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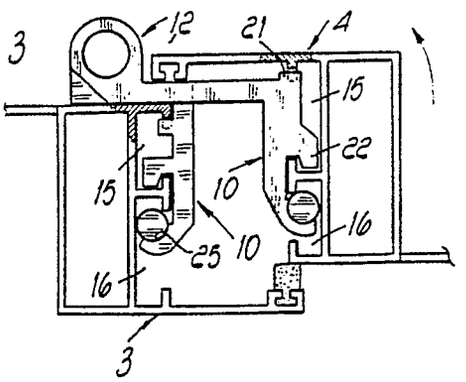
(54) Hinge for rapid fixing to profiled elements for casements and the like.

(57) The present invention relates to a hinge for rapid fixing to profiled elements for casements and the like, which comprises a first hinge body (1) and a second hinge body (2) which can be associated respectively with the fixed frame (3) and with the movable frame (4) and are mutually associable by means of a rotation pin. The peculiarity of the invention resides in that said hinge bodies (1, 2) have a resting foot (10) which can be accommodated in seats (15, 16) defined on the hidden faces of the profiled elements. Locking means can furthermore be inserted along a direction which is substantially parallel to the rotation pin and interact between the resting foot (10) and a portion of the seats (15, 16).

Fig. 3



EP 0 353 485 A2

HINGE FOR RAPID FIXING TO PROFILED ELEMENTS FOR CASEMENTS AND THE LIKE

The present invention relates to a hinge for rapid fixing to profiled elements for casements and the like.

As known, in the manufacture of casements by means of extruded profiled elements, hinges are applied to connect the fixed frame and the movable frame; such hinges currently require considerable production steps, both to preset the hinge's accommodation region and to fix the hinge to the related profiled element.

In particular, in the solutions of the current art it is furthermore necessary to employ screw means to fix the parts of the hinge, with considerable waste of time during assembly, and with the disadvantage that loosening may occur, making the placement of the hinge unstable.

The aim of the invention is indeed to eliminate the previously described disadvantages by providing a hinge for rapid fixing to profiled elements for casements and the like which allows the parts which constitute the hinge to be coupled to said profiled elements without having to use screw means and without having to provide machinings on the exposed parts of the profiled element.

Within the scope of the above described aim, a particular object of the invention is to provide a rapid fixing hinge which can be applied to the profiled element in a short time even without providing machinings on said profiled element.

Still another object of the present invention is to provide a rapid fixing hinge which allows a precise locking action, preventing the possibility of movements even after long periods of use.

A not least object of the present invention is to provide a rapid fixing hinge which can be obtained starting from commonly commercially available elements and materials and is furthermore competitive from a merely economical point of view.

The above described aim, as well as the objects mentioned and others which will become apparent hereinafter, are achieved by a hinge for rapid fixing to profiled elements for casements and the like, according to the invention, comprising a first hinge body and a second hinge body respectively associable with the fixed frame and with the movable frame and mutually associable by means of a rotation pin, characterized in that said hinge bodies have a resting foot which can be accommodated in seats defined on hidden faces of said profiled elements, locking means being furthermore insertable along a direction which is substantially parallel to said rotation pin, said locking means interacting between said resting foot and a portion of said seats.

Further characteristics and advantages will become apparent from the description of two preferred but not exclusive embodiments of a hinge for rapid fixing to profiled elements for casements and the like, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is an exploded perspective view of a first embodiment of the hinge;

figure 2 is a schematic view of the hinge applied to a profiled element, for example to the profiled element of the fixed frame;

figure 3 is a schematic view of the hinge mounted between the fixed frame and the movable frame;

figure 4 is an exploded perspective view of a different embodiment of the hinge;

figure 5 is a partially sectional view of the hinge applied to one of the frames;

figure 6 is a schematic sectional view of the hinge applied between the fixed frame and the movable frame;

figure 7 is an exploded perspective view of a further embodiment of the hinge's fixing means;

figure 8 is a view of an element of the hinge with the double-wedge locking element sectioned at its lower end;

figure 9 is a schematic view of the hinge applied between the fixed frame and the movable frame;

figure 10 is a schematic exploded perspective view of a further embodiment of the hinge;

figure 11 is a schematic sectional view of the hinge of figure 10 applied between two mutually movable profiled elements;

figure 12 is a partially sectional view of the first hinge body applied to the first profiled element;

figure 13 is a partially sectional view of the second hinge body applied to the second profiled element;

figure 14 is a view of a different embodiment of the second hinge body.

With reference to the above described figures and in particular to figures 1 to 3, the hinge for rapid fixing to profiled elements for casements and the like, according to the invention, comprises a first hinge body, indicated by 1, and a second hinge body, indicated by 2, which are respectively associable with the fixed frame. indicated by 3, and with the profiled element of the movable frame, generally indicated by 4.

Both hinge bodies 1 and 2 have a foot for resting on the profiled element, generally indicated by the reference numeral 10, and a seat 11 for accommodating the rotation pin.

Said hinge bodies 1 and 2 differ from one another due to the different configuration of the bodies connecting the foot 10 and the seat for the pin 11 which are respectively indicated by 12 and 13.

The resting feet 10 can be inserted in seats which are defined on the hidden faces of the profiled elements; more precisely, a first seat 15 and a second seat 16 are defined on the inner lateral sides of the profiled elements 3 and 4; said seats 15 and 16 are delimited by a central wing 17 and by opposite lateral wings respectively indicated by 18 and 19.

The lateral wing 18, which is directed toward the face on which the hinge is applied, has a recess 20 in which an abutment tang 21 defined by the resting foot 10 can be accommodated.

Said resting foot 10 is furthermore provided with coupling teeth 22 which are inserted below the central wing 17 in the first seat 15; the resting foot 10 furthermore has a protrusion 23 which extends beyond the central wings 17 and enters the second seat 16; in the region of accommodation in the seat 16, said protrusion 23, has a recess 25 in which a locking element can be inserted; said locking element is constituted by a pin 26 which can be inserted along a direction which is parallel to the rotation axis of the hinge, so as to render the coupling stable, in practice forcing the coupling tooth 22 below the central wing 17.

In this manner it is possible to couple the hinge body 1 and the hinge body 2 to the profiled elements, with a stable locking action and with the assurance that even after a prolonged period of use, the hinge will not move along the direction of the profiled elements.

According to what is illustrated in figures 4 to 6, a different embodiment of the hinge has a first hinge body, indicated by 1′, and a second hinge body, generally indicated by 2′, which are also provided with the cavities for accommodating the pins, indicated by 11′.

The resting foot, generally indicated by the reference numeral 10′, is provided with a pair of front engagement teeth, indicated by 30, which are inserted into a cavity 31 which is defined respectively on the hidden side of the profiled elements of the fixed frame and of the movable frame, indicated by 3′ and 4′.

The coupling teeth are inserted below opposite wings 32 which delimit the cavity 31. The locking action is provided by virtue of locking means which are constituted by an insertion body 40 which is insertable within the locking teeth 30 along a direction which is substantially parallel to the rotation axis of the hinge, prevents the radial contraction of the teeth and has lower coupling teeth 41 which engage the longitudinal end of the related hinge body, so as to be firmly retained in place.

In order to prevent accidental sliding along a longitudinal direction with respect to the profiled elements of the hinge body, it is possible to mechanically provide deformations on the wings 32 or possibly, as illustrated in figure 4, to provide a milling 50 which downwardly delimits an abutment edge 51 on which the ends of the locking teeth rest, consequently preventing their sliding.

According to what is illustrated in figures 7 to 9, a further embodiment of the hinge has a first hinge body, indicated by 1″, and a second hinge body, generally indicated by 2″, which are provided with the cavity for accommodating the pins for mutual rotation, indicated by 11″.

The resting foot, generally indicated by the reference numeral 10″, has an insertion tooth 60 which can be inserted below one of the opposite wings 61 that delimit a cavity 62 defined respectively on the hidden side of the profiled elements of the fixed frame and of the movable frame, indicated by 3″ and 4″.

To the side of the insertion tooth 60, the resting foot has a shaped protrusion 63 which is flanked by recesses 64 provided on the resting foot 10″.

Locking means are provided in order to effect the locking; said means are constituted by an insertion body 70 in the shape of a double wedge which is substantially constituted by a plate 71 which defines, on one face, dovetail-shaped teeth 72 which delimit a dovetail recess 73 which is associable with the dovetail protrusion 63.

Said double-wedge insertion element 70, which is insertable in the cavity 62 with a movement parallel to the rotation axis of the hinge, has a wedge like tapered portion 74 which can be defined on an edge of the plate and acts on the lateral edge of the cavity 62 or possibly on one of the dovetail teeth 72, and in this case acts on the free end of a flap 61, so that when the element 70 is inserted a thrust is generated on the resting foot 10″, thereby inserting the insertion tooth 60 below the wing.

In order to create a thrusting action which retains the resting foot against the cavity 62, i.e. therefore with a movement along a direction which is perpendicular to the bottom of the cavity 62, the dovetail teeth 72 are furthermore provided, at their lower end, with tapered portions 75 which by engaging the dovetail protrusion 63 create a thrust component which in practice moves the resting foot 10″ toward the related profiled element.

When the element 70 is inserted in the cavity, the presence of the two wedges produces a combined movement along two mutually perpendicular directions which wedge the insertion tooth 60 below the wing 61 and the consequent movement of

the resting foot against the profiled element, thus providing a precise locking.

In order to prevent accidental sliding of the hinge body along a longitudinal direction with respect to the profiled elements, a mechanical deformation can be provided on the wing 61 so as to define a protrusion which, when arranged below the resting foot, prevents its sliding.

Similarly, in the described solutions it is possible to use said mechanical deformation to provide retention in place.

Figures 10 to 14 illustrate a further embodiment of the hinge which comprises a first hinge body, generally indicated by the reference numeral 101, which can advantageously be defined by a portion of an extruded profiled element. Said first hinge body 101 defines a substantially cylindrical axial cavity 102 which has, on its circumferential extension, an opening 103; tabs 104 extend from said opening 103 and end with teeth 105.

The tabs 104 in practice protrude from an abutment plane 106 which constitutes the resting plane of the first hinge body.

Said teeth 105, as is more clearly illustrated in figure 11, can be inserted in a first recess 108 defined in a first profiled element 109 which is advantageously constituted by a profiled element of a fixed frame.

The teeth 105 allow a substantially snap-together coupling of the first hinge body to the profiled element.

The hinge furthermore comprises a second hinge body, indicated by 110, which has a second axial cavity 111 which can be aligned with the axial cavity 102 defined by said first hinge body.

Laterally of the region affected by the second axial cavity 111, the second hinge body 110 has an abutment wing 112 which can be superimposed on a second profiled element 113 advantageously constituted by a profiled element of a movable member.

A tab 115 extends from the inner face of the wing 112 and has a substantially L-shaped transverse cross section; said tab can be inserted in a second recess 116 defined correspondingly on the second profiled element 113.

Locking means are furthermore provided for the second hinge body; in the example illustrated in figures 10 to 13, said means are constituted by a wedge-like plate 120, possibly provided with a set of teeth 121 on a longitudinal edge, which can be inserted at the L-shaped tabs 115 so as to lock it, by preventing said tabs from exiting from the second recess 116.

The wedge-like plate 120 acts between the tab 115 and a ridge 113a of the second profiled element 113.

According to what is illustrated in figure 14, the tab, now indicated by the reference numeral 130, has the shape of a portion of circumference, and the locking means are constituted by a cylindrical pin 131 which can be inserted in the seat defined by the tab in the shape of a portion of circumference, performing the locking in a conceptually similar manner.

The first hinge body and the second hinge body are mutually rotatably associated by means of a hinge pin, generally indicated by the reference numeral 140, which can be inserted in the first axial cavity 102 and in the second axial cavity 111.

An important characteristic is constituted by the fact that locking means are provided on the hinge pin and prevent the uncoupling of the teeth 105 from the first recess 108.

Said locking means are constituted by a radial protrusion 141 which is accommodated between the tabs 104, preventing their mutual contraction which could allow the uncoupling of the teeth 105 from the profiled element 108.

In this embodiment, the hinge pin is itself locked on the first hinge body and rotatably engages the second axial cavity 111.

The hinge pin 140 is advantageously provided, in a middle portion, with an annular flange, indicated by 142, which is interposed between the first hinge body and the second hinge body and also acts as an element for positioning the hinge pin inside the cavities 102 and 111.

For the sake of descriptive completeness, it should be furthermore added that plug elements, generally indicated by 150, can close the axial ends of the cavities 102 and 111.

The longitudinal extension of the tabs 115 or 130 and the teeth 105 is advantageously shorter than the longitudinal extension respectively of the first hinge body and the second hinge body, so that the respective hinge bodies integrally cover the recesses provided on the profiled elements, thus contributing to an improved aesthetic effect of the hinge.

In practical use, the hinge can be assembled in a very rapid manner simply by inserting the teeth 105 in a snap-together manner into the first recess 108 defined on the first profiled element 109 and by then inserting the pin 140 which locks the coupling of the first hinge body to the first profiled element.

The second hinge body can be applied to the second profiled element simply by inserting the tab 115 or 130 inside the recess 116 defined on the profiled element 113 and by immediately locking it by means of the wedge-shaped plate or possibly by means of the pin 131.

From what has been described above it is thus evident that the invention achieves the intended purposes and in particular the fact is stressed that

a hinge is provided which can be applied to the profiled elements of the movable frame and of the fixed frame without using screw means, simply by inserting locking means which can be constituted by the locking pin or by the insertion body and can be inserted in an extremely rapid and safe manner so as to firmly retain the hinge bodies in position.

The invention thus conceived is susceptible to numerous modifications and variations, all of which are within the scope of the inventive concept.

All the details may furthermore be replaced with other technically equivalent elements.

In practice, the materials employed, as well as the dimensions and contingent shapes, may be any according to requirements.

Where technical features mentioned in any claim are followed by reference signs. those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. Hinge for rapid fixing to profiled elements for casements and the like, comprising a first hinge body and a second hinge body respectively associable with the fixed frame and with the movable frame and mutually associable by means of a rotation pin, characterized in that said hinge bodies have a resting foot which can be accommodated in seats defined on the hidden faces of said profiled elements, locking means being furthermore insertable along a direction which is substantially parallel to said rotation pin, said means interacting between said resting foot and a portion of said seats.

2. Hinge according to the preceding claim, characterized in that said seats defined on the hidden faces of said profiled elements have a first seat and a second seat which are arranged side by side and are separated by central wings arranged opposite to respective lateral wings.

3. Hinge according to the preceding claims, characterized in that said resting foot has an abutment tang which can be accommodated in a recess defined on the lateral wing of said first seat which is directed toward the hinge application face, said resting foot having a coupling tooth which can be inserted below said central wing in said first seat.

4. Hinge according to one or more of the preceding claims, characterized in that said resting foot has a terminal extension arranged above said central wing and being at least partially insertable into said second seat, said extension having, on the side directed toward said second seat, a recess in which said locking means are insertable, said locking means being constituted by a pin which abuts between said central wing and said recess.

5. Hinge according to one or more of the preceding claims, characterized in that said seats are constituted by a cavity defined on the hidden face of said profiled elements and delimited by opposite wings.

6. Hinge according to one or more of the preceding claims, characterized in that said resting foot has a pair of locking teeth which can be frontally associated with said opposite wings, said locking means being constituted by an insertion body which can be inserted between said locking teeth along a direction which is substantially parallel to the rotation axis of said hinge.

7. Hinge according to one or more of the preceding claims, characterized in that said insertion body has coupling teeth associable with a longitudinal end of said locking teeth.

8. Hinge according to one or more of the preceding claims, characterized in that said opposite wings which delimit said cavity have a milling which is downwardly delimited by an abutment which can engage the longitudinal end of said locking teeth to prevent longitudinal movement of the related hinge body with respect to the profiled element.

9. Hinge according to one or more of the preceding claims, characterized in that said resting foot has an insertion foot which can be accommodated below one of the wings, delimits a cavity defined on the hidden face of said profiled elements and is arranged to the side of said insertion tooth, said resting foot having a saw-tooth protrusion flanked by a pair of recesses, said locking means being constituted by a double-wedge insertion element which can be inserted in said cavity along a direction which is substantially parallel to the hinge's rotation pin.

10. Hinge according to one or more of the preceding claims, characterized in that said double-wedge insertion element has a plate-like body which defines, on one face, dovetail teeth which delimit a dovetail groove which can be associated with said dovetail protrusion.

11. Hinge according to one or more of the preceding claims, characterized in that said plate has a tapered part at a lower portion of said insertion element to generate a thrust action adapted to insert said insertion tooth below one of said wings.

12. Hinge according to one or more of the preceding claims, characterized in that said double-wedge insertion element has a tapered part defined on one of said dovetail teeth which acts by contact on the end of one of said wings to produce a thrust

component adapted to insert said tooth below the other wing.

13. Hinge according to one or more of the preceding claims, characterized in that it comprises opposite tapered portions arranged between said dovetail teeth and engageable with said dovetail protrusion to generate a thrust component in the direction of approach of said resting foot with respect to the bottom of said cavity along a direction which is substantially perpendicular to the bottom of said cavity.

14. Hinge structure for rapid fixing to profiled elements for casements and the like, characterized in that it comprises a first hinge body which is peripherally provided with teeth for snap-together coupling into a first recess defined in a first profiled element and a second hinge body applicable to a second profiled element said first hinge body and said second hinge body being mutually rotatably associable by means of a hinge pin provided with locking means adapted to prevent the disengagement of said teeth from said first recess.

15. Hinge structure according to the preceding claim, characterized in that said first hinge body internally defines a first axial cavity provided with an opening on a circumferential portion, tabs extending from said opening and ending with said coupling teeth.

16. Hinge structure, according to the preceding claims, characterized in that said locking means are constituted by a radial protrusion of said pin which can be inserted between said tabs to prevent their mutual contraction with disengagement of said coupling teeth from said first recess.

17. Hinge structure, according to one or more of the preceding claims, characterized in that said coupling pin has in a middle portion, an annular flange which can be interposed between said first body and said second body.

18. Hinge structure, according to one or more of the preceding claims, characterized in that said second hinge body defines a second axial cavity which can be aligned with said first axial cavity, a wing being provided laterally to said second axial cavity, said wing defining, on its inner face, a shaped tab which can be inserted in a second recess provided on said second profiled element and engageable by fixing means of said second body.

19. Hinge structure according to one or more of the preceding claims, characterized in that said shaped tab has, in transverse cross section, a substantially L-shaped configuration and in that said fixing means are constituted by a wedge-like plate which can engage the inner face of said second profiled element.

20. Hinge structure according to one or more of the preceding claims, characterized in that said shaped tab has the shape of a portion of circumference and in that said fixing means are constituted by a pin which can be associated with the inner face of said second profiled element.

21. Hinge structure according to one or more of the preceding claims, characterized in that the longitudinal extension of said coupling teeth and of said shaped tab is shorter than the longitudinal extension of the respective hinge bodies.

Fig. 3

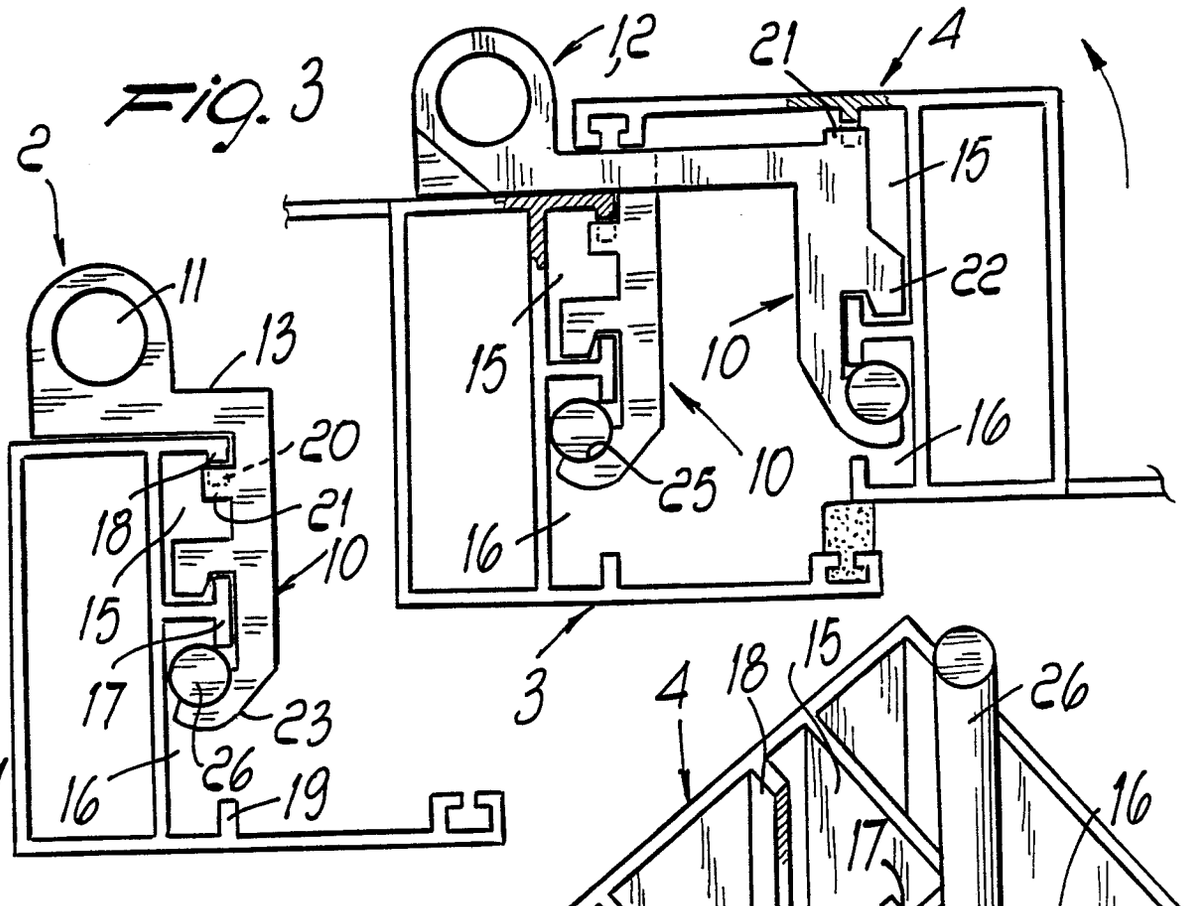


Fig. 2

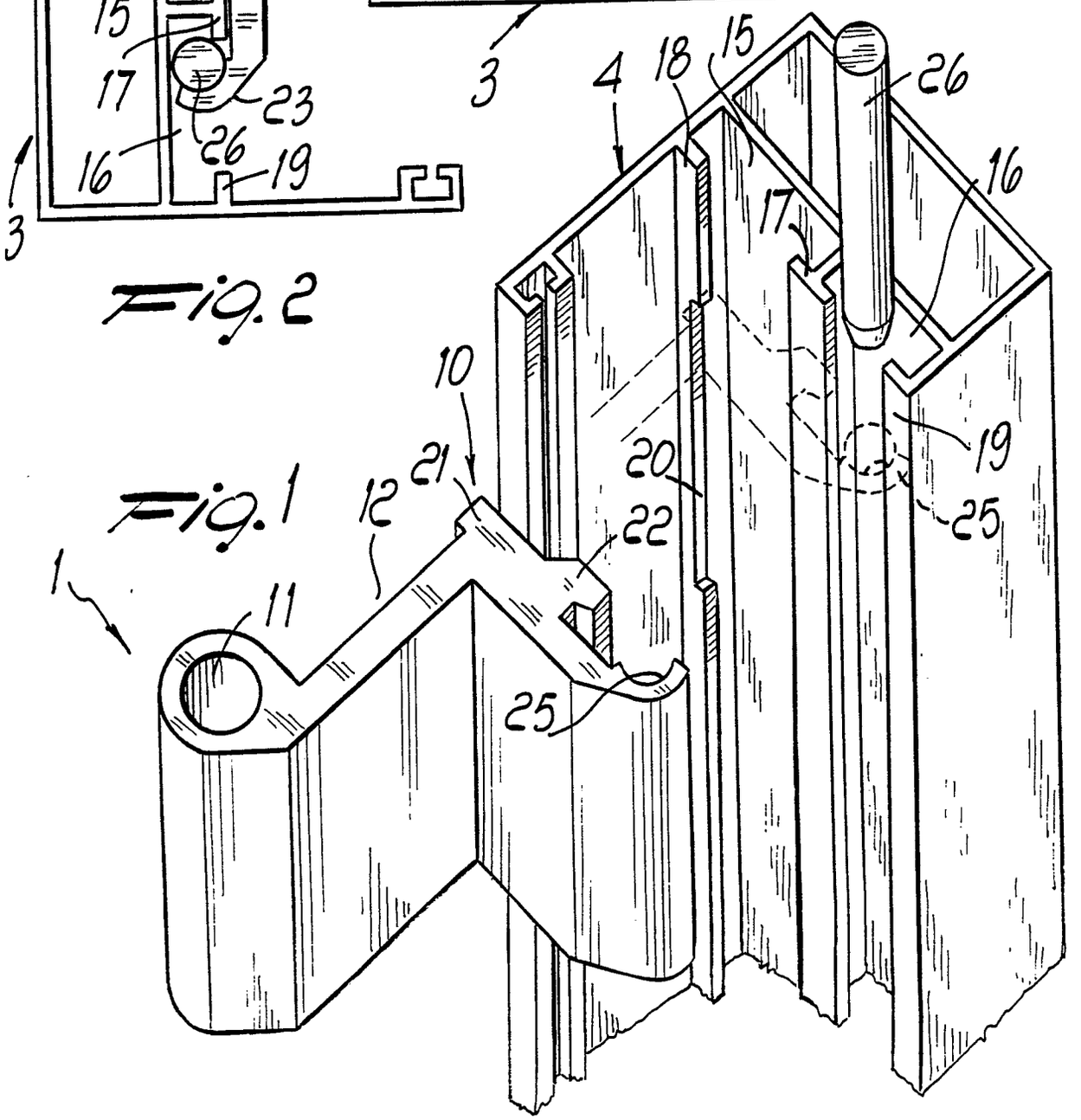


Fig. 1

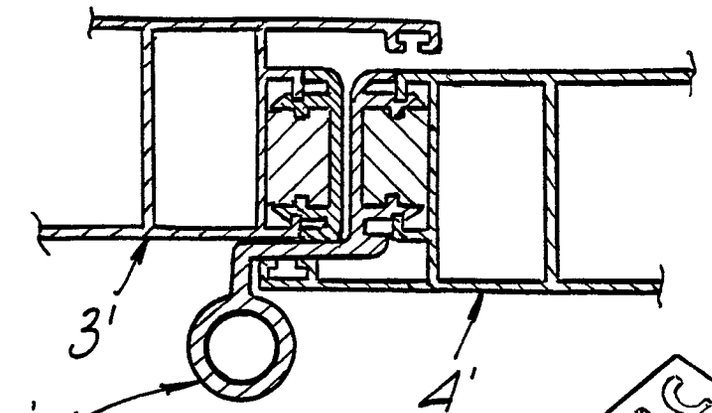


Fig. 6

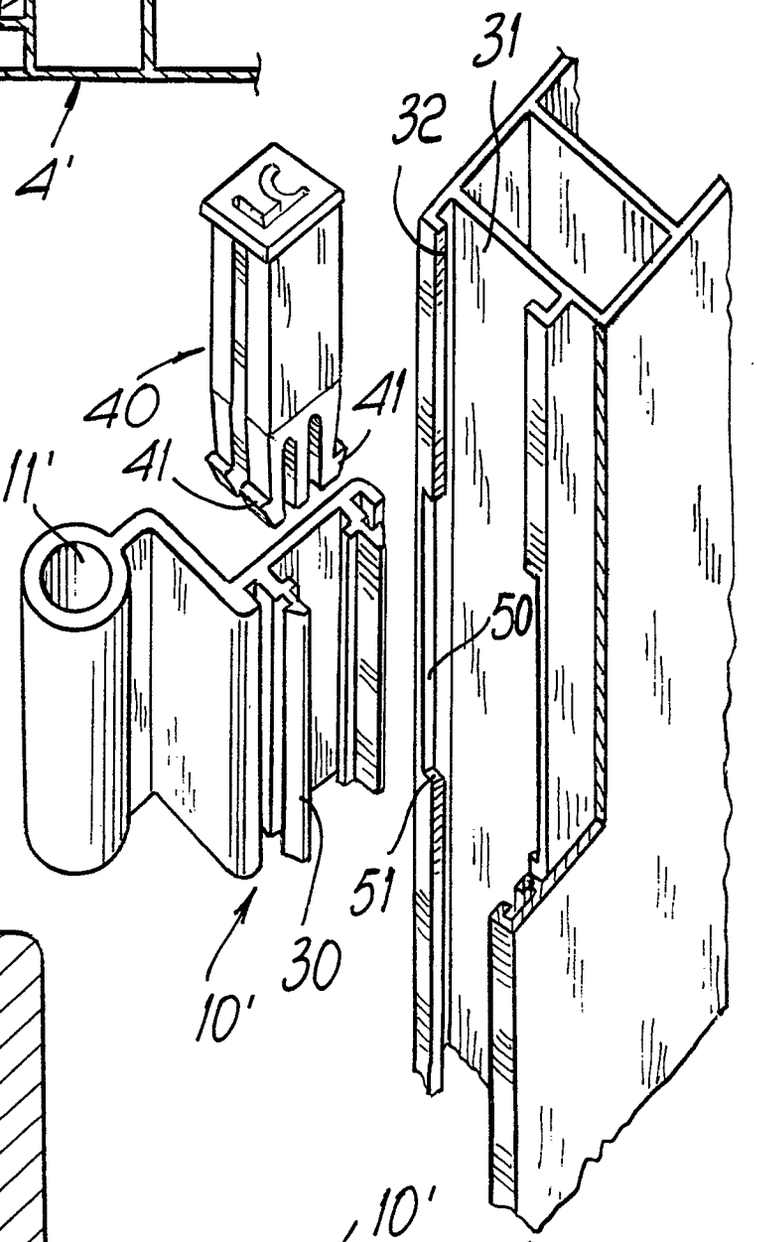


Fig. 4

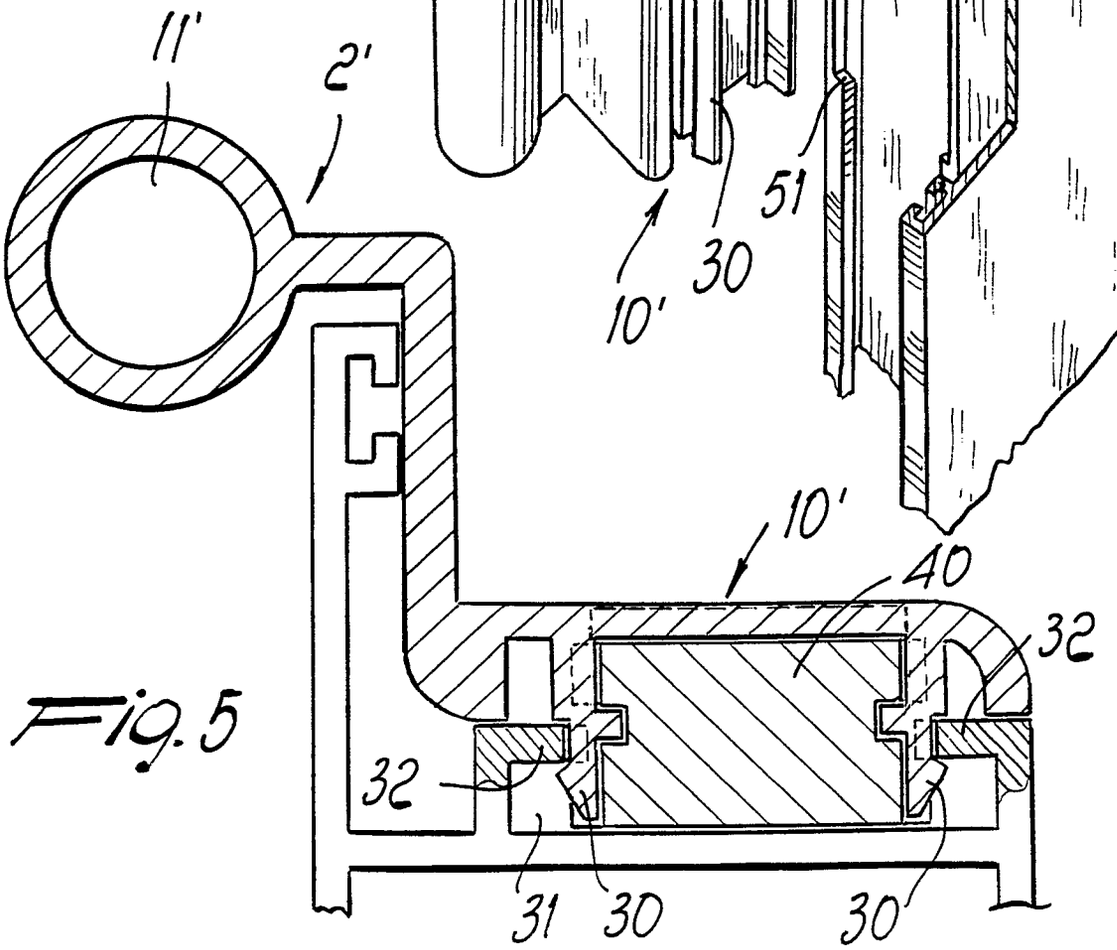


Fig. 5

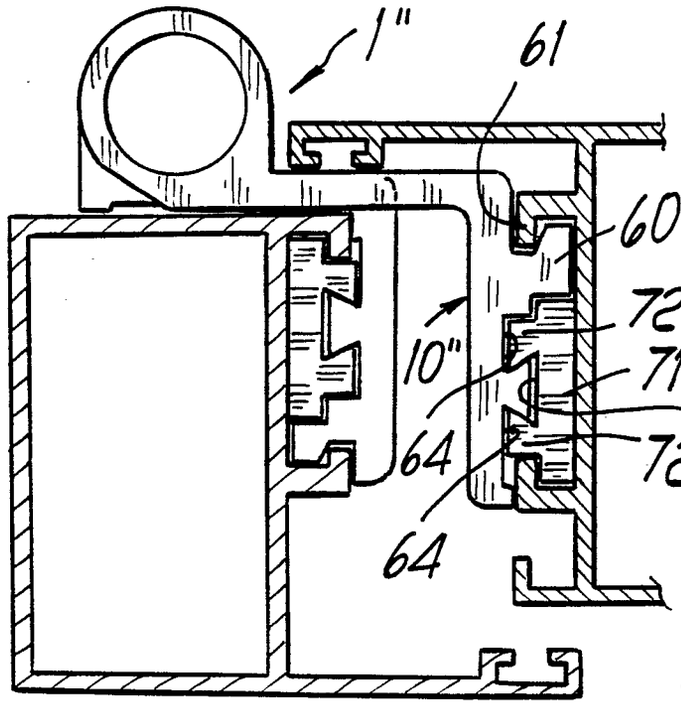


Fig. 9

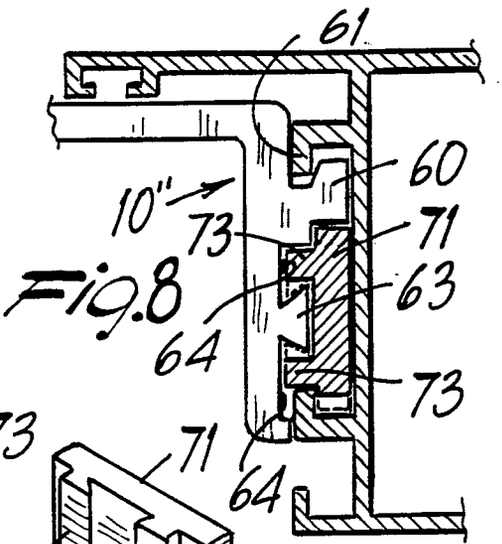


Fig. 8

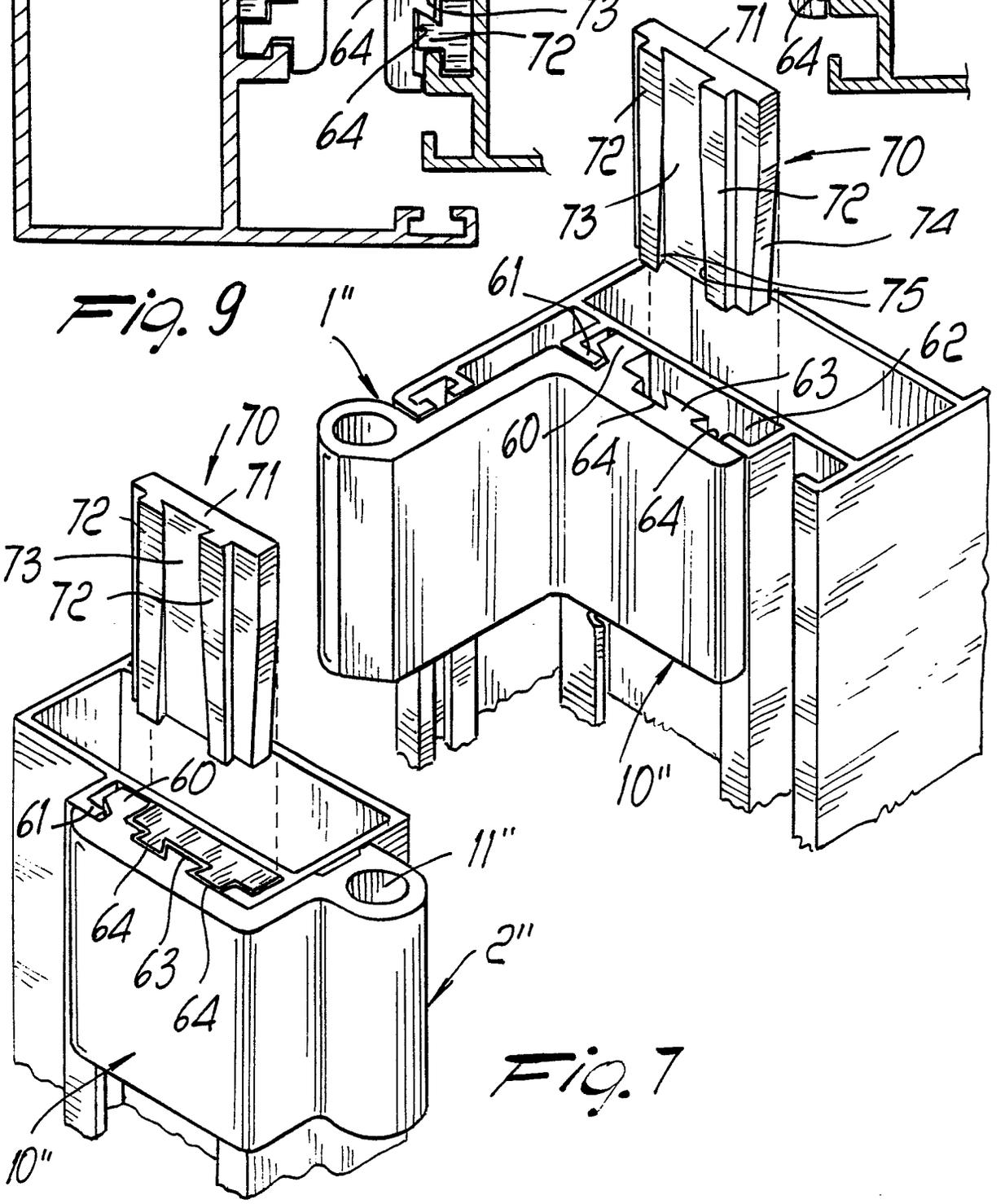


Fig. 7

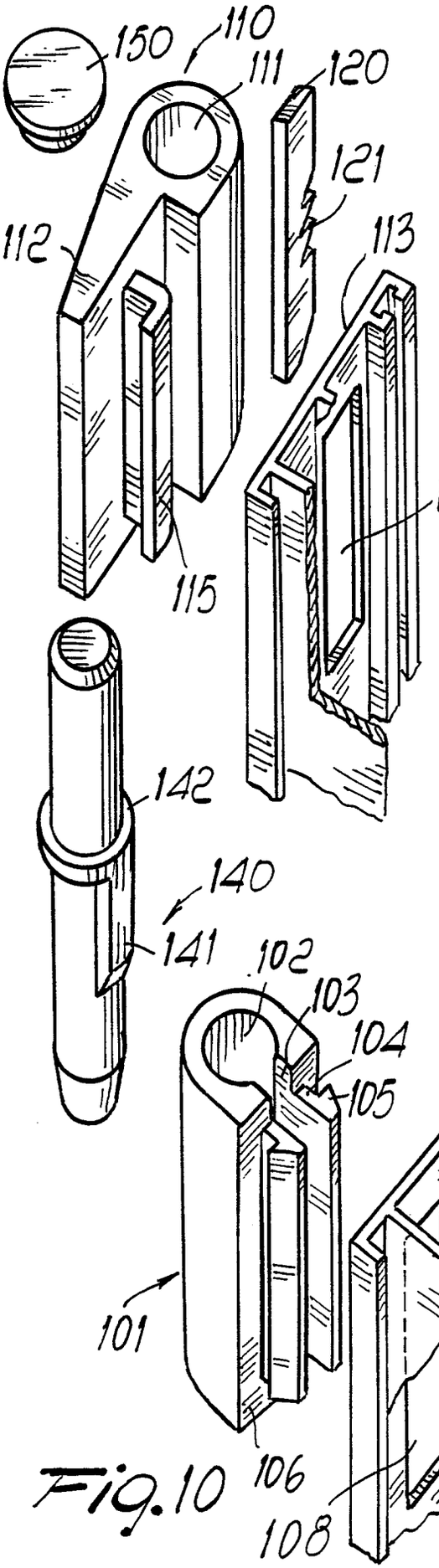


Fig. 10

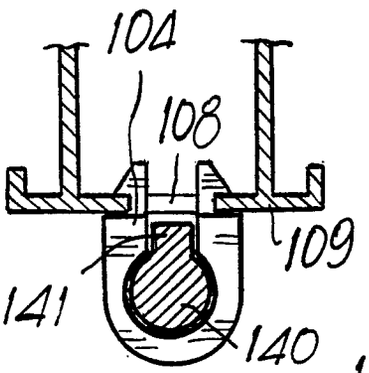


Fig. 12

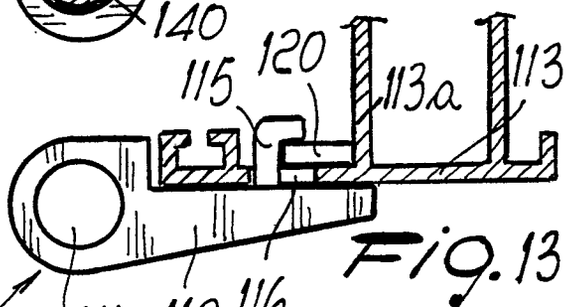


Fig. 13

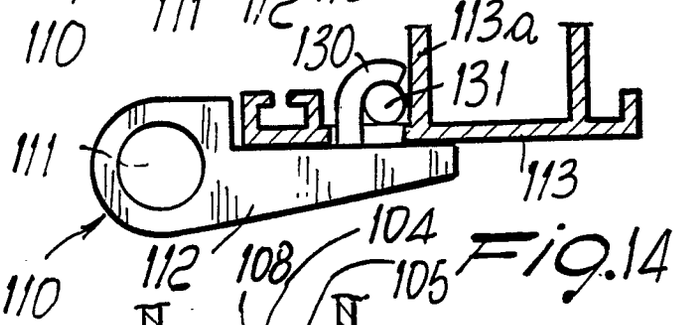


Fig. 14

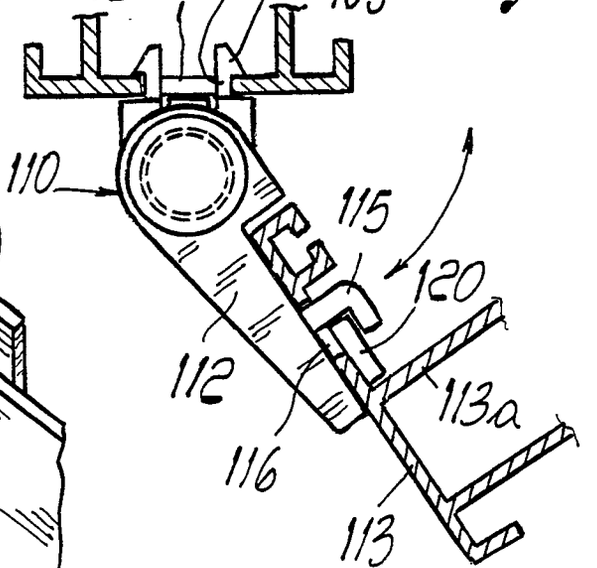


Fig. 11