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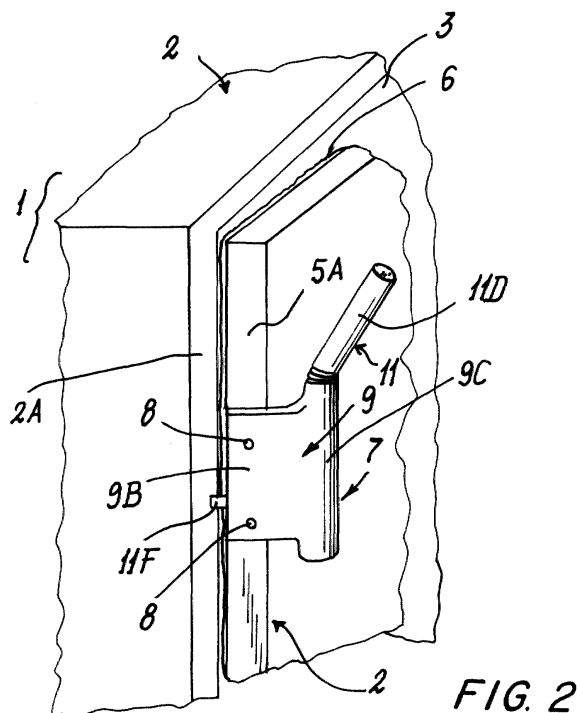
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(54) **Handle for a refrigeration appliance door**

(57) A handle for the door of domestic refrigeration appliances in general and, more specifically, for the door of upright domestic freezers, comprising a lever means with unequal lever arms, the smaller of which is arranged to open said door by reacting with its end against

the appliance housing on applying a manual opening force to the larger lever arm, comprising a stationary part formed from two half-casings (9, 12) cooperating to rotatably support the lever means (11), one of them being provided integrally with a cheek (9B) for mounting the handle on the cabinet (Figure 2).



Description

[0001] The present invention relates to a handle for the door of refrigeration appliances and, more specifically, for the door of upright freezers, in accordance with the introduction to the accompanying claim 1.

[0002] In refrigeration appliances, and in particular in upright freezers, especially if provided with doors of large dimensions, it is normal to use special handles which facilitate the opening of the door to which they are applied, its opening being opposed not only by a pressure difference between the hotter external environment and the substantially colder interior of the appliance, but in particular by the magnetic attraction exerted by the (magnetic) gaskets present on the door. These handles comprise a lever with unequal lever arms. The end of the smaller lever arm presses against the appliance cabinet or housing when the user acts on the larger lever arm in the direction of door opening, to cause initial "detachment" of the cabinet door by reaction.

[0003] Handles of this type are known for example from German Utility Models 1811327 and 9313987, and from EP0891524.

[0004] The main object of this invention is to provide a handle of the stated type which is improved in terms both of its construction and its effectiveness in use.

[0005] This and further objects which will be apparent to an expert of the art on reading the ensuing detailed description are attained by the innovative teachings of the accompanying claims.

[0006] The invention will be better understood from the detailed description thereof given hereinafter by way of non-limiting example with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of an upright freezer the door of which, shown open, is provided with the handle of the invention;

Figure 2 is a schematic perspective view of part of the freezer on a larger scale, shown at the moment of opening (detachment) of the door, this part including the handle of the invention;

Figure 3 shows by means of continuous lines one of the handle components (namely the support half-casing) seen from its interior, and by means of dashed lines the lever handgrip positioned in this component and itself forming another component of the handle;

Figure 4 is a perspective view, on a different scale, of the support half-casing of Figure 3 seen from its interior;

Figure 5 is a perspective view of the lever handgrip of Figure 3; and

Figure 6 is a perspective view, seen from its interior, of that component (namely the closure half-casing) which when coupled to the support half-casing of Figures 3 and 4, completes the handle (of which however a return spring also forms part).

[0007] In the figures, the reference numeral 1 indicates overall an upright domestic freezer presenting a stationary housing 2 with a compartment 3 containing extractable drawers 4 for preserving food. A door 5 provided with a magnetic gasket 6 substantially along its entire inner perimeter is conventionally hinged to the housing.

[0008] The lever handle of the present invention, indicated overall by 7, is connected to the door. The connection is made on that vertical edge 5A of the door 5 opposite the hinging edge, using screws 9. As will be apparent hereinafter, when opening the door the handle, by means of its movable foot 11F acting (thrusting) against the front surrounding edge 2A of the housing 2, exerts the thrust necessary to facilitate the detachment and opening of the door.

[0009] The lever handle 7 comprises substantially three parts (plus a return spring). These three parts are shown individually in Figures 4, 5 and 6 respectively, whereas the spring appears in Figure 3.

[0010] The part shown in Figure 4 is indicated by the reference numeral 9 and is defined herein as the support half-casing in that it serves for mounting the handle on the edge 5A of the door 5 by means of said screws 8 inserted through holes 9A from the opposite side to that visible in Figure 4. The support half-casing 9 is substantially, but not necessarily, of T-shape with the shank of the T represented by a cheek 9B which is ribbed (for reinforcement) and edged by a side wall interrupted at 90B. The cheek is applied with that side visible in Figure 4 against the edge 5A of the door. The crosspiece 9C of the T is internally and longitudinally hollow and is internally connected with the cheek 9B through a cut 9D of a shared edge. The crosspiece 9C presents internally a projection 9K provided with a dead hole and acting as a rotatable support for one of the parts of a pin 11A rigid with the movable component 11 of the handle shown in perspective view in Figure 5 and identified herein by the term "lever handgrip". The lever handgrip is described in greater detail hereinafter.

[0011] In the interior of the crosspiece 9C there is provided a longitudinal groove 9F for receiving (see Figure 3) the end of a return spring 13, the other end of which engages in a hole 11B in the lever handgrip 11.

[0012] The crosspiece 9C also comprises a recess, at 9G, at one of its ends and an arched end flange 9L projecting from the outside of the crosspiece. When the handle is assembled, this flange acts as a lateral guide by cooperating with one of the two closed-base slots 11C present in the lever handgrip 11 into which the flange penetrates (Figure 3), and also, as stated hereinafter, stabilizes the rest position of the handle by the action of the spring.

[0013] The lever handgrip 11 of Figure 5 is intended to be positioned within the handle as shown by dashed lines in Figure 3, it comprising a gripping part 11D of robust plastic in which the two already mentioned guide slots 11C are provided, and a metal part 11E of broken-

line axis and of substantially bar-like section, embedded in the end of the gripping part 11D and projecting from it.

[0014] Said metal part presents both the said hole 11B (for coupling the spring 13, Figure 3), and the said hinge pin 11A, and terminates with the foot 11F suitably provided with a plastic covering in order not to damage the contour 2A of the housing 2 of the freezer on which this foot operationally bears.

[0015] The third component of the handle is shown in Figure 6 and is indicated by the reference numeral 12. It consists of the closure half-casing, to be superposed on the crosspiece 9C of the support half-casing 9 and fixed to it (by bonding, for example ultrasonic if these parts are of plastic material) after mounting the lever handgrip 11 in the half-casing 9, inserting the pin 11A also into the holed support projection 12A coaxial with that 9K provided on the half-casing 12, and inserting the provided flange 12B into the other slot 11C of the lever handgrip 11, this flange being identical to the flange 9H and being parallel to it after mounting. The half-casing 12 also presents an end recess 12C which together with the recess 9G of the other half-casing 9 defines the aperture through which there extends into the two coupled half-casings the metal part 11E of the lever handgrip 11 projecting from the passageway 90C and extending with its terminal foot 11F beyond the cheek 9B (see Figure 3).

[0016] To open the door the lever handgrip 11 is rotated in the direction of the arrow F (Figure 3) by acting on the part 11D. The foot 11F exerts on the front contour 2A of the appliance housing 2 a thrust which by reaction results in detachment of the door from the contour 2A, the foot then separating from it when the metal part 11E of the lever handgrip 11 abuts against the inclined rib 9M present on the inside of the cheek 9B and the lever handgrip 11 ceases to rotate.

[0017] However the user continues to act on the handgrip to complete the opening of the door. With the door closed or on abandoning the lever handgrip 11, this abuts, via the closed base of its slots 11C, on the sides of the flanges 9H, 12B of the two half-casings 9 and 12.

[0018] The lever arm H1 (Figure 3) is chosen smaller than the lever arm H2 to an extent such that the opening of the door 5, achieved by manually rotating the lever handgrip 11 in the direction of the arrow F (Figure 3) is greatly and productively facilitated.

from two half-casings (9, 12) cooperating to rotatably support the lever means (11), one of them being provided integrally with a cheek (9B) for mounting the handle on the cabinet.

2. A handle as claimed in claim 1, wherein the lever means (11) comprises a handgrip (11D) and a bar-like part of broken-line axis (11E) which terminates with a thrust foot (11F) and is provided with pins (11A) for the rotatable support of said lever means.
3. A handle as claimed in the preceding claims, wherein the handgrip (11D) is provided with at least one closed-base slot (11C) in which there engages a projecting flange (9H, 12B) of the stationary part (9, 12).
4. A handle as claimed in the preceding claims, wherein the handgrip (11D) is of plastic material in which one end of the bar-like part (11E), which is of metal, is embedded.
5. A handle as claimed in one or more of the preceding claims, comprising a return spring (13) operating between the stationary part (9, 12) and the lever means (11).
6. A handle as claimed in one or more of the preceding claims, wherein the stationary part (9, 12) is of plastic material.
7. A handle as claimed in one or more of the preceding claims, wherein means (9M) are provided in the cheek (9B) to limit the angular excursion of the lever means (11) by interfering with its trajectory.

Claims

1. A handle for the door of domestic refrigeration appliances in general and, more specifically, for the door of upright domestic freezers, comprising a lever means with unequal lever arms, the smaller of which is arranged to open said door by reacting with its end against the appliance housing on applying a manual opening force to the larger lever arm, **characterised by** comprising a stationary part formed

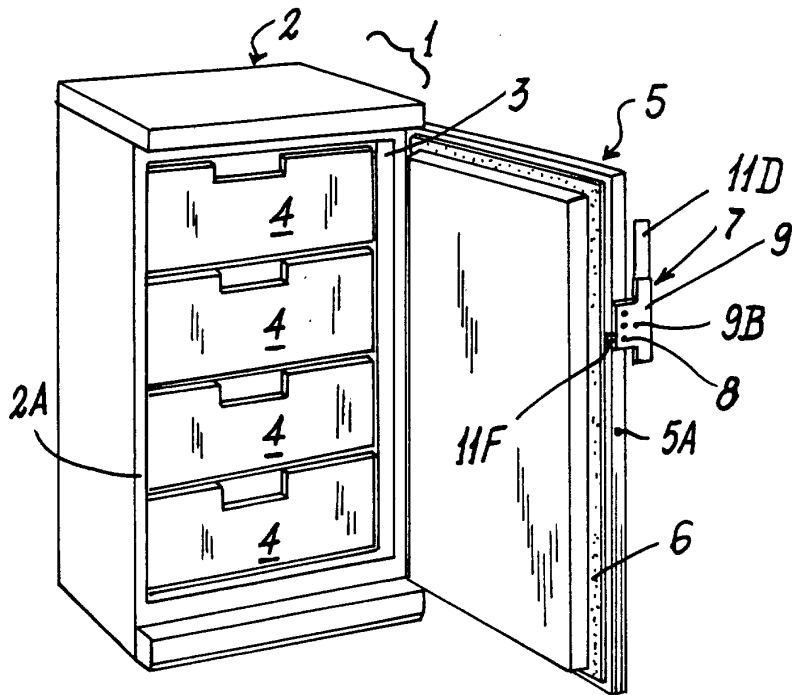


FIG. 1

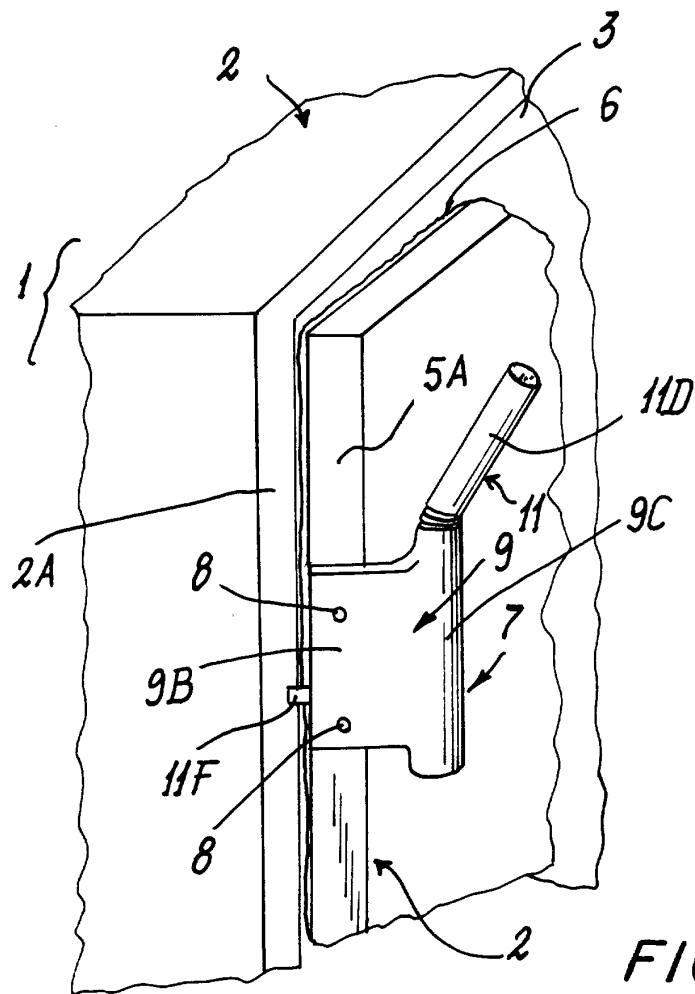


FIG. 2

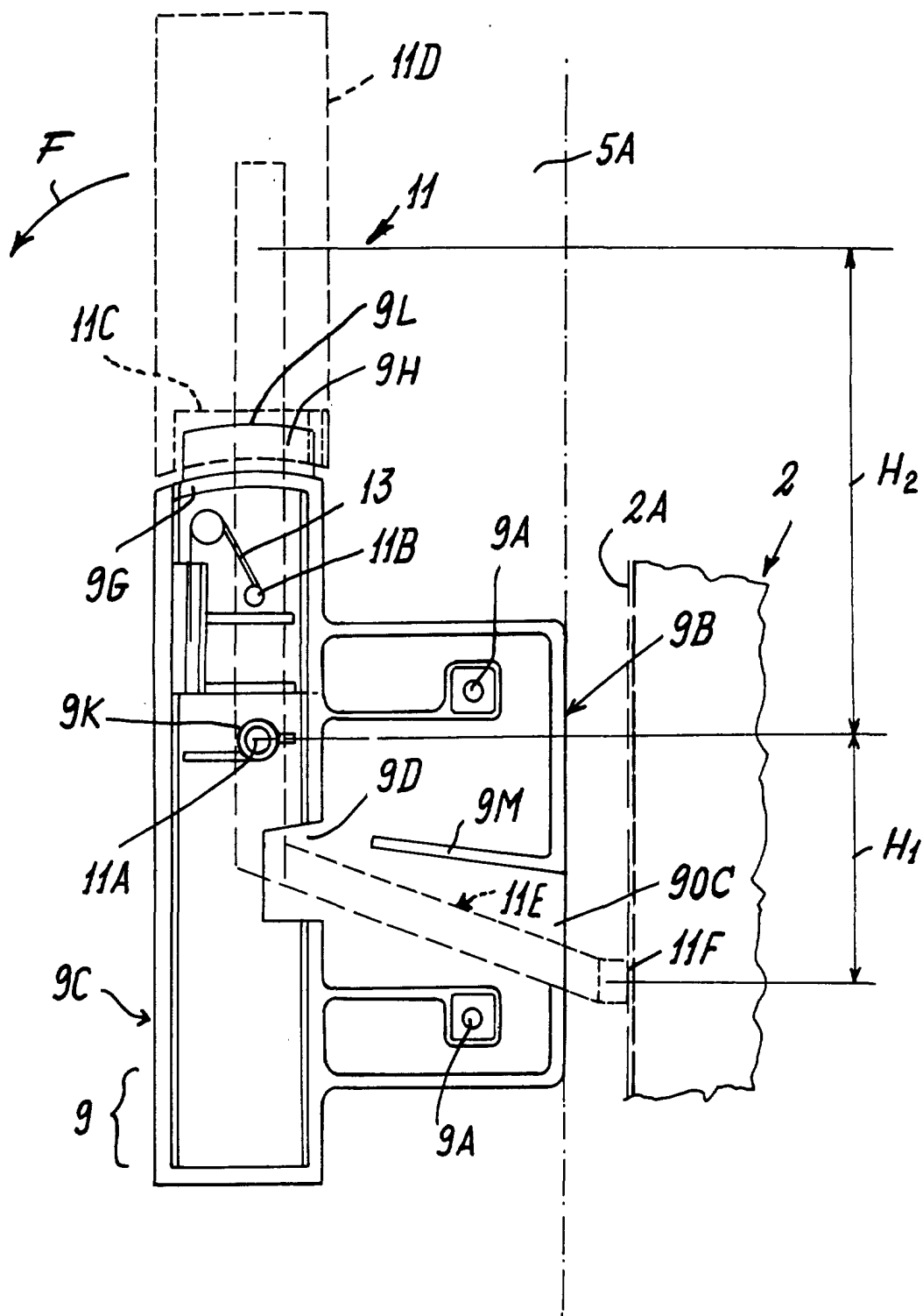


FIG. 3

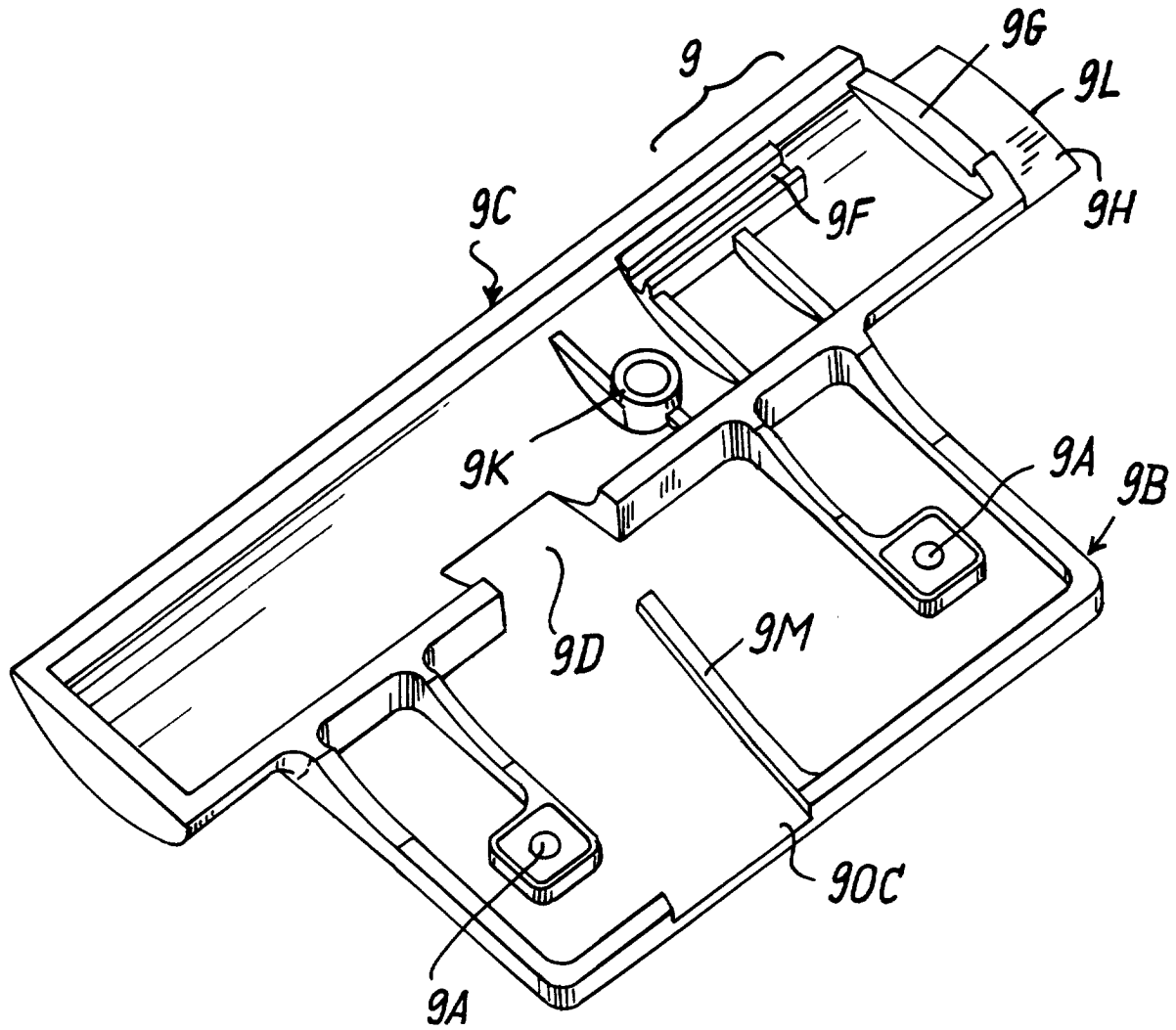


FIG. 4

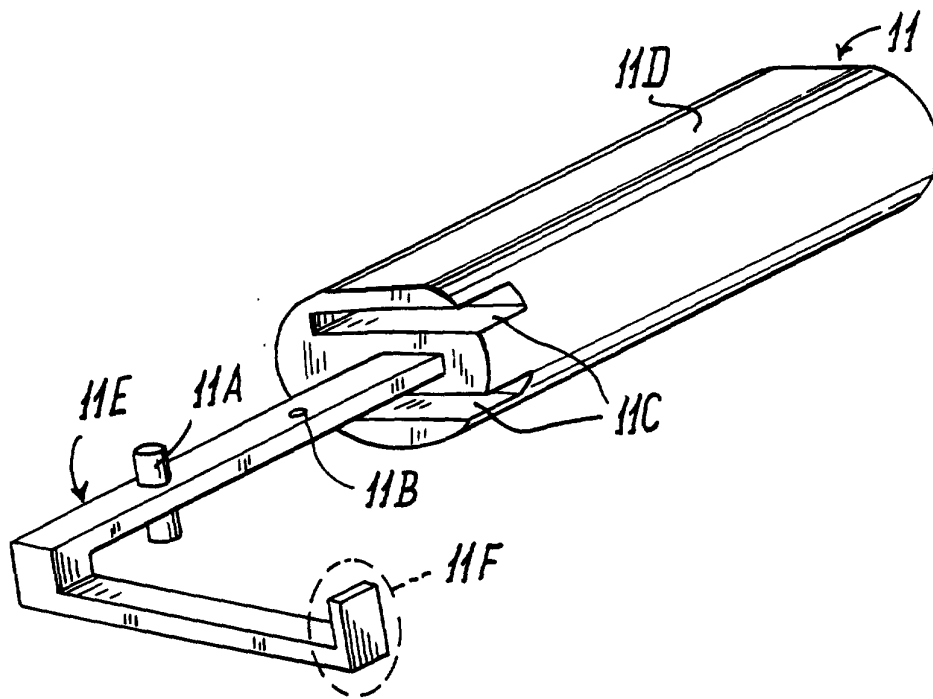


FIG. 5

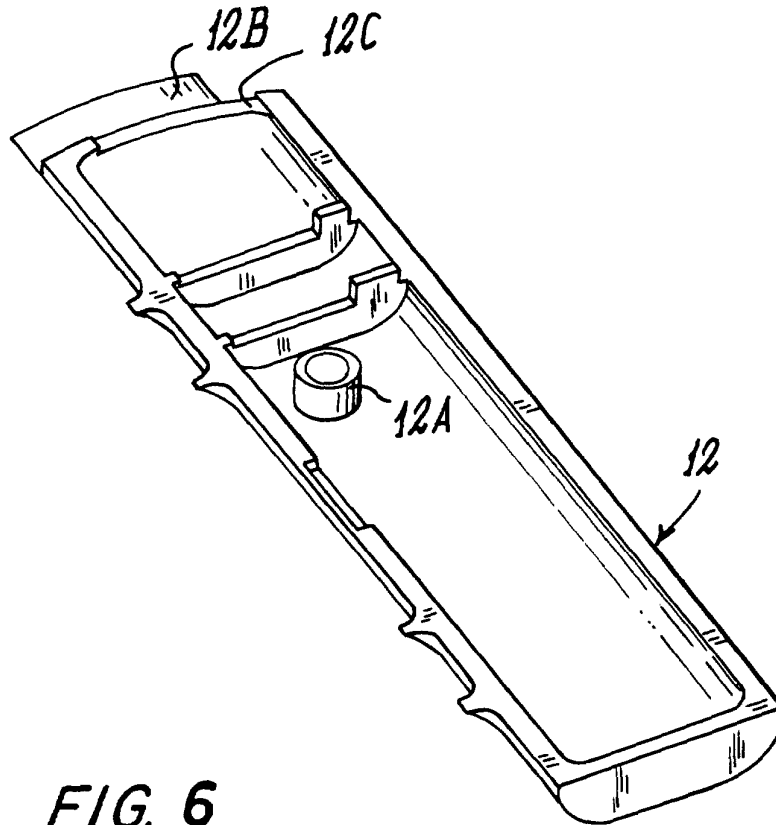


FIG. 6



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EUROPEAN SEARCH REPORT

Application Number
EP 01 11 5795

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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		2 November 2001	Yousufi, S
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			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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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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