(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 256 788**
A2

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **87306968.6**

(51) Int. Cl.4: **E06B 5/06**

(22) Date of filing: **06.08.87**

(30) Priority: **09.08.86 GB 8619465**

(43) Date of publication of application:
24.02.88 Bulletin 88/08

(84) Designated Contracting States:
DE ES FR IT

(71) Applicant: **Blakeney Enterprises Limited**
14 & 15 Halesowen Road
Halesowen West Midlands B62 9AA(GB)

(72) Inventor: **Haines, Reginald Laurence**
11, Green Road
Hall Green Birmingham(GB)

(74) Representative: **Stonehouse, Sidney William et al**
Barker, Brettell & Duncan 138 Hagley Road Edgbaston
Birmingham B16 9PW(GB)

(54) Security barriers.

(57) Securing premises against unauthorised entry such as by way of a door, requires that the door construction be resistant against tampering and forced opening. Often such doors have to be able to be fitted quickly. To that end we provided a security barrier having a panel (1) hingedly connected to a first jamb (2) by hinge means (6) to the rear of the panel member, and releasable locking means at the rear of the panel for locking the panel to a second jamb (3). By providing panel sides which extend to cover the hinge means and the locking means, access to same is obstructed from the front of the panel.

Having the first and second jambs in the form of an open mouthed channel member (49, 60) and providing them with clamping means (44, 64) enables them and hence the barrier to be fitted particularly easily about in situ jambs.

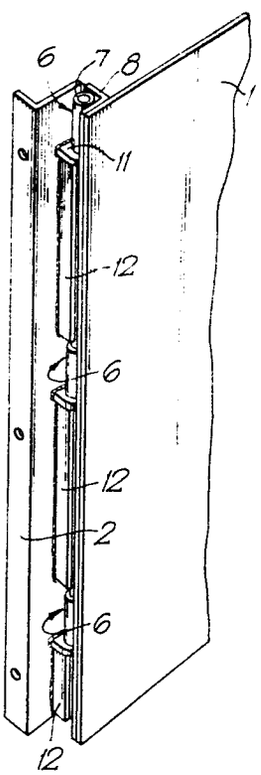


Fig.1.

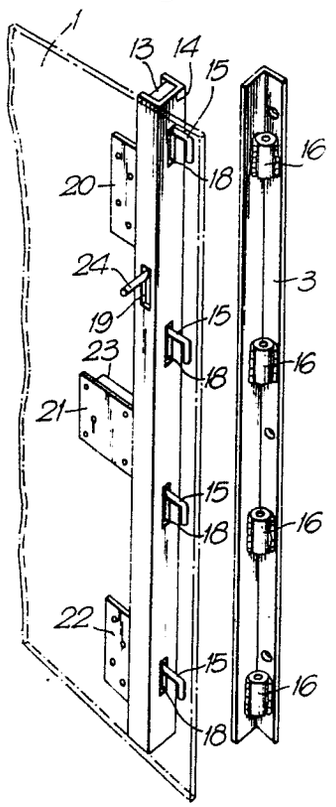


Fig.2.

EP 0 256 788 A2

Security Barriers

The invention relates to a security barrier for a window or door opening, and in particular, but not exclusively, to a security door which is adapted to close a doorway, such as an opening between opposite sides of a recess or a flush fitting doorway.

Security barriers are becoming increasingly required to secure premises against unauthorised entry. Security doors currently available consist of a door which is permanently secured across an opening. In some present designs the door has to be totally removed in order to allow subsequent access to the premises. In other designs the door can only be secured internally by two pairs of jacks at the top and bottom of the door, and a small opening is provided through which the operator crawls after securing the door. The opening is then closed by a plate of strong reinforced material, such as "Armadillo" sheeting, which is secured to the door by three hooks operated by magnets. These operating magnets are expensive to purchase and it is possible that they may be acquired by unauthorised persons.

We are especially concerned with a security barrier for protecting void properties or the like, where it is often a requirement for a door or window barrier to be secured in place quickly and to be effective to prevent unauthorised entry. For example a door or a window barrier would be fitted when a property becomes empty and left in place until reoccupied. Thus we are especially concerned with what we term a temporary security barrier.

It is an aim of the present invention to provide a security barrier, especially as a door, which is lockable to provide a large degree of security, and which opens readily when unlocked to permit easy access to authorised persons. It is a further aim to provide a security barrier which can be fitted quickly.

According to a first aspect the present invention consists in a security barrier adapted to close an opening between two jambs secured to opposite sides of an opening comprising a panel member hingedly connected along one side to a first one of the jambs by hinge means to the rear of the panel member, and releasable locking means at the rear of the panel member provided on the side opposite the hinge means for locking the panel member to the second jamb, wherein said sides of the panel member extend to cover the hinge means and the locking means thereby obstructing access to the hinge means and the locking means from the front of the panel.

The hinged security barrier of the present invention can be opened and closed in the same manner as a normal door or window shutter when unlocked but, when locked, the front panel member, which is preferably formed of a particularly strong material such as "Armadillo" sheeting, protects the hinge and the locking means from being tampered with by unauthorised persons. We also envisage using "Armaglaze" for the front panel which is resistant to damage and yet allows light through.

The locking means preferably comprises one or more locking elements, the or each of which is movable into and out of locking engagement with complementary, cooperating locking element on the second jamb. Movement of the or each locking element may be controlled by an operating member adapted to be inserted through a small or narrow opening in the panel member. It is also desirable to provide auxiliary locking means which can lock the or each locking element in permanent locking engagement with its respective complementary locking element on the jamb.

In a preferred embodiment, at least two locking elements in the form of hooked rods are provided on a locking shaft slidable in a guide member on the rear of the panel, and each hooked rod is movable upon movement of the locking shaft into and out of engagement with a complementary locking element which has a recess or aperture adapted to receive the hooked rod. A mortice dead lock may engage with the locking shaft to constitute the auxiliary locking means.

The hinge means may comprise one or more hinges of the hook and band type. When at least two hinges are provided the gap between the hinges may be occupied by a plate secured to the first door jamb.

We envisage the security barrier of the present invention primarily as a security door for securing a door opening yet allowing access to the building when required. However, we also envisage possible applications as a security barrier for a window opening, such as for securing void properties, where the ability to hinge open a barrier to let in light to facilitate working or inspection prior to occupation is clearly advantageous over repeated removal and refitting of fixed barriers. Our copending U.K. Patent Application No. 8713936 describes a particularly advantageous construction of window barrier.

In the case of a window, the first and second jambs may be vertical framemembers secured to the wall of the building adjacent the vertical sides of the window, or could be secured to the vertical framemembers of the window.

To facilitate fixing of the security barrier across an opening, the hinge connection(s) and the cooperating locking element(s) are conveniently carried by respective first and second jambs separate from any existing in situ jambs or framing. These may comprise angle brackets, especially elongate members, with provision for fixing same, say by bolts, securely for hinging and locking of the barrier across the desired opening. In one embodiment simple right angle cross-section members are employed for fitting the panel across a recess using suitable fixing screws or bolts passing through the members. Such members may be readily adapted to provide a flush fitting doorway by provision of angle brackets extending to avoid in situ framing - such as door jambs.

A particularly convenient construction is provided when the first and second jambs are such as to be able to fit about in situ jambs or framing. Such is especially convenient in effecting a repair after a door has been forceably broken down, or otherwise requiring removal of an existing door. Accordingly, we propose a clamping jaw arrangement, conveniently as a generally U-shaped channel member dimensioned to fit over such framing and having screw action or cam action clamping means for fixing the first and second jambs securely about in situ door jambs. Such clamping jaw arrangement may be integral with each of the first and second jambs, or provided as an add on component to the aforesaid right angle members. It is envisaged that such a fitting could also be applicable to a window security barrier.

Having regard to the forgoing, the present invention also provides a security barrier assembly for securing a door or window opening, comprising first and second jambs adapted to be secured to or adjacent opposite sides of an opening about in situ jambs and a panel member secured between said first and second jambs, preferably hingedly to said first jamb and preferably adapted to be locked, releasably to said second jamb, wherein at least said first jamb, and preferably also said second jamb is arranged as a clamping element to facilitate fitting about said in situ jamb.

Such clamping element may conveniently take the form of an open mouthed elongate member with one limb affording an abutment with the in situ jamb and an opposite limb or bracket parts providing mounting means for one or more clamping devices - such as the aforesaid screw or cam action devices.

In certain applications it may well be advantageous to provide said jambs with head/transom parts, possibly also threshold parts, and with say provisions for securing together such parts of first and second jambs. Such parts serve to hold the frame parts securely with respect of one another and the surrounding frame, and may provide additional security especially in conjunction with additional locking elements between the panel and said part or parts.

According to another aspect, the present invention consists in a security barrier assembly comprising first and second jambs adapted to be secured to opposite sides of an opening and a security frame in accordance with the first aspect of the present invention.

In accordance with our preferred embodiment the jambs above referred to are door jambs and the security barrier is in the form of a security door.

The present invention will now be described, by way of example only, with reference to the accompanying drawing in which:-

Figure 1 is a perspective view of one side of a panel member of a security barrier in accordance with the present invention hingedly connected to a first jamb adapted to be secured to one side of a recess;

Figure 2 is a perspective view of releasable locking means for locking the other side of the panel member to a second jamb adapted to be secured to the opposite side of the recess;

Figure 3 is a view showing the barrier in a closed and locked condition;

Figure 4 is a section on the line IV-IV of Figure 3;

Figure 5 is a section on the line V-V of Figure 3;

Figure 6 is a section on the line VI-VI of Figure 3;

Figure 7 is a section on the line VII-VII of Figure 3;

Figure 8 is a view similar to Figure 1 showing the first jamb modified to enable it to be secured to one side of a flush fitting opening such as a doorway.

Figure 9 is a view similar to Figure 2 showing the second jamb modified to enable it to be secured to the other side of a flush fitting opening such as a doorway;

Figure 10 is a sectional view similar to Figure 4 of the first jamb shown in Figure 8,

Figure 11 is a sectional view similar to Figure 7 of the second jamb shown in Figure 9;

Figure 12 is a perspective view showing a bracket member for fitting to the first jamb to enable it to be secured about an in situ jamb such as a door jamb,

Figure 13 is a perspective view showing the bracket member for fitting to the second jamb to enable it to be secured about an in situ jamb,

Figure 14 is a cross-sectional view for the case of Figure 12 in the fitted position,

Figure 15 is a cross-sectional view of another embodiment of first and second jambs also for fitting about in situ jambs such as door jambs, and

Figure 16 is a perspective view of another embodiment of security barrier assembly.

The security barrier illustrated in the drawings is primarily intended as a security door and has been described accordingly, but it will be understood that it could also form a window barrier with references to door and door jambs being construed accordingly. The illustrated security barrier comprises a panel member 1 formed of a tough material such as "Armadillo" sheet fabric, which closes an opening between first and second door jambs, 2 and 3 respectively, which consist of angle iron posts bolted to opposite sides of a recess between two walls 4 and 5.

The panel member 1 is connected to the first door jamb 2 by hinges 6 of the hook and band type. As is best shown in Figures 3 and 4, each hinge 6 comprises a hook 7 welded to an angle iron member 8 bolted (and tack welded where panel material allows) to the rear surface 9 of the panel member 1 and a pin 10 extending upwards from a plate 11 welded onto the door jamb 2. As shown in Figures 1 and 3 there are three hinges 6 and the gaps between the hinges 6 are occupied by iron plates 12 welded to the door jamb 2 (Figure 6).

At the opposite side of the panel member 1 from the hinges 6 a releasable locking means is provided for locking the panel member 1 to the second door jamb 3 (Figures 2, 3, 5 and 7).

The releasable locking means comprises a locking shaft 13 slidable in a guide member 14 of U-shaped channel section secured to the panel member 1 and locking elements in the form of hooked rods 15 provided on one side of the locking shaft 13 and which are adapted to be received in complementary locking elements in the form of steel cups 16 welded to the second door jamb 3. The locking shaft 13 is restrained within the guide member 14 by stops welded across the mouth of the channel. As shown in Figure 2, the hooked rods 15 extend through slots 18 in the guide member 14 and an elongate aperture 19 is provided in the limb of the U-shaped guide member 14 which is secured to the panel member 1.

As shown in Figures 2 and 3 the guide member 14 is secured to the panel member 1 by three metal plates 20, 21 and 22 bolted (and tack welded where the panel material allows) to the rear surface 9 of the panel member 1. The central metal plate 21 carries auxiliary locking means in the form of a five-lever mortice dead lock 23 which is used to lock the locking shaft 13 and guide member 14 against relative movement when the hooked rods 15 are received in the cups 16 on the door jamb.

In an alternative preferred construction the U-shaped channel section is replaced by a J-shaped channel section with the longer leg having a plurality of holes therealong for securing it to the rear surface of the panel members. This enables the plates 20, 21, 22 to be dispensed with. The mortice lock 23 is carried by a plate forming an extension of the longer leg. The lock can be central as illustrated or, advantageously in certain applications, positioned towards the upper edge of the door where it is more difficult to tamper with.

The security door illustrated in the drawings may be installed in a doorway simply by connecting the panel member 1 to the first door jamb 2 by means of the hinges 6 so that the door is movable in the usual manner between a closed position and an open position (shown by broken lines in Figure 4).

In order to operate the locking means when the door is in its closed position the locking shaft 13 is moved downwards from the position shown in Figure 2 by a detachable, screw-threaded operating rod 24 which is inserted through a narrow opening or slit cut into the panel member 1 and through the elongate aperture 19 where it is received in a screw-threaded recess in the locking shaft 13. Downward movement of the locking shaft 13 is accompanied by movement of the locking rods 15 into engagement with the cups 16 on the second door jamb. The mortice dead lock 23 may then be employed to prevent the shaft 13 from subsequently being moved upwards within the guide member 14. The security door can then only be opened by a person who possesses the correct key to open the mortice dead lock 23 and the appropriate operating rod 24.

As shown in Figures 2, 3, 5 and 7 the panel member 1 extends beyond the guide member 14 so that the locking elements 15 and 16 ae completely hidden from view from the front of the door when it is closed. In this position the front panel 1 fits flush with the wall 5. Similarly, the other side of the panel member 1 hides the hinges 6 from view from the front of the door, and the gap between the front panel 1 and the wall 4 is only just sufficient to enable the door to be opened. Thus it is very difficult to tamper with the hinges 6 or the locking means of the security door in accordance with the invention. As will be understood from Figures 4 and

7 of the drawings, whilst the security door is closed it is also impossible for access to be gained from the front of the security door to the bolts securing the door jambs 2, 3 to the walls 4, 5.

Figures 8 to 11 illustrate a security door which is identical in all respects to the door of Figures 1 to 7 except that the door jambs 2, 3 are modified to enable them to be secured to opposite sides of a doorway.

As shown in Figures 8 and 10 three angle iron brackets 25 are secured to the rear limb of the first door jamb 2 by pegs 26 extending through apertures in the limb, and as shown in Figures 9 and 11 three angle iron brackets 27 are bolted to flanges 28 extending rearwardly of the second door jamb 3. The angle iron brackets 25 and 27 enable the door jambs 2 and 3 to be secured to the walls 29 and 30 on opposite sides of a conventional flush fitting doorway (see Figures 10 and 11).

Considerable advantage results when it is possible to fit the security door in position quickly, and to this end Figures 12 to 15 show embodiments of door jambs which can be quickly fitted about existing in situ doors jambs.

In Figures 12, 13 and 14 an elongate member 40 is illustrated having two limbs 41, 42 at right angles to one another as viewed in cross-section, and tabs 43 extending at spaced intervals from the limb 42 thereby defining an open mouth channel section. The brackets have passing therethrough, threadingly, clamping members 44 conveniently as headed bolts 45 with load spreading foot 46. Spaced protecting studs 47 are provided for coupling with either first jamb 2 carrying hinge means (Figure 12) or second jamb 3 carrying coupling locking elements (Figure 13), for which purpose respective through bores 48, 49 are provided. Otherwise the parts may be welded together to give the same open channel section as part of the jambs 2,3. The fitted position of first jamb 2 is shown dotted at F. The members 40 can be purpose built to fit first or second jambs, or made as a universal fitting.

With the members 40 fitted to the jambs 2 or 3 of a configuration as previously described, they can be clamped about an in situ door jamb 50 as seen in Figure 14 for the hinge side. The limb 41 is caused to be held against the outer edge of the frame by action of the foot 46 contacting the other edge. Studing or other tooth-like formations or spikes may be provided on the inner side of the limb 41 to dig into the frame to render the fixing even more secure. As illustrated in Figures 12 and 14 the door panel is preferably fixed to its mounting bar 8′ by nuts and bolts 54, 54′ passing through the panel and through slots 52 in the mounting bar. The slots allow for widthwise adjustment of the door panel relative to the opening, say of the order of 50 mm, without affecting security. Utilising a T-shaped member for the mounting bar 8′ is advantageous in this respect. Where the door panel is metal, the bolt may be in the form of a threaded stud welded in place to receive the nut 54.

Figure 15 illustrates a yet further embodiment constructed specifically as a quick fit type, with the clamping jaw members 60, 61′ for fitting about the in situ door jambs, 62, 63 having the hinge cups 7′ and the locking element lip 16′ secured directly thereto, such as by welding. The clamping jaws may be as members 40 already described, or U-shaped section channel members. Clamping in position may be further speeded up by the use of an eccentric cam type clamping element in place of the aforedescribed screw clamp. The line of clamping is generally indicated by arrows 64. T-shaped member 8′ as before allows for widthwise adjustment of the door panel. The door panel, hinge and locking construction are otherwise as described in relation to the other embodiment.

Figure 16 illustrates the use of two panels 80, 81 secured together, preferably adjustably using threaded connection means 82′ pasing through slotted holes 83 and enables the security door to be fitted across wider openings, such as across a double door entry. One panel carries the fixing for the hinge side as at 85, whilst the other carries the locking elements 86 conveniently in the form of a hooked bar as before. For added security, the locking shaft 87 carries an arm 88 extending towards the joining of the two panels, with a hook 89 for cooperation with an abutment at the base of the door. Of course where wider panels are available, such can replace the two panels illustrated; but the use of additional locking arm 88 is to be preferred for security.

Conveniently, the abutment is in a threshold part 92 secured to one or both of the jambs 90, 91. We find it convenient to have a threshold part secured to each jamb and arranged as an angle member or channel for sliding one within the other and with aligned slots in each to receive the hook 89. The threshold parts can be bolted together as at 95.

Also illustrated are optional head frame parts 96a, b again preferably as angle or channel members and having means for fixing one to the other, conveniently by way of a slotted hole 98 in an extension of one part receiving fixing means 97. Such members are welded to the respective door jamb and may be utilised with either single panel barriers or double panel as illustrated and adds to the security of location of the jambs, especially where the doors are of metal plate. Preferably and as illustrated the held frame parts are constructed as open channel members to engage round and clamp to the head of the door frame with clamping

screws 99 threading through one or more brackets 100. Door jamb weight with the embodiments of Figures 12 to 16 can be usefully reduced by arranging for bracket parts 101 carry clamping elements 102 to stand off from a right angle cross-section part, say welded to it as at 103 - allowing each part to be of angle iron. See Figure 16 for illustration.

Claims

1. A security barrier adapted to close an opening between two jambs secured to opposite sides of a door or window opening comprising a panel member (1) hingedly connected along one side to a first one of the jambs by hinge means (6), and releasable locking means (15, 16) provided on the side of the panel member opposite the hinge means for locking the panel member to the second jamb, characterised in that the hinge means are to the rear of the panel member, the releasable locking means are at the rear of the panel member and wherein said sides of the panel member extend to cover the hinge means and the locking means thereby obstructing access to the hinge means and the locking means from the front of the panel.

2. A security barrier as claimed in claim 1 in which the locking means comprises one or more locking elements (15) in the form of hooked rods (15) on a locking shaft (13) slidable in a guide member on the rear of the door panel and each hooked rod is movable upon movement of the locking shaft into and out of engagement with a respective complementary locking element (16) on the second jamb.

3. A security barrier as claimed in claim 2 in which movement of the or each locking element (15) is by means of an operating member (24) adapted to be inserted through a small or narrow opening (19) in the panel member.

4. A security barrier as claimed in claim 2 or 3 in which auxiliary locking means (23) is provided to lock the or each locking element in permanent locking engagement with its respective complementary locking element on the jamb and wherein the auxiliary locking means engages with the locking shaft.

5. A security barrier as claimed in any one of claims 1 to 4 in combination with first and second jambs comprising respective elongate bracket members (2, 60, 90, 3, 61', 91) with which said hinge means (6) and releasable locking means (15) cooperate respectively and wherein said bracket members are adapted to be secured to opposite sides of said opening.

6. A security barrier as claimed in claim 5 in which the first and second jambs each comprise an open mouth channel section (40; 60, 61'; 90, 91) and clamping means (44, 64, 102) for fitting and clamping said first and second jambs about existing in situ jambs.

7. A security barrier as claimed in claim 5 or 6 in which each jamb additionally comprises a head/transom (96a, 96b) and/or a threshold member (92) and wherein respective said members are adapted to be secured together.

8. A security barrier assembly for securing a door or window opening comprising first (2, 60, 90) and second (3, 61, 91) jambs adapted to be secured at the opposite sides of an opening about in situ jambs/framing, and at least one panel member (1, 80, 81) secured between said first and second jambs and wherein at least said first jamb is arranged as a clamping element (40, 60, 90) to facilitate fitting about said in situ jamb.

9. A security assembly as claimed in claim 8 in which the or each clamping element comprises an open mouthed elongate member (40; 60, 61; 90, 91) with one limb affording an abutment with the in situ jamb and an opposite limb or bracket parts providing mounting means for clamping means (44, 64, 102).

10. A security barrier assembly as claimed in claim 9 in which the clamping means comprises a plurality of screw action clamps.

11. A security barrier assembly as claimed in any one of claims 8, 9 or 10 in which the panel member (1, 80) is hingedly connected to one of said jambs.

12. A security barrier assembly as claimed in any one of claims 8 to 11 in which the panel member (1, 90) is adapted to be locked releasably to at least one of said jambs.

Fig.1.

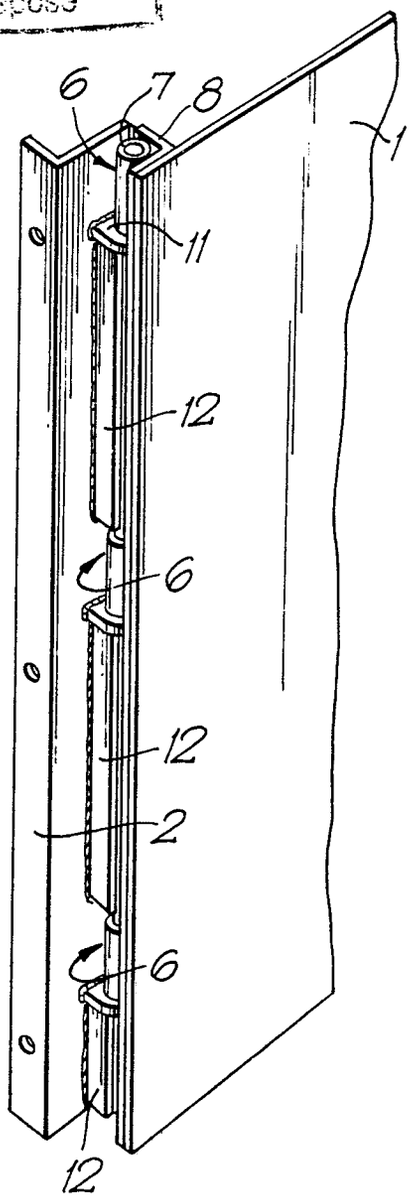


Fig.2.

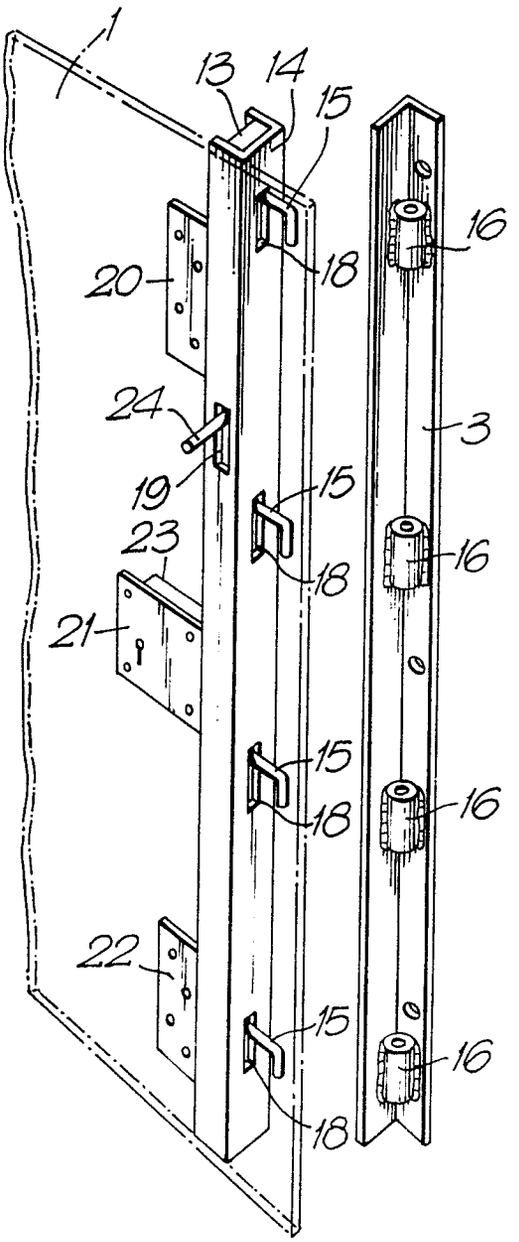
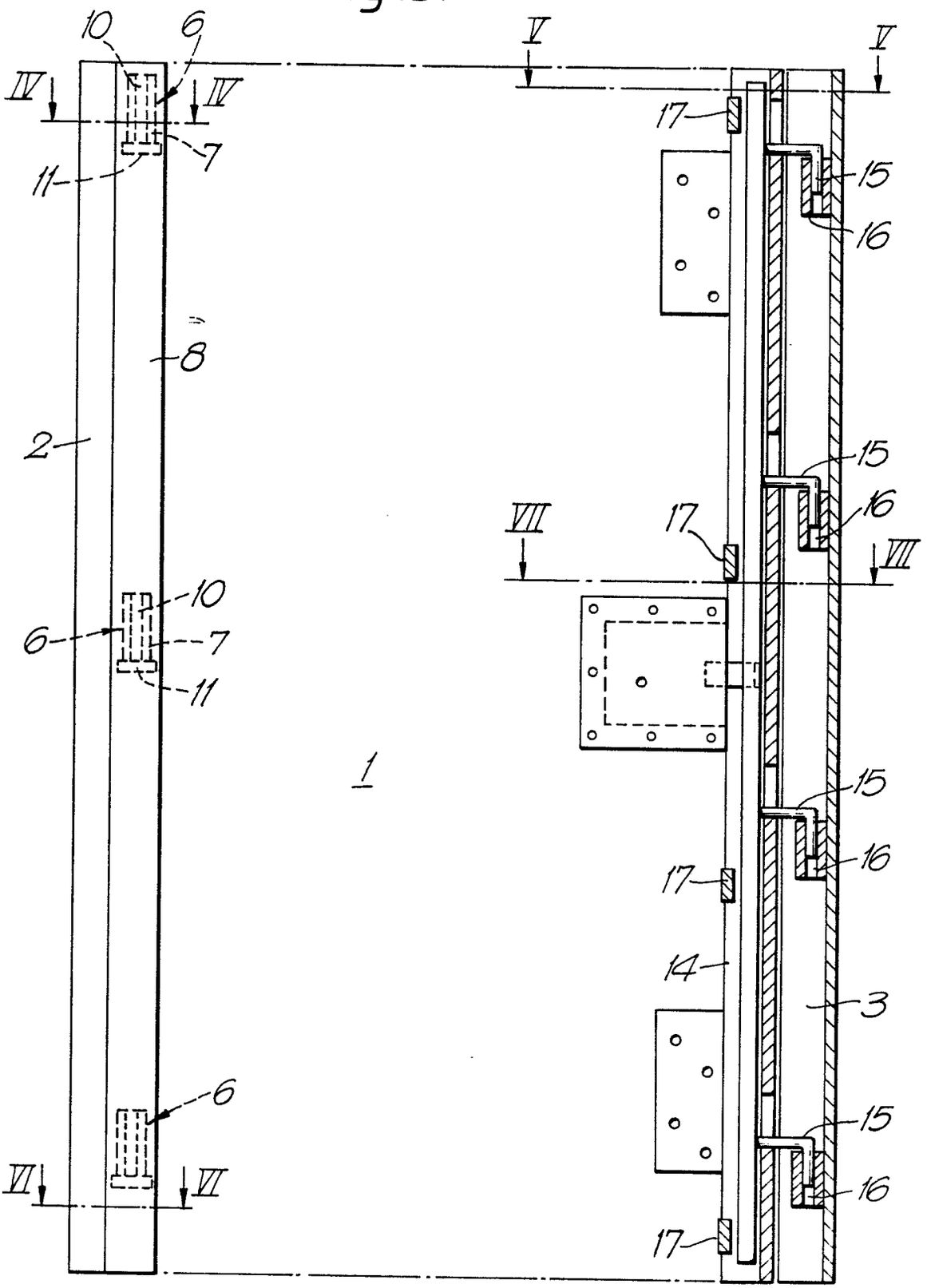


Fig.3.



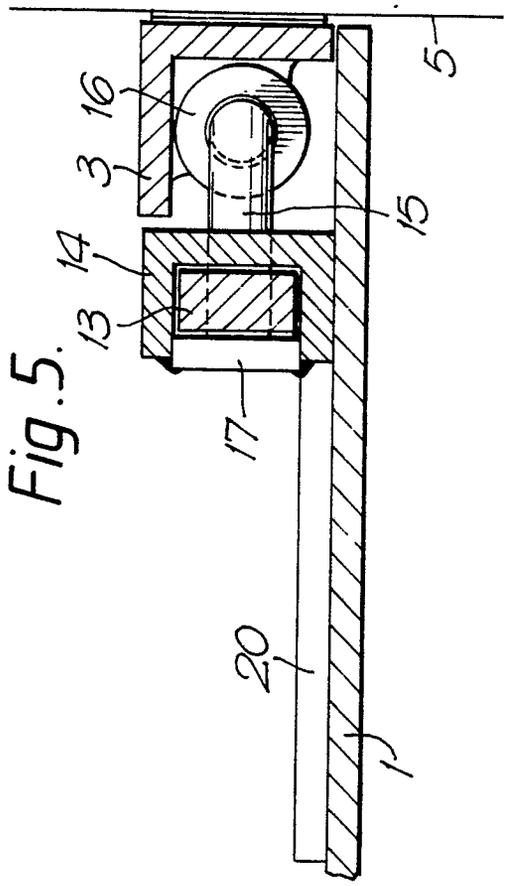


Fig.5.

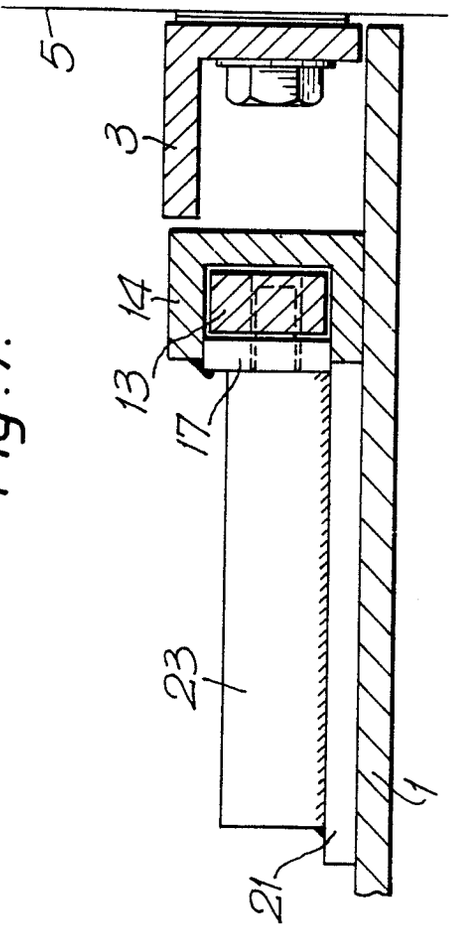


Fig.7.

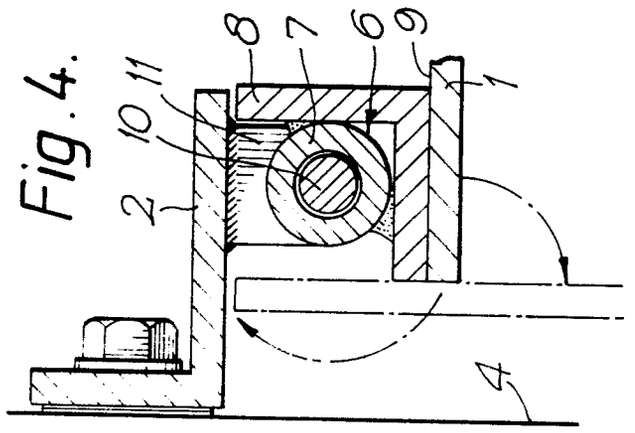


Fig.4.

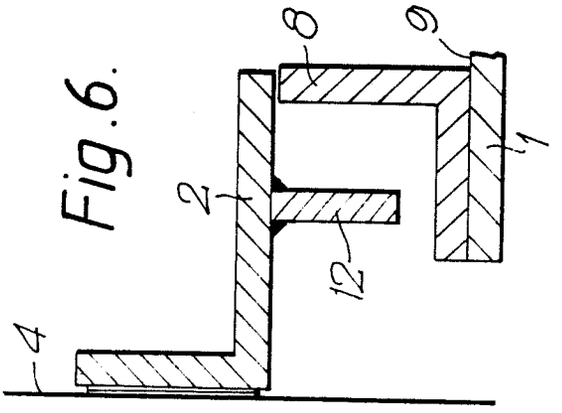


Fig.6.

Fig.8.

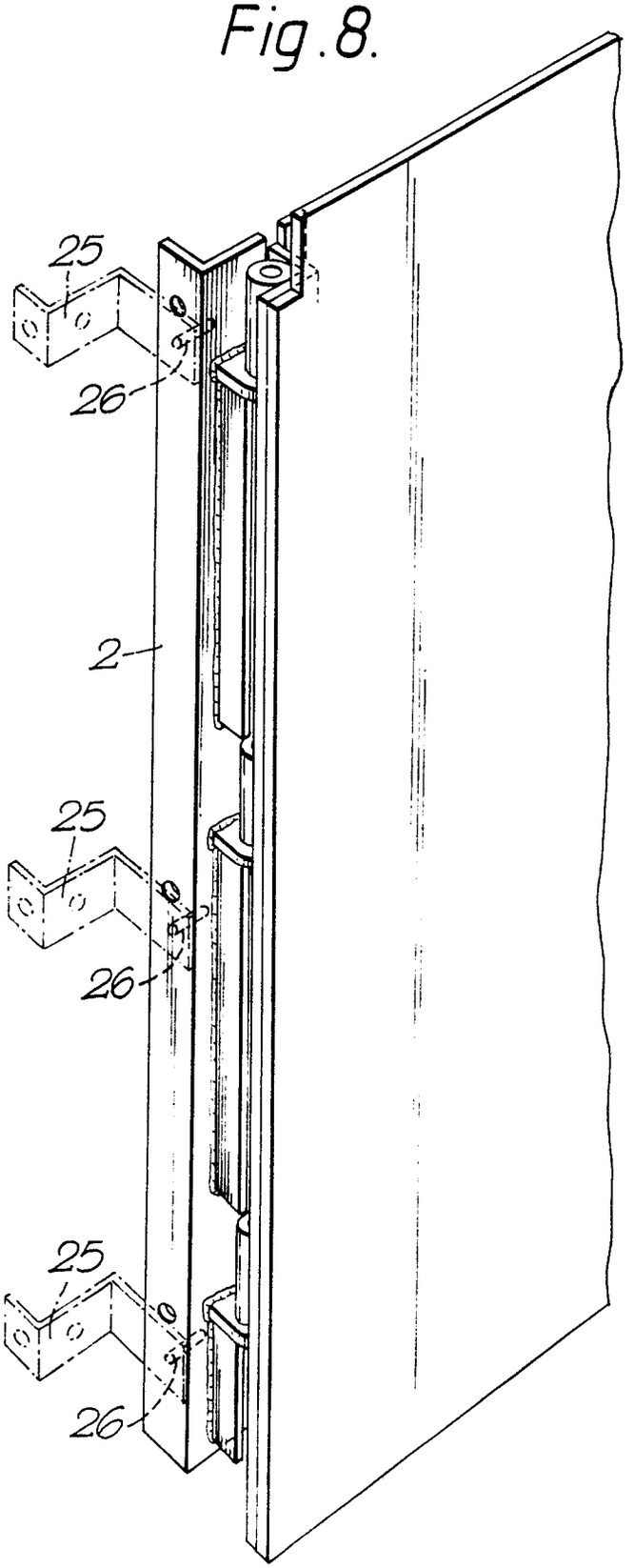


Fig.9.

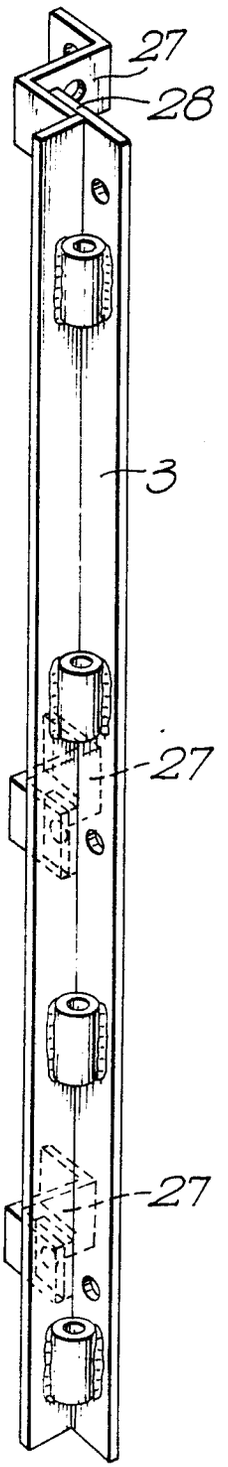


Fig. 10.

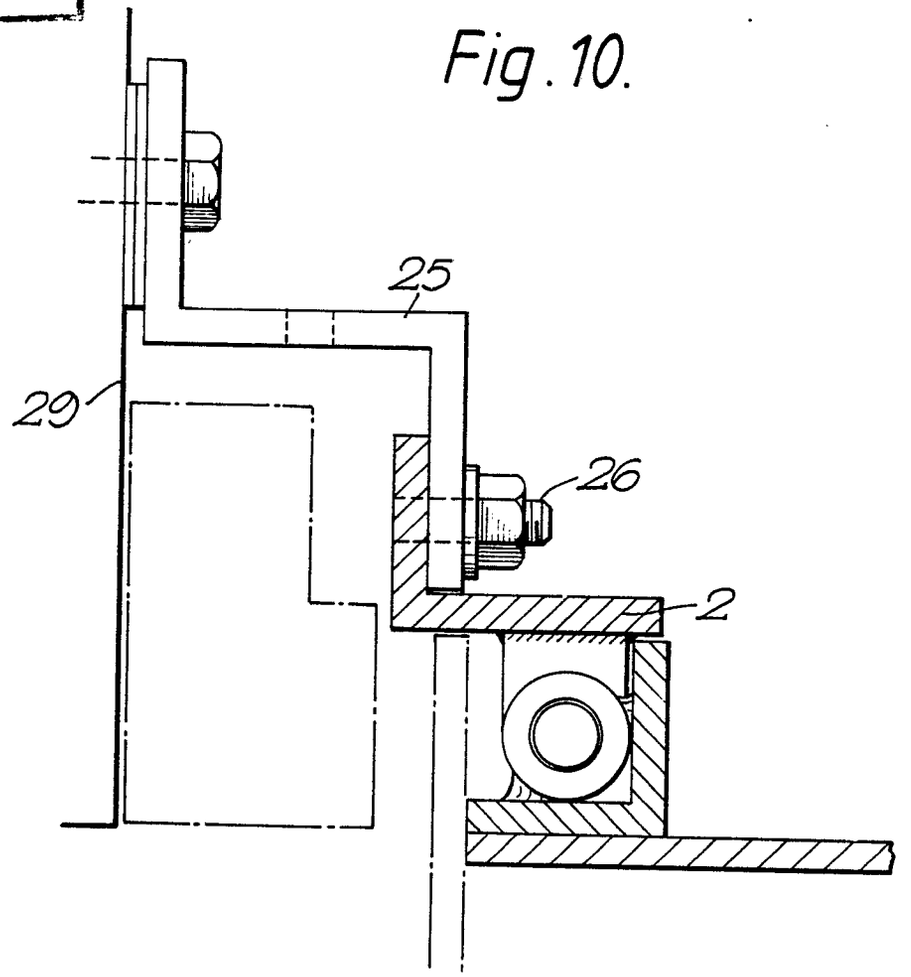


Fig. 11.

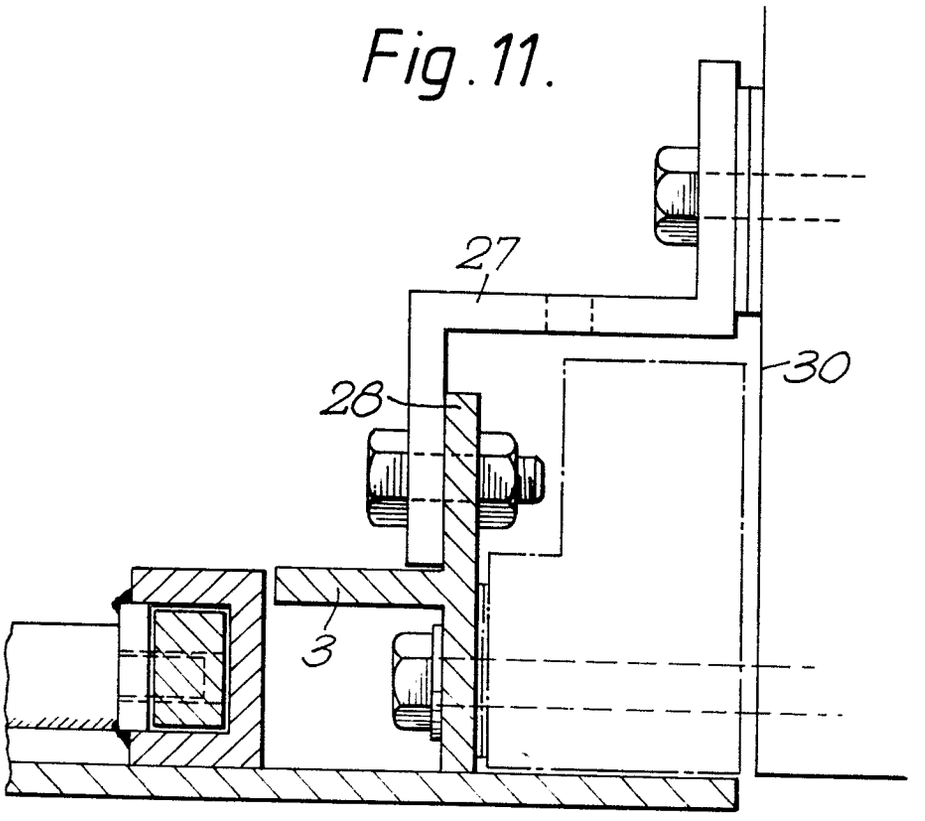


Fig. 12.

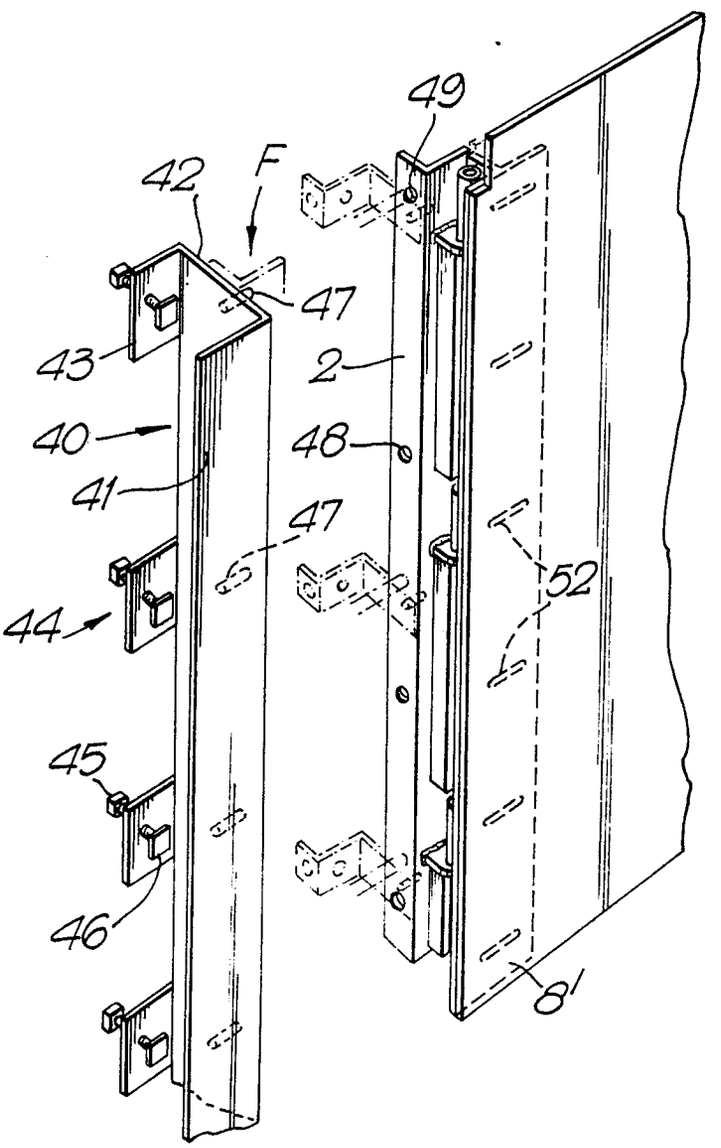


Fig. 13.

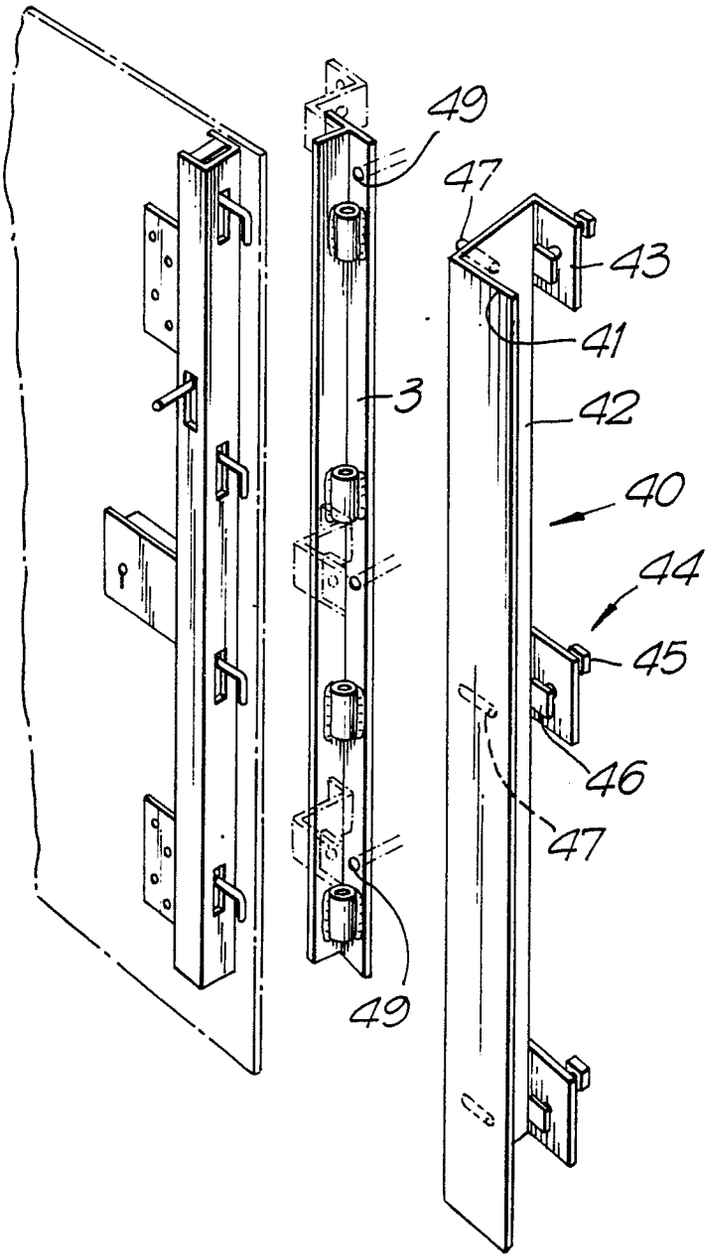


Fig. 14.

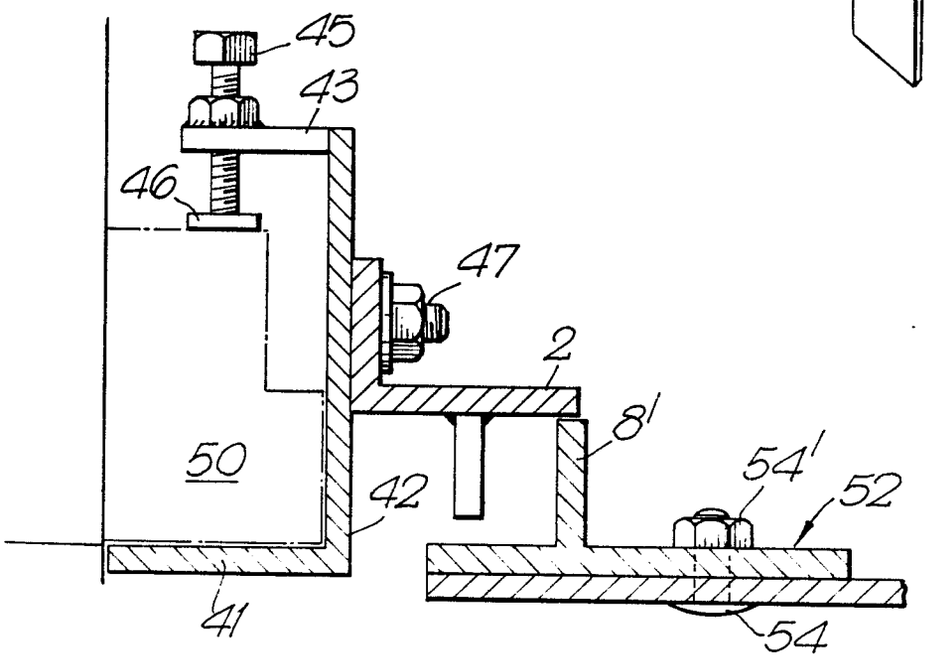


Fig. 15.

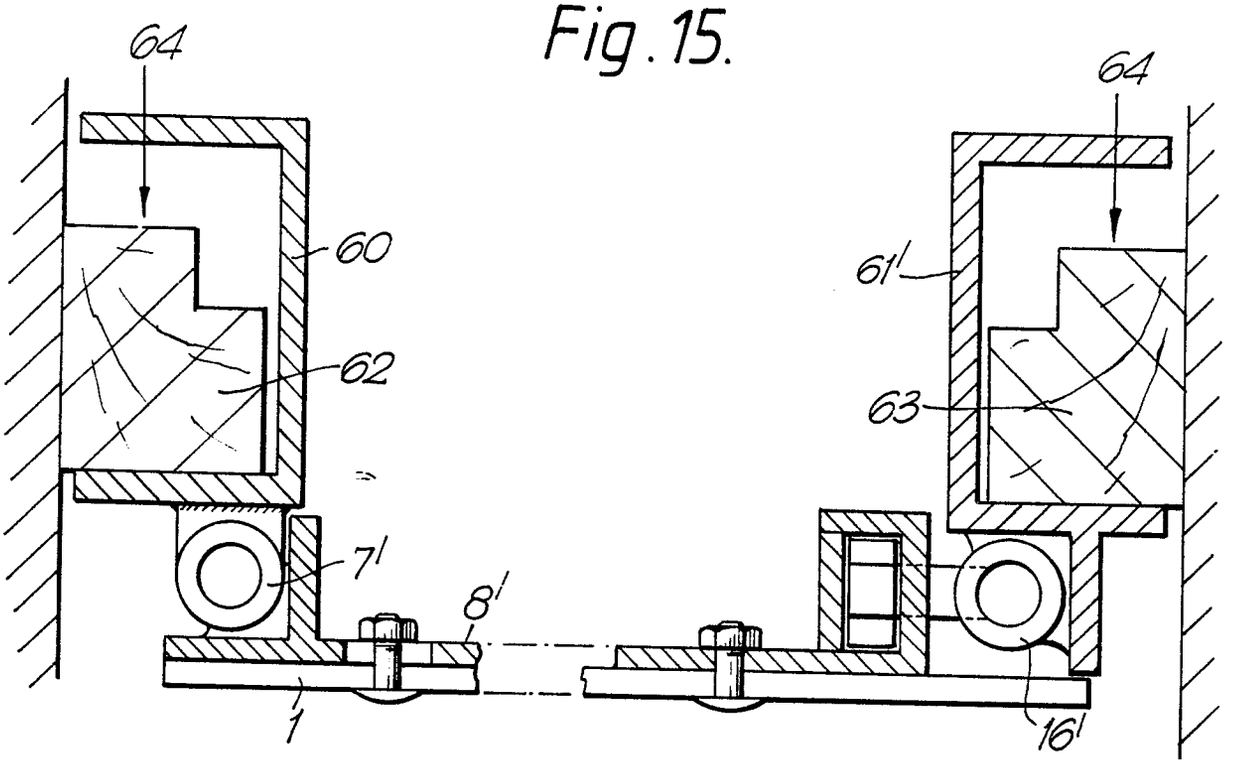


Fig. 16.