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(54) **Door arrangement**

Einrichtung an einer Tür

Dispositif de porte

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(73) Proprietor: **Jones, Christopher Sean
Bradford, West Yorkshire BD15 7RZ (GB)**

(72) Inventor: **Jones, Christopher Sean
Bradford, West Yorkshire BD15 7RZ (GB)**

(74) Representative: **Sherrard-Smith, Hugh
Appleyard, Lees & Co.
15 Clare Road
Halifax, HX1 2HY West Yorkshire (GB)**

(56) References cited:
**FR-A- 2 220 659 FR-A- 2 381 889
US-A- 2 619 689**

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Description

The present invention relates to a door arrangement, and a method of mounting a door edge attachment, according to the preamble of claim 1.

U.S. Patent No. 2 619 689 (Parrott) discloses a door arrangement including a pivotally mounted glass door and an edge region adjacent to the door, in which the door is pivotally movable between an open position and a closed position, the majority of the door comprising a generally planar member of substantially constant thickness, the distance of the pivot to the portion of the glass door nearest the edge region being greater than half the width of the generally planar member when the door is in the closed position the arrangement further including an elongate portion connected to the glass door to define an edge portion of the door which is caused to move adjacent to the edge region when the door moves between the closed and open positions and is arranged to be more than half the width of the generally planar member away from the pivot when the door is in the open position.

The present invention is characterised in that the elongate portion is adhered to the glass door such that movement of the elongate portion away from the glass door is inhibited but sliding movement of the elongate portion along the glass door at the region where the adhesive connects the elongate portion and the door together is permitted.

The elongate portion may be adhered at one location only to the glass door or, alternatively, the elongate portion may be adhered at a plurality of locations to the glass door.

The adhering of the elongate portion to the glass door may include a tape wrapped around the edge of the door. The tape may provide a physical barrier to inhibit movement of the elongate portion away from the glass door.

The top of the elongate portion may extend partially within a socket and may be guided for movement within the socket.

The pivot axis of the glass door may be coincident with the axis of an arcuate portion of the elongate portion.

The edge region may be comprised by a glass member of the same thickness as the glass door.

According to another aspect of the present invention a method of mounting an elongate portion to a door arrangement in which the arrangement includes a pivotally mounted glass door and an edge region adjacent to the door, the door being pivotally movable between an open position and a closed position, the majority of the door comprising a generally planar member of substantially constant thickness, the distance of the pivot to the portion of the glass door nearest the edge region being greater than half the width of the generally planar member when the door is in the closed position such that the elongate portion is connected to the glass door

to define an edge portion of the door which is caused to move adjacent to the edge region when the door moves between the closed and open positions and is arranged to be more than half the width of the generally planar member away from the pivot when the door is in the open position, the method is characterised in that the elongate portion is mounted to the glass door by adhering the elongate portion such that movement of the elongate portion away from the glass door is inhibited but sliding movement of the elongate portion along the glass door at the region where the adhesive connects the elongate portion and the glass door together is permitted.

The present invention may be carried into practice in various ways but various embodiments will now be described by way of example and with reference to the accompanying drawings, in which:-

Figure 1 shows a door without any guard at the edge;

Figure 2A is a schematic cross-sectional view looking down through a first embodiment of a glass door 10 and a panel 11;

Figure 2B is a view similar to Figure 2A of a second embodiment;

Figure 3 is a schematic front view of a pair of double glass doors mounted within a surrounding glass panel;

Figure 4 is an enlarged view taken on the circle IV-IV of Figure 3 showing the upper mounting of the left hand door;

Figure 5 is a sectional plan view through the door and panel;

Figure 6 is an enlarged view taken on the circle VVI of Figure 3 showing the lower mounting of the right hand door, and

Figure 7 is a plan view of Figure 6.

Figure 1 is a schematic cross-section looking down through a known 10 mm thick glass door 1 and an adjacent glass panel 2. In the position shown in solid lines there is necessarily a small gap of 3 mm between the opposed faces of the door 1 and the panel 2 in order to allow the upwardly extending side edge 3 to clear the panel 2 when the door is opened by clockwise pivotal movement about an axis 4. The open position is shown in chain lines. As a result on the design limitations on hanging glass doors the pivot axis 4 is necessarily approximately 18 mm away from the side face of the panel 2 which is much greater than the thickness of the glass and accordingly, when the door is in the open position,

there is a gap of 13 mm between the face 5 of the door and the panel 2. It is in this gap between the panel and the door which the fingers of small children can get trapped. As a result of the weight of the door and the considerable moment exerted in the region of the edge 3, if any fingers are located in the gap when the door is moved from the open position to the closed position, those fingers get drawn further into the gap and are crushed. Furthermore, as the edge 3 passes through the gap between the door and panel the gap between the door and panel is reduced to below 3 mm to about 2 mm thereby possibly crushing any bone in the gap and severing a finger. An additional problem is that, if fingers are trapped in a closed door then in order to release those fingers it is necessary to exert a further crushing force by the edge passing through the gap as the door is being opened before that gap is increased to 13 mm again.

As shown in Figure 2A, the edge 12 of the door 10 is surrounded by a groove 13A of a PVC generally cylindrical rod 13. The pivot axis 14 of the door is coincident with the longitudinal axis of the rod. The diameter of the rod 13 is 25 mm, and the distance between the adjacent outer surface of the rod 13 and the panel 11 is 4.5 mm.

When the door is opened by clockwise or anticlockwise movement of the door 10 about the axis 14, the rod is carried with the door and the distance between the adjacent outer peripheral portion of the rod and the panel 11 remains at 4.5 mm. Accordingly there will be no variation in the gap between the door and panel within which fingers could be nipped, and, between a full 90 degree opening in either direction, the region swept through by the side portion of the door including the rod remains constant.

In Figure 2B, the function of the rod 13 is replaced by a tube 40 which includes a slot 40A extending along the length of the tube. The resilience of the part circumferential tube 40 can assist in maintaining the grip of the tube on the door.

It is possible that the axis of rotation of the door will not be exactly coincident with the elongate axis of the rod 13 or tube 40 in which case the gap could open by a minimal amount of from 3 to 4 or from 3 to 5 mm.

Referring now to Figures 3 to 7, each of the doors 10 includes a top and bottom vertical pivot mounting 15 and 16 respectively.

As shown in Figures 4 and 5, the top mounting 15 comprises a pair of fixed plates 17 (only one of which is shown) which are connected together to abut the front and rear face of the side panel 11 and a top glass panel 18 by bolts 19. The top panel 18 has a cut out portion 20 within which is mounted a pivot block 21 by bolts 22 connected to the fixed plates 17. The pivot block 21 has a downwardly extending cylindrical pivot lug 23 which extends into a socket 24 formed in the upwardly facing surface of a stainless steel cylindrical housing 25. The housing 25 is secured to the door 10 by a pair of bolts

26 which extend to a fixed plate 27 which is welded to the housing 25 which abuts the rear surface of the door and a loose plate 28 which abuts the front surface of the door.

The housing 25 includes a stop 29 welded thereto which extends between the plates 27 and 28 with which stop the top of the door may abut to locate the door. The upwardly extending edge 30 of the door extends through a slot located in the lower portion of the housing to extend partially into a downwardly facing socket 31 located in the lower portion of the housing 25.

The rod 13 or tube 40 may be a loose fit or a friction fit on the edge 30 of the door. The rod 13 or the tube 40 are fixed to the edge 30 by adhesive at one (for instance half way up the door) or more locations. A portion of tape may be wrapped around the edge of the door and slightly around each side such that, when the rod or tube is pushed over the edge of the door the tape is engaged. The tape may bunch up between the grip with the tube and the edge of the glass, and harden after a time to present a physical barrier to the tube coming off the door. The tape may permit sliding of the tube along the edge of the door past the tape. The tape may comprise VHB type 9471. With such a tape which permits relative sliding movement, the tube can be connected at three spaced locations along the edge region of the door and yet still be able to expand or contract by sliding along the edge region. If desired, the rod 13 or tube 40 may be transparent or translucent. The top of the rod 13 or tube 40 extends partially into the socket 31 of the housing. The sides of the socket may guide the movement of the rod 13 or tube 40 with the door and the space between the top of the rod or tube and the top of the socket 31 may allow the rod or tube to expand or contract as the rod or tube is subjected to varying temperatures.

As can be seen, the centre of the pivot lug 23 which defines the pivot axis is coincident with the longitudinal axis of the generally cylindrical rod 13 or tube 40 such that the outwardly facing surface of the rod 13 or tube 40 is always a constant predetermined small distance from the side panel 11.

Referring now to Figures 6 and 7 which show the bottom mounting 16, a tube 32 is pivotally mounted about an axis coincident with the centre of the rod 13 by means (not shown). The bottom part of the edge 12 of the door extends through a slit 33 in the tube 32, and a reduced section 34 of the rod 13 extends partially into the tube 32 for radial guidance and axial support on a packaging 35. If desired, the bottom of the rod 13 can be spaced from any packing 35 in order to allow the rod to expand into or retract partially out of the tube as a result of temperature variation.

This feature is particularly useful where the rod is attached to the door at a location remote from the bottom of the door.

A block 36 is welded to the rod and extends between and provides support for the door. A pair of alu-

minium bottom rails 37 extend across the bottom region and beneath the bottom region of each door.

The tube 40 may be mounted and co-operate with other parts of the arrangement in the same way as the rod 13.

Claims

1. A door arrangement including a pivotally mounted glass door (10) and an edge region (11) adjacent to the door, in which the door is pivotally movable between an open position and a closed position, the majority of the door comprising a generally planar member (10) of substantially constant thickness, the distance of the pivot (14) to the portion of the glass door nearest the edge region (11) being greater than half the width of the generally planar member (10) when the door is in the closed position the arrangement further including an elongate portion connected to the glass door to define an edge portion (13,40) of the door which is caused to move adjacent to the edge region (11) when the door moves between the closed and open positions and is arranged to be more than half the width of the generally planar member (10) away from the pivot (14) when the door is in the open position characterised in that the elongate portion is adhered to the glass door such that movement of the elongate portion away from the glass door is inhibited but sliding movement of the elongate portion along the glass door at the region where the adhesive connects the elongate portion and the door together is permitted.
2. An arrangement as claimed in Claim 1 in which the elongate portion is adhered at one location only to the glass door.
3. An arrangement as claimed in claim 1 in which the elongate portion is adhered at a plurality of locations to the glass door.
4. An arrangement as claimed in any preceding claim in which the adhering includes a tape wrapped around the edge of the door.
5. An arrangement as claimed in claim 4 in which the tape provides a physical barrier to inhibit movement of the elongate portion away from the glass door.
6. An arrangement as claimed in any preceding claim in which the top of the elongate portion extends partially within a socket (31) and is guided for movement within the socket.
7. An arrangement as claimed in any preceding claim in which the pivot axis of the glass door is coincident with the axis of an arcuate portion of the elongate

portion.

8. An arrangement as claimed in any preceding claim in which edge region (11) is comprised by a glass member of the same thickness as the glass door.
9. A method of mounting an elongate portion to a door arrangement, the arrangement including a pivotally mounted glass door (10) and an edge region (11) adjacent to the door, the door being pivotally movable between an open position and a closed position, the majority of the door comprising a generally planar member (10) of substantially constant thickness, the distance of the pivot (14) to the portion of the glass door nearest the edge region (11) being greater than half the width of the generally planar member (10) when the door is in the closed position such that the elongate portion is connected to the glass door to define an edge portion (13,40) of the door which is caused to move adjacent to the edge region (11) when the door moves between the closed and open positions and is arranged to be more than half the width of the generally planar member (10) away from the pivot (14) when the door is in the open position characterised in that the method comprises mounting the elongate portion to the glass door by adhering the elongate portion such that movement of the elongate portion away from the glass door is inhibited but sliding movement of the elongate portion along the glass door at the region where the adhesive connects the elongate portion and the door together is permitted.

Patentansprüche

1. Eine eine schwenkbar gelagerte Glastür (10) und einen Randbereich (11) benachbart zu der Tür umfassende Türanordnung, bei der die Tür schwenkbar zwischen einer offenen Stellung und einer geschlossenen Stellung bewegbar ist, wobei der Großteil der Tür ein im allgemeinen ebenes Teil (10) im wesentlichen konstanter Stärke umfaßt und der Abstand des Schwenklagers/Scharniers (14) zu dem dem Randbereich (10) nächsten Abschnitt der Glastür größer als die halbe Stärke des im wesentlichen ebenen Teils (10) bei sich in geschlossener Stellung befindlicher Tür ist, wobei die Anordnung weiter einen länglichen Abschnitt umfaßt, der mit der Glastür verbunden ist, um einen Randabschnitt (13, 40) der Tür zu bestimmen, der sich benachbart zu dem Randbereich (11) bewegen soll, wenn die Tür sich zwischen der geschlossenen und geöffneten Stellung bewegt, und so angeordnet ist, daß er mehr als die Hälfte der Stärke des im allgemeinen ebenen Teils (10) von dem Schwenkzapfen (14) entfernt ist, wenn sich die Tür in geöffneter Stellung befindet, **dadurch gekennzeichnet**, daß der läng-

liche Abschnitt an der Glastür so befestigt ist, daß die Bewegung des länglichen Abschnittes von der Glastür weg verhindert wird, aber eine Gleitbewegung des länglichen Abschnittes entlang der Glastür in dem Bereich, in dem die Befestigung den länglichen Abschnitt und die Tür miteinander verbindet, möglich ist.

2. Eine Anordnung nach Anspruch 1, bei der der längliche Abschnitt an einer Stelle nur mit der Glastür befestigt ist.

3. Eine Anordnung nach Anspruch 1, bei der der längliche Abschnitt an einer Mehrzahl Stellen mit der Glastür befestigt ist.

4. Eine Anordnung nach einem der vorhergehenden Ansprüche, bei der die Befestigung ein um den Rand der Tür gewickeltes Band umfaßt.

5. Eine Anordnung nach Anspruch 4, bei der das Band eine physische Trennung bildet, um eine Bewegung des länglichen Abschnittes von der Glastür weg zu verhindern.

6. Eine Anordnung nach einem der vorhergehenden Ansprüche, bei der das obere Teil des länglichen Abschnittes sich teilweise in einer Lageraufnahme (31) erstreckt und zur Bewegung darin geführt ist.

7. Eine Anordnung nach einem der vorhergehenden Ansprüche, bei der die Schwenkachse der Glastür mit der Achse eines bogenförmigen Abschnittes des länglichen Abschnittes übereinstimmt.

8. Eine Anordnung nach einem der vorhergehenden Ansprüche, bei der der Randbereich (11) in einem Glasteil der gleichen Stärke wie die Glastür enthalten ist.

9. Ein Verfahren zum Anbringen eines länglichen Abschnittes an einer Türanordnung, wobei letztere eine schwenkbar gelagerte Glastür (10) und einen benachbart zu der Tür befindlichen Randbereich (11) umfaßt, wobei die Tür schwenkbar zwischen einer geöffneten Stellung und einer geschlossenen Stellung beweglich ist, wobei der Großteil der Tür ein im allgemeinen ebenes Teil (10) im wesentlichen konstanter Stärke umfaßt, wobei der Abstand des Schwenklagers/Scharniers (14) zu dem dem Randbereich (11) nächsten Abschnitt der Glastür größer als die halbe Stärke des im wesentlichen ebenen Teils (10) bei sich in geschlossener Stellung befindlicher Tür ist, so daß der längliche Abschnitt mit der Glastür verbunden wird, um einen Randabschnitt (13, 40) der Tür zu bestimmen, der dazu gebracht wird, sich benachbart zu dem Randbereich (11) zu bewegen, wenn die Tür sich zwischen

der geschlossenen und geöffneten Stellung bewegt, und so angeordnet wird, daß er mehr als die Hälfte der Stärke des im allgemeinen ebenen Teils (10) von dem Schwenkzapfen (14) entfernt ist, wenn sich die Tür in geöffneten Stellung befindet, **dadurch gekennzeichnet**, daß das Verfahren das Anbringen des länglichen Abschnittes an der Glastür durch Befestigen des länglichen Abschnittes derart umfaßt, daß eine Bewegung des länglichen Abschnittes von der Glastür weg verhindert wird, aber eine Gleitbewegung des länglichen Abschnittes entlang der Glastür in dem Bereich, in dem das Befestigungsmittel den länglichen Abschnitt und die Tür miteinander verbindet, ermöglicht wird.

Revendications

1. Ensemble formant porte comprenant une porte en verre (10) montée pivotante et une zone de bord (11) adjacente à la porte, dans lequel la porte est susceptible de pivoter entre une position ouverte et une position fermée, la majorité de la porte comprenant un élément (10) globalement plan d'épaisseur sensiblement constante, la distance entre le pivot (14) et la partie de la porte en verre qui est la plus proche de la zone de bord (11) étant supérieure à la moitié de la largeur de l'élément (10) globalement plan lorsque la porte se trouve en position fermée, l'ensemble comprenant, en outre, une partie allongée reliée à la porte en verre afin de définir une partie de bord (13, 40) de la porte qui est entraînée à se déplacer de façon adjacente à la zone de bord (11) lorsque la porte pivote entre les positions fermée et ouverte et qui est conçue pour être supérieure à la moitié de la largeur de l'élément (10) globalement plan, à distance du pivot (14) lorsque la porte se trouve en position ouverte, caractérise en ce que la partie allongée est collée à la porte en verre, de telle sorte que la partie allongée ne puisse pas s'éloigner de la porte en verre, mais qu'un glissement de la partie allongée le long de la porte en verre au niveau de la zone où l'adhésif relie la partie allongée à la porte soit permis.

2. Ensemble selon la revendication 1, dans lequel la partie allongée est scellée, en un point seulement, à la porte en verre.

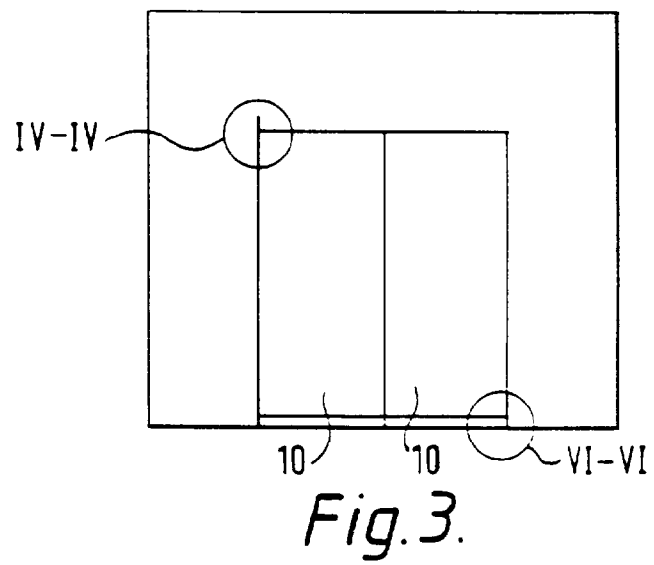
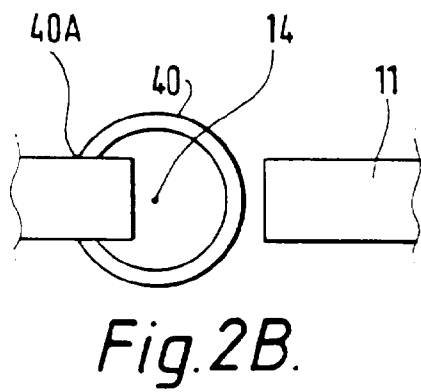
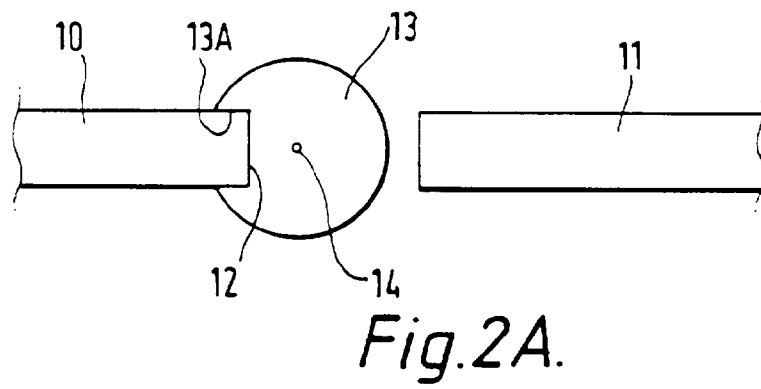
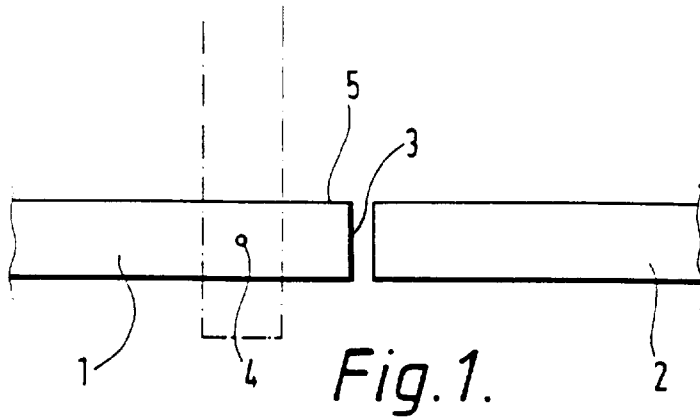
3. Ensemble selon la revendication 1, dans lequel la partie allongée est scellée, en une pluralité de points, à la porte en verre.

4. Ensemble selon l'une quelconque des revendications précédentes, dans lequel l'adhésif comprend un ruban enroulé autour du bord de la porte.

5. Ensemble selon la revendication 4, dans lequel le

ruban constitue une barrière physique empêchant que la partie allongée ne s'éloigne de la porte en verre.

6. Ensemble selon l'une quelconque des revendications précédentes, dans lequel le sommet de la partie allongée s'étend partiellement à l'intérieur d'un logement (31) et est guidée pour se déplacer à l'intérieur du logement. 5
- 10
7. Ensemble selon l'une quelconque des revendications précédentes, dans lequel l'axe de pivotement de la porte en verre coïncide avec l'axe d'une partie arquée de la partie allongée. 15
- 20
8. Ensemble selon l'une quelconque des revendications précédentes, dans lequel la zone de bord (11) est constituée d'un élément en verre de la même épaisseur que la porte en verre. 25
- 30
9. Procédé de montage d'une partie allongée sur un ensemble formant porte, l'ensemble comprenant une porte en verre (10) montée pivotante et une zone de bord (11) adjacente à la porte, la porte étant susceptible de pivoter entre une position ouverte et une position fermée, la majorité de la porte comprenant un élément (10) globalement plan d'épaisseur sensiblement constante, la distance entre le pivot (14) et la partie de la porte en verre qui est la plus proche de la zone de bord (11) étant supérieure à la moitié de la largeur de l'élément (10) globalement plan lorsque la porte se trouve en position fermée, de telle sorte que la partie allongée soit reliée à la porte en verre afin de définir une partie de bord (13, 40) de la porte qui est entraînée à se déplacer de façon adjacente à la zone de bord (11) lorsque la porte pivote entre les positions fermée et ouverte et soit conçue pour être supérieure à la moitié de la largeur de l'élément (10) globalement plan, à distance du pivot (14) lorsque la porte se trouve en position ouverte, caractérisé en ce que le procédé comprend le montage de la partie allongée sur la porte en verre en collant la partie allongée de telle sorte que la partie allongée ne puisse pas s'éloigner de la porte en verre, mais qu'un glissement de la partie allongée le long de la porte en verre au niveau de la zone où l'adhésif relie la partie allongée à la porte soit permis. 35
- 40
- 45
- 50
- 55



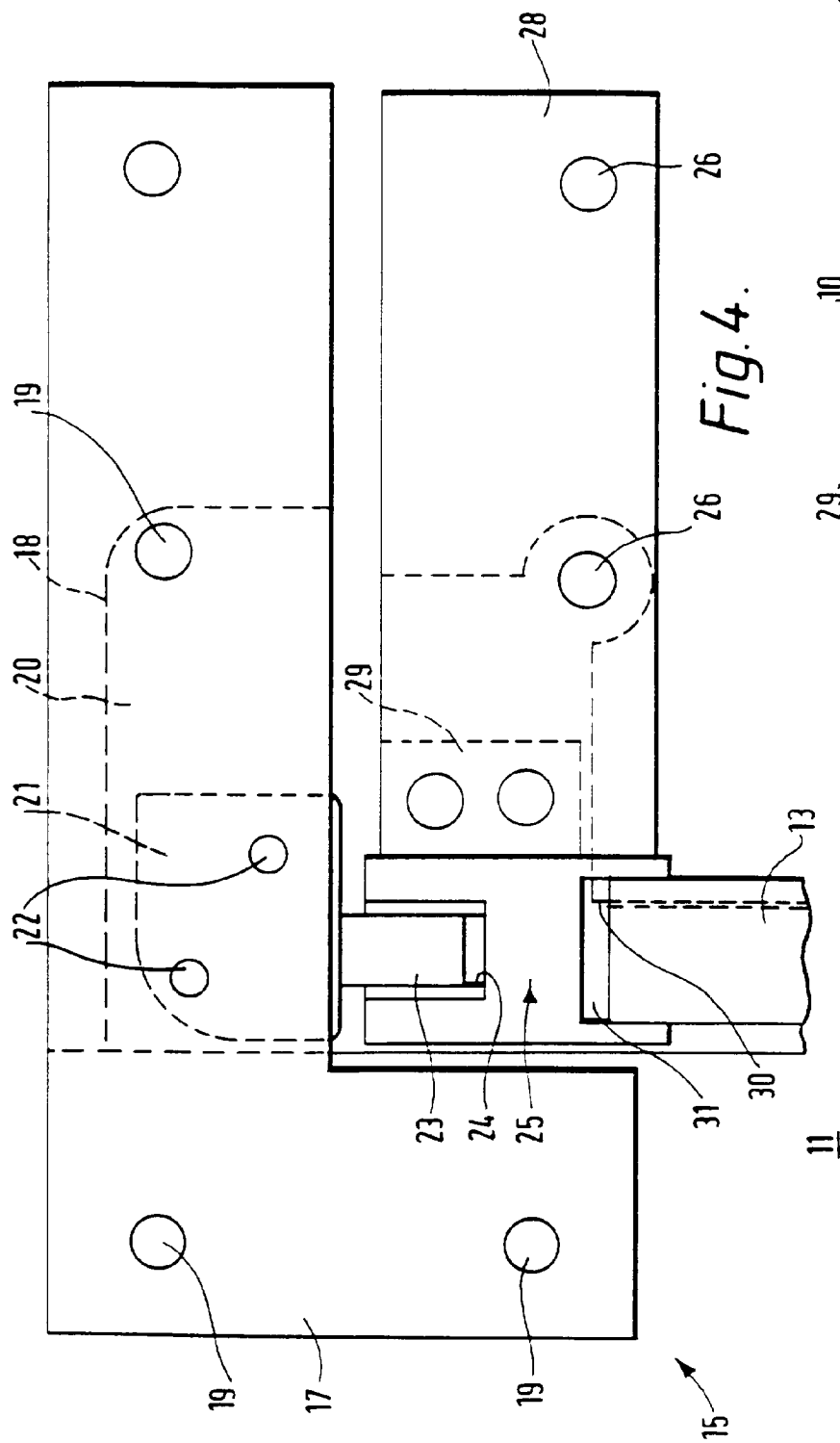


Fig. 4.

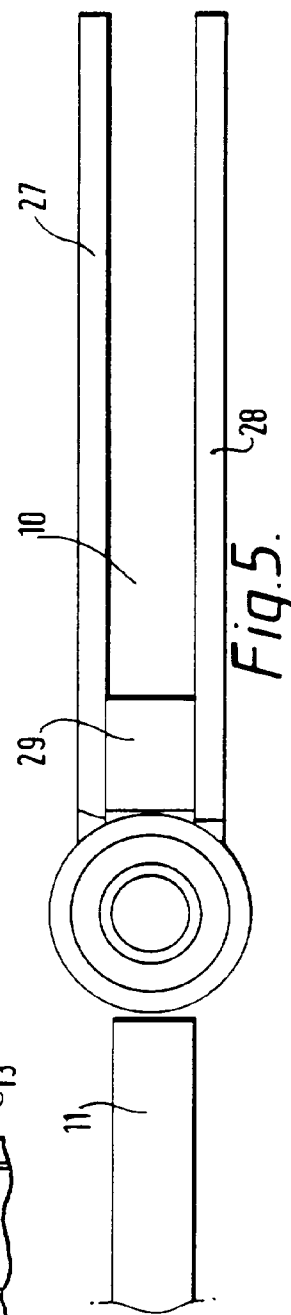


Fig. 5.

