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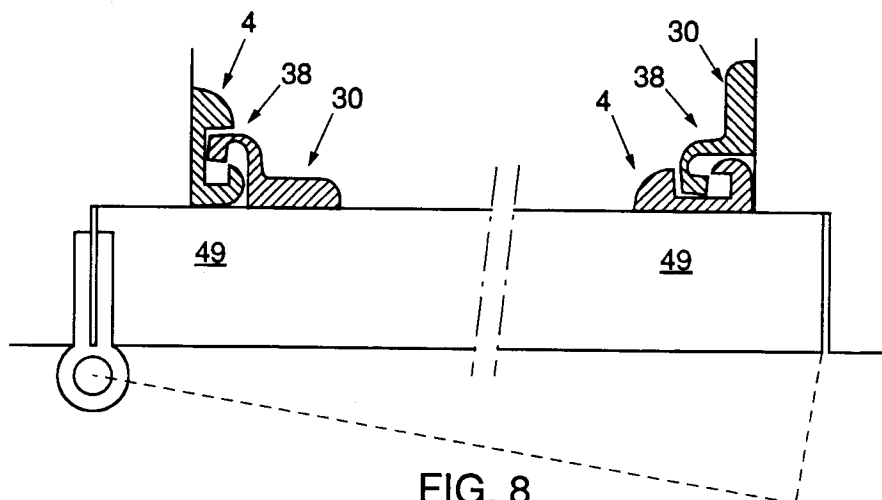
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NL-2587 BN Den Haag(NL)**(54) **Protection system for use in movable panels mounted in a frame.**

(57) A protection system for use in panels (49) mounted in a frame, which panels can move relatively to the frame, in particular doors and windows, comprising an assembly (38) of two profiled strips (4,30) which in mounted position interlock in operation, a first profiled strip (4) being mounted along at least one of the edges of the panel or a frame section and having a hollow for receiving a lug of a second profiled strip (30) which is mounted along a part of the frame or panel that corresponds with said at

least one edge, **characterized in that** the first profiled strip (4) has a recess extending in longitudinal direction, said recess being bounded on one of its longitudinal edges by a member hook-shaped in section, directed towards the recess, and that the second profiled strip (30) has a resilient arm hook-shaped in section, which arm in operation extends around the hook-shaped member into the recess and whose terminal end can interlock with the hook-shaped member.

**FIG. 8****EP 0 463 704 A1**

This invention relates to a protection system for use in panels mounted in a frame, which panels can move relatively to the frame, in particular doors and windows, comprising an assembly of two profiled strips which in mounted position interlock in operation, a first profiled strip being mounted along at least one of the edges of the panel or a frame section and having a hollow for receiving a lug of a second profiled strip which is mounted along a part of the frame or panel that corresponds with said at least one edge.

Such a protection system is known from international patent application WO 89/04907. The object of such a protection is to cover, at least on the lock side, the seam between a door or window and the corresponding frame, so that in the closed position of the door or the window, this seam is inaccessible to a crowbar or the like which the door or window could be forced with.

A drawback of the known protection system is that the profiled strips belonging to it are only suitable to be made of steel or relatively thick-walled aluminum. Such strips are therefore relatively expensive and esthetically unappealing.

Another drawback of the known protection system is that it is only suitable for use in an inwardly hinging panel or in a sliding panel.

The object of the invention is to overcome the drawbacks outlined. More generally, the object of the invention is to provide an improved protection system that is universally applicable and can be made from plastics and still provides good protection.

To that effect, according to the invention, a protection system of the type described hereinabove, is characterized in that the first profiled strip has a recess extending in longitudinal direction, said recess being bounded on one of its longitudinal edges by a member hook-shaped in section, directed towards the recess, and that the second profiled strip has a resilient arm hook-shaped in section, which arm in operation extends around the hook-shaped member into the recess and whose terminal end can interlock with the hook-shaped member.

An additional advantage of the protection system according to the invention is that it can readily be designed such that a draught excluding effect is achieved as well.

The invention will now be further described, by way of example only, with reference to the accompanying drawings of some embodiments. In the drawings:

Fig. 1 is a diagrammatic cross-section of a protection system according to the invention, used in an outwardly hinging panel;

Fig. 2 is a diagrammatic view of the hinge side of one embodiment of a protection system ac-

cording to the invention in an inwardly hinging panel;

Fig. 3 is a diagrammatic cross-section of one embodiment of a profiled strip according to the invention;

Figs. 4 and 5 are diagrammatic cross-sections of two embodiments of profiled strips cooperating with the strip of Fig. 3;

Fig. 6 is a diagrammatic view of an outwardly hinging panel protected according to the invention;

Fig. 7 is a diagrammatic view of a pair of outwardly hinging double doors protected according to the invention;

Fig. 8 is a diagrammatic view of an inwardly hinging panel protected according to the invention;

Fig. 9 is a diagrammatic view of a pair of inwardly hinging double doors protected according to the invention; and

Fig. 10 is a diagrammatic view of one embodiment of a protection system according to the invention used in a sliding door or window.

Fig. 1 is a diagrammatic cross-section of a frame post 1 and a part of an outwardly hinging panel 2, such as a door or a window. Of the panel, only the edge opposite the hinge side is shown. At 2' broken lines indicate a slightly outwardly hinged position of the panel 2.

In the closed position, the external surface of the panel 2 and the external surface of the post 1 are substantially in the same plane. There is a seam 3 between the panel and the post. A crowbar could be placed in such a seam with a view to prizing the panel open.

The protection system according to the invention serves to render the seam inaccessible to a crowbar or similar tools. To that effect, a first profiled strip 4 is mounted on the external surface of the frame post 1, e.g. by means of screws 5 and/or 6. Advantageously, the screws may be of the commercially available anti-burglary type. These are screws that can only be tightened.

The strip 4, shown once more in Fig. 3, has a back surface 7 abutting the frame post and, in this embodiment, on the side remote from the back surface, comprises a recess 8 approximately rectangular in section, which is open on the side remote from the back surface and has a bottom surface 9 which, in the embodiment shown, is substantially parallel to the back surface.

In mounted position, wall 10 of the recess, which is proximal to the seam 3, forms a recessed portion of a hook-shaped portion 11 extending from the back surface, this portion 11 forming a hook-shaped member 12 directed towards the recess 8.

The third wall 13 of the recess, arranged opposite wall 10, bounds an outer band of material

14, which, in the embodiment shown, has a rounded shape in section. Preferably, the surface 15 of the band 14 is of convex, curved configuration right from the point where it adjoins the back surface, the curve in this embodiment extending up to the wall 13. This design renders it more difficult to forcibly remove the strip by means of a hammer or the like. Alternatively, the configuration may be bevelled.

The recess 8 of the profiled strip 4 described, serves to receive a lug of a second profiled strip 16. The first profiled strip 4 is generally mounted on the post and the second profiled strip is generally mounted on the panel. When the protection system is used in double outwardly opening windows or doors, however, to protect the seam between the two doors or windows, both types of strips may be mounted on a moving part, as shown in Figs. 7 and 9.

The strip 16 is shown in more detail in Fig. 4. Fig. 4A shows the strip 16 in the position where it does not cooperate with a strip 4, and Fig. 4B shows the strip 16 in an operative position, as shown, for instance, in Fig. 1.

The strip 16 has a back surface 17 which abuts a panel in the operative position. Like strip 4, strip 16 can be mounted by means of nails, or anti-burglary screws or glue. The strip 16 has a band-shaped body 18, which, in the embodiment shown, has a rounded longitudinal edge 19, the curve preferably beginning directly at the joint with the back surface 17, as in the case of the curved surface 15 of the strip 4. It is also possible to use a different suitable shape, for instance a bevelled shape.

At the other longitudinal edge 20, the strip 16 is provided with a flange 21 extending transversely to the back surface 17 over some distance, which flange 21 adjoins, beyond the body, a portion 22 extending away from the body and approximately parallel to the back surface. Together, the portion 22, the flange 21 and the body 18 have a more or less Z-shaped cross-section.

At some distance from the flange 21, the portion 22 adjoins a portion 23 curving in downward direction, i.e. in the direction of the back surface 17, which portion 23 terminates in a thickened lug 24 extending inwardly, i.e. towards the body 18 and the flange 21. The inside of the lug is shaped such that it can interlock with the hook-shaped member 12 of a strip 4.

In the embodiment shown, in operation, the hook-shaped member 12 of a strip 4 and the lug 24 of a strip 16 have facing surfaces 25 and 26, respectively, which are flat. However, these surfaces may also be profiled, e.g. by means of saw-tooth shaped ribs adapted to interlock.

Preferably, as shown, the outside of the lug 24

is shaped such that in operation it properly contacts the bottom 9 and the sidewall 13 of the recess 8 of a strip 4. Because the assembly of flange 21, portions 22 and 23 and lug 24 forms a resilient hook-shaped arm, with the lug in the inoperative position (Fig. 4A) being preferably inclined obliquely downwardly, the lug 24 in operation resiliently and tightly fits into the recess 8 of a strip 4. In this manner, the protection system functions at the same time as a draught excluder, which in some situations is considered an important advantage.

The operation of the system described is as follows. In mounted position as shown in Fig. 1, the seam 3 between the frame post 1 and the panel 2 is covered by the hook-shaped arm 21-24 of the strip 16. Normally, the hook-shaped arm 21-24 can freely pass the hook-shaped member 12 of the strip 4 when opening and closing the panel 2. However, if one were to attempt to bend away the hook-shaped arm, e.g. by applying a screwdriver to the seam 27 between the wall 13 of the recess 8 of the strip 4 and the lug 24 of the strip 16, the lug 24 will be pushed under the hook-shaped member 12 of the strip 4 and, as a result, cannot be prized up.

The hook-shaped arm 21-24 of the strip 16 preferably has a rounded shape on the outside, so that it is impossible to grip the hook-shaped arm with a pair of nippers. Moreover, in that event, too, the lug 24 would be pushed under the hook-shaped member 12 of the strip 4.

Fig. 5 shows a second embodiment of the strip 16, indicated at 30, which is used when the panel surface and the adjacent surface of the frame are mutually perpendicular. Such a situation arises in the case of an inwardly hinging panel, Fig. 2 showing the hinge side. The strip 30 is only different from the strip 16 in that the portion 23 extending from the portion 22 towards the back surface, is omitted. The lug 24 directly adjoins the free end of the portion 22, so that the hook-shaped arm 21-24, viewed in cross-section, extends through 90°, rather than 180°, as in strip 16. The lug 24 of the strip 30 is directed to the back surface 17. As can be seen in Fig. 5A, the lug 24 is again oriented slightly obliquely outwardly in unloaded position. Fig. 5B shows the operative position of the strip 30. The operative position is also shown in Fig. 2.

Fig. 2 shows that a panel 31 can hinge inwardly relative to a frame post 32 along an arrow 33 without the lug 24 of the strip 30 interlocking with the hook-shaped member 12 of the strip 4. However, as soon as it is attempted to bend away the lug 24, e.g. by applying a screwdriver between the hook-shaped arm 21-24 of the strip 30 and the band 14 of the strip 4, the lug 24 is pushed behind the hook-shaped member 12, as is the case in the configuration shown in Fig. 1.

Fig. 6, as Fig. 1, diagrammatically shows an outwardly hinging panel 2 and a frame with a post 1 on the lock side, and a post 35 on the hinge side. Further, at 36 a hinge is shown which also extends on the outside. In the same manner as shown in Fig. 1, the seam 3 on the lock side is protected by means of an assembly 37 of a strip 4 and a strip 16. In this situation it might be attempted to remove the hinge pins which are accessible from the outside and subsequently to prize open the panel at the hinge side. This can be prevented, even when no security locks are used, by mounting a similar assembly of strips 4 and 30 as shown in Fig. 2 on the inside of the panel and the frame on the hinge side of the panel. The assembly shown at 38 in Fig. 6 corresponds entirely to the assembly shown in Fig. 2. When, after removal of hinge pins 39, it is attempted to prize outwardly the hinge side 40 of the panel, as indicated by an arrow 41, the hook-shaped arm of the strip 30 is caught behind the hook-shaped member of the strip 4, so that the panel is retained.

Fig. 7 schematically shows a pair of outwardly hinging doors or windows 42,43, mounted in a frame with posts 44,45, provided with hinges 46,47. In closed position, the panels form a seam 48 between the facing edges, which seam is protected by an assembly 37 of a strip 4 and a strip 16. In this case, both strips have been mounted on a moving panel.

Further, both panels are protected on the inside on the hinge side, by assemblies 38 of strips 4 and 30, in the same manner as shown in Fig. 6.

Fig. 8 schematically shows that an inwardly hinging panel 49 can not only be protected by means of an assembly 38 as shown in Figs. 6 and 7, but also on the lock side, on the outside. In that case, however, on the lock side the strip 4 is mounted on the moving panel and the strip 30 is mounted on the frame.

Fig. 9 schematically shows inwardly hinging double doors or windows 50,51. The seam 53 between the two panels is protected again by means of an assembly 37 of a strip 4 and a strip 16, mounted on the outside, while the seams between the frame posts 54,55 and the panels are protected on the outside by assemblies 38 as shown in Figs. 6,7 and 8.

Fig. 10, finally, schematically shows the use of an assembly 38 of strips 4 and 30 for protecting the closure side of a sliding panel 60.

It is observed that a protection system according to the invention, in particular an assembly 38 of strips 4 and 30 can also be used for protecting horizontal seams between frame and panel or panels and for excluding draught therethrough. Further, it is noted that after the foregoing, various modifications will readily occur to anyone skilled in the art.

Thus, the strips can be made of a suitable plastics, but also of spring steel, if so desired. Further, for instance, the strip 16 or 30 may be made of spring steel or another material that allows construction of a resilient hook-shaped arm, and the strip 4 may optionally be made of a less resilient material. Further, modifications of the shapes of the bodies 14 and 18 and of the hook-shaped members 12 and 21-24 are possible.

These and similar modifications are considered to fall within the scope of the invention.

Claims

1. A protection system for use in panels mounted in a frame, which panels can move relatively to the frame, in particular doors and windows, comprising an assembly of two profiled strips which in mounted position interlock in operation, a first profiled strip being mounted along at least one of the edges of the panel or a frame section and having a hollow for receiving a lug of a second profiled strip, which is mounted along a part of the frame or panel that corresponds with said at least one edge, **characterized in that** the first profiled strip has a recess extending in longitudinal direction, said recess being bounded on one of its longitudinal edges by a member hook-shaped in section, directed towards the recess, and that the second profiled strip has a resilient arm hook-shaped in section, which arm in operation extends around the hook-shaped member into the recess and whose terminal end can interlock with the hook-shaped member.
2. A protection system according to claim 1, characterized in that the hook-shaped arm has a lug at its free end, which in the operative position is directed towards the hook-shaped member of said first profiled strip, but normally can pass the hook-shaped member freely.
3. A protection system according to claim 1 or 2, characterized in that the end of the hook-shaped arm that extends into the recess has an outer surface of a shape substantially complementary to the shape of the corresponding inner surface of the recess.
4. A protection system according to any one of the preceding claims, characterized in that the end of the hook-shaped arm that extends into the recess, in operation resiliently abuts at least the wall of the recess that adjoins the hook-shaped member.
5. A protection system according to any one of

the preceding claims, characterized in that the hook-shaped arm has an outer surface that is rounded off in cross-section.

6. A protection system according to any one of the preceding claims, characterized in that the hook-shaped arm extends over a path of approximately 180° . 5
7. A protection system according to any one of the preceding claims, characterized in that the hook-shaped arm extends over a path of approximately 90° . 10
8. A protection system according to any one of the preceding claims, characterized in that the first profiled strip has an elongate back surface, the hook-shaped member extending along one longitudinal edge of the back surface at right angles to said back surface, and a band of material extending along the other longitudinal edge of the back surface, the recess being located between the band of material and the hook-shaped member. 15
20
9. A protection system according to claim 8, characterized in that the band of material has a surface that curves from the back surface into the vicinity of the recess. 25
10. A protection system according to claim 8, characterized in that the band of material is bevelled. 30
11. A protection system according to any one of the preceding claims, characterized in that the second profiled strip has an elongate band-shaped body with a back surface and a flange extending from the back surface along one longitudinal edge of the body beyond the body, the flange adjoining a curved hook-shaped member directed away from the body. 35
40
12. A protection system according to claim 11, characterized in that the band-shaped body is rounded off at the other longitudinal edge. 45
13. A protection system according to claim 11, characterized in that the band-shaped body is bevelled at the other longitudinal edge. 50
14. A protection system according to any one of the preceding claims, characterized in that the profiled strips are made of plastics. 55

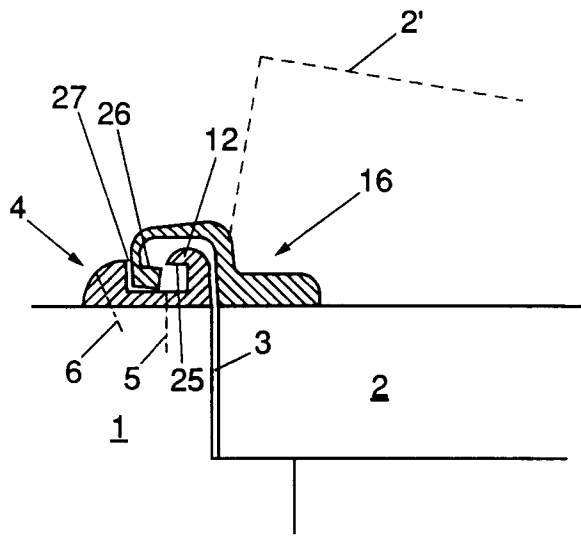


FIG. 1

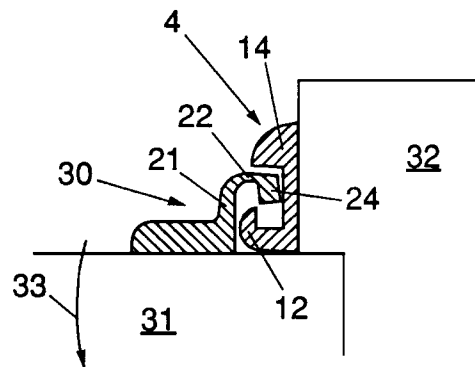


FIG. 2

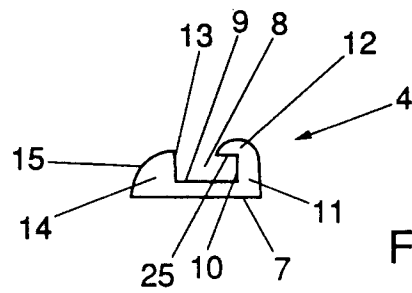


FIG. 3

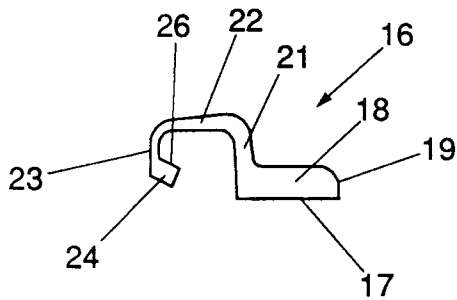


FIG. 4A

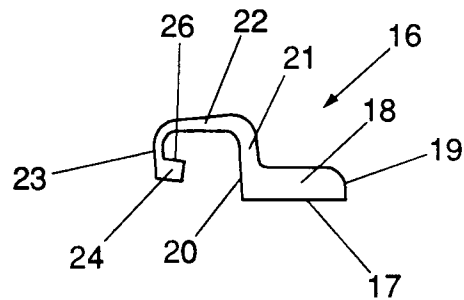


FIG. 4B

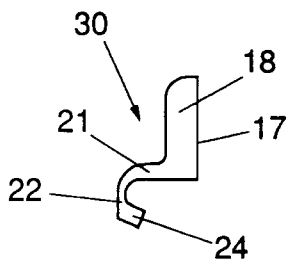


FIG. 5A

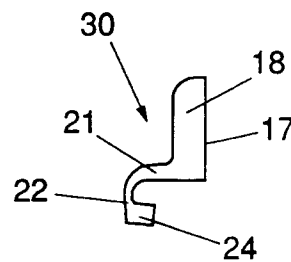
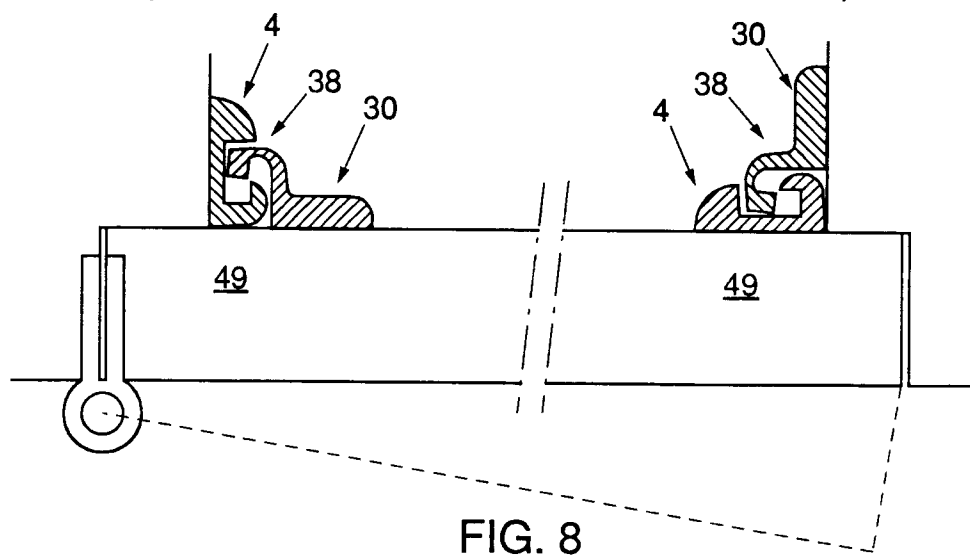
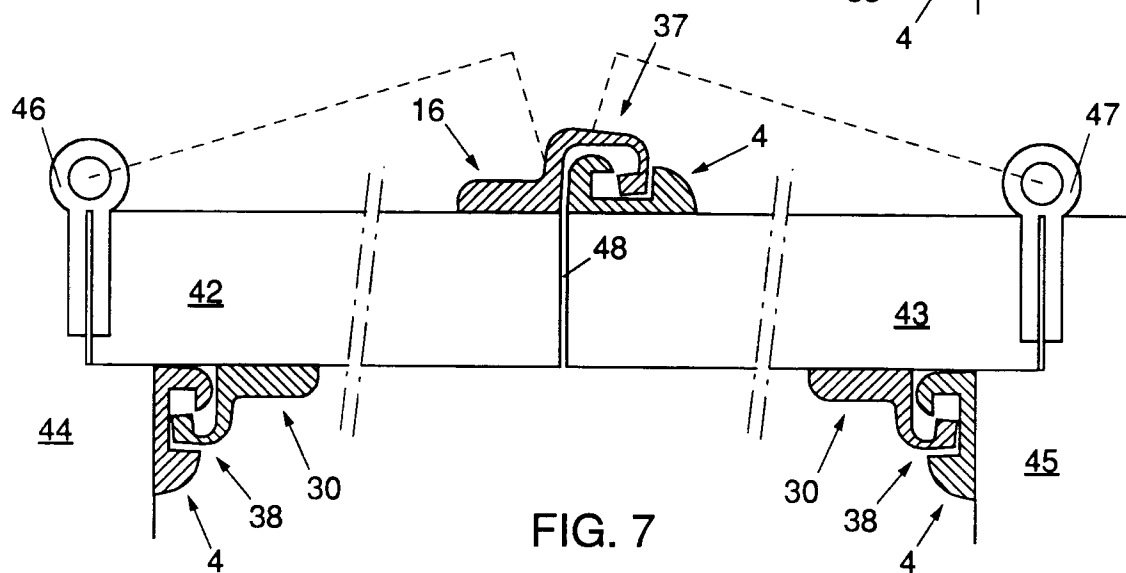
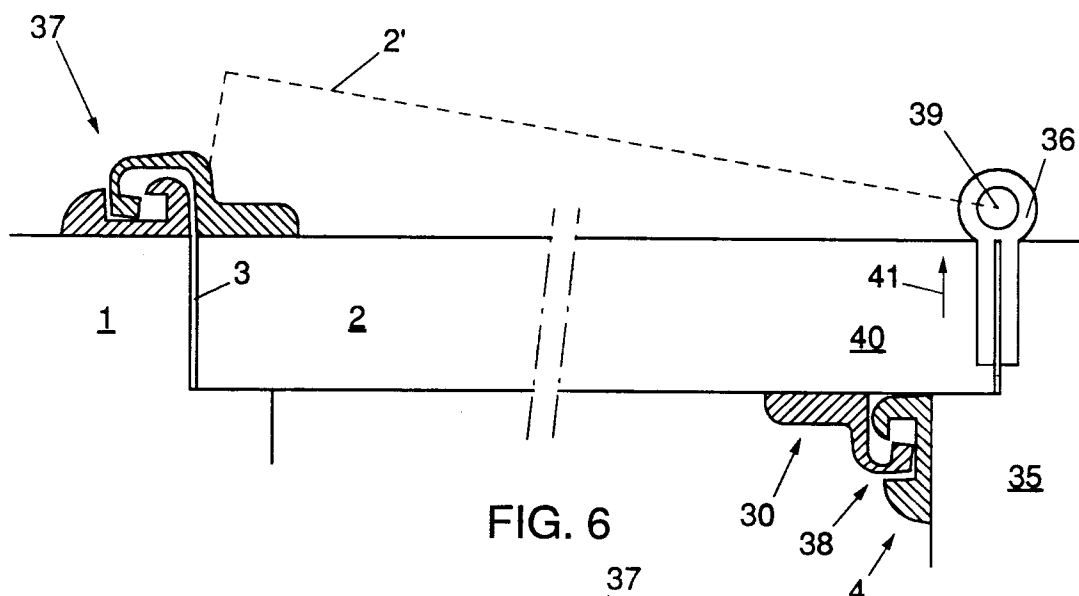


FIG. 5B



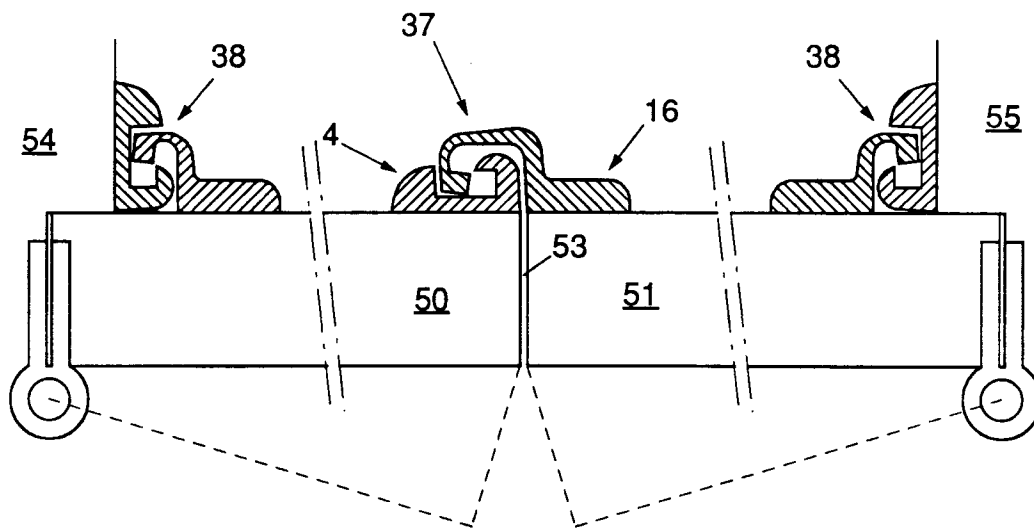


FIG. 9

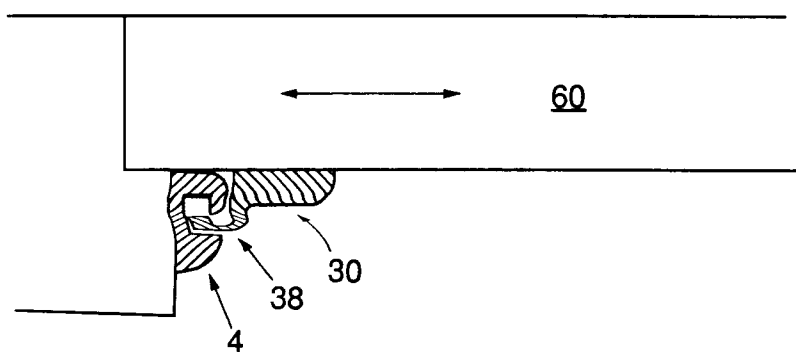


FIG. 10



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Application Number

EP 91 20 1632

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	DE-C-3 219 196 (BIERGANS) * column 2, line 57 - column 4, line 28; figures 1-6 * - - -	1,3,5, 7-13	E 06 B 5/10
A	NL-A-8 800 517 (SECU-STRIP) * page 3, line 14 - page 4, line 12; figures 3,6 * - - -	1,5,6	
A	FR-A-2 408 713 (BONPUNT) * page 5, line 13 - page 6, line 2; figures 2,7,8 * - - - - -	1,5,6,13	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E 06 B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of search 23 September 91	Examiner DEPOORTER F.
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