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(54) **HINGE DEVICE.**

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Description

Technical field:

The present invention relates to a hinge arrangement which permits mounting of door leaves intended for so-called snap-in hinges a door frame equipped with hinge components of an earlier type provided with pins.

Prior art:

In building work in the fifties and sixties in the Nordic countries there was generally one type of hinge design, especially for inner doors, comprising a first hinge component mounted on the door frame and provided with a pin, and a second hinge component mounted in a recess in the hanging edge of the door leaf and provided with a so-called knuckle. This hinge design forms part of the so-called "earlier door standard" and is normally called a "lift-off hinge". The standardized height of the door leaf was 2015 mm during this period.

However, in 1972 a new standard for inner doors was introduced, on the basis of which the height of the door leaf was increased to 2040 mm and at the same time the hinge was now designed as a "hinge part" and a fixture part. The hinge part, which is normally secured in the frame, is provided with a snap-in element. The snap-in element is snapped into the fixture part which is provided with a slot and is normally secured in the door leaf. The anchoring between the two hinge parts is achieved, for example, by the snap action or by screws. As was the case with earlier standards, it was necessary, on account of the fixture recess in the door leaf, to decide during manufacture itself whether the door would be right-hanging or left-hanging. The snap-in element could therefore only be introduced into the fixture part from one side of the door leaf.

On account of the intensive building which took place during the fifties and sixties, there is nowadays a widespread requirement for replacement of doors complying with the earlier door standard. The demand for replacement is also heightened by the fact that the manufacturers of doors are nowadays offering a particularly extensive and very attractive range of "new doors" complying with the current standard. There is therefore a problem in adaptation between door constructions of the earlier standard and those of the present standard since, for reasons of cost, replacement of the actual door frame is seldom feasible. For replacing an older door leaf, the present range of doors must consequently be adapted to the earlier standard with regard to both the height of the door leaf and the type of hinge and positioning of the fixture recesses.

A first known attempt at solving the problem was based on producing doors complying with the "earlier standard" and fitting them in the "earlier manner" with associated hinge parts. However, the solution was unsatisfactory both from the production point of view and from the stock point of view.

Another known attempt, which incidentally was introduced by the applicant of the present invention, was based on using a door leaf with fixture positioning and height in compliance with the current standard. The door leaf was cut along the top edge from 2040 mm to 2015 mm. In order to mount the door leaf, adapted for snap-in hinges, on the existing door frame equipped with hinge components provided with pins, "intermediate hinges" were introduced consisting of snap-in elements which were provided with a knuckle for fitting on the existing hinge components provided with pins. On account of the difference in positioning between the fixture recesses of the door leaf and the existing, earlier hinge fixtures, it was necessary to position the snap-in elements at different heights in relation to the associated knuckle. This in order to avoid two different fixture positionings in the door leaf upon manufacture. Thus, the knuckle in the upper intermediate hinge was offset slightly upwards in relation to the snap-in element, and, in the lower intermediate hinge, was offset even further upwards in relation to the snap-in element. The knuckle of each intermediate hinge was in a conventional manner open at the lower end, for the pin of the existing hinge component, and permanently closed at the upper end with a securely fixed end plug. Since the locking part of the door leaf was also positioned in compliance with the current standard, it was necessary for space to be cut out in the existing frame for a longer striking plate adapted to the locking part of the door leaf. Thus, upon supply of the door leaf, an extended striking plate of this type had to be supplied too. With this system it was still necessary to decide, during the manufacture of the door leaf, whether the door leaf was intended for right-hanging or left-hanging, since the fixture parts of the door leaf only permitted introduction of the snap-in element from one side. As was the case with the earlier lift-off hinges, the intermediate hinges also had to be manufactured in a first version intended for right-hanging and in a version for left-hanging which was the mirror image of the first version. Therefore, the correct fixtures in terms of right-hanging or left-hanging had to be delivered to the customer.

The most recent development in the fixture part of the door leaf is described in EP-A-0 236 287 and involves the snap-in element being capable of being introduced into the fixture from any chosen side of the door leaf. In this way, one and

the same door leaf permits both right-hanging and left-hanging by turning the door leaf about its vertical axis. In order to be able to make use of this turnability when a door leaf of this type is to be mounted on a frame complying with the earlier standard as has been described above, a double set of intermediate hinges according to the prior art must nevertheless be supplied to the customer - one for right-hanging and one for left-hanging - since these cannot be turned. Regardless of which alternative is chosen, one set therefore remains superfluous. However, in practice, only one set is still supplied to the customer depending on which alternative the latter has specified and, consequently, the supplier must be informed of the manner in which the door leaf is to be hung in each particular case.

The problem with existing types of intermediate hinges is therefore the great stock and production costs for the two different sets of in each case an upper and a lower intermediate hinge which are not mutually identical (altogether four components).

Aim of the invention:

The aim of the present invention is to overcome the abovementioned problems by providing a hinge arrangement of the type mentioned at the outset, by means of which only one type of intermediate hinge needs to be produced and stocked, compared to the previous four, and as a result of which the question of whether the door leaf will be right-hanging or left-hanging is taken into consideration only at the time of fitting.

Solution:

The abovementioned aim is achieved by means of a hinge arrangement for mounting, on a door frame equipped with a hinge component of an earlier type provided with a pin, a door leaf provided with a fixture of a more recent type which permits insertion from any chosen side of the door leaf, of a snap-in element of a more recent type provided with a knuckle for mounting on the said hinge component. The invention is characterized in particular by the fact that the said snap-in element is in the longitudinal direction of the knuckle, symmetrically positioned in relation to the centre of the knuckle, and in that the knuckle can be turned for application of any chosen end on the said hinge component provided with a pin.

In a preferred embodiment of the invention, the knuckle is provided with an end plug which is designed detachable for positioning on any chosen end of the knuckle.

In an advantageous embodiment of the invention, the snap-in element is furthermore designed to be held in position in the fixture by means of the snap action and/or by locking screws.

In order to improve the guiding of the snap-in element in the fixture part, and thereby to minimize play, the snap-in element is designed in such a way that its length corresponds essentially to the thickness of the door leaf.

Description of figures:

The invention will be described in greater detail below on the basis of an exemplary embodiment and with reference to the attached drawings, in which identical reference numbers in the various figures each indicate corresponding parts.

Fig. 1 is a broken view of a door frame and a door leaf intended for right-hanging with a "lift-off hinge" of an earlier type.

Fig. 2 is a broken view of a door frame and a door leaf intended for right-hanging with a snap-in hinge complying with the current standard.

Fig. 3 is a broken view of a door frame complying with the earlier standard and a door leaf complying with the current standard, in which the door leaf is intended to be hung with an upper and a lower intermediate hinge according to the prior art.

Fig. 4 is an exploded view of an intermediate hinge according to the invention.

Fig. 5 shows the intermediate hinge in Fig. 4 seen from above and without the associated end plug and slide washer.

Fig. 6 is a broken view of a door frame and a door leaf intended for right-hanging with the aid of an intermediate hinge according to the invention.

Fig. 7 is a broken view of a door frame and a door leaf intended for left-hanging with the aid of an intermediate hinge according to the invention.

Description of embodiment:

In order to illustrate the full background to the invention, the prior art will be described in brief with reference to Figs. 1, 2 and 3. Thus, in Fig. 1, reference 1 designates a door frame provided with a door frame component 2 which has a pin 3. Also shown in the figure is a door leaf 4 whose one edge side 5 has a hinge component 7 provided with a so-called knuckle 6, where the knuckle 6 is intended to be "lifted" onto the pin 3. This type of hinge construction is generally called a "lift-off hinge" and was manufactured in large quantities during the fifties and sixties.

In accordance with the current standard, the so-called snap-in hinge according to Fig. 2 is used. The snap-in hinge consists of a hinge component 8 mounted on the door frame 1 with a pivotable snap-in element 9 for insertion into a fixture 10

open from one side of the door leaf 4.

For the sake of consistency, Fig. 3 shows a previously known solution for mounting of the door leaf 4 in Fig. 2 on the door frame 1 in Fig. 1. The frame 1 is thus provided with hinge components 2 provided with pins, and the door leaf 4 can be mounted on the frame 1 via an upper and a lower intermediate hinge 11 and 12, each one consisting of a snap-in element 13 and a knuckle 14 to be secured on the pin 3. As can be seen in the figure, the knuckles 14 of the intermediate hinges 11, 12 are offset upwards to differing extents in relation to the centre of the snap-in element 13, depending on differences in the positioning of the fixtures between earlier and current standards.

The intermediate hinge 19 according to the invention is shown in Fig. 4 and consists of a snap-in element 13 and a so-called knuckle 14 forming a passage 15 of essentially circular cross-section, open at both ends 16, 17. The intermediate hinge 19 is advantageously made of metal. A circular end plug 18 of suitable plastic material is designed, for tightening purposes, to be introduced detachably into any chosen end 16, 17 of the knuckle 14. For the sake of clarity, the end plug 18 is placed at a distance from the one end 16 of the knuckle 14. As shown in Fig. 6, the snap-in element 13 is designed to be introduced into a plastic fixture 20 known per se and mounted on the door leaf, which fixture permits insertion from any chosen side of the door leaf. The snap-in element 13 is held in position in the fixture 20 by means of the snap action between, on the one hand, a flexible tongue 21 formed in the fixture 20 and provided with a locking shoulder 22, and, on the other hand, an opening 23 in the snap-in element. In order to facilitate the lifting of the tongue 21 and thus the locking shoulder 22, there is an obliquely bevelled section 24 at the front edge 25 of the snap-in element 13. The length of the snap-in element 13 corresponds essentially to the thickness of the door leaf 4. This provides for improved guiding in the fixture 20, in which respect play between the door frame 1 and the door leaf 4 can be minimized. If required, the snap-in element 13 can also be provided with a hole 26, shown in the figure by a dot-and-dash line, for a locking screw (not shown) which in such a case is also passed through the fixture 20 and is anchored in the door leaf 4.

It can also be seen from Fig. 4 that the snap-in element 13 is, in the longitudinal direction of the knuckle 14, positioned symmetrically in relation to the centre of the knuckle 14 in accordance with the axis of symmetry 27 shown by a dot-and-dash line in the figure. Depending on whether the existing door frame 1 is designed for right-hanging or left-hanging of the door leaf 4, the intermediate hinge 19 can be turned about its axis of symmetry 27 for application of any chosen end 16, 17 of the knuckle 14 on the hinge component 2 provided with a pin 3, the end plug 18 then being introduced into the other end 16, 17.

In order to prevent wearing between the knuckle 14 and the hinge component 2, a slide washer 28 is advantageously positioned on the pin 3 between the said components.

Fig. 6 shows the intermediate hinge 19 designed for right-hanging of a door leaf 4 on a door frame 1. In Fig. 7 the intermediate hinge 19 has been turned 180° about its axis of symmetry 27 and the end plug 18 has been introduced into the opposite end of the knuckle 14 in relation to Fig. 6, the hinge now being adapted in a corresponding manner for left-hanging of the door leaf 4.

In order to use the turnable intermediate hinge 19 according to the invention, the positioning of the recesses in the door leaf 4 for the fixtures 20 must be adapted to the symmetrical snap-in element 13 of the intermediate hinge 19. This change in the fixture positioning in relation to the current standard was not carried out in the previously known intermediate hinge solution, as is shown in Fig. 3, where only the height of the door leaf 4 is adapted by cutting off its top edge to the earlier standard. Thus, according to the invention, both an adaptation of the height of the door leaf and a change in the fixture positioning are carried out. However, this is more than made up for by the advantage of stocking only one type of intermediate hinge 19 compared to four according to the prior art. The locking part (not shown) of the door leaf 4 is also positioned during manufacture in order to correspond to the positioning of the striking plate (not shown) in the earlier door frame. Thus, there is no longer any requirement to supply an extra, extended striking plate for which room must be cut out in the existing frame at the time of fitting. Moreover, the intermediate hinge 19 according to the invention means that the question of whether the door leaf will be right-hanging or left-hanging need be considered only at the time of fitting and not, as was previously the case, when the door frame is to be supplied. Thus, by means of a simple manipulation, the intermediate hinge 19 can be converted from being intended for right-hanging to being intended for left-hanging, and vice versa. Thus, in terms of adaptability, the present invention affords a solution to the adaptation problem which is clearly superior to the prior art.

The invention is not limited to the embodiment described above, but can be varied within the scope of the following patent claims.

Claims

1. Method for mounting a door leaf (4) provided with fixtures of a recent type which permit insertion, from any chosen side of the door leaf (4), of snap-in elements (13) of a recent type, which snap-in elements are provided with a knuckle (14) for mounting on hinge components (2) of an earlier type provided with a pin, which hinge components (2) are arranged on a door frame (1) of an earlier type, whereby the door leaf (4) is cut to a length which fits said door frame (1), characterized in that each snap-in element (13) is, in the longitudinal direction of the knuckle (14), symmetrically positioned in relation to the centre of the knuckle (14), and the knuckle (14) can be turned for application of any chosen end (16, 17) on the said hinge component (2) provided with a pin, and in that the distance between the fixtures (20) on the door leaf (4) is adjusted so that each snap-in element (13), when it is mounted on the pin of its respective hinge-component (2), is aligned with a said fixture (20) on the door leaf (4).

2. Method according to Claim 1, characterized in that the knuckle (14) is provided with an end plug (18) which is designed detachable for positioning on any chosen end (16, 17) of the knuckle (14).

3. Method according to Claim 1, characterized in that the snap-in element (13) is designed to be held in position in the fixture (20) by means of the snap action and/or locking screws.

4. Method according to Claims 1 and 3, characterized in that the length of the snap-in element (13) corresponds essentially to the thickness of the door leaf (4).

Patentansprüche

1. Verfahren zur Montage eines mit Befestigungselementen neuerer Art versehenen Türblattes (4), die ein Einbringen von Einschnappelementen (13) neuerer Art von jeder ausgewählten Seite des Türblattes (4) ermöglichen, wobei die Einschnappelemente ein Gelenk (14) zur Befestigung auf, mit einem Stift versehene, Scharnierkomponenten (2) früherer Art aufweisen, und die Scharnierkomponenten (2) auf einem Türrahmen (1) früherer Art angeordnet sind, wobei das Türblatt (4) auf eine zum Türrahmen (1) passende Länge geschnitten ist, dadurch gekennzeichnet, daß jedes Einschnappelement (13) in Längsrichtung des Gelenkes (14) symmetrisch bezüglich des Mittelpunktes des Gelenkes (14) angeordnet ist, und das Gelenk (14) unter Verwendung eines beliebigen ausgewählten Endes (16, 17) auf die mit einem Stift versehenen Scharnierkomponenten (2) drehbar ist, und daß der Abstand zwischen den Befestigungselementen (20) auf dem Türblatt (4) derart eingestellt ist, daß jedes Einschnappelement (13) nach seiner Befestigung auf dem Stift seiner entsprechenden Scharnierkomponente (2) mit dem Befestigungselement (20) auf dem Türblatt (4) ausgerichtet ist.

2. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß das Gelenk (14) mit einem Abschlußstöpsel (18) zur lösbaren Anbringung auf jedem ausgewählten Ende (16, 17) des Gelenks (14) versehen ist.

3. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß das Einschnappelement (13) durch das Einschnappen und/oder durch Verschlußschrauben in dem Befestigungselement (20) in Stellung haltbar ist.

4. Verfahren nach den Ansprüchen 1 und 3, dadurch gekennzeichnet, daß die Länge des Einschnappelementes (13) im wesentlichen der Dicke des Türblattes (4) entspricht.

Revendications

1. Procédé de montage d'un vantail (4) de porte ayant des ferrures d'un type récent qui permettent l'introduction, d'un côté choisi quelconque du vantail (4), d'éléments (13) à enclenchement élastique d'un type récent, les éléments à enclenchement élastique étant munis d'un charnon (14) destiné au montage sur les éléments (2) de charnière d'un type antérieur munis d'une broche, les éléments de charnière (2) étant placés sur un montant (1) de porte de type ancien, dans lequel le vantail (4) de la porte est découpé à une longueur correspondant à celle du montant (1) de porte, caractérisé en ce que chaque élément (13) à enclenchement élastique est placé, dans la direction longitudinale du charnon (14) en position symétrique par rapport au centre du charnon (14), et le charnon (14) peut être tourné pour l'application d'une extrémité choisie quelconque (16, 17) sur l'élément (2) de charnière ayant la broche, et en ce que la distance comprise entre les ferrures (20) sur le vantail (4) de porte est ajustée afin que chaque élément (13) à enclenchement élastique, qui est monté sur la broche de l'élément correspondant de charnière (2), soit aligné sur la ferrure

(20) placée sur le vantail (4) de la porte.

2. Procédé selon la revendication 1, caractérisé en ce que le charnon (14) est muni d'un bouchon (18) d'extrémité qui peut être séparé afin qu'il puisse être placé à une extrémité choisie quelconque (16, 17) du charnon (14).

3. Procédé selon la revendication 1, caractérisé en ce que l'élément (13) à enclenchement élastique est destiné à être maintenu en position dans la ferrure (20) par enclenchement élastique et/ou des vis de blocage.

4. Procédé selon les revendications 1 et 3, caractérisé en ce que la longueur de l'élément d'enclenchement élastique (13) correspond pratiquement à l'épaisseur du vantail (4) de la porte.

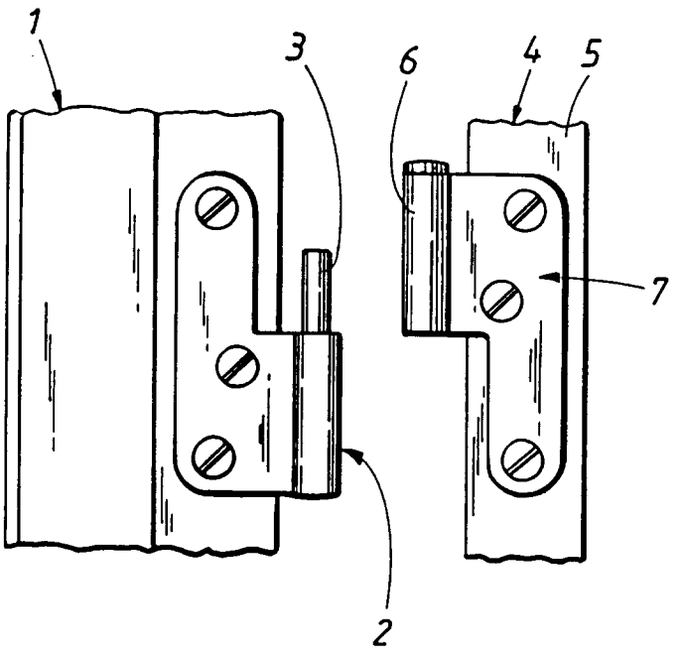

FIG. 1

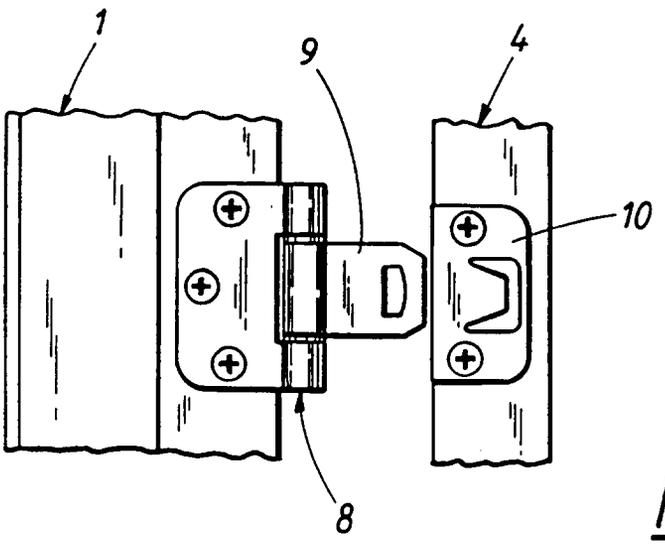

FIG. 2

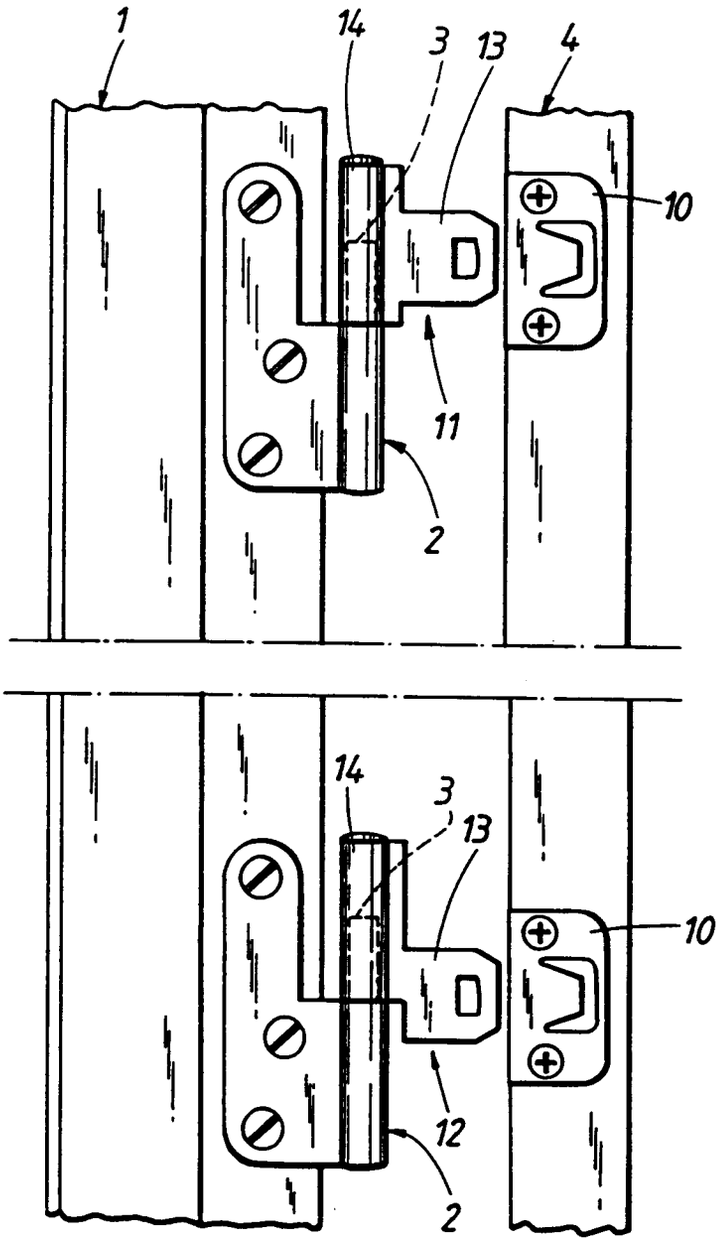

FIG.3

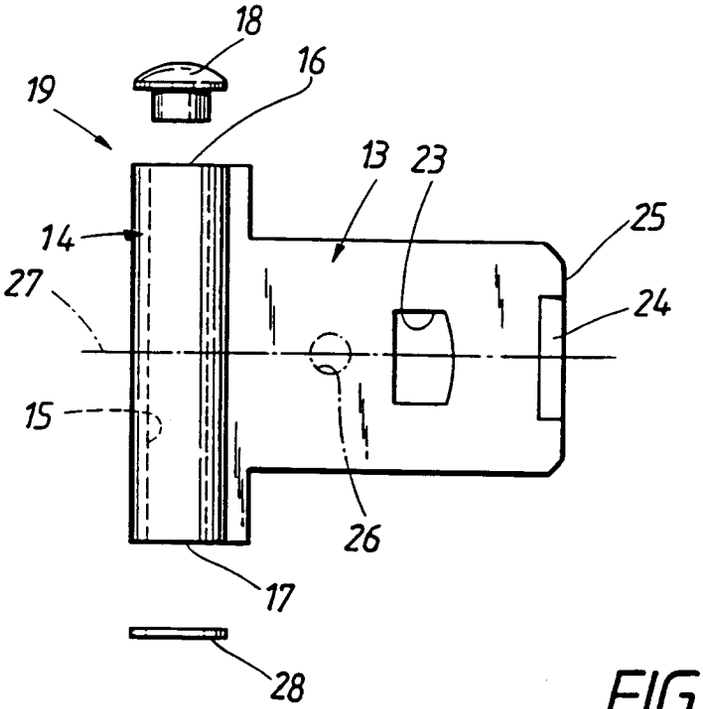

FIG.4

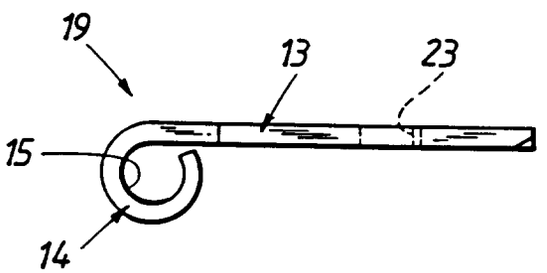

FIG.5

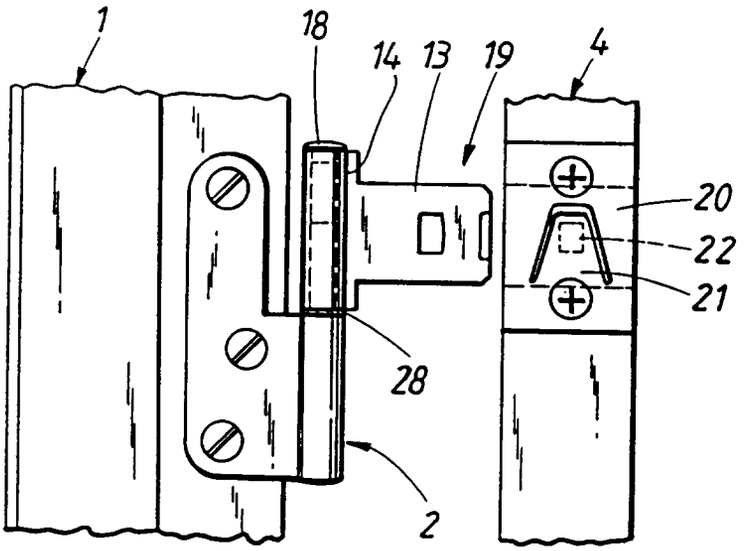

FIG.6

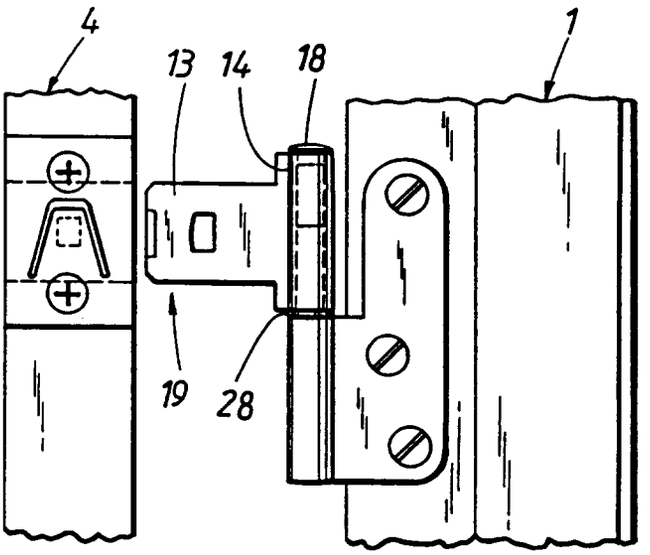

FIG.7