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(54) Door kit

(57) A door kit comprises a door panel having front and rear faces bridged by top and side edges including at least one recess on a side edge, the recess being bounded by a ridge, and a plate forming or adapted to form part of a hinge, the plate being fixable to the side edge in the recess after removal of the ridge or part thereof along one side edge, thereby to assist in hanging the door. This means that the "handedness" of the door is not fixed until shortly before installation. There can be backplate in the recess, partially filling the recess so as to still provide a discernible depth for receiving the plate, and providing additional strength in securing the plate. The backplate can if desired be of variable thickness and include a thinner part corresponding in shape to the plate. This then allows a thicker part to lie alongside the plate. The thicker part and the plate can be keyed so as to provide a firm engagement. The plate is suitably one half of a hinge, releasably connectable to another half, for example via a removable pin. A hinge is also disclosed comprising first and second mutually rotatable plates, and a separate backplate adapted to conform to the second plate. The backplate and the second plate preferably interlock together in a keying arrangement.

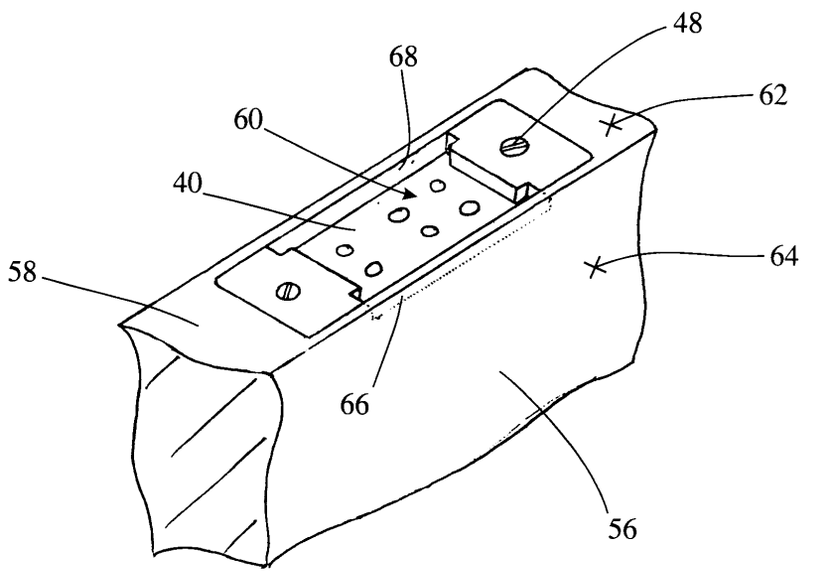

Fig 8

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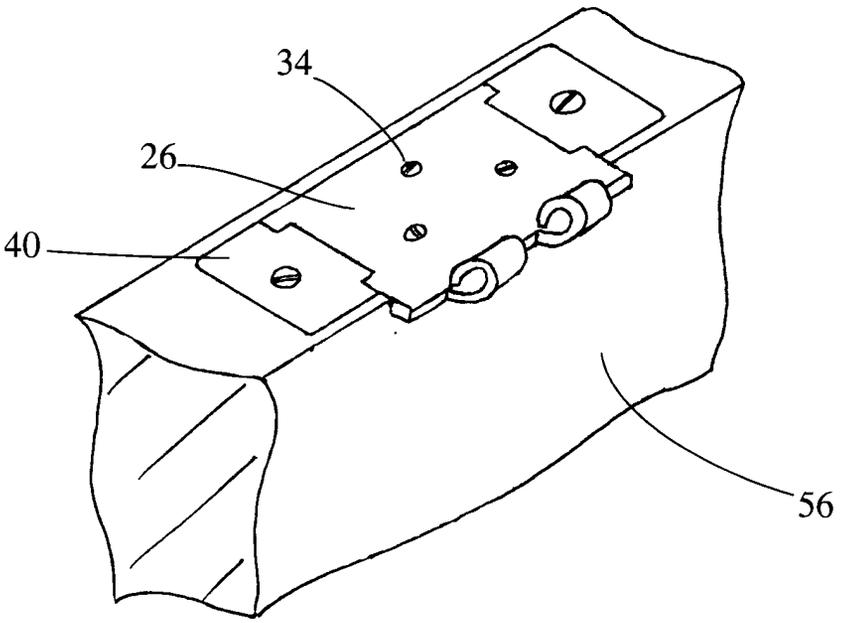


Fig 9

Description

[0001] The present invention relates to doors.

[0002] Internal doors have historically been purchased and supplied in distinct parts. A building contractor would thus order a door from one supplier, hinges etc from another supplier, and the wood to construct a door frame from a still further supplier. On the continent of Europe, and more recently in the United Kingdom, doors have however been ordered as "door sets". These comprise a door, a set of hinges, and a door frame, all ready assembled for incorporation into a building. They therefore provide a simple package that can be assembled accurately by the door manufacturer in advance, and which can be fitted on site swiftly and easily. However, they present particular difficulties of their own.

[0003] Specifically, there is scope for confusion as to the handedness of the door. Door sets are not symmetrical, as a door can open on the left-hand side or the right-hand side. In addition, the door can open inwardly or outwardly. It will be apparent that an inward opening door hinged on the left is physically identical to an outward opening door hinged on the right. The same applies to inward opening doors hinged on the right and outward opening doors hinged on the left. However, this presents difficulty in definition, since designers will normally specify (eg) a "left-hinged door" which could of course be of either configuration. It is not unknown for door sets to be supplied to site only to find that the orders have been reversed and further supplies are needed.

[0004] In addition, problems in the installation and design of doors often only become apparent when they are fitted on site. Clashes between nearby doors or between doors and other fittings may not have been noticed at the design stage. If this happens, the door set must often be scrapped and replaced with an opposite door set.

[0005] Furthermore, assembled door sets will include a door of either 35, 40 or 44 mm thickness held within a door frame which may be up to 180 mm in thickness. Thus, there exists a depth of over 130 mm which is simply empty space. This means that door sets cannot be packed for storage and transport in an efficient and space-saving manner.

[0006] The present invention therefore provides a door kit comprising a door panel having front and rear faces bridged by top and side edges including at least one recess on a side edge, the recess being bounded by a ridge, and a plate forming or adapted to form part of a hinge, the plate being fixable to the side edge in the recess after removal of the ridge or part thereof along one side edge, thereby to assist in hanging the door.

[0007] Thus, by providing a hinge part for fitting in a preformed recess on the edge of the door which is enlarged to break a front face of the door, symmetricality is achieved.

[0008] Preferably, there is a backplate in the recess. This can partially fill the recess so as to still provide a discernible depth for receiving the plate, and provides additional strength in securing the plate. The backplate can if desired be of variable thickness and include a thinner part corresponding in shape to the plate. This then allows a thicker part to lie alongside the plate. The thicker part and the plate can be keyed so as to provide a firm engagement.

[0009] It is preferred if the plate is one half of a hinge. It can be releasably connectable to another half, for example via a removable pin.

[0010] The present invention also relates to a hinge comprising first and second mutually rotatable plates, and a separate backplate adapted to conform to the second plate. The backplate and the second plate preferably interlock together in a keying arrangement.

[0011] Embodiments of the present invention will now be described, by way of example, with reference to the accompanying figures, in which;

Figure 1 is a front view of a known door;

Figure 2 is a plan view of a hinge according to the present invention;

Figure 3 is a side view of a backplate according to the present invention;

Figure 4 is a front view of a backplate according to the present invention;

Figure 5 is an end view of a hinge plate according to the present invention;

Figure 6 is a plan view of the hinge plate at Figure 5;

Figure 7 is a plan view of an alternative form of hinge plate according to the present invention;

Figure 8 is a perspective view of the side edge of a door prior to fitting the hinge plate; and

Figure 9 is a view of the hinge of Figures 2-6 fitted in place to the side of a door.

[0012] Figure 1 shows a typical internal door 10. It includes two upper decorative panels 12, 14, and two lower decorative panels 16, 18. Near to one edge of the door, below the upper panels 12, 14 and above the lower panels 16, 18, there is a handle 20. In order to provide an appropriate decorative effect and to place the handle at a suitable height for human use, the upper decorative panels 12, 14 are longer than the lower panels 16, 18.

[0013] Hinges 22, 24 are provided on the other edge of the door so that it can be hung within a door frame (not shown).

[0014] As illustrated, the door is hinged on the left, opening out of the page. If the door were to be rotated about a vertical axis within the page, it would then hinge on the right but would open into the page. Thus, the

"handedness" of the door would not be affected.

[0015] In order to use this door in an opposite handed sense, it would need to be rotated either about a horizontal line lying within the page, or about a line perpendicular to the plane of the page. The former rotation would give a left hinged door opening into the page, whilst the latter would give a right hinged door opening out of the page. These configurations are of course physically identical. These rotations require the hinges 22, 24 to be spaced an identical distance from the bottom and top edges respectively from the door, but this does not present a problem. More seriously, both these rotations result in the upper decorative panels 12, 14 being in the lower half of the door and the lower decorative panel 16, 18 being in the upper half of the door. As noted earlier, the panels are not identical and therefore the appearance of the door will be incorrect. Furthermore, the handle 20 is not exactly halfway along the door and therefore its position will also be incorrect.

[0016] In order to use the same door in either hand, the hinges must be removed and replaced so that they project over the opposite edge of the door and therefore open in the opposite direction. However, hinge plates are normally recessed into the wood of the door, and therefore if a hinge plate that had already been fitted to a door was reversed, it would break from the opposite side of the door. The first side of the door would then have an open cut remaining on the door.

[0017] Figures 2-7 illustrate a hinge that, when combined with a suitably designed door, can overcome these difficulties. Figures 8 and 9 will be described later and show the integration of this hinge into a door.

[0018] Referring to Figures 2-4, the hinge comprises first and second hinge plates 26, 28 respectively. Each is formed with suitable hinge barrels such as that illustrated at 30, and a hinge pin 32 passes through the barrels so as to join the hinge plates 26, 28. Each hinge plate also carries three counter-sunk screw holes such as that illustrated at 34 so that it can be fixed to an end face of the door or to a frame surface. In these respects, the hinge is normal.

[0019] The first hinge plate 24 comprises a pair of upper and lower key recesses 36, 38. These comprise rectangular indentations on the longitudinal edges of the first hinge plate. The longitudinal axis is defined as being parallel to the hinge pin 32.

[0020] The hinge also comprises a backplate 40, shown in Figures 3 and 4. This is slightly thicker overall than the first hinge plate 26, but includes a central thinned portion 42 which is thinner by an amount corresponding to the thickness of the first hinge plate 26. At its upper and lower extremities, the backplate 40 thus has relatively thicker portions 44, 46 in which are formed counter-sunk screw holes such as that shown at 48. These screw holes allow the backplate 40 to be fitted to an edge of a door as will be described more fully later. The relatively thicker portions 44, 46 also include key projections 50 and 52 which are rectangular in shape and extend into the relatively thinner portion 42. These projections 50, 52 correspond in shape to the key recesses 36, 38 of the first hinge plate 26.

[0021] The projections 50, 52 are symmetrical and therefore the first hinge plate 26 can be fitted into the thinner portion 42 in either orientation. Thus, the hinge can be placed over the backplate 40 so that the hinge pin 32 can lie on either side. This allows the hinge to adopt either orientation.

[0022] The backplate 40 also includes an array of six screw holes 54 so as to accommodate screws fitted to the three screw holes 34 of the first hinge plate 26 when it is in either orientation.

[0023] Figure 5 shows an end view of the first hinge plate 26, illustrating the hinge curls 30 and the screw holes 34.

[0024] Figures 6 and 7 illustrate alternate forms of first hinge plate 26. The hinge plate 26 of Figure 7 is generally wider than the hinge plate 26 of Figure 6, but this is achieved purely by inserting additional material between the recesses 36, 38 and the hinge curls 30. Thus, the only difference is that hinge line is displaced as between Figure 6 and 7. This allows the hinge to cope with different thickness doors simply by provision of an alternative first hinge plate 26.

[0025] Figures 8 and 9 illustrate the use of the hinge according to the previous Figures. A door 56 is shown, concentrating on one side edge 58 thereof. A recess 60 is formed in the side edge corresponding to the external dimensions of the backplate 40. The backplate is then placed in the recess such that it is flush with the surface 62 of the side edge 58. The backplate is then secured to the door 56 by fitting suitable screws in the countersunk holes 48.

[0026] It should be noted that the recess 60 does not break either of the front of rear faces 64, 66 of the door 56. Thus, the door is still symmetrical and can be fitted in either orientation. The door is therefore shipped to site in this state.

[0027] Once on site and ready to install, the workman simply cuts the side wall 66 as indicated in dotted to extend the recess 60 to (in this case) the front face 64. The first hinge plate 26 can then be fitted in place, lying principally within the recess 60 but extending therefrom and breaking the front face 64 of the door 56. This cutting operation is extremely straightforward and assisted by the presence of the backplate 40. The first hinge plate 26 is then screwed into place through the screw holes 34, 54. The door can then be hung by offering the door with its first hinge plates 26 up to the second hinge plates 28 already fitted into the frame, followed by insertion of the hinge pins 32. The hinge pin 32 is deliberately made removable so that it can be fitted in either orientation, thereby preventing it from falling out if reversed.

[0028] It will be appreciated that it would have been just as straightforward to remove the opposite wall 68, thereby allowing the first hinge plate 26 to be fitted in a reversed orientation and reversing the handedness of

the door set thus formed. Therefore, the present invention provides a door set which can be supplied in a symmetrical form, and which requires only minor alteration on site in order to configure it for a particular orientation.

[0029] In addition, the backplate 40 and the second hinge plate 28 can be fitted to the door 56 and the frame respectively during manufacture. Thus, their fitting can be to an accuracy not usually achievable on site. The keying nature of the backplate 40 and first hinge plate 26 means that both plates of the hinge will be accurately located.

[0030] Furthermore, the doors 56 can be stored and transported in a stacked configuration separate from the door frames. This will allow space to be used very much more efficiently since the doors can be immediately face to face rather than separated by the thickness of a door frame.

[0031] Despite the above advantages, the door surfaces are flush and neat on their exposed side regardless of the orientation choice of the frame. No damage is caused to the front face of the door.

Claims

1. A door kit comprising a door panel (56) having front and rear faces (64) bridged by top and side edges (58) including at least one recess (60) on a side edge (58), and a plate (26) forming or adapted to form part of a hinge,
characterised by the recess (60) being bounded by a ridge, the plate (26) being fixable to the side edge (58) in the recess (60) after removal of the ridge or part thereof.

2. A door kit according to claim 2 in which there is a backplate (40) in the recess (60).

3. A door kit according to claim 2 in which the backplate (40) only partially fills the depth of the recess (60).

4. A door kit according to claim 2 or claim 3 in which the backplate (40) includes a thinner part (42) corresponding in shape to the plate (26).

5. A door kit according to claim 4 in which the thinner part (42) is bounded by a thicker part (44, 46) which lies alongside the plate.

6. A door kit according to claim 4 or claim 5 in which the thicker part (44, 46) and the plate (26) are keyed (50, 52).

7. A door kit according to any preceding claim in which the plate (26) is one half of a hinge.

8. A door kit according to claim 7 where the plate (26) is releasably connectable to another half of a hinge.

9. A door kit according to claim 8 in which the connection is by way of a removable pin (32) which passes through a receptor means (30) on each part.

10. A hinge comprising first (28) and second (26) mutually rotatable plates, and a separate backplate (40) adapted to conform to the second plate (26).

11. A hinge according to claim 10 in which the backplate (40) and the second plate (26) interlock together in a keying arrangement.

12. A method of preparing a hinged door comprising providing a hinge part (26), fitting the hinge part (26) in a preformed recess (60) on the edge of the door, and enlarging the recess (60) to break a front face of the door.

Fig 1

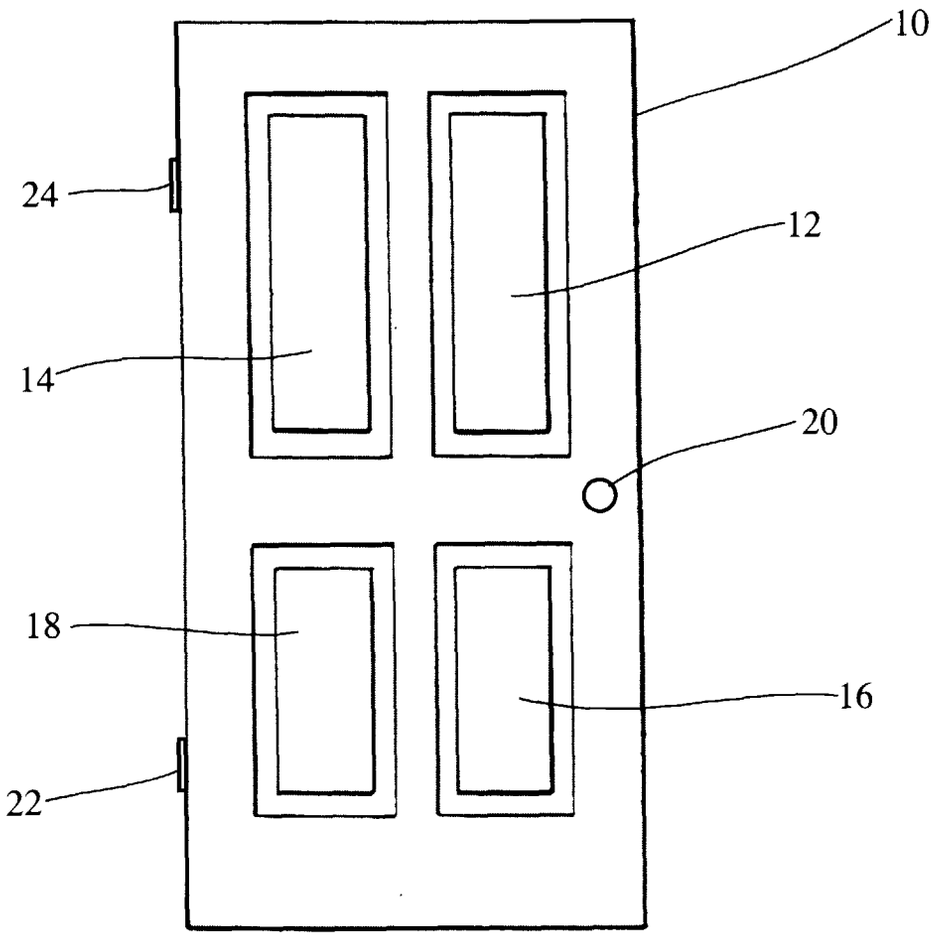


Fig 2

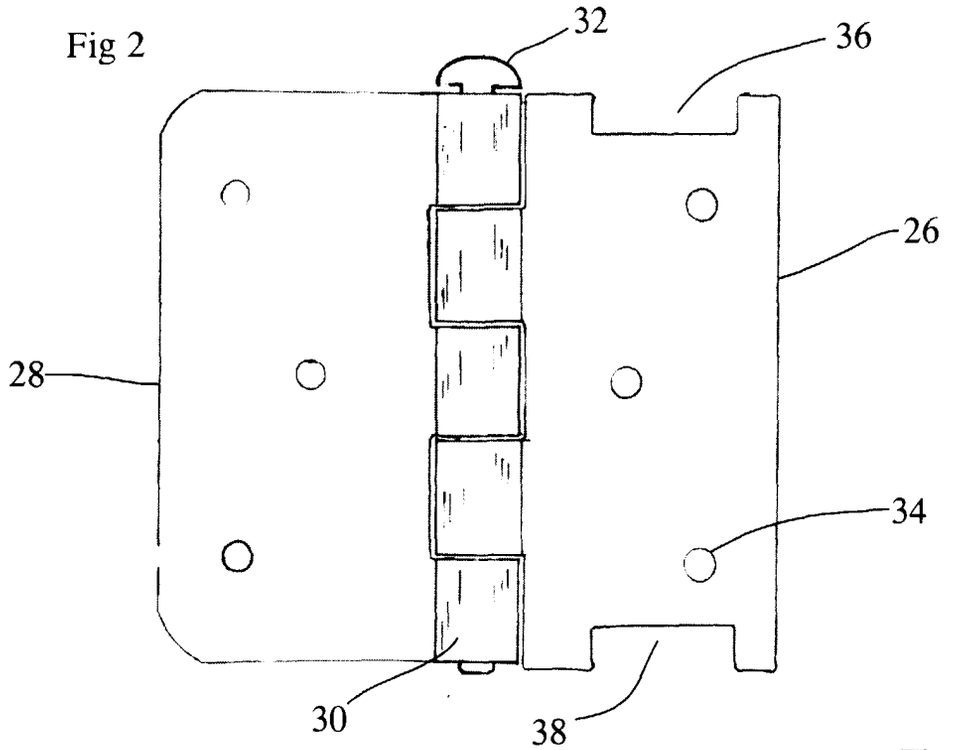


Fig 3

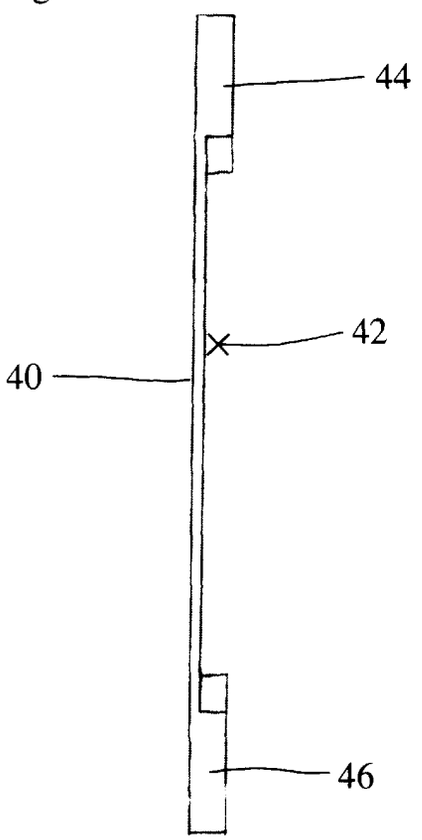


Fig 4

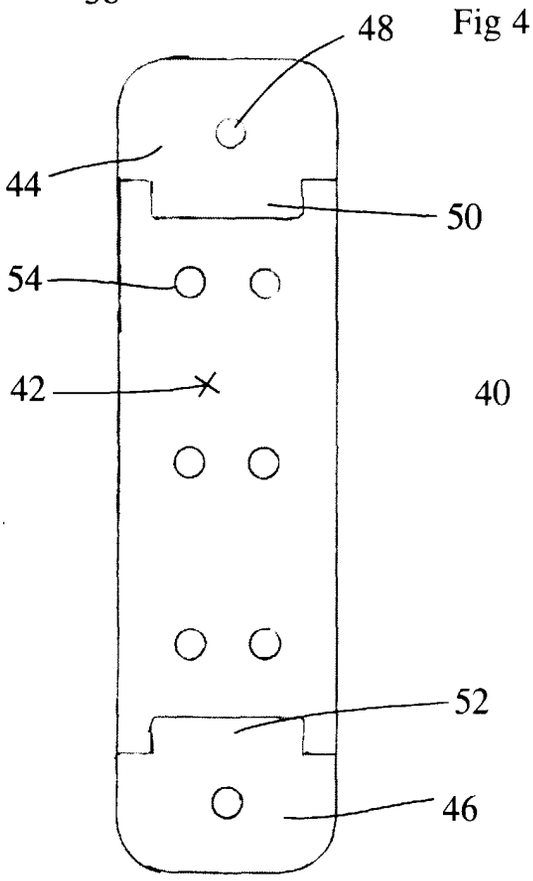


Fig 5

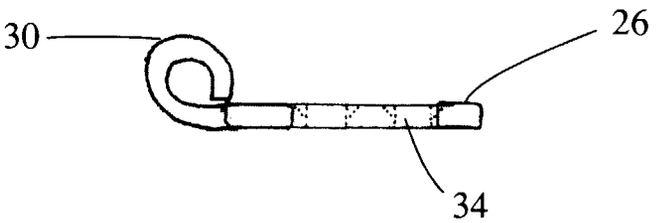


Fig 6

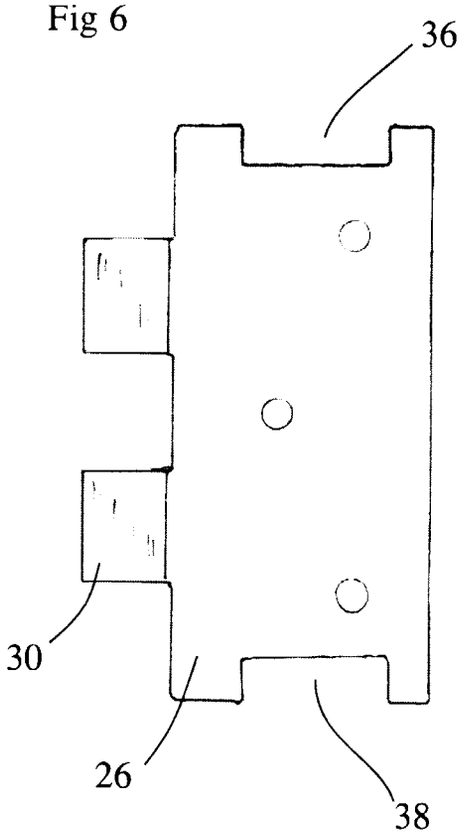
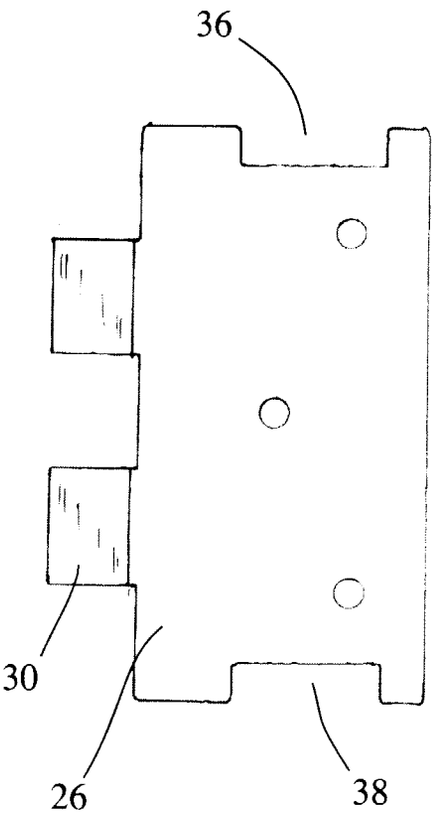


Fig 7



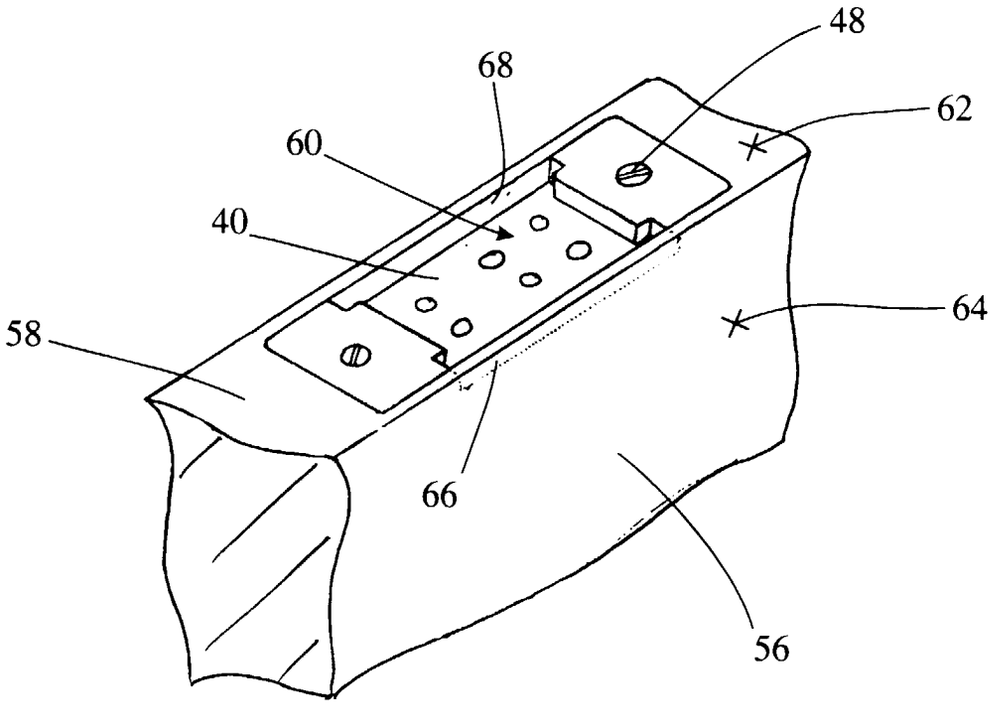


Fig 8

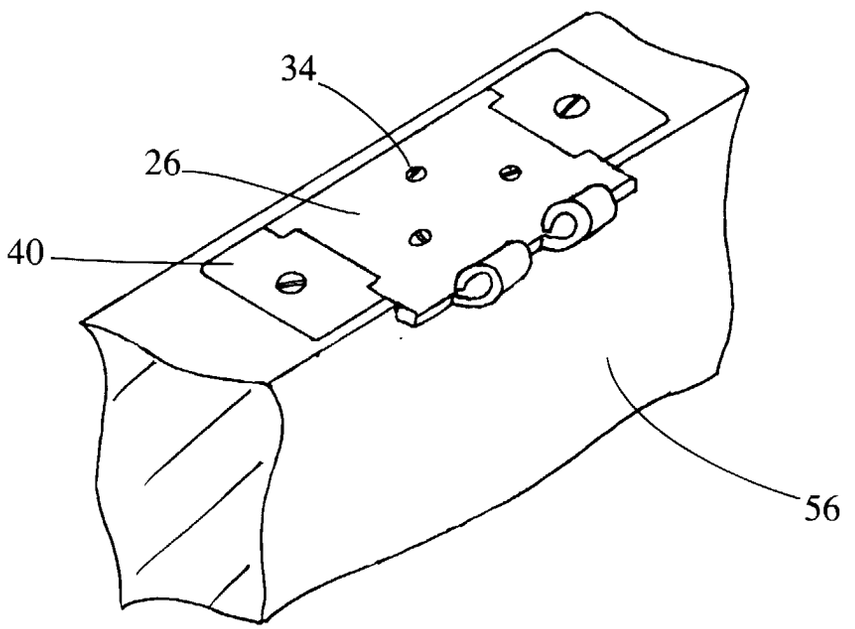


Fig 9