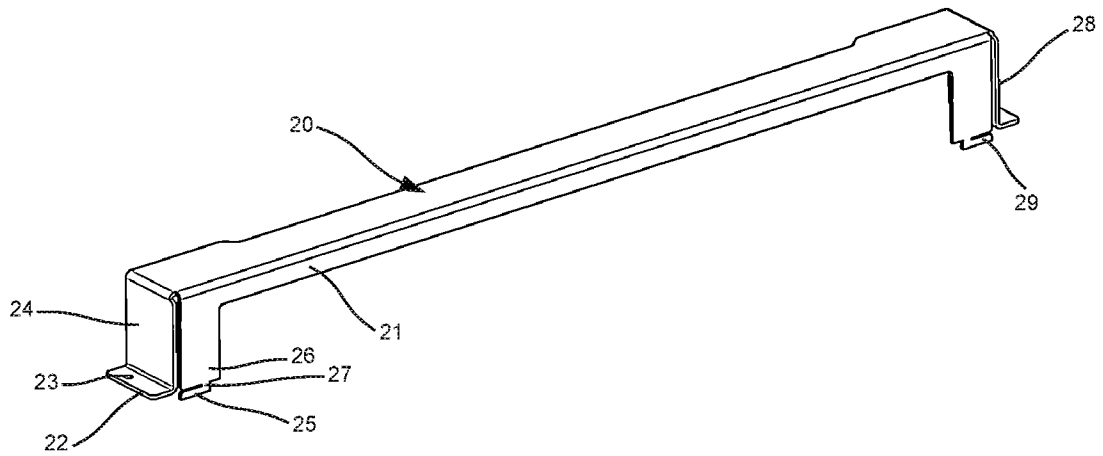


Figure 2

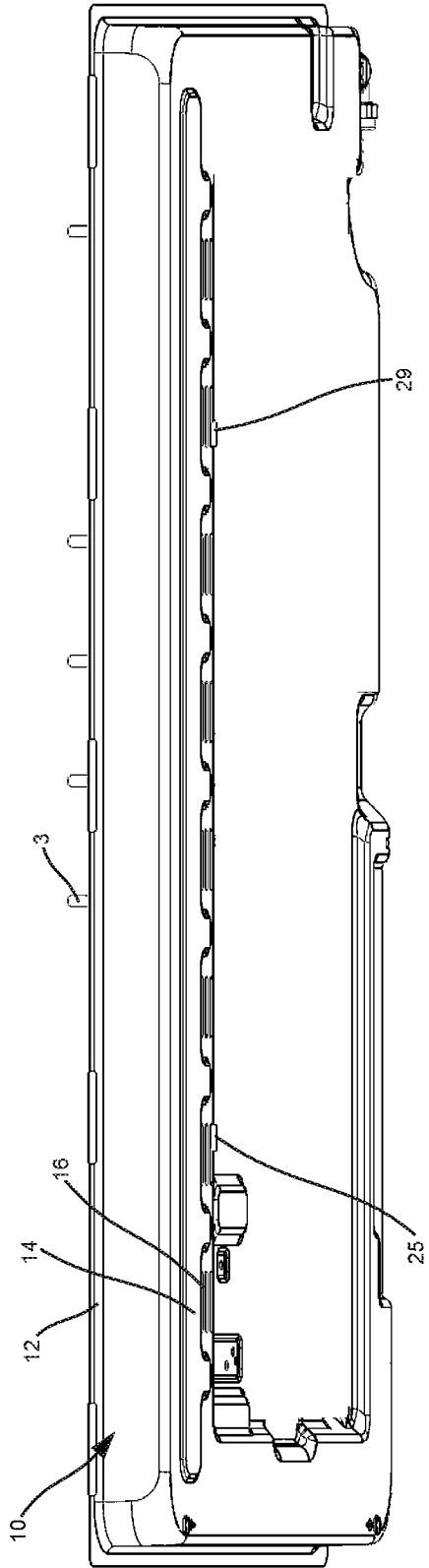


Figure 3

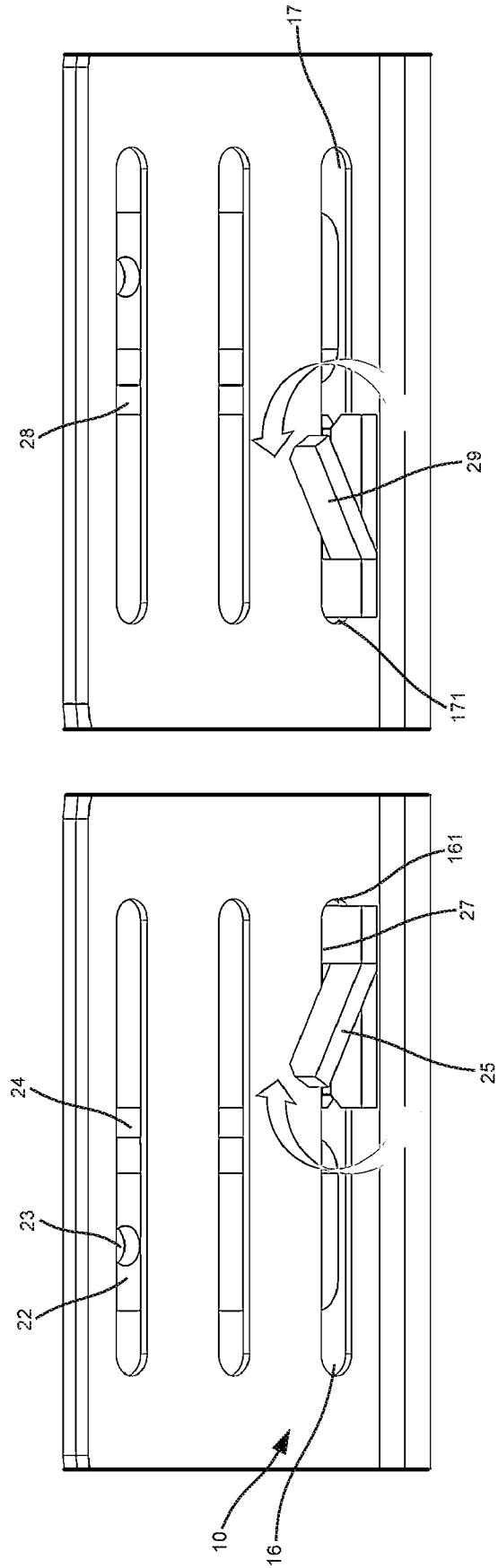


Figure 4

INTERNATIONAL SEARCH REPORT

International application No.

PCT/TR2021/050900

A. CLASSIFICATION OF SUBJECT MATTER

F24C 15/08 (2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

F24C 15/08

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

TURKPATENT Patent Database

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO Abstract & Fulltext Databases & Keywords: prevent, deformation, base, sheet/panel/plate, rigid, reinforcement, member/element/component, leg/foot, inverted, u-shaped, one-piece/monolithic, metal, strip, close/near, side, gap, tab/lug/teeth, groove/throat, foldable, connecting hole, fastening element, canal/channel/cavity

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 112524645 A (BSH ELECTRICAL APPLIANCES JIANGSU CO LTD) 19 March 2021 (2021-03-19) Abstract and Figures	1-9
A	WO 2005038352 A1 (LG ELECTRONICS INC [KR]) 28 April 2005 (2005-04-28) Abstract and Figures 2,3	1-9
A	CN 207006274 U (JOYOUNG CO LTD) 13 February 2018 (2018-02-13) Description Paragraphs 021, 047, Figures	1-9

 Further documents are listed in the continuation of Box C.
 See patent family annex.

* Special categories of cited documents:

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

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Information on patent family members

International application No.

PCT/TR2021/050900

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
CN	112524645	A	19 March 2021	CN	107917444	A	17 April 2018
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CN	207006274	U	13 February 2018	NONE			