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(54) **WEDGE RELEASE DEVICE**
KEILFREIGABEVORRICHTUNG
DISPOSITIF DE LIBÉRATION DE CALE

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Description

Field of technology

[0001] This invention relates to a lock of a passive door of a double door.

Prior art

[0002] Figure 1 illustrates a double door 1. The double door consists of an active door 2 and a passive door 3. The active door is the door that is normally used. The passive door is the door that is used occasionally, for example in connection with moving when furniture is carried through the doorway. The active door has a lock 4, the bolt 7 of which is inside the passive door's lock 5 when the double door is shut and locked. In that case the wedge 6 of the lock 4 rests against the front shield of the passive door's lock or against a wedge release device.

[0003] The wedge 6 of the lock 4 is a control wedge indicating whether the active door is against the passive door. If the active door is open, the wedge is extruded from the lock body. The lock usually has a spring that imposes an outward force on the wedge. When the wedge is extruded, the lock bolt 7 will not go into the deadbolted position; in other words, it is allowed to move into the lock body and, correspondingly, out of the lock body. Thus the active door can be turned to the closed position against the passive door, and correspondingly to the open position.

[0004] The passive door's lock 5 may also have a wedge release device. The wedge release device is a component pressed by the active door's wedge while the double door is closed. A prior art wedge release device is a metal part bent to a L shape that has a transmission link to a handle turning shaft system of the passive door's lock. When the handle or the knob of the passive door's lock (hereafter, this text will only refer to a handle, but this shall also comprise a knob or similar turnable element) is turned, the wedge release device moves into the passive door's lock body, and the active door's wedge is allowed to extrude. This releases the bolt from the deadbolted position, the active door's bolt is pushed into the lock, and the active door and passive door can be opened. The rate of the wedge release device's movement is directly proportionate to the rate of turning the handle or knob. This causes malfunctions because the slow outward movement of the active door lock's wedge does not necessarily release the bolt from the deadbolted position even though the wedge release device has moved deeper within the passive door's lock.

[0005] EP 0562526 A2 discloses another example of a lock of a passive door of a double door.

Short description of invention

[0006] The objective of the invention is to eliminate

malfunctions of the passive door lock within a double door, caused by operation of the wedge release device. The objective will be achieved as described in the independent claim. The dependent claims describe various embodiments of the invention.

[0007] The lock 5 of the passive door 3 of a double door 1 according to the invention comprises handle control means 9 and a wedge release device 8. The wedge release device comprises a latch 12, a spring 13, a sliding part 14 and a stopper part 15. The stopper part comprises a stem part 16, and the sliding part 14 is arranged together with the stem part 16 to move in the axial direction of the stem part. The sliding part 14 comprises a handle control surface 18 through which the sliding part 14 can be moved using the handle control means of the lock 5 in a first direction parallel to the axis of the stem part 16 when a handle connected to the lock is turned. The latch 12 is arranged to hold the stopper part 15 stationary in relation to the body of the passive door lock 5 against the pushing force of the wedge of the lock in the active door 2 of the double door, and to turn for releasing said holding action in response to the movement of the sliding part 14 when the handle is turned. The spring back force of the spring 13 is arranged to move the sliding part 14 in a second direction parallel to the axis of the stem part when said handle is no longer turned, and the latch 12 is arranged to turn for holding the stopper part stationary by said spring back force when said handle is no longer turned.

[0008] The structure according to the invention will eliminate or at least reduce malfunctions of the wedge release device.

List of figures

[0009] In the following, the invention is described in more detail by reference to the enclosed drawings, where

Figure 1 illustrates an example of a double door,

Figure 2 illustrates a double door lock according to the invention,

Figure 3 illustrates an example of a wedge release device according to the invention,

Figure 4 illustrates an example of the wedge release device in the blocking position,

Figure 5 illustrates the example of Figure 4 in the released position.

Description of the invention

[0010] Figure 2 illustrates an example of a passive door lock 5 according to the invention. The lock comprises a wedge release device 8 that is in a force transmission connection with the turning shaft system 10 of the handle

through handle control means 9. When the handle is turned, the wedge release device moves deeper into the body 11 of the passive door lock, i.e. to the released state. This allows the wedge of the active door to move outward from the active door lock body. When the handle is released (handle is no longer turned), the wedge release device moves back to the blocking state, i.e. the state according to Figure 2.

[0011] Figure 3 illustrates an embodiment of the wedge release device of a lock according to the invention. Figure 4 illustrates the same embodiment of the wedge release device in the blocking state, i.e. the wedge of the active door lock is not allowed to extrude. Figure 5 illustrates the wedge release device in the released state, i.e. the wedge of the active door lock is allowed to extrude.

[0012] The wedge release device comprises a latch 12, a spring 13, a sliding part 14 and a stopper part 15. The stopper part comprises a stem part 16. The sliding part 14 is arranged together with the stem part 16 to move in the axial direction of the stem part. The stopper part also has a stop face 17 against which the active door's wedge is intended to press.

[0013] The sliding part 14 comprises a handle control surface 18 that through which the sliding part 14 can be moved using the handle control means of the lock 5 in a first direction parallel to the axis of the stem part 16 when a handle connected to the lock is turned. The embodiments in Figures 3 to 5 have two handle control surfaces, but one is enough. The latch 12 is arranged to hold the stopper part 15 stationary in relation to the body of the passive door lock 5 against the pushing force of the wedge of the lock in the active door 2 of the double door, and to turn for releasing said holding action in response to the movement of the sliding part 14 in the first direction.

[0014] The latch 12 comprises a first projection 22 and a second projection 23. The second projection is in a force transmission connection with the spring 13, which tries to turn the latch 12 to hold the stopper part stationary. In this case the first projection 22 is arranged through the holding surface 24 against the body structure of the passive door lock to hold the stopper part 15 stationary. When the sliding part 14 has moved sufficiently to the first direction, it engages a force transmission connection with the latch release surface 25 (Figure 5). When the sliding part moves further to the first direction, the latch turns to release said holding action in response to the movement of the sliding part 14. Now the holding surface 24 is no longer against the passive door lock body, and the stopper part is also allowed to move in the first direction, deeper into the passive door body. Thus the wedge release device has moved from the blocking state to the released state in which the wedge of the active door lock is allowed to extrude. Because release is no longer dependent on the rate of turning the handle, and release is a clear and rapid action, this ensures that the deadbolting of the active door lock's bolt is released.

[0015] In the illustrated embodiment of the latch, the first projection comprises both the holding surface 24 and

the release surface 25, but it is also possible that there are designated projections for both surfaces.

[0016] The spring 13 is arranged to move the sliding part 14 in a second direction parallel to the axis of the stem part when said handle is released, and the latch 12 is arranged to turn for holding the stopper part stationary when said handle is released. In other words, the spring-back force of the spring moves the wedge release device from the released state to the blocking state when the handle is released.

[0017] In the illustrated embodiment, one end 19 of the spring 13 is in a force transmission connection with the sliding part 14. The other end 20 is against the latch projections 23. If using a different type of structure according to the invention, the other end of the spring may be against the passive door lock body, for example. In that case, the sliding part is not as illustrated in the Figures but can be, for example, a part moving in a groove on the outer surface of the stopper part. The latch 12 may also be attached to the passive door lock body in a pivoting manner.

[0018] In the embodiment illustrated in the Figures, the sliding part 14 is a sleeve, and the stem part 16 is mounted in a sliding manner in the sleeve hole 21. Furthermore, the latch 12 is attached to the stem part 16 in a pivoting manner. The stem part 16 is a rod, and the spring 13 is inside the sleeve around the rod.

[0019] The rod 16 comprises a cutting 27 parallel to the rod's axis in which the latch 12 is located. The latch can be attached to the stem part in a pivoting manner using cotter projections 26, in which case the rod has recesses 28 for the cotter projections. Another method is to use a separate cotter, in which case the rod and latch have holes for the cotter.

[0020] The wedge release device may also have an element 29 for changing the handedness of the installation, with matching elements 30 in the sliding part. Such a wedge release device is suitable for left-handed and right-handed applications.

[0021] As can be noted, an embodiment according to the invention can be achieved through many different solutions. It is thus evident that the invention is not limited to the examples mentioned in this text. Therefore any inventive embodiment can be implemented without departing from the scope of the invention as defined by the appended claims.

Claims

1. A lock (5) of a passive door (3) of a double door (1), comprising handle control means (9) and a wedge release device (8), **characterised in that** the wedge release device comprises a latch (12), a spring (13), a sliding part (14) and a stopper part (15), said stopper part comprising a stem part (16) and said sliding part (14) being arranged together with the stem part (16) to move in the axial direction of the stem part,

said sliding part (14) comprising a handle control surface (18) through which the sliding part (14) is moveable using the handle control means of the lock (5) in a first direction parallel to the axis of the stem part (16) when a handle connected to the lock is turned, said latch (12) being arranged to hold the stopper part (15) stationary in relation to the body of the passive door lock (5) against the pushing force of the wedge of the lock in an active door (2) of the double door, and to turn for releasing said holding action in response to the movement of the sliding part (14) when said handle is turned, and spring back force of said spring (13) is arranged to move the sliding part (14) in a second direction parallel to the axis of the stem part when said handle is no longer turned, and said latch (12) is arranged to turn for holding the stopper part stationary by said spring back force when said handle is no longer turned.

2. A lock according to Claim 1, **characterised in that** one end (19) of the spring (13) is in a force transmission connection with the sliding part (14).
3. A lock according to Claim 2, **characterised in that** the sliding part (14) is a sleeve, and the stem part (16) is mounted in a sliding manner in the sleeve hole.
4. A lock according to Claim 2 or 3, **characterised in that** the latch (12) is attached to the stem part (16) in a pivoting manner.
5. A lock according to Claims 3 and 4, **characterised in that** the stem part (16) is a rod, and the spring (13) is inside the sleeve around the rod.
6. A lock according to Claim 5, **characterised in that** the rod (16) comprises a cutting (27) parallel to the rod's axis in which the latch (12) is located, said latch comprising a first projection (22) and a second projection (23), said second projection being in a force transmission connection with the spring (13), said spring trying to turn the latch (12) for holding the stopper part stationary, and said first projection (22) comprising a holding surface (24) to hold the stopper part stationary and a release surface (25) to turn the latch for releasing said holding action in response to the movement of the sliding part (14).
7. A lock according to Claim 6, **characterised in that** the latch (12) is attached to the stem part using cotter projections (26).

Patentansprüche

1. Schloss (5) einer passiven Tür (3) einer Doppeltür

(1), umfassend Griff-Steuermittel (9) und eine Keilfreigabevorrichtung (8), **dadurch gekennzeichnet, dass** die Keilfreigabevorrichtung eine Verriegelung (12), eine Feder (13), ein Schiebeteil (14) und ein Anschlagteil (15) umfasst, wobei das Anschlagteil ein Schaftteil (16) umfasst und das Schiebeteil (14) zusammen mit dem Schaftteil (16) angeordnet ist, um sich in die axiale Richtung des Schaftteils zu bewegen, wobei das Schiebeteil (14) eine Griff-Steuerfläche (18) umfasst, durch die das Schiebeteil (14) unter Verwendung des Griff-Steuermittels des Schlosses (5) in eine erste Richtung parallel zu der Achse des Schaftteils (16) bewegbar ist, wenn ein Griff, der mit dem Schloss verbunden ist, gedreht wird, wobei die Verriegelung (12) angeordnet ist, um das Anschlagteil (15) stationär in Beziehung zu dem Körper des Schlosses (5) der passiven Tür gegen die Druckkraft des Keils des Schlosses in einer aktiven Tür (2) der Doppeltür zu halten und um sich zum Freigeben der Haltewirkung als Reaktion auf die Bewegung des Schiebeteils (14) zu drehen, wenn der Griff gedreht wird, und wobei eine Federrückstellkraft der Feder (13) angeordnet ist, um das Schiebeteil (14) in eine zweite Richtung parallel zu der Achse des Schaftteils zu bewegen, wenn der Griff nicht länger gedreht wird, und die Verriegelung (12) angeordnet ist, um sich zum Halten des Anschlagteils stationär durch die Federrückstellkraft zu drehen, wenn der Griff nicht länger gedreht wird.

2. Schloss nach Anspruch 1, **dadurch gekennzeichnet, dass** ein Ende (19) der Feder (13) in einer Kraftübertragungsverbindung mit dem Schiebeteil (14) ist.
3. Schloss nach Anspruch 2, **dadurch gekennzeichnet, dass** das Schiebeteil (14) eine Hülse ist und das Schaftteil (16) in einer verschiebbaren Weise in dem Hülsenloch montiert ist.
4. Schloss nach Anspruch 2 oder 3, **dadurch gekennzeichnet, dass** die Verriegelung (12) an dem Schaftteil (16) in einer schwenkenden Weise angebracht ist.
5. Schloss nach Anspruch 3 und 4, **dadurch gekennzeichnet, dass** das Schaftteil (16) eine Stange ist und sich die Feder (13) im Inneren der Hülse um die Stange befindet.
6. Schloss nach Anspruch 5, **dadurch gekennzeichnet, dass** die Stange (16) einen Schnitt (27) parallel zu der Achse der Stange umfasst, in dem sich die Verriegelung (12) befindet, die Verriegelung einen ersten Vorsprung (22) und einen zweite Vorsprung (23) umfasst, der zweite Vorsprung in einer Kraftü-

bertragungsverbindung mit der Feder (13) ist, die Feder versucht, die Verriegelung (12) zum stationären Halten des Anschlagteils zu drehen, und der erste Vorsprung (22) eine Haltefläche (24), um das Anschlagteil stationär zu halten, und eine Freigabefläche (25), um die Verriegelung zum Freigeben der Haltewirkung als Reaktion auf die Bewegung des Schiebeteils (14) zu drehen, umfasst.

7. Schloss nach Anspruch 6, **dadurch gekennzeichnet, dass** die Verriegelung (12) an dem Schaftteil unter Verwendung von Splintvorsprüngen (26) angebracht ist.

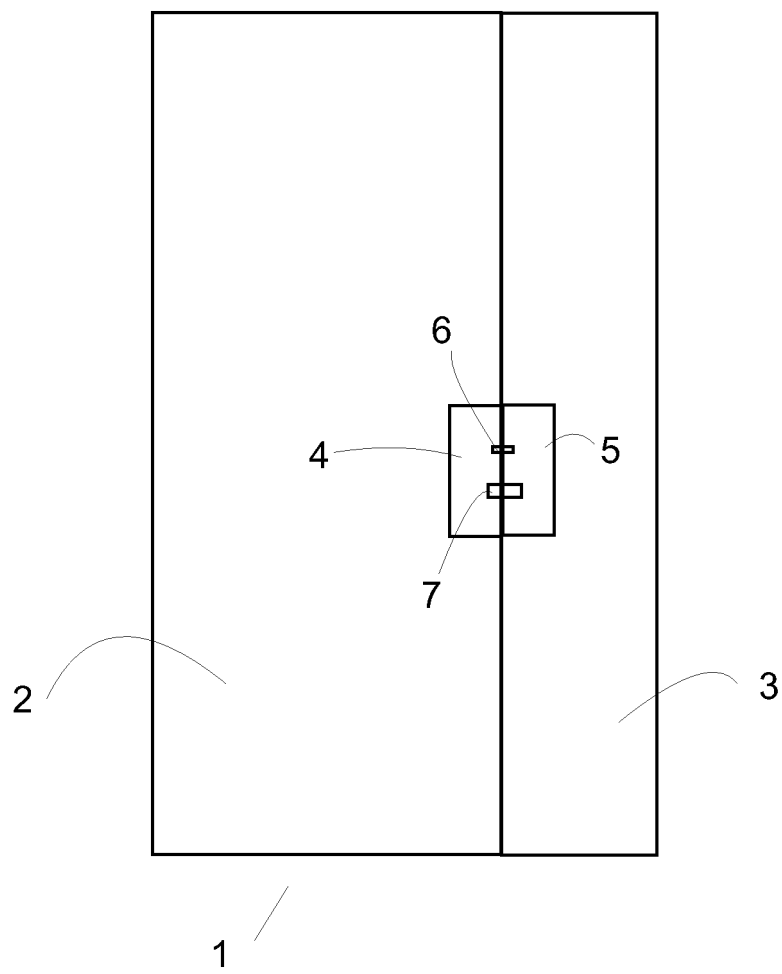
Revendications

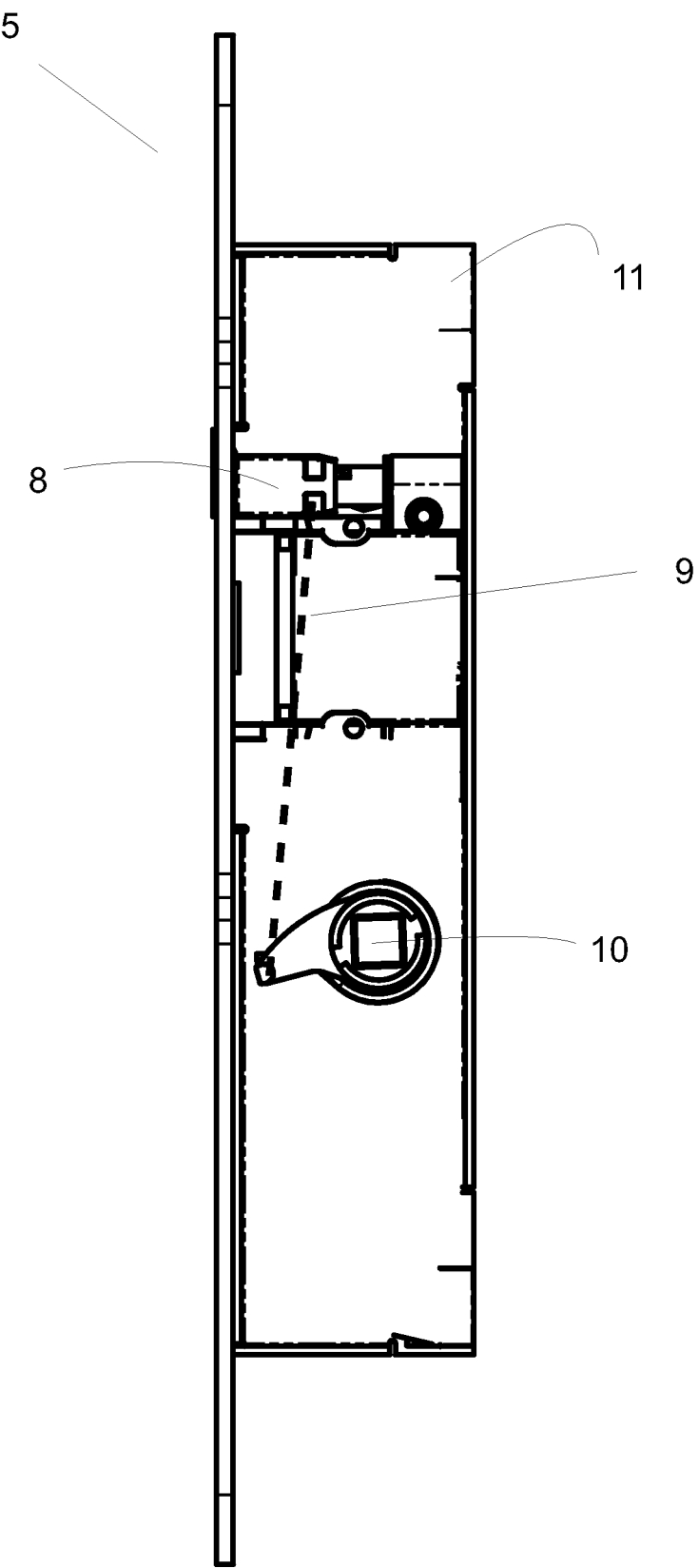
1. Verrou (5) d'une porte passive (3) d'une double porte (1), comprenant un moyen de commande de poignée (9) et un dispositif de libération de cale (8), **caractérisé en ce que** le dispositif de libération de cale comprend un loquet (12), un ressort (13), une partie coulissante (14) et une partie d'arrêt (15), ladite partie d'arrêt comprenant une partie de tige (16) et ladite partie coulissante (14) étant arrangée ensemble avec la partie de tige (16) pour se déplacer dans la direction axiale de la partie de tige, ladite partie coulissante (14) comprenant une surface de commande de poignée (18) permettant de déplacer la partie coulissante (14) à l'aide du moyen de commande de poignée du verrou (5) dans une première direction parallèle à l'axe de la partie de tige (16) lorsqu'une poignée connectée au verrou est tournée, ledit loquet (12) étant conçu pour maintenir la partie d'arrêt (15) immobile par rapport au corps du verrou de porte passive (5) contre la force de poussée de la cale du verrou dans une porte active (2) de la double porte, et pour tourner de manière à relâcher ladite action de maintien en réponse au déplacement de la partie coulissante (14) lorsque ladite poignée est tournée, et la force de rappel de ressort dudit ressort (13) est conçue pour déplacer la partie coulissante (14) dans une deuxième direction parallèle à l'axe de la partie de tige lorsque ladite poignée n'est plus tournée, et ledit loquet (12) est conçu pour tourner de manière à maintenir la partie d'arrêt immobile par ladite force de rappel de ressort lorsque ladite poignée n'est plus tournée.
2. Verrou selon la revendication 1, **caractérisé en ce qu'une** extrémité (19) du ressort (13) est une connexion à transmission de force avec la partie coulissante (14).
3. Verrou selon la revendication 2, **caractérisé en ce que** la partie coulissante (14) est un manchon, et la partie de tige (16) est montée de façon coulissante

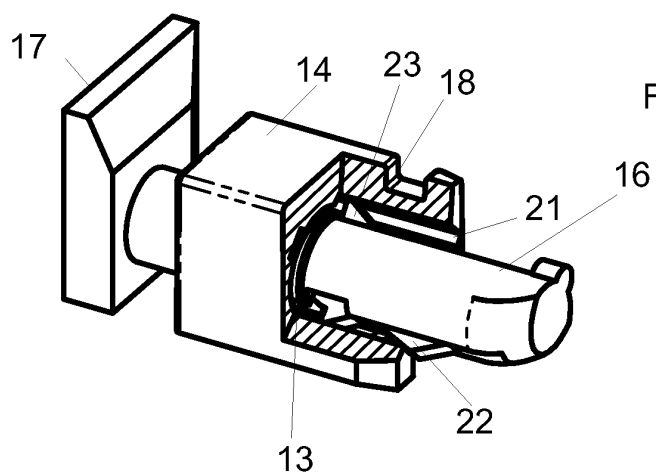
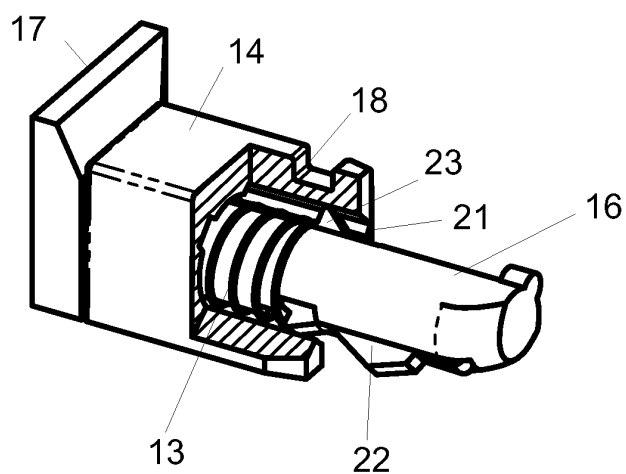
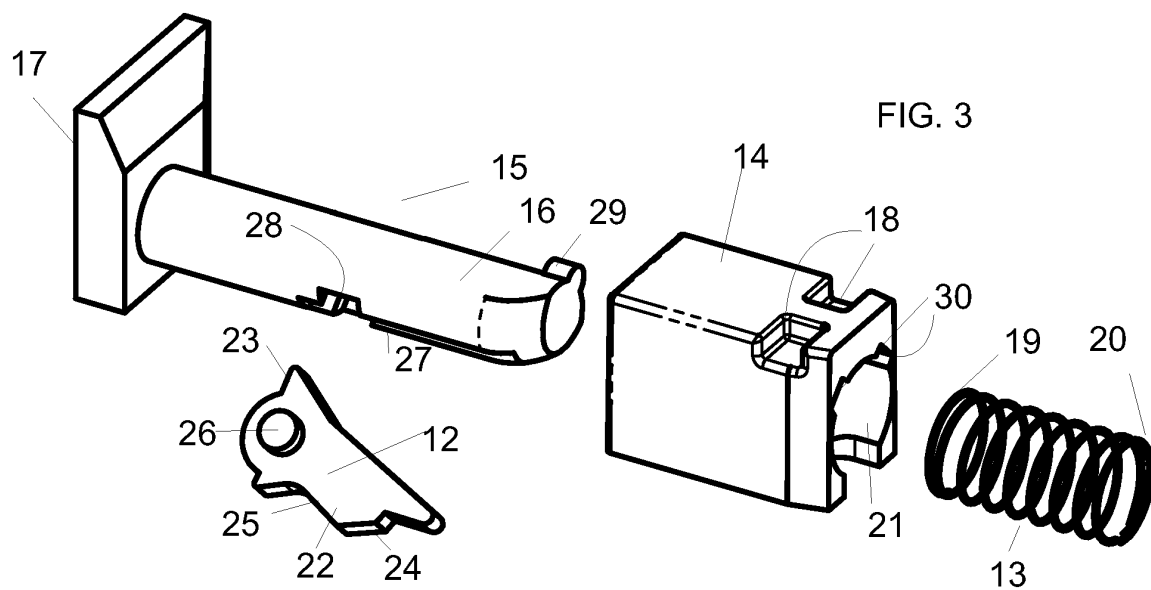
dans le trou de manchon.

4. Verrou selon la revendication 2 ou 3, **caractérisé en ce que** le loquet (12) est fixé à la partie de tige (16) de façon pivotante.
5. Verrou selon les revendications 3 et 4, **caractérisé en ce que** la partie de tige (16) est une barre, et le ressort (13) se trouve à l'intérieur du manchon autour de la barre.
6. Verrou selon la revendication 5, **caractérisé en ce que** la barre (16) comprend un découpage (27) parallèle à l'axe de barre où se trouve le loquet (12), ledit loquet comprenant une première saillie (22) et une deuxième saillie (23), ladite deuxième saillie étant une connexion à transmission de force avec le ressort (13), ledit ressort tentant de tourner le loquet (12) pour maintenir la partie d'arrêt immobile, et ladite première saillie (22) comprenant une surface de maintien (24) pour maintenir la partie d'arrêt immobile et une surface de relâchement (25) destinée à tourner le loquet pour relâcher ladite action de maintien en réponse au déplacement de la partie coulissante (14).
7. Verrou selon la revendication 6, **caractérisé en ce que** le loquet (12) est fixé à la partie de tige à l'aide de saillies de clavette (26).

FIG. 1







REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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