

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 529 482 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
27.12.2006 Bulletin 2006/52

(51) Int Cl.:
A47L 15/42^(2006.01) D06F 39/14^(2006.01)

(21) Application number: **03425723.8**

(22) Date of filing: **07.11.2003**

(54) Built-in domestic appliance with decorative panel applied to the door

Eingebautes Haushaltsgerät mit an die Tür angebrachter dekorativer Vorsatzplatte

Appareil électroménager encastré avec panneau d'habillage appliqué sur la porte

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IT LI LU MC NL PT RO SE SI SK TR**

(43) Date of publication of application:
11.05.2005 Bulletin 2005/19

(73) Proprietor: **Bonferraro S.p.A.
37060 Bonferraro (VR) (IT)**

(72) Inventor: **Ambrosi, Andrea
37052 Casaleone VR (IT)**

(74) Representative: **Concone, Emanuele et al
Società Italiana Brevetti S.p.A.
Via Carducci 8
20123 Milano (IT)**

(56) References cited:
**EP-A- 0 261 083 EP-A- 0 543 696
EP-A- 0 744 152 EP-A- 0 873 715
EP-A- 1 364 609 DE-A- 2 937 369
DE-A- 10 161 658 FR-A- 2 464 692
GB-A- 641 584**

EP 1 529 482 B1

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

[0001] The present invention relates to built-in domestic appliances having the door lined with a decorative panel, and in particular to domestic appliances in which the panel slides with respect to the door. Reference will be made hereafter to a dishwasher while it is clear that what is said applies to any other domestic appliance having a similar door hinged along its bottom side, e.g. a washing machine.

[0002] This type of decorative panel is known to be used to camouflage a built-in appliance so that it blends with the kitchen furniture. This is achieved by applying to the door of said appliance, by various means, a panel having the same appearance of the other doors. In this way there is no visible element allowing to distinguish the appliance from the other members which make up the kitchen, its controls being accessible only when the door is open. Examples of panel mounting systems including a sliding coupling between the panel and the door are disclosed, for example, in EP-A-744152, EP-A-1364609, and FR-A-2464692.

[0003] However, the presence of this panel poses a particular problem when it has a height greater than the standard height of 720 mm, since this would result in the interference of the panel with the dishwasher base at the end of the door opening, otherwise the door could not open completely to 90°.

[0004] To overcome this problem there are presently dishwashers specifically manufactured with more room in the lower portion in order to be able to receive higher panels. However this solution has the double drawback of reducing the room available inside the machine to house the members arranged in the lower portion of the dishwasher, as well as the need to manufacture a specific version only for those few markets (e.g. Switzerland) where higher panels are used.

[0005] Therefore the object of the present invention is to provide a domestic appliance provided with a mounting system for the decorative panel that overcomes the aforementioned drawbacks.

[0006] This object is achieved by means of a domestic appliance in which the panel is mounted through a sliding coupling between the panel and the door with sliding direction orthogonal to the rotation axis of the door, said coupling including an elastic member suitable to push the panel toward the rotation axis so as to achieve an automatic movement of the panel.

[0007] The main advantage of the domestic appliance with the panel mounting system according to the present invention is the possibility of being able to mount also higher panels on the same machines manufactured for the application of standard panels, without requiring any modification of the machine base.

[0008] Still another advantage of the present system stems from its extreme structural simplicity which makes it cheap and reliable.

[0009] These and other advantages and features of

the domestic appliance according to the present invention will be evident to those skilled in the art from the following detailed description of an embodiment thereof, with reference to the attached drawings, wherein:

Fig.1 is a diagrammatic view showing the rear side of the panel of a dishwasher according to the invention;

Fig.2 is a diagrammatic front view of the dishwasher on which there is applied the panel of fig.1;

Fig.3 is a diagrammatic side view of the above-mentioned dishwasher with the panel applied thereon, with the door in the closed position;

Fig.4 is a view similar to the preceding one with the door in the phase where the interference with the dishwasher base begins; and

Fig.5 is a view similar to the preceding one with the door fully open.

[0010] With reference to Figures 1 to 3, there is seen that a dishwasher according to the present invention includes a decorative panel applied to the door through hooks 1 (four in the illustrated example) engaging corresponding slots 2, formed in the machine, within which the sliding can take place. On the panel there is also secured a bracket 4 carrying a pin 3, almost centrally, suitable to engage a corresponding sliding insert 5 arranged in the upper front part 6 of the machine.

[0011] The sliding insert 5 is mobile in the vertical direction, guided by its seat 7, and is pushed downward by a spring 8. In the lower portion of the panel there are also preferably provided plastic protections 9, extending to the bottom face, to favour the grazing of the panel on the machine base.

[0012] The simple and effective operation of the present mounting system for the panel is readily understood from the description above with the help of figures 4 and 5.

[0013] In the initial phase the door opening is not different from that of conventional dishwashers, but when the final phase of the opening is reached (fig.4) the panel, at the protections 9, comes into contact with the machine base. At this moment, due to the push received from the base, the panel starts to slide upward with respect to the door compressing spring 8, through pin 3 engaged in insert 5, and thus allowing to reach the complete opening (fig.5).

[0014] Obviously when the door is closed the push of spring 8 takes the panel back to the rest position as soon as the interference zone is cleared.

[0015] It is clear that the above-described and illustrated embodiment of the domestic appliance according to the invention is just an example susceptible of various modifications. In particular, the sliding coupling may be made in other ways and/or in other positions and the same applies to the elastic return member, as long as there is retained the automatic movement during the opening and closing movement due to the interference

between the bottom end of the panel and the machine base.

Claims

1. A built-in domestic appliance with a door hinged along its bottom side and provided with a front decorative panel applied to the appliance through a mounting system including a sliding coupling between the panel and the door with sliding direction orthogonal to the rotation axis of the door, **characterized in that** the front decorative panel has such a height that its bottom end comes into contact with the appliance base in the final phase of the door opening and due to the push received from said appliance base the front decorative panel leaves its rest position and starts to slide upward with respect to the door, said sliding coupling including an elastic member (8) suitable to push the panel toward said rotation axis so that in the initial phase of the door closing said elastic member takes the panel back to its rest position.
2. A built-in domestic appliance according to claim 1, **characterized in that** the sliding coupling is achieved through a plurality of hooks (1) arranged on the rear of the panel and engaged in corresponding slots (2), formed in the appliance, within which the sliding can take place.
3. A built-in domestic appliance according to claim 1 or 2, **characterized in that** the interaction between the elastic member and the door takes place through a pin (3), arranged on the rear of the panel, engaging a corresponding insert (5) vertically slidable in a seat (7) formed in the appliance, the elastic member also being housed in said seat (7).
4. A built-in domestic appliance according to claim 3, **characterized in that** the elastic member consists of a spring (8) arranged in the seat (7) above the sliding insert (5).
5. A built-in domestic appliance according to claim 3 or 4, **characterized in that** the seat (7) is formed in a substantially central position in the upper portion of the door.
6. A built-in domestic appliance according to one or more of the preceding claims, **characterized in that** the panel is provided at its bottom end with one or more plastic protections (9) extending to the bottom face.

Patentansprüche

1. Einbauhaushaltsgerät mit einer Tür, die entlang ihrer Unterseite gelenkig verbunden ist und die mit einer vorderen Dekorplatte versehen ist, die mit einem Befestigungssystem an das Gerät angebracht ist, umfassend eine Gleitkupplung zwischen der Platte und der Tür mit einer Gleitrichtung, die orthogonal zur Drehachse der Tür verläuft, **dadurch gekennzeichnet, dass** die vordere Dekorplatte eine solche Höhe aufweist, dass ihr unteres Ende in der Endphase der Türöffnung in Kontakt mit dem Gerätesockel kommt, und die vordere Dekorplatte aufgrund des Schubes, den sie von dem Gerät erhält, ihre Ruheposition verlässt und beginnt, in Bezug auf die Tür nach oben zu gleiten, wobei die Gleitkupplung ein elastisches Element (8) beinhaltet, das geeignet ist, die Platte in Richtung auf die Drehachse zu drücken, so dass in der Anfangsphase der Türschließung das elastische Element die Platte zurück in ihre Ruheposition bringt.
2. Einbauhaushaltsgerät nach Anspruch 1, **dadurch gekennzeichnet, dass** die Gleitkupplung durch mehrere Haken (1) geschaffen ist, die an der Rückseite der Platte angeordnet sind und in entsprechender Weise in dem Gerät ausgebildete Schlitze (2) eingreifen, innerhalb derer das Gleiten erfolgen kann.
3. Einbauhaushaltsgerät nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Interaktion zwischen dem elastischen Element und der Tür durch einen Stift (3) erfolgt, der auf der Rückseite der Platte angeordnet ist, und in einen entsprechenden Einsatz (5) eingreift, der in einem in dem Gerät ausgebildeten Sitz (7) vertikal verschiebbar ist, wobei das elastische Element ebenfalls in dem Sitz (7) untergebracht ist.
4. Einbauhaushaltsgerät nach Anspruch 3, **dadurch gekennzeichnet, dass** das elastische Element aus einer Feder (8) besteht, die in dem Sitz (7) über dem Gleiteinsatz (5) angeordnet ist.
5. Einbauhaushaltsgerät nach Anspruch 3 oder 4, **dadurch gekennzeichnet, dass** der Sitz (7) in einer im Wesentlichen mittigen Position in dem oberen Abschnitt der Tür ausgebildet ist.
6. Einbauhaushaltsgerät nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Platte an ihrem unteren Ende mit einem oder mehreren Kunststoffschutzeinrichtungen (9), die sich bis zur Unterseite erstrecken, versehen ist.

Revendications

1. Appareil ménager intégré avec une porte articulée le long de son côté inférieur et pourvue d'un panneau décoratif avant appliquée à l'appareil par un système de montage incluant un assemblage coulissant entre le panneau et la porte avec la direction de glissement orthogonale à l'axe de rotation de la porte, **caractérisé en ce que** le panneau décoratif avant a une hauteur telle que son extrémité inférieure vient en contact avec la base de l'appareil dans la phase finale de l'ouverture de la porte et à cause de la poussée reçue de ladite base de l'appareil, le panneau avant décoratif quitte sa position de repos et commence à coulisser vers le haut par rapport à la porte, ledit assemblage coulissant incluant un élément élastique (8) approprié pour pousser le panneau vers ledit axe de rotation de sorte que dans la phase initiale de fermeture de la porte ledit élément élastique ramène le panneau dans sa position de repos. 5
10
15
20
2. Appareil ménager intégré selon la revendication 1, **caractérisé en ce que** l'assemblage coulissant est réalisé par une pluralité de crochets (1) arrangés sur l'arrière du panneau et engagés dans des fentes correspondantes (2), formées dans l'appareil, au sein duquel le glissement peut s'effectuer. 25
3. Appareil ménager intégré selon la revendication 1 ou 2, **caractérisé en ce que** l'interaction entre l'élément élastique et la porte s'effectue par une cheville (3) disposée sur l'arrière du panneau, venant en prise avec un insert correspondant (5) coulissable verticalement dans une embase (7) formée dans l'appareil, l'élément élastique étant aussi logé dans ladite embase (7). 30
35
4. Appareil ménager intégré selon la revendication 3, **caractérisé en ce que** l'élément élastique consiste en un ressort (8) disposé dans l'embase (7) au-dessus de l'insert coulissant (5). 40
5. Appareil ménager intégré selon la revendication 3 ou 4, **caractérisé en ce que** l'embase (7) est formée dans une position sensiblement centrale dans la partie supérieure de la porte. 45
6. Appareil ménager intégré selon l'une ou plusieurs des revendications précédentes, **caractérisé en ce que** le panneau est pourvu à son extrémité inférieure d'une ou plusieurs protection(s) en plastique (9) s'étendant sur la face inférieure. 50

55

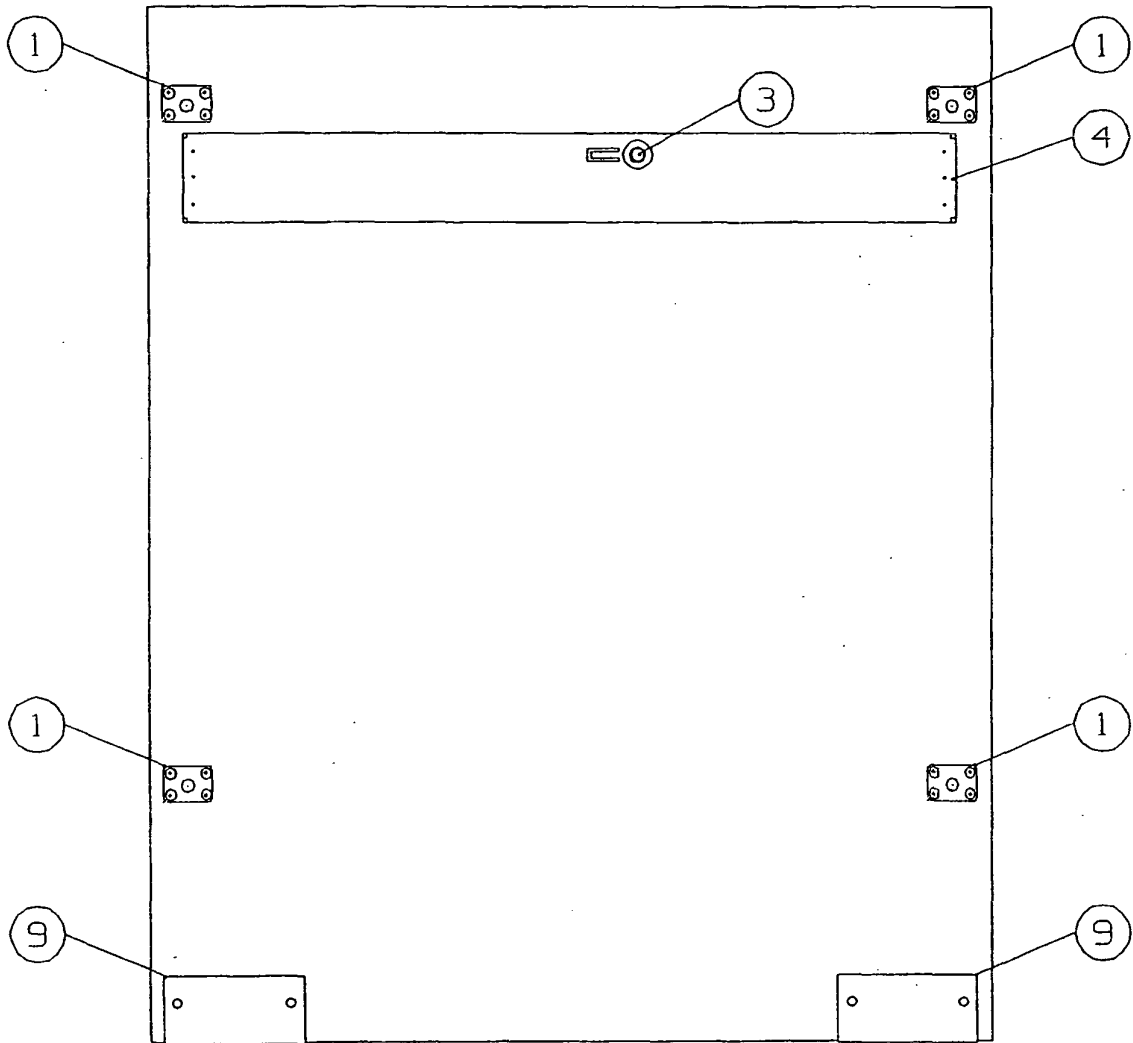


Fig. 1

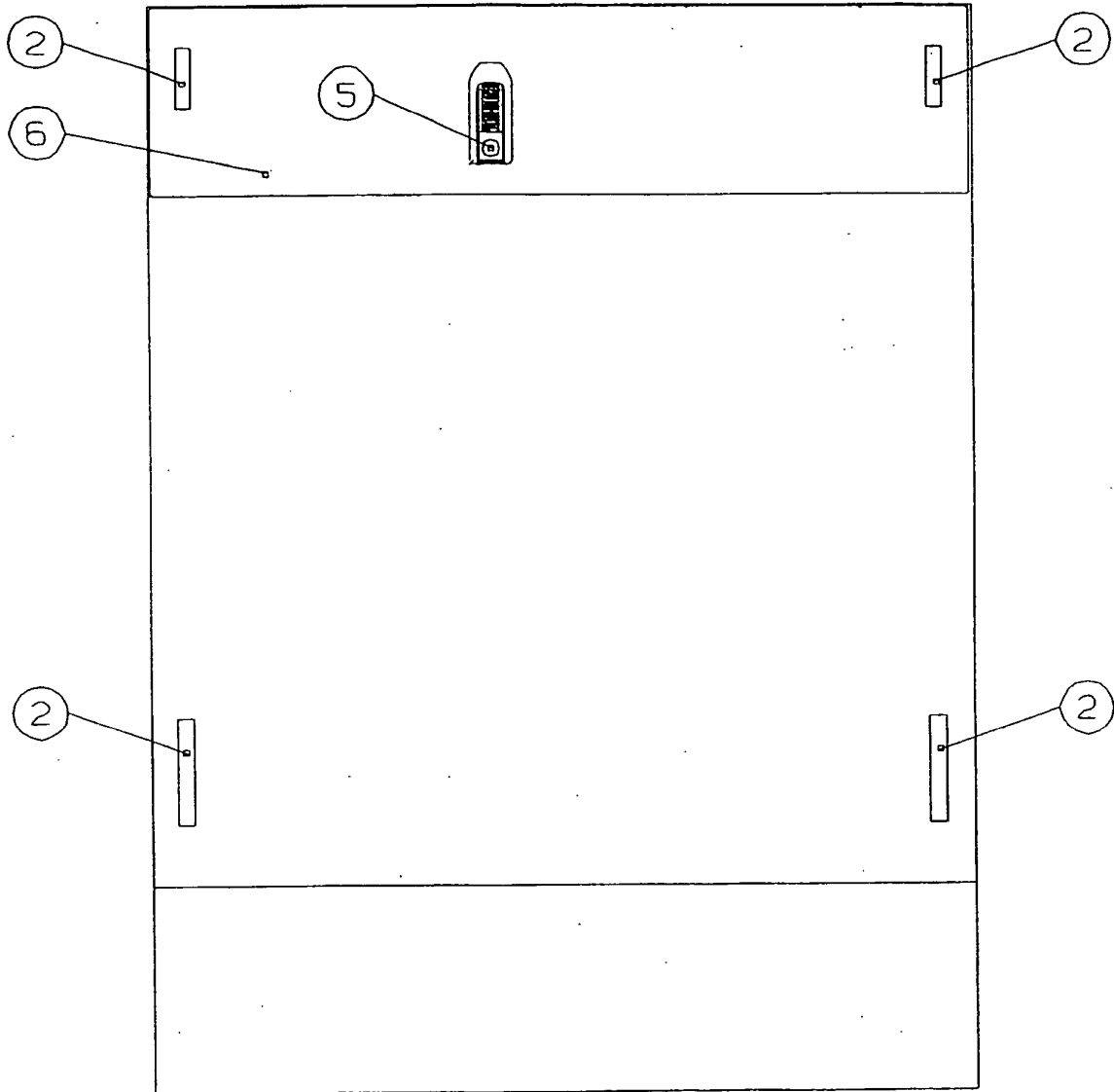


Fig. 2

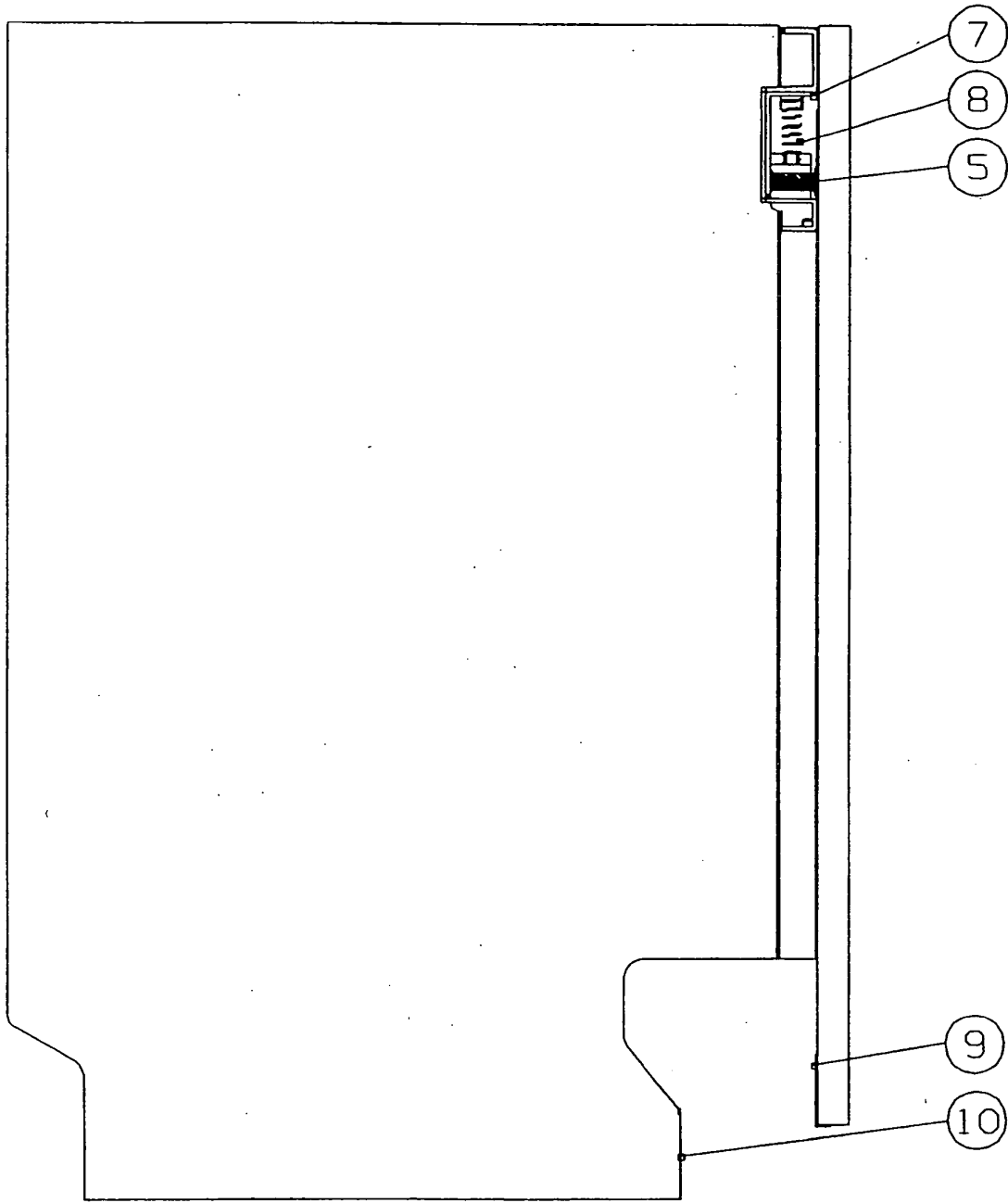


Fig. 3

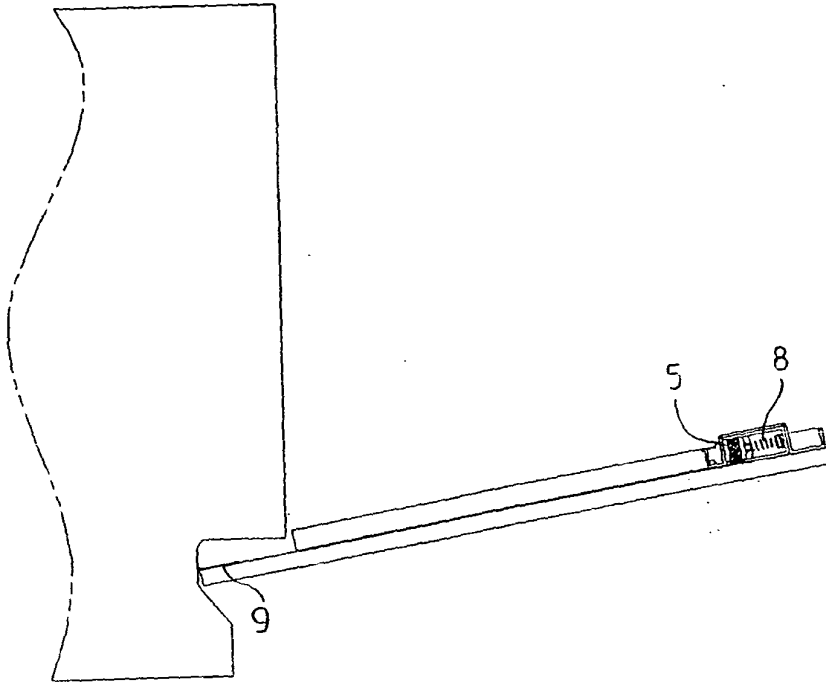


Fig. 4

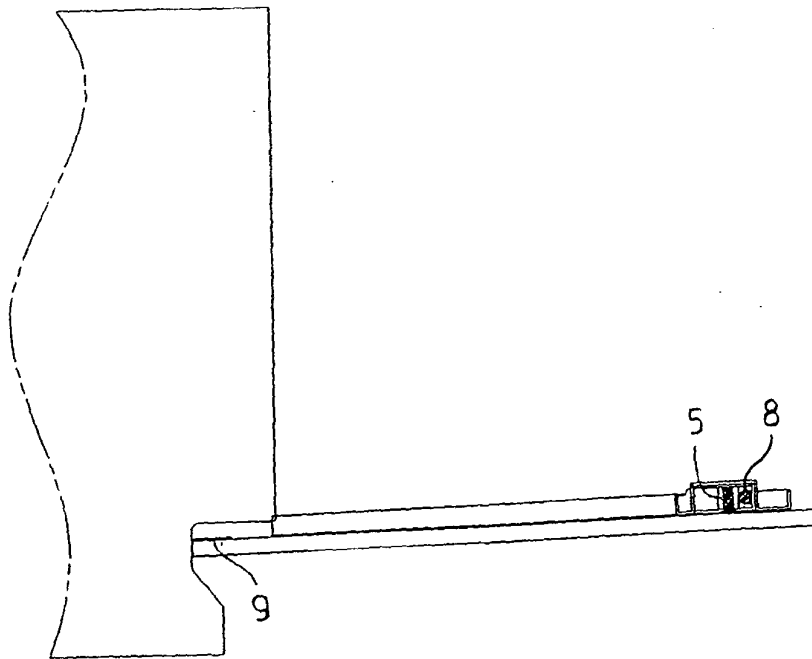


Fig. 5