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(54) **A panic-safe lock comprising a device for adapting the lock to the opening direction of a door, for presetting the lock to open only from one side, and for temporarily allowing to open it from the opposite side**

Schloss für Notausgang, anpassbar an die Türöffnungsrichtung, mit einer Handhabe auf der einen Seite und eine Möglichkeit zum befristeten Öffnen auf der anderen Seite

Serrure pour sortie de secours, adaptable à la direction d'ouverture de la porte, avec un loquet d'un coté et une possibilité d'ouverture temporaire d'autre coté

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Description

The present invention relates to a panic-safe lock comprising a device for adapting the lock to the opening direction of a door, for presetting the lock to open only from one side, and for temporarily allowing to open it from the opposite side.

Conventional panic-safe locks provided with a latch and a bolt that can be moved into their release position by actuating a handle are installed in emergency doors. With these locks, in case of emergency the door can be opened only from the inside outward.

However, the need arises to install these locks in emergency doors that open to the right or to the left and to temporarily open the door from the outside as well.

The technical aim of the present invention is to provide a device which, when installed in a panic-safe lock, renders it possible to open the door from one side and, only with an appropriate actuation, from the opposite side.

Within the scope of this aim, an object of the present invention is to provide a device which is constructively simple, highly reliable in operation and easy to modify according to the rightward or leftward opening characteristics of the door.

The invention provides a panic-safe lock comprising a device for adapting the lock to the opening direction of a door, for presetting the lock to open only from one side and for temporarily allowing to open it from the opposite side, with the features set forth in the characterizing part of claim 1.

Further particularities of the present invention will become apparent from the following description of a preferred embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a view of the device;
figure 2 is an enlarged-scale view of the device;
figure 3 is a sectional view, taken along the plane III-III of figure 2;
figure 4 is an exploded view of the device; and
figure 5 is a view of the lever alone.

With reference to the above figures, the device comprises a bush 1 having a peripheral collar 2 on which two annular elements 3 and 4 are centered on opposite sides; said elements are substantially mirror images of each other and make mutual contact at the centerline plane P.

The annular elements 3 and 4, termed simply "rings" hereinafter for brevity, have on their outer faces respective raised portions 3a, 4a by means of which they are rotatably supportable in openings of the side walls of a lock case. Each one of the rings 3 and 4 has two teeth 5, 6 and 7, 8 that lie diagonally opposite with respect to the bush 1, a central seat 9, 10 and a threaded hole 11, 12. The central seats 9, 10 are coaxial to the

bush 1 and have a square cross-section which is complementary to the cross-sections of the tangs of lock actuation handles.

The holes 11, 12 are located outside the seats 9, 10, and the raised portions 3a, 4a are conveniently expanded radially at said holes so as to engage in recesses of the lock case openings which rotatably support the rings 3, 4. The angular extension of these recesses determines the rotation angle of the rings 3, 4. The teeth 5, 7 have notches for the insertion of rods subjected to the action of springs (see figure 1) that react against shoulders of the case and bias the rings 3, 4 in abutment in a clearly set angular position. A seat 13 is formed between the rings 3, 4, which accommodates a lever, generally designated by the reference numeral 14 and shown in greater detail in figure 5.

The lever 14 comprises two rings 15, 16 which are internally provided with two respective openings 17, 18 alignable with the holes 11, 12. The opening 18 is located in a wing 19 of the ring 16 that extends outward. The ring 16 forms a tooth-shaped arm 20, with a front 21, in a position that lies diametrically opposite the wing 19.

The rings 15, 16 can be alternately coupled to the ring 3 or to the ring 4 by means of a screw 22 inserted in the hole 11 or 12.

The length of the screw 22 is such that when it has been fully screwed into the hole 11 or 12 of an annular element 3 or 4, its end engages both openings 17, 18 of the rings 15, 16 but not the hole of the opposite annular element, which is thus free to rotate. Figure 3 shows that the screw 22 produces the rotational coupling between the element 3 and the rings 15, 16, whereas the element 4 is free.

The ring 15 of the lever 14 has an arm 23 extending radially opposite the tooth 20, and a tab 24 in which a pawl 26 is articulated by means of a pivot 25. A pin 27 arranged substantially radially to the bush 1 is guided in the pawl 26 and has a collar 28 on which a spring 29 acts, said spring being accommodated in a seat 30 formed in the pawl around the pin 27.

The spring 29 pushes the pin 27 against the edge of the ring 15, so that the pawl 26 is constantly biased in a position in which a tooth 31, formed therein, is out of the path of the teeth 6, 8 of the annular elements or rings 3, 4.

The described device is installed in a lock so that the lever 23 can act directly on the spring latch 32 and the tooth 20 can act on the bolt 33 by means of an interposed lever 34 which rests on the front 21 with one end and acts on the tang of the bolt with its opposite end. The tumbler of a key-operated cylinder 36 can also act, by means of an interposed lever 35, on the pawl 26.

Assuming that the device is to be installed so that the ring 3 is on the inner side of the door, the inner ring is connected to the lever 14 by means of the screw 22. In this manner the outer ring 4 is free. Therefore, by actuating in a clockwise direction the inner handle that en-

gages the seat 9, the latch and the bolt will retract simultaneously. However, any rotation of the outer handle has no effect, since there is no rotational connection between the lever 14 and the ring 4. In this situation, in order to open the door from the outside, by means of the cylinder 36, the pawl 26 is moved adjacent to the rings 3, 4, causing the tooth 31 to engage the teeth 6, 8, so that the rotation of the outer ring 4 can be transmitted to the levers 14, rotates said lever and actuates the latch so that it opens.

As can be seen, the invention perfectly achieves the intended aim and object.

Particularly, by shifting the screw 22 from one hole 11 to the other one 12 it is possible to modify the lock in order to make it usable in right-opening or left-opening doors.

Numerous modifications and variations, all within the purview of the invention as claimed, are possible in the practical embodiment of the invention. Particularly, the lever 14 can be formed monolithically.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. A panic-safe lock of the type comprising a spring latch (32), a bolt (33), a key-operated device (36) with a tumbler and a device for adapting the lock to the opening direction of a door, for presetting said lock to open only from one side and for temporarily allowing it to open from the opposite side, **characterized in that** the device comprises: a pair of annular elements (3, 4) rotatably supported in the lock and biased in a set angular position by elastic means, said annular elements (3, 4) having coaxial polygonal seats (9, 10) for side-fitting engagement of a respective handle and threaded coaxial holes (11, 12) parallel to the axis of said seats; a lever (14) which is pivoted between said annular elements (3, 4) coaxially thereto, said lever (14) having an opening (17, 18) alignable with said threaded holes (11, 12), a first arm (23) for the actuation of the spring latch (32), a second arm (20) for the simultaneous actuation of the bolt (33), and a pawl (26) actuable by means of the tumbler of the key-operated device (36), said pawl (26) being adapted to engage teeth (6, 8) of said annular elements (3, 4) for providing a rotational coupling between said lever (14) and said annular elements (3, 4); and a screw (22) which is insertable in said opening (17, 18), said screw being screwable into one of said threaded holes (11, 12) and having such a length as to rotationally cou-

ple said lever (14) and the annular element (3, 4) in which said screw is screwed while the other annular element is left free from coupling.

2. A lock according to claim 1, characterized in that said lever (14) is constituted by a pair of adjacent rings (15, 16), one of which (15) is provided with said first arm (23) for the actuation of the spring latch (32) and the other one (16) is provided with said second arm (20) for the actuation of the bolt (33), respective openings (17, 18) for the engagement of said screw being formed in said rings (15, 16).
3. A lock according to claim 2, characterized in that said annular elements (3, 4) are rotatably supported on a bush (1) and form a seat (13) in which said rings (15, 16) are accommodated, the arms of said rings forming said lever (14).
4. A lock according to claim 2 or 3, characterized in that said ring (15) provided with said first arm (23) has a tab (24) which is co-planar thereto and in which said pawl (26) is articulated, a pin (27) being guided in said pawl (26), a spring (29) acting on said pin, pushing it against the edge of said ring (15) and keeping a tooth (31), formed on said pawl (26), disengaged from corresponding teeth (6, 8) of the annular elements (3, 4), said pawl (26) being actuable by the tumbler of the key-operated device (36) installed in the lock so as to move said teeth (6, 8) of said annular elements and said tooth (31) of said pawl so that they mutually mesh and rotationally couple said annular element left free from coupling to said lever (14).

Patentansprüche

1. Paniksicheres Schloß mit einer Federklinke (32), einem Riegel (33), einer schlüsselbetätigten Vorrichtung (36) mit einer Zuhaltung und einer Vorrichtung zum Anpassen des Schlosses an die Öffnungsrichtung einer Tür, zum Voreinstellen des Schlosses zum Öffnen nur von einer Seite und zum zeitweiligen Öffnen von der anderen Seite, dadurch **gekennzeichnet**, daß die Vorrichtung enthält: ein Paar in dem Schloß drehbar gehaltener Ringelemente (3, 4), die elastisch in eine eingestellte Winkelposition gespannt sind und koaxiale polygonale Sitze (9, 10) zum seitlichen Einsetzen jeweils eines Handgriffs sowie koaxiale Gewindebohrungen (11, 12) parallel zur Achse der Sitze haben; einen Hebel (14), der zwischen den Ringelementen (3, 4) koaxial zu diesen schwenkbar ist und eine auf die Gewindebohrungen (11, 12) ausrichtbare Öffnung (17, 18), einen ersten Arm (23) zum Betätigen der Federklinke (32), einen zweiten Arm (20) zum gleich-

zeitigen Betätigen des Riegels (33) und eine durch die Zuhaltung der schlüsselbetätigten Vorrichtung (36) betätigbare Klinke (26) hat, die zum Eingriff mit Zähnen (6, 8) der Ringelemente (3, 4) zur Drehkupplung zwischen dem Hebel (14) und den Ringelementen (3, 4) geeignet ist; und eine Schraube (22), die in die Öffnung (17, 18) einsetzbar und in eine der Gewindebohrungen (11, 12) einschraubbar ist und eine solche Länge hat, daß sie den Hebel (14) und das Ringelement (3, 4) drehbar kuppelt, in das die Schraube eingeschraubt ist, während das andere Ringelement nicht gekuppelt ist.

2. Schloß nach Anspruch 1, dadurch **gekennzeichnet**, daß der Hebel (14) durch ein Paar aneinanderliegender Ringe (15, 16) gebildet ist, von denen einer (15) mit dem ersten Arm (23) zum Betätigen der Federklinke (32) und der andere (16) mit dem anderen Arm (20) zum Betätigen des Riegels (33) versehen ist, und daß in den Ringen (15, 16) jeweils eine Öffnung (17, 18) zum Eingriff mit der Schraube vorgesehen ist.

3. Schloß nach Anspruch 2, dadurch **gekennzeichnet**, daß die Ringelemente (3, 4) auf einer Büchse (1) drehbar gelagert sind und einen Sitz (13) zur Aufnahme der Ringe (15, 16) bilden, und daß die Arme der Ringe den Hebel (14) bilden.

4. Schloß nach Anspruch 2 oder 3, dadurch **gekennzeichnet**, daß der mit dem ersten Arm (23) versehene Ring (15) einen mit ihm koplanaren Ansatz (24) hat, an den die Klinke (26) angelenkt ist, in der ein Stift (27) geführt ist, auf den eine Feder (29) einwirkt und ihn gegen die Kante des Ringes (15) drückt und einen an der Klinke (26) ausgebildeten Zahn (31) außer Eingriff mit entsprechenden Zähnen (6, 8) der Ringelemente (3, 4) hält, und daß die Klinke (26) durch die Zuhaltung der schlüsselbetätigten Vorrichtung (36) in dem Schloß betätigbar ist, um die Zähne (6, 8) der Ringelemente und den Zahn (31) der Klinke so zu bewegen, daß sie miteinander in Eingriff kommen und das mit dem Hebel (14) nicht gekuppelte Ringelement in Drehkupplung bringen.

Revendications

1. Fermeture anti-panique du type comportant un verrou à ressort (32), un boulon (33), un dispositif (36) actionné par clé, muni d'un tambour, et un dispositif pour adapter la fermeture au sens d'ouverture d'une porte, pour préétablir ladite fermeture pour n'ouvrir qu'à partir d'un côté et pour lui permettre temporairement de s'ouvrir à partir du côté opposé, caractérisée en ce que le dispositif comporte : deux éléments annulaires (3, 4) supportés de manière rota-

tive dans la fermeture et rappelés dans une position angulaire établie par des moyens élastiques, lesdits éléments annulaires (3, 4) ayant des sièges polygonaux coaxiaux (9, 10) destinés à être en contact selon un agencement latéral avec une poignée respective, et des trous coaxiaux filetés (11, 12) parallèles à l'axe desdits sièges, un levier (14) qui pivote entre lesdits éléments annulaires (3, 4) coaxialement à ceux-ci, ledit levier (14) ayant une ouverture (17, 18) pouvant être alignée avec lesdits trous filetés (11, 12), un premier bras (23) pour actionner le verrou à ressort (32), un second bras (20) pour l'actionnement simultané du boulon (33), et un cliquet (26) pouvant être actionné par l'intermédiaire du tambour du dispositif actionné par clé (36), ledit cliquet (26) étant adapté pour venir en prise avec des dents (6, 8) desdits éléments annulaires (3, 4) pour fournir un accouplement en rotation entre ledit levier (14) et lesdits éléments annulaires (3, 4), et une vis (22) qui peut être insérée dans ladite ouverture (17, 18), ladite vis pouvant être vissée dans l'un desdits trous filetés (11, 12) et ayant une longueur telle qu'elle accouple en rotation ledit levier (14) et l'élément annulaire (3, 4) dans lequel ladite vis est vissée, alors que l'autre élément annulaire est maintenu libre d'accouplement.

2. Fermeture selon la revendication 1, caractérisée en ce que ledit levier (14) est constitué de deux anneaux adjacents (15, 16) dont un premier (15) est muni dudit premier bras (23) pour l'actionnement du verrou à ressort (32) et dont l'autre (16) est muni dudit second bras (20) pour l'actionnement du boulon (33), des ouvertures respectives (17, 18) destinées à l'engagement de ladite vis étant formées dans lesdits anneaux (15, 16).

3. Fermeture selon la revendication 2, caractérisée en ce que lesdits éléments annulaires (3, 4) sont supportés de manière rotative sur une bague (1) et forment un siège (13) dans lequel lesdits anneaux (15, 16) sont reçus, les bras desdits anneaux formant ledit levier (14).

4. Fermeture selon la revendication 2 ou 3, caractérisée en ce que ledit anneau (15) muni dudit premier bras (23) a une patte (24) qui est coplanaire à celui-ci et dans laquelle est articulé ledit cliquet (26), un axe (27) étant guidé dans ledit cliquet (26), un ressort (29) agissant sur ledit axe, le poussant contre le bord dudit anneau (15) et maintenant une dent (31), formée sur ledit cliquet (26), libérée des dents correspondantes (6, 8) des éléments annulaires (3, 4), ledit cliquet (26) pouvant être actionné par le tambour du dispositif actionné par clé (36) installé dans la fermeture de manière à déplacer lesdites dents (6, 8) desdits éléments annulaires et ladite dent (31) dudit cliquet de sorte qu'elles engrènent

mutuellement et relie en rotation ledit élément annulaire laissé libre d'accouplement audit levier (14).

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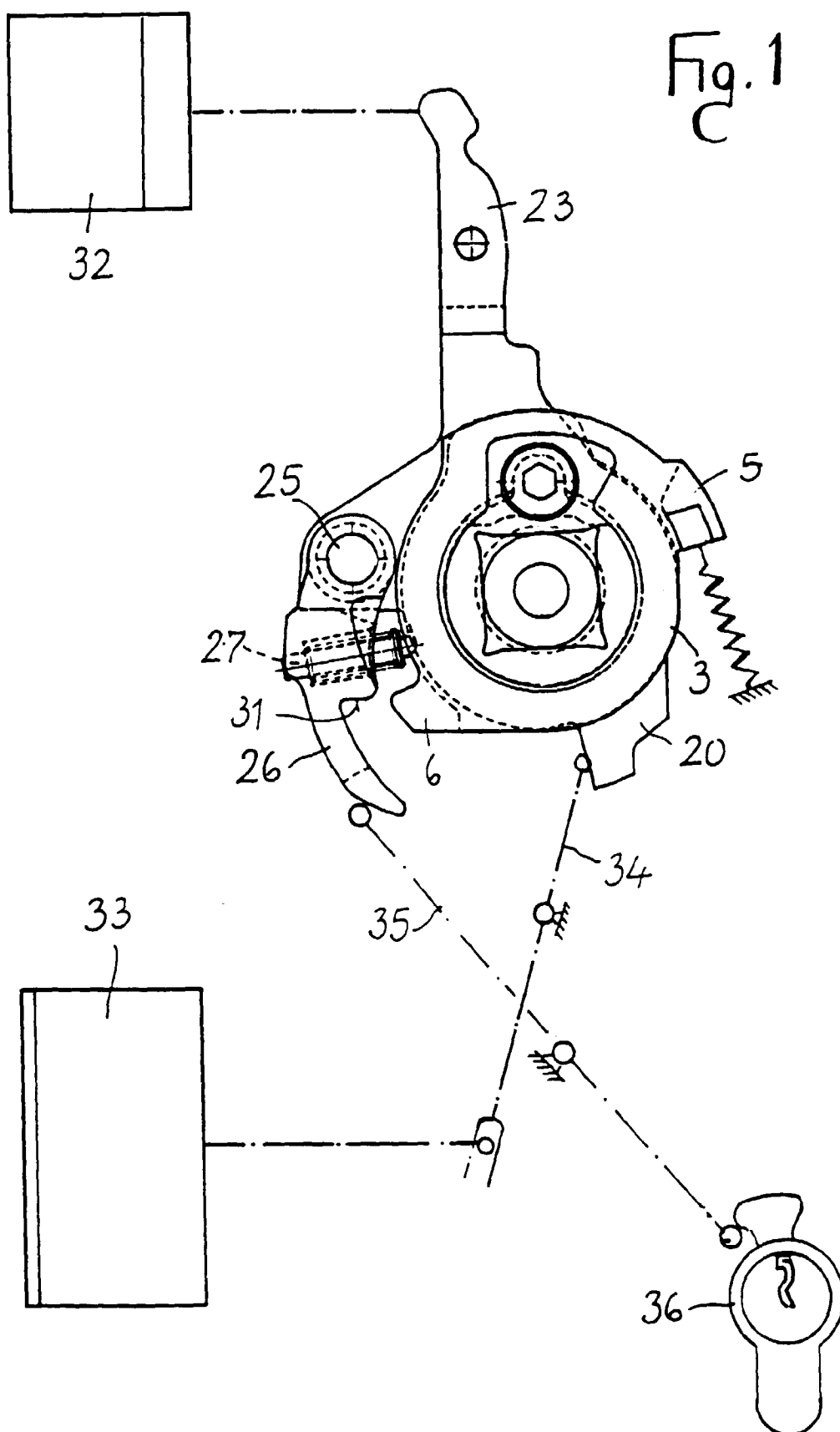
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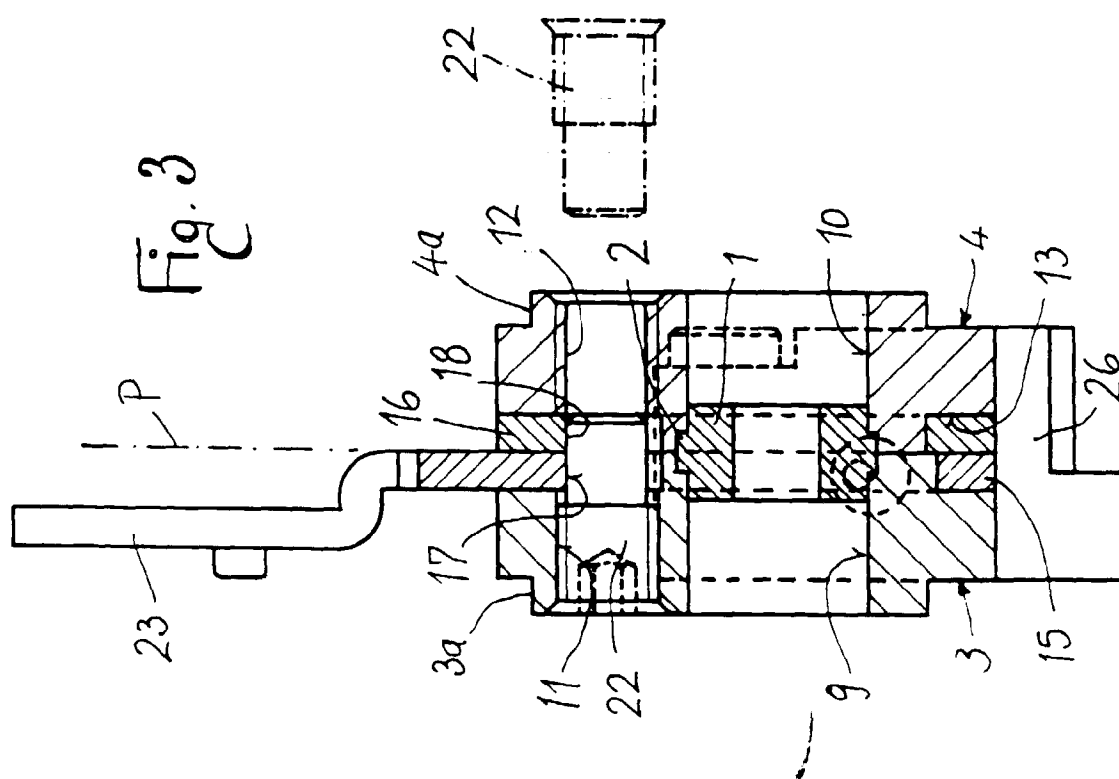
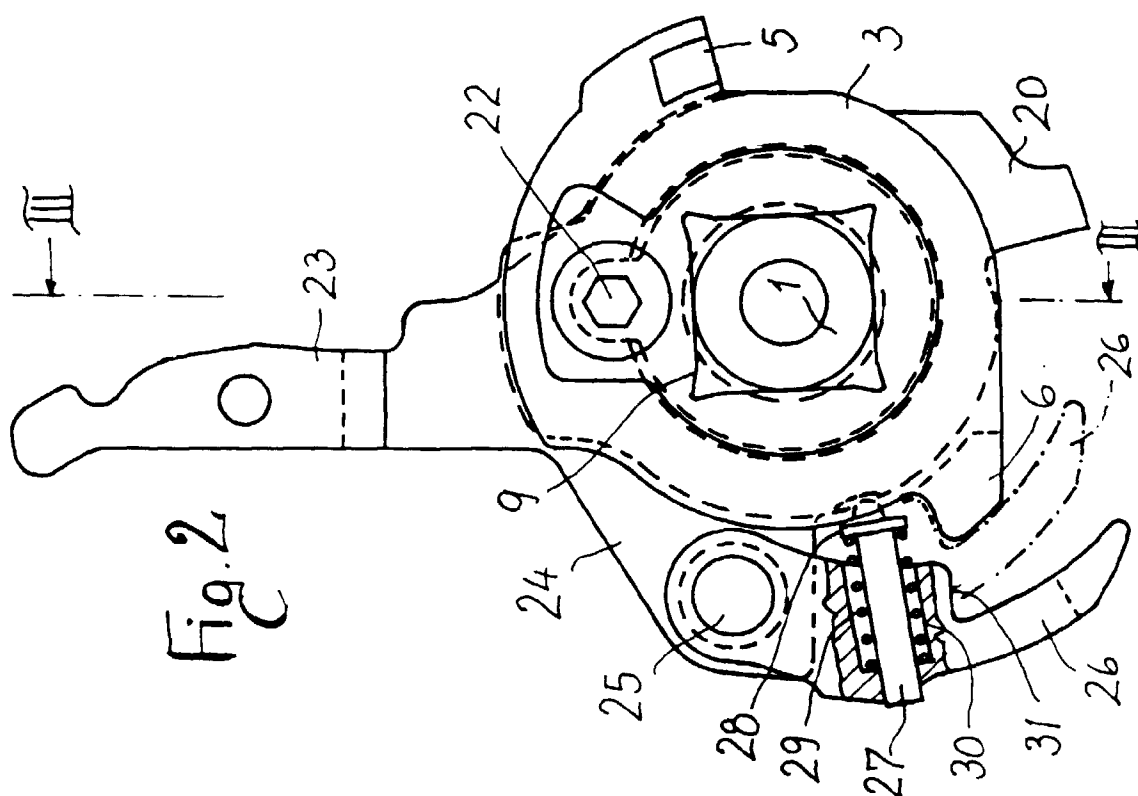
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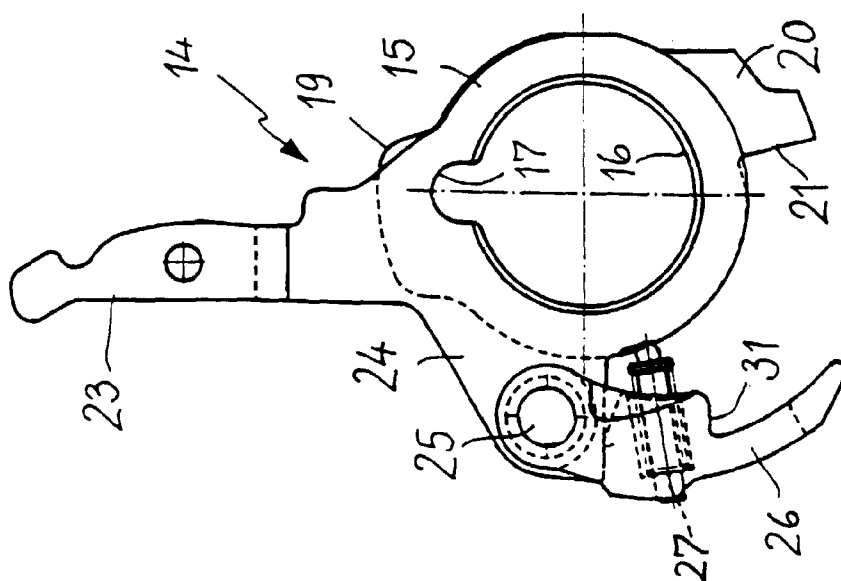


Fig. 5

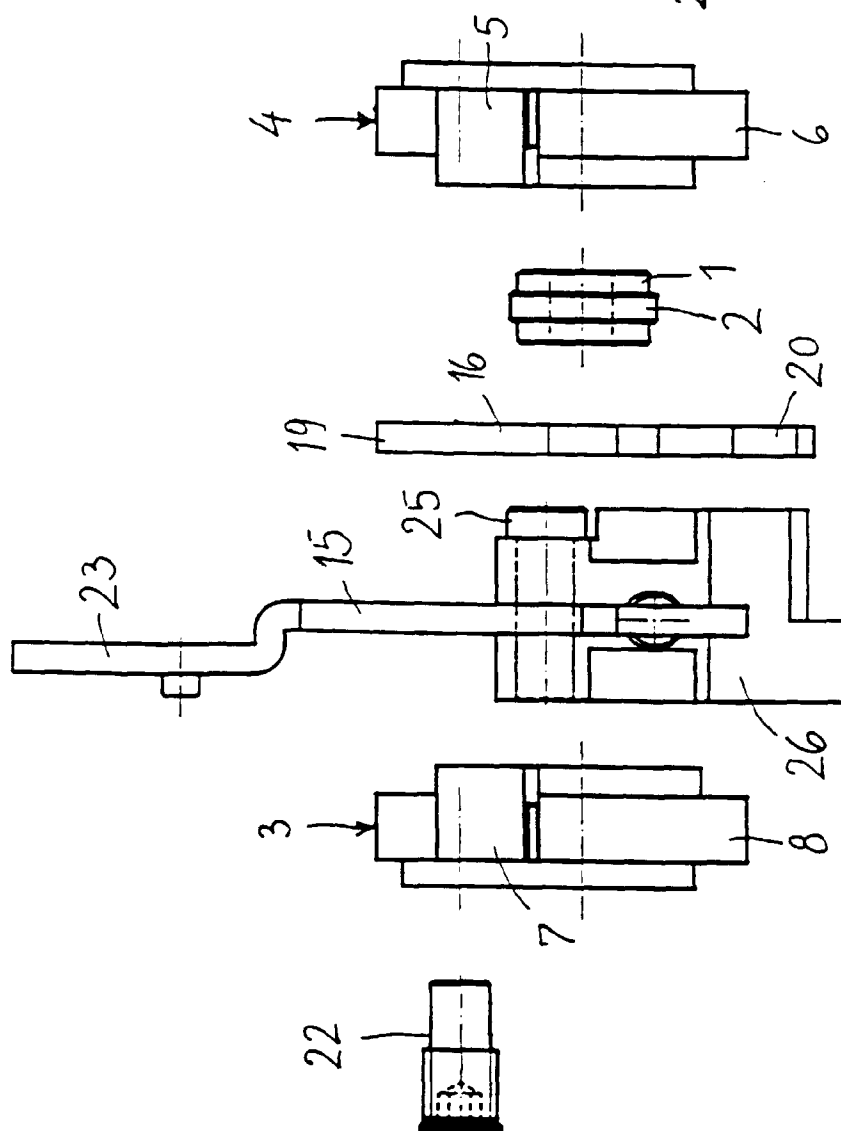


Fig. 4