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(54) **REINFORCED DOOR PROVIDED WITH FIXING HOOKS SUPPORTED BY THE DOOR
COUNTERFRAME**

VERSTÄRKTE TÜR MIT AM FESTRAHMEN DER TÜR MONTIERTEN VERRIEGELUNGSHAKEN
PORTE BLINDEE EQUIPEE DE GONDS DE FIXATION SUPPORTES PAR LE DORMANT
RAPPORTE DE LA PORTE

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Description

[0001] The present patent invention relates to a reinforced door fixed by means of an overlapped series of hooks, supported by the door counterframe and activated with an electric motor, which is controlled with the door lock. In the French Patent No. FR2563266A is described a reinforced door having a series of hooks housed inside the door itself which are secured to corresponding slots located on the door counterframe when the door is in dosing position.

[0002] The door according to the present invention features an entirely innovative construction since it is provided with a series of hooks used to block the door and fixing means with all the maneuvering mechanisms, it being provided that both hooks and fixing means are assembled on the door counterframe, instead of being housed in the internal door opening, as described in The French patent FR 2 563 266 A.

[0003] This allows for reinforcing the entire door surface, since it is no longer necessary - as it is in the current models of reinforced doors - to provide spaces to house the traditional latches and their corresponding maneuvering levers, including the lock or the electric motor, if any, in case of automatic latch control.

[0004] This means that the reinforced panels can have the same total thickness as the door. In this perspective, the door can also incorporate a small-mesh grate located between two thick plate panels.

[0005] Moreover, for the first time the absence of mechanisms inside the door allows for creating an entirely transparent reinforced door, using reinforced glass sheets.

[0006] Another advantage offered by the door according to the present invention is represented by the use of a series of fixing hooks assembled on the door counterframe to fit into corresponding slots located on the door wing.

[0007] The fact that the door is fixed by means of hooks assembled on the door counterframe makes the traditional technique used to unhinge reinforced doors ineffective, according to which the two posts of the door counterframe - which are always represented by boxed metal profiles - are divaricated by means of jacks until the latches and the fixed beaks protruding from the two sides of the door are completely extracted from their housing holes located on the boxed metal profiles.

[0008] It is obvious that once the latches and the beaks have been extracted from their housings, the door can be easily unhinged, thus making the presence of anti-burglary and anti-drill panels completely irrelevant.

[0009] In the door according to the present invention the divarication of the posts of the door frames is prevented by a series of hooks that, unlike latches, are capable of opposing the force that tends to extract them from their fixing housing, thus making it impossible to push the door counterframe posts away from the door swings.

[0010] In order to make burglary even more difficult, the posts of the door counterframe do not have a boxed structure and therefore they cannot be deformed by crushing them.

[0011] For major clarity the description of the reinforced door according to the present invention continues with reference to the enclosed drawings, which are intended for purposes of illustration and not in a limiting sense, whereby:

- Figure 1 is a view of the door according to the present invention seen from inside, in which some of the surfaces have been partially removed to show the components positioned behind them. For graphic convenience reasons, figure 1 illustrates two different alternative types of reinforced door: the first type with a grate (upper section of Figure 1) and the second type with reinforced glass sheets (lower section of Figure 1);
- Figure 2 is an enlarged view of a details shown in Figure 1, which shows the coupling between the series of hooks assembled on the door counterframe and the corresponding series of slots located on the door swing;
- Figures 3 and 4 are a view of the two swings of the door according to the present invention;
- Figure 5 is a cutaway view of Figure 1 with the V-V plane of Figure 1;
- Figure 6 is a cutaway view of Figure 1 with the VI-VI plane of Figure 1;
- Figure 7 is a cutaway view of one of the frame and of the counterframe, in the assembled position, with the horizontal plane that goes through the axis of one of the fixing bolts used to fix the counterframe to the frame;
- Figure 8 is a top view of the upper ending section of the frame post and a cutaway view of the lintel of the frame, on which the counterframe has not been assembled yet;
- Figure 9 shows a cutaway view of the post of the counterframe, which has not been fitted to the frame yet;
- Figure 10 is an enlarged view of the details marked in Figure 1;
- Figure 11 is a view of Figure 10 according to the XI-XI angle indicated in Figure 10.

[0012] With particular reference to Figures 8 and 11, the door according to the present invention comprises a frame (1), composed of a T-section metal profile, designed to be fixed to the wall (M) so that the head wing (1a) of the T-section is placed in a vertical plane which is substantially aligned with the plane of the external door wall (2) with the door closed, as shown in Figure 5.

[0013] The frame (1) is fixed to the wall (M) by means of a regularly spaced series of metal pins (3), to which the frame (1) is welded. More exactly, once the pins have been fitted and fixed to the wall (M), the frame (1)

is coupled with the pins (3) so that the pins are fitted into a corresponding series of U-notches especially located on the wing (1b) of the frame (1).

[0014] The frame (1) is connected to the supporting and blocking pins (3) by means of a series of metal disks (5) which are first fitted into the pins (3) and then welded both to the pins and to the outside of the wing (1b) of the frame.

[0015] With particular reference to Figures 7, 9 and 10, the door according to the present invention also comprises a counterframe (6), composed of an L metal profile, of which one wing (6a) is fixed to the head wing (1a) of the frame (1) by means of a series of bolts (7), which are screwed into corresponding nuts (8), welded to the wing (1a) of the frame (1) and coupled to corresponding bushings (9a) that house dowels (9) which make it easier and faster to center the counterframe (6) to the frame (1). A regularly spaced series of pairs of bushing (10) is welded inside the wing (6a) of the counterframe, with one bushing housing the fixing bolts (7) and the other bushing housing the centering dowels (9).

[0016] A series of hooks (11) is assembled inside the counterframe (6), with each hook oscillating around a pivot (11a), oriented in orthogonal direction to the head wing (1a) of the frame (1). This means that each hook (11) oscillates on a vertical coplanar plane with respect to the door plane, as illustrated in Figures 5 and 6.

[0017] A shelf (12) is welded inside the counterframe (6), located in parallel position at a certain distance from the wing (6a) of the counterframe (6). As a matter of fact, the shelf (12) is fitted against the series of bolts (8) when the counterframe (6) is fixed to the frame (1), as illustrated in Figure 7.

[0018] With particular reference to Figure 7, it must be noted that a U track (13) is fixed along the shelf (12), in which track a bar (15) is housed and slides by means of the interposition of spheres (14). The bar (15) is provided with a regularly spaced series of threaded holes (15a) used to fix some rack segments (17) to the bar (15) by means of bolts (16), with each rack section engaging with a special toothed sector (11b) located on each hook (11).

[0019] This means that each stroke of the bar (15) makes all the hooks (11) simultaneously overturn, either going up or down.

[0020] The alternate strokes of the bar (15) inside the track (13) are produced by means of an electric motor (18), whose pinion (18a) engages with a specific rack segment (17a) screwed into the upper ending section of the bar (15), since the motor (18) is fixed on the top of the counterframe (6), so as to be housed under the door lintel, as illustrated in Figure 1.

[0021] The motor (18) is activated by the door lock, which is schematically illustrated and marked as (19) in Figure 1.

[0022] It is obvious that on each hook (11) the wing (6b) of the counterframe (6) features a slot (6c), used by the hook to protrude out of the counterframe (6) when

going down.

[0023] The enclosed drawings illustrate a version of the reinforced door according to the present invention, in which the series of hooks (11) is only present in one of the two posts of the counterframe (6) - that is the post against which the door swing stops - with a series of fixed beaks (20) on the other post of the counterframe - that is the post located nearby the door hinges (21). It is understood that it is also possible to have two identical series of overlapped hooks (11), one for each post of the counterframe.

[0024] Finally, the door according to the present invention comprises a reinforced door (2), which features a series of overlapped slots (23) on both sides (2a), used to engage the hooks (11) and/or the fixed beaks (20).

[0025] As already mentioned above, the absence of mechanisms inside the door (2) allows for freely reinforcing the door. Figure 1 and Figure 5 show a reinforced door with a small-mesh grate (23), placed between a welded pair of thick plates (23a).

[0026] Figure 6 shows how the absence of mechanism inside the door (2) allows for having an entirely transparent door made of reinforced glass (22).

[0027] Figures 5 and 6 illustrate various techniques used to hide the wing (1b) of the frame (1) from the external side of the door:

- according to one technique, the wing (1b) of the frame is hidden with a marble panel (24);
- according to one technique, the wing (1b) of the frame is hidden with a wooden plate (25);
- according to one technique, the wing (1b) of the frame is hidden with an extruded metal or plastic profile (26);
- according to one technique, the wing (1b) of the frame is hidden with a concrete layer (27).

[0028] In any case, it must be noted that, in case of burglary, the removal of these screening means of the frame (1) will not allow the burglar to reach the counterframe (6), which is protected behind the head wing (1a) of the frame (1), which, in turn, cannot be easily removed from the wall (M).

[0029] From the internal side of the door, the counterframe (6) of the door is hidden with traditional finishing angles (28).

Claims

1. Reinforced door provided with fixing hooks supported by the door counterframe of the type comprising a reinforced door (2) and a counterframe (6) which can be joined to each other by means of a series of hooks (11) oscillating around corresponding pivots (11a), door **characterized in that:**

- it comprises a frame (1), composed of a T-sec-

tion metal profile, designed to be fixed to the wall (M) by means of a regularly spaced series of metal pins (3), to which the frame (1) is welded;

- said counterframe (6) is composed of an L metal profile and is fixed to said frame (1) by means of bolts (7), internally provided with said series of hooks (11), oscillating around said corresponding pivots (11a) and provided with toothed sections (11b) engaged with corresponding rack segments (17), all screwed into the same bar (15), which is housed and slides inside a track (13), fixed to a shelf (12), being an integral part of the counterframe (6), which features a slot (6c) on each hook (11) and each wing (6b) and supports an electric motor (18) on the top, whose pinion (18a) engages with a particular rack segment (17a), screwed onto the upper ending section of the bar (13);
- said reinforced door (2) features an overlapped series of slots (23) on the sides (2a) used to fix the hooks (11).

2. Reinforced door provided with fixing hooks supported by the door counterframe, according to the previous claim, **characterized in that** the pins (13) are fitted into a corresponding series of U notches (4), especially located on the wing (1b) of the frame (1) and disks (6) are welded onto the pins (3), with the disks (6) being welded to the wing (1b) of the frame (1).

3. Reinforced door provided with fixing hooks supported by the door counterframe, according to the previous claims, **characterized in that** the wing (6a) of the counterframe (6) is fixed to the head wing (1a) of the frame (1) by means of a series of bolts (7) screwed into corresponding nuts (8) welded on the wing (1a) of the frame (1) and coupled to corresponding bushings (9a) which house the dowels (9) used to center the counterframe (6) to the frame (1), with a regularly spaced series of bushing pairs (10) welded inside the wing (6a), with one bushing housing the fixing bolts (7) and the other bushing housing the centering dowels (9).

4. Reinforced door provided with fixing hooks supported by the door counterframe, according to the previous claims, **characterized in that** the door (2) incorporates a small-mesh grate (23) placed between a welded pair of thick plates (23a).

Patentansprüche

1. Gepanzerte Tür, versehen mit Befestigungshaken, die vom Türkonnerrahmen gehalten werden, welche Tür einen gepanzerten Flügel (2) und einen Konter-

rahmen (6) umfasst, die mit einer Reihe von Haken (11) fest miteinander verbunden werden können, die jeweils um Drehbolzen (11a) schwingen, **dadurch gekennzeichnet, dass:**

- sie einen Rahmen (1) umfasst, der aus einem Metallprofil mit "T"-förmigem Querschnitt besteht und dazu bestimmt ist, mit einer Serie von Metallstiften an der Wand (M) befestigt zu werden, die in regelmäßigem Abstand voneinander angebracht sind und an welche der Rahmen (1) angeschweißt wird;
- der Konterrahmen (6) aus einem "L"-förmigem Metallprofil besteht, das mittels Bolzen (7) am Rahmen (2) befestigt ist und in seinem Innern eine Serie von Haken (11) aufweist, die jeweils um Drehbolzen (11a) schwingen und mit gezahnten Abschnitten (11b) versehen sind, die in entsprechende Zahnstangenabschnitte (17) eingreifen, die allesamt auf derselben Stange (15) angeschraubt sind, die in einer Schiene (13) gleiten kann, die auf einer Konsole (12) befestigt ist, die Bestandteil des Konterrahmens (6) ist, welcher an jedem Haken (11) und an einem seiner beiden Flügel einen Schlitz (6c) aufweist und an seiner Oberseite einen Elektromotor (18) besitzt, dessen Ritzel (18a) in ein entsprechendes Zahnstangensegment (17a) eingreift, das auf dem oberen Endabschnitt der besagten Stange (13) angeschraubt ist;
- die gepanzerte Tür (2) an ihren Seitenteilen (2a) eine Reihe übereinander liegender Schlitze (23) aufweist, in welche die Haken (11) eingehängt werden können.

2. Gepanzerte Tür, versehen mit Befestigungshaken, die vom Türkonnerrahmen gehalten werden gemäß dem vorstehenden Anspruch, **dadurch gekennzeichnet, dass** die genannten Stifte (3) in einer Reihe entsprechender, "U"-förmiger Einschnitte (4) gelagert sind, die zu diesem Zweck aus dem Flügel (1b) des Rahmens (1) herausgearbeitet wurden, sowie dadurch, dass an die genannten Stifte (3) Scheiben (6) angeschweißt werden, welche ihrerseits am Flügel (1b) des Rahmens (1) angeschweißt werden.

3. Gepanzerte Tür, versehen mit Befestigungshaken, die vom Türkonnerrahmen gehalten werden gemäß den vorstehenden Ansprüchen, **dadurch gekennzeichnet, dass** der Flügel (6a) des Konterrahmens (6) am stirnseitigen Flügel (1a) des Rahmens (1) mittels einer Reihe von Bolzen (7) befestigt ist, die in entsprechende Muttern (8) eingedreht werden, die auf dem Flügel (1a) des Rahmens (1) angeschweißt werden und mit ebenso vielen Buchsen (9a) zur Aufnahme der Dome (9) zur Zentrierung des Konterrahmens (6) auf dem Rahmen (1) ver-

bunden sind, in dessen Flügel (6a) eine Reihe von regelmäßig angeordneten Buchsenpaaren (10) angeschweißt wird, wovon eines zur Aufnahme der Befestigungsbolzen (7) und das andere zur Aufnahme der Zentrierdorne (9) dient.

4. Gepanzerte Tür, versehen mit Befestigungshaken, die vom Türkonterahmen gehalten werden gemäß den vorstehenden Ansprüchen, **dadurch gekennzeichnet, dass** die Tür (2) ein engmaschiges Eisengitter (23) umfasst, das im Innern eines Paares dicker, verschweißter Blechplatten (23a) eingeschlossen ist.

Revendications

1. Porte blindée dotée de crochets de blocage du panneau supportés par le contre-châssis de la porte, du type comprenant un panneau blindé (2) et un contre-châssis (6) qui peuvent être rendus solidaires entre eux par le biais d'une série de crochets (11) oscillants autour de respectifs pivots de rotation (11a), **caractérisée en ce que** :

- elle présente un châssis (1), réalisé avec un profil métallique ayant section en forme de "T", destiné à être fixé au mur (M) au moyen d'une série régulièrement distribuée de pivots métalliques (3) auxquels le châssis (1) est soudé ;
- ledit contre-châssis (6), réalisé avec un profil métallique en forme de "L", est fixé au dit châssis (2) au moyen de boulons (7) et présente à l'intérieur ladite série de crochets (11), oscillants autour des dits respectifs pivots de rotation (11a) et dotés de respectifs secteurs dentés (11b), embrayés sur des respectifs segments de crémaillère (17), tous vissés sur une même barre (15), logée et coulissante dans un rail (13), fixée sur une tablette (12), faisant partie intégrante du contre-châssis (6) qui présente - en correspondance de chaque crochet (11) et d'une (6b) de ses deux ailes - une fente (6c) et qui supporte à son sommet un moteur électrique (18) dont le pignon (18a) embraye avec un segment de crémaillère (17a) prévu à cet effet, vissé sur le segment terminal supérieur de la susdite barre (13) ;
- dit panneau blindé (2) présente, en correspondance de ses côtés (2a), une série superposée de fentes (23) dans lesquelles les crochets (11) peuvent s'accrocher.

2. Porte blindée dotée de crochets de blocage du panneau supportés par le contre-châssis de la porte, selon la revendication précédente, **caractérisée en ce que** les dits pivots (3) résultent logés dans une série correspondante d'entailles (4), ayant forme en

"U", réalisées à cet effet sur l'aile (1b) du châssis (1) et **en ce que** des disques (6) sont soudés sur les dits pivots (3), disques (6) qui à leur tour sont soudés sur l'aile (1b) du châssis (1).

3. Porte blindée dotée de crochets de blocage du panneau supportés par le contre-châssis de la porte, selon les revendications précédentes, **caractérisée en ce que** l'aile (6a) du contre-châssis (6) est fixée à l'aile de tête (1a) du châssis (1) au moyen d'une série de boulons (7) vissés dans des écrous (8) correspondants, soudés sur l'aile (1a) du châssis (1), et couplés à des douilles (9a) de nombre correspondant aptes au logement de chevilles (9) pour le centrage au châssis (1) du contre-châssis (6), à l'intérieur de l'aile (6a) duquel est soudée une série régulièrement distribuée de paire de manchons (10), l'une pour le logement des boulons de fixation (7), l'autre pour le logement des chevilles de centrage (9).

4. Porte blindée dotée de crochets de blocage du panneau supportés par le contre-châssis de la porte, selon les revendications précédentes, **caractérisée en ce que** le panneau (2) incorpore une grille en fer (23), à mailles étroites, renfermée à l'intérieur d'une paire soudée de tôles épaisses (23a).

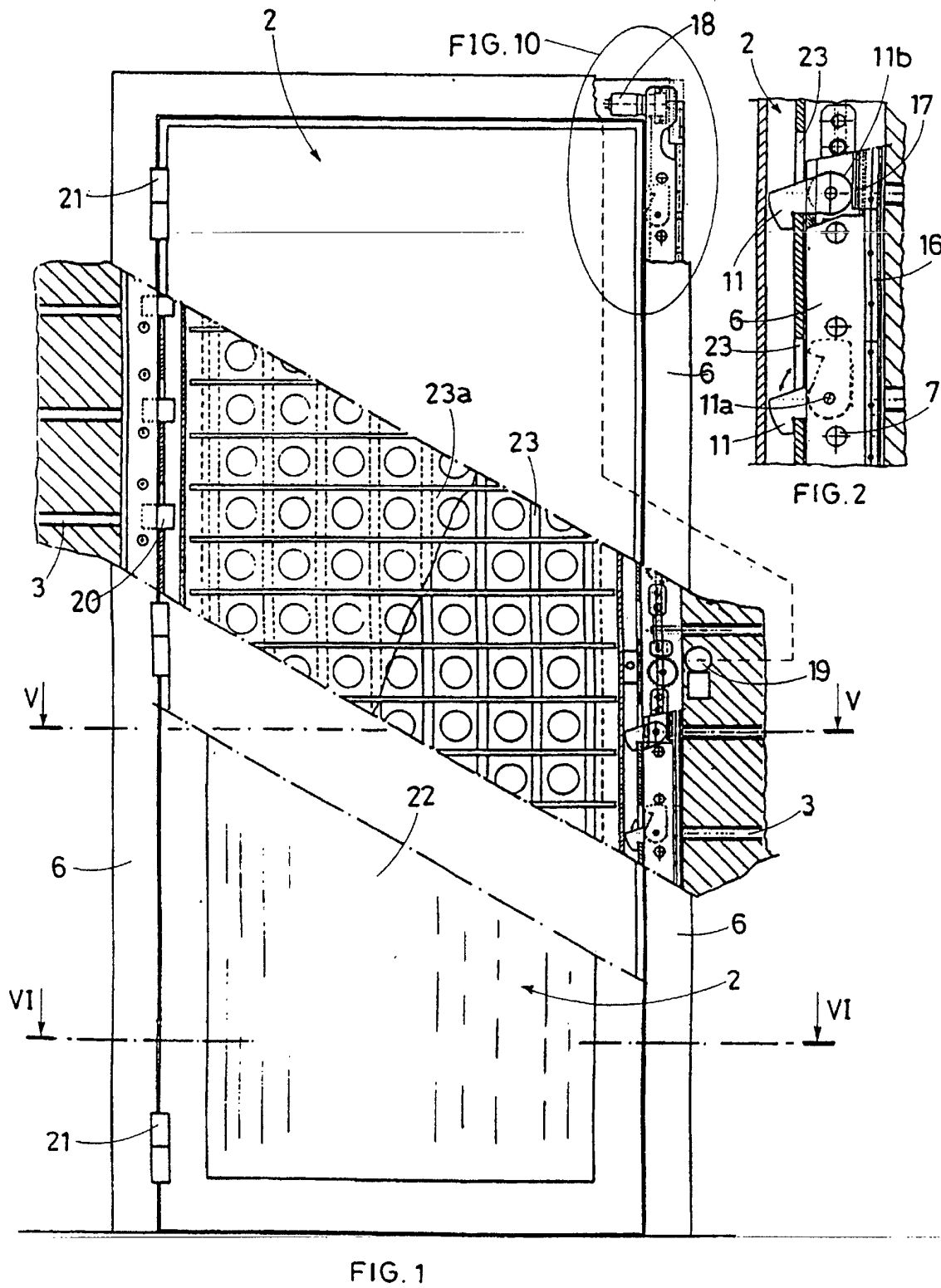


FIG. 1

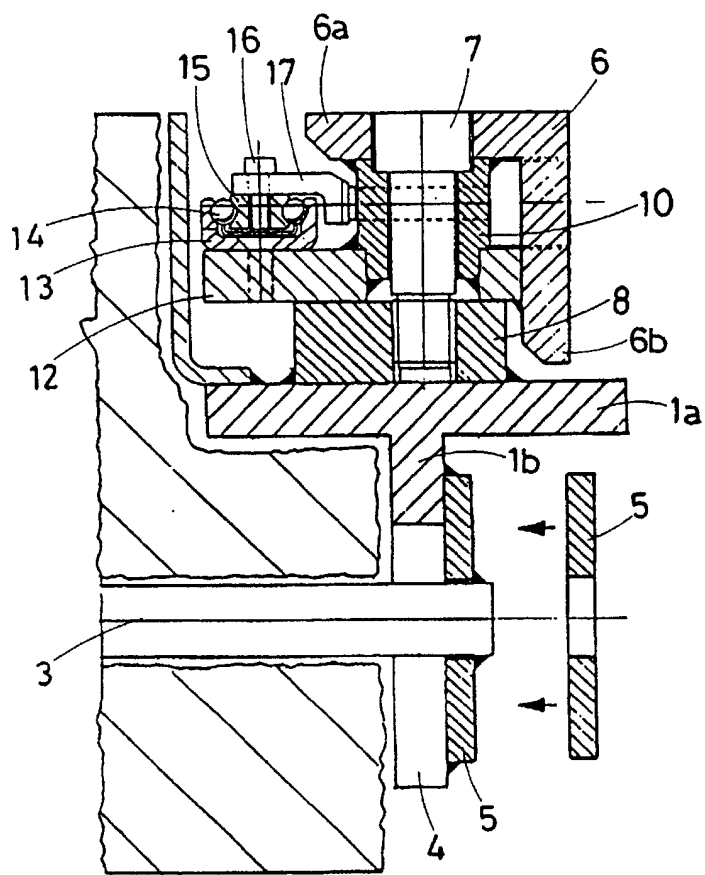


FIG. 7

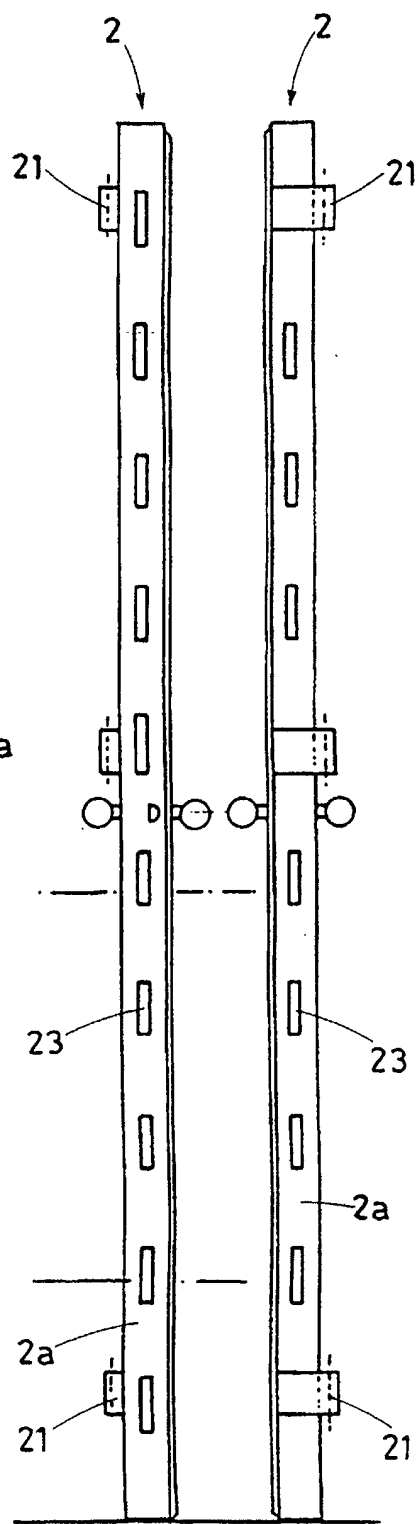


FIG. 3 FIG. 4

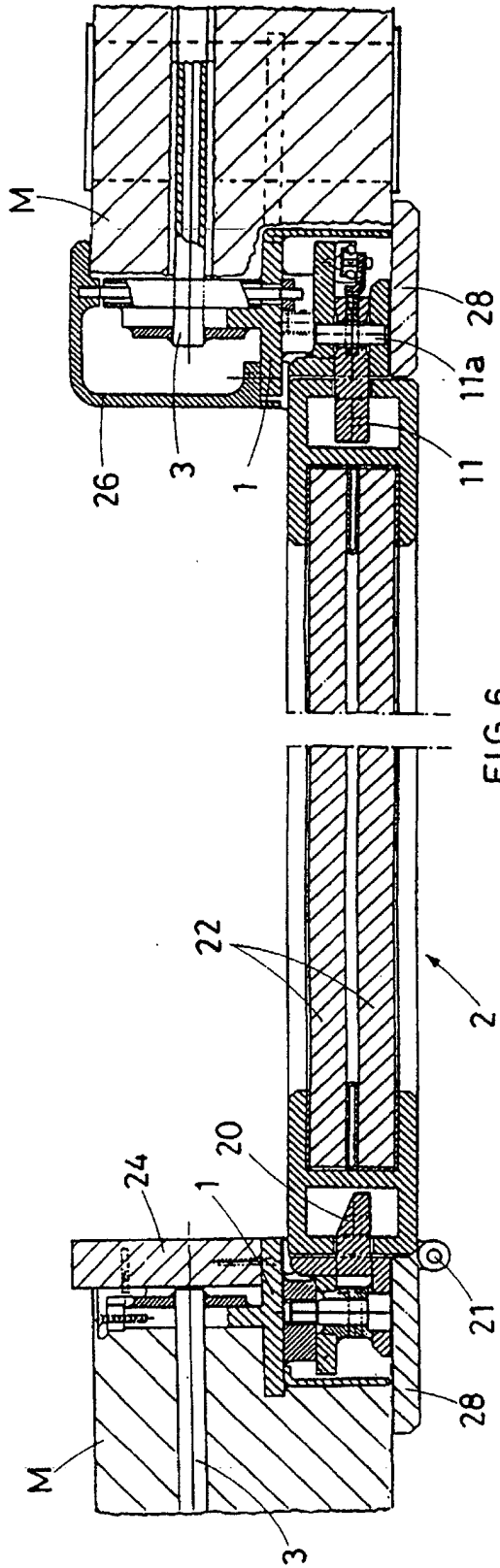


FIG. 6

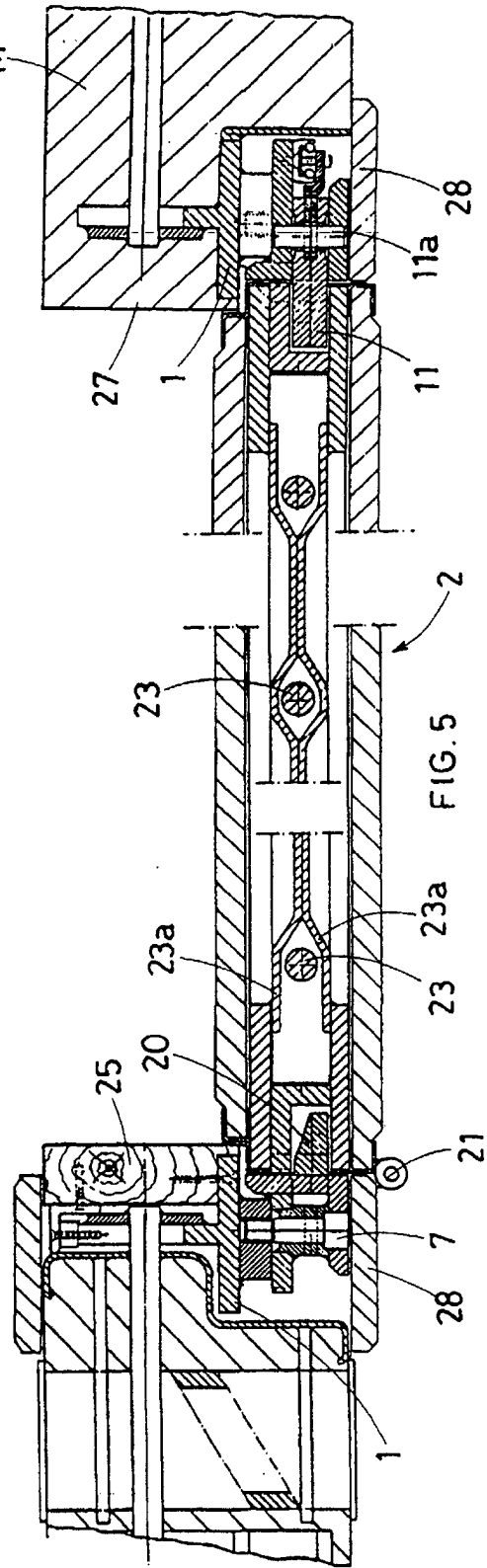


FIG. 5

