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(54) **LOCKING DEVICE**

VERRIEGELUNGSVORRICHTUNG

DISPOSITIF DE VERROUILLAGE

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Description

TECHNICAL AREA

[0001] The present invention relates to a device for being used with doors having locks comprising at least one bolt, for instance a dead bolt which in unlocked position functions as a drop bolt, wherein the device comprises a securing plate (1) arranged moveable between an opened and a closed position, wherein the securing plate is arranged for receiving the bolt. Locks refer for instance to drop locks or bolt locks.

PRIOR ART

[0002] For a known lock, for example according to Swedish patent document 9500582-3 or 9700962-5, the lock comprises a lock case and a rotating cam (securing plate) having U-shaped recess for the out locked dead bolt. The securing plate is here pivotally journalled on a shaft and is effected by the out locked dead bolt to closed position or open position each time the door is opened or closed, respectively.

[0003] It is a desire to also be able to use the lock also together with a lock having a drop bolt or together with a bolt lock. A difficulty in that is to be able to effect the securing plate to closed position with a drop bolt or with a dead bolt having oblique surface after the securing plate has rotated to open position.

THE INVENTION

[0004] The present invention is a solution of the above and similar problems and is characterized in that the securing plate is arranged always loaded by a force towards the closed position and that the device comprises a blocking member arranged for cooperation with the securing plate for retaining the securing plate in the open position and for cooperation with the bolt for releasing the securing plate to the closed position. The securing plate is by means of a spring force always provided with an urging towards closed position meanwhile a blocking member, cooperating with the securing plate, blocks the rotation of the securing plate to closed position after the door is opened, i.e. after the dead bolt is moved away from the securing plate.

[0005] According to a preferred embodiment of the invention the blocking member is arranged moveable between a retaining position, in which the blocking member retains the securing plate in the open position and an releasing position, in which the securing plate is released, wherein the blocking member is arranged loaded by a force towards the retaining position.

[0006] According to a further preferred embodiment of the invention the securing plate is arranged loaded by a spring force towards the closed position.

[0007] According to a further preferred embodiment of the invention the blocking member is adapted for retaining the securing plate to the closed position after the bolt in completely or half protruding position hits the blocking member at closing of the door.

[0008] The securing plate is not rotated to closed position until the entirely or half out locked drop bolt or dead bolt hits the blocking member, which accordingly releases the securing plate, and the rotation to closed position may occur. Thereby a safe and a distinct closing movement are achieved. The securing plate is by means of a spring force always provided with an urging towards closed position at the same time as a blocking member, cooperating with the securing plate, is blocking the rotation of the securing plate to closed position after the door is opened, i.e. after the dead bolt has been moved away from the securing plate.

[0009] The securing plate is not rotated to closed position until after the dead bolt or drop bolt has hit the blocking member, which accordingly releases the securing plate and the rotation to closed position may occur. This provides a safe and distinct closing movement.

DRAWINGS

[0010] The invention is exemplified in the following drawings:

Fig. 1 shows the lock, seen from a side view.

Figs. 2-9 show a view A-A from Figure 1 in different positions, wherein Figures 5, 8 and 9 show the lock in closed position, Figures 2, 6 and 7 in open position and Figures 3 and 4 in an intermediate position.

EMBODIMENT EXAMPLES

[0011] Figure 1 shows the lock case 12, provided with a securing plate 1 and shaft 6, rotatably mounted on intermediate walls 15 and 16. Shaft 8 is provided with a torsion spring 9, intended for an opening force on the blocking member 2. Shaft 6 is provided with a torsion spring 7 for a closing force on the securing plate 1. The securing plate is provided with a blocking pin 14. 10 is a shaft, connected to shaft 8 for influence of an indication device 11. 4 is a latch for locking the securing plate 1 in closed position. The latch 4 is maneuvered by means of an electric driving device 3.

[0012] Figure 2 shows the lock with an oblique edge 17 and post 18 (not shown in Figure 1) with recess 20. 21 is an inner radius in the securing plate, shaped such that the securing plate urges towards open position when effected by the dead bolt 5. 13 is a blocking bolt of locking bolt 14, see also Figure 1, and belongs to the mechanical door lock. Figure 6 shows the lock with the dead bolt in unlocked position. Figure 5 shows the lock in locked position with the latch 4, which in locked position against the securing plate blocks it. The blocking member 2 is effected by the dead bolt 5, wherein detect-

ing signal is delivered to indication device 11. Unlocking may now occur through the electrical driving device 3, which releases the latch 4.

[0013] Figure 4 shows the position of the dead bolt 5 during movement away from the securing plate 1. The rotation of the securing plate 1 occurs at influence from the dead bolt 5 on the inner radius 21 of the securing plate, wherein a component force exceeds the closing force of the securing plate from the torsion spring 7.

[0014] Figure 2 shows that the blocking member 2 keeps the securing plate 1 in opening on blocking protrusion 14 after the dead bolt 5 has been moved from the securing plate 1. At closing of the door the dead bolt 5 is moved to a position according to Figure 3, wherein the end surface of the dead bolt 5 firstly presses down the securing plate 1, thereafter the blocking member 5 according to Figure 4, which releases the protrusion 14 of the securing plate, and the securing plate 1 can, by means of spring force from torsion spring 7, rotate to closed position according to Figure 5. The dead bolt 5 may also be mechanically unlocked so that the dead bolt land in a preparatory locked position, according to Figure 6. At the movement of the dead bolt towards the lock case, the recess 17 and the recess 20 causes that the block bolt 13 of the dead bolt is not influenced until when the end surface of the dead bolt is located above the securing plate and is prevented from reaching its entirely out locked position before the dead bolt 5 is located in right locked position according to Figure 5.

[0015] The dead bolt may also be mechanically blocked so that the dead bolt never reaches its entirely out locked position. The blocking member 2, see Figure 7, is therefore provided with a surface, lying on the same height as post 18, and the half out locked dead bolt 5 functions as a dead bolt and effects the blocking member 2 so that the securing plate 1 is released from the blocking protrusion 14 and closing of the securing plate may occur.

[0016] The device according to the above may be varied in many different ways within the frame of the following claims.

Claims

1. Device for being used with doors having locks comprising at least one bolt, for instance a dead bolt which in unlocked position functions as a drop bolt, wherein the device comprises a securing plate (1) arranged moveable between an opened and a closed position, wherein the securing plate (1) is arranged for receiving the bolt, **characterized in that** the securing plate (1) is arranged always loaded by a force towards the closed position and that the device comprises a blocking member (2) arranged for cooperation with the securing plate (1) for retaining the securing plate in the open position and for cooperation with the bolt for releasing the securing plate to the closed position.

2. Device according to claim 1 **characterized in that** the blocking member (2) is arranged moveable between a retaining position, in which the blocking member (2) retains the securing plate (1) in the open position and an releasing position, in which the securing plate (1) is released, wherein the blocking member (2) is arranged loaded by a force towards the retaining position.

3. Device according to any of the claims 1 or 2, **characterized in that** the securing plate (1) is arranged loaded by a spring force towards the closed position.

4. Device according to any of the previous claims, **characterized in that** the blocking member (2) is adapted for retaining the securing plate (1) to the closed position after the bolt in completely or half protruding position hits the blocking member at closing of the door.

5. Device according to claim 2, **characterized in that** the blocking member (2) comprises a spring (9) arranged for loading the blocking member (2) towards the retaining position and the spring (9) influences an indication device (11).

6. Device according to any of the previous claims, **characterized in that** the securing plate (1) is shaped with a partly circular radius surface (21), that during influence is arranged for achieving rotation of the securing plate (1) to open position.

7. Device according to any of the previous claims, **characterized in that** it comprises a lock case (12) having a folded edge (17) and a recess (20) in a post (18) for free passage of a lock bolt (13) belonging to the lock, until the bolt is in a certain desired position.

Patentansprüche

1. Vorrichtung (D) zur Verwendung mit Türen mit Schlössern, aufweisend mindestens einen Riegel, zum Beispiel einen stehenden Riegel, der in der unverriegelten Position als ein Fallriegel wirkt, wobei die Vorrichtung eine Sicherungsplatte (1) aufweist, die zwischen einer geöffneten und einer geschlossenen Position bewegbar angeordnet ist, wobei die Sicherungsplatte (1) zur Aufnahme des Riegels angeordnet ist, **dadurch gekennzeichnet, dass** die Sicherungsplatte (1) so angeordnet ist, dass sie durch eine Kraft zur geschlossenen Position hin beschwert ist und dass die Vorrichtung ein Sperrelement (2) aufweist, das zur Zusammenwirkung mit

der Sicherungsplatte (1) zum Halten der Sicherungsplatte in der offenen Position und zur Zusammenwirkung mit dem Riegel zum Lösen der Sicherungsplatte in die geschlossene Position angeordnet ist.

2. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** das Sperrelement (2) zwischen einer Halteposition, in der das Sperrelement (2) die Sicherungsplatte (1) in der offenen Position hält, und einer Löseposition, in der die Sicherungsplatte (1) gelöst wird, bewegbar angeordnet ist, wobei das Sperrelement (2) so angeordnet ist, dass es durch eine Kraft zur Halteposition hin beschwert ist.

3. Vorrichtung nach einem der Ansprüche 1 oder 2, **dadurch gekennzeichnet, dass** die Sicherungsplatte (1) so angeordnet ist, dass sie durch eine Federkraft zur geschlossenen Position hin beschwert ist.

4. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Sperrelement (2) dafür geeignet ist, die Sicherungsplatte (1) in der geschlossenen Position zu halten, nachdem der Riegel in einer vollständig oder halb vorstehenden Position beim Schließen der Tür auf das Sperrelement (2) trifft.

5. Vorrichtung nach Anspruch 2, **dadurch gekennzeichnet, dass** das Sperrelement (2) eine Feder (9) aufweist, die zum Beschweren des Sperrelements (2) zur Halteposition hin angeordnet ist, und die Feder (9) auf eine Anzeigevorrichtung (11) einwirkt.

6. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Sicherungsplatte (1) mit einer Oberfläche mit teilweise kreisförmigem Radius (21) geformt ist, die während des Einwirkens so angeordnet ist, dass sie die Drehung der Sicherungsplatte (1) zur offenen Position erreicht.

7. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sie einen Schlosskasten (12) mit einer Faltkante (17) und einer Ausnehmung (20) in einer Strebe (18) zum freien Durchgang eines zum Schloss gehörenden Schlossriegels (13), bis sich der Riegel in einer bestimmten gewünschten Position befindet, aufweist.

Revendications

1. Dispositif destiné à être utilisé avec des portes ayant des serrures comprenant au moins un pêne, par exemple, un pêne dormant qui, dans la position non verrouillée, fonctionne comme un pêne basculant, dans lequel le dispositif comprend une plaque de sécurité (1) agencée pour être mobile entre une position ouverte et une position fermée, dans lequel la plaque de sécurité (1) est agencée pour recevoir le pêne, **caractérisé en ce que** la plaque de sécurité (1) est agencée pour être toujours chargée par une force vers la position fermée et **en ce que** le dispositif comprend un élément blocage (2) agencé pour coopérer avec la plaque de sécurité (1), afin de retenir la plaque de sécurité dans la position ouverte, et pour coopérer avec le pêne afin de libérer la plaque de sécurité et qu'elle prenne la position fermée.

2. Dispositif selon la revendication 1, **caractérisé en ce que** l'élément de blocage (2) est agencé pour être mobile entre une position de retenue, dans laquelle l'élément de blocage (2) retient la plaque de sécurité (1) dans la position ouverte, et une position de libération, dans laquelle la plaque de sécurité (1) est libérée, et pour lequel l'élément de blocage (2) est agencé pour être chargé par une force vers la position de retenue.

3. Dispositif selon l'une quelconque des revendications 1 ou 2, **caractérisé en ce que** la plaque de sécurité (1) est agencée pour être chargée par une force de ressort vers la position fermée.

4. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'élément de blocage (2) est conçu pour retenir la plaque de sécurité (1) en positon fermée après que le pêne, en position totalement protubérante ou à demi protubérante, vient heurter l'élément de verrouillage, au moment de la fermeture de la porte.

5. Dispositif selon la revendication 2, **caractérisé en ce que** l'élément de blocage (2) comprend un ressort (9) agencé pour charger l'élément de blocage (2) vers la position de retenue et **en ce que** le ressort (9) influence un dispositif indicateur (11).

6. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la plaque de sécurité (1) a une forme de surface de rayon partiellement circulaire (21), qui pendant l'influence est agencée pour obtenir la rotation de la plaque de sécurité (1) en position ouverte.

7. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il comprend un logement de pêne (12) ayant un bord replié (17) et un évidement (20) prévu dans un montant (18) pour laisser le libre passage d'un pêne de serrure (13) appartenant à la serrure, jusqu'à ce que le pêne soit dans une certaine position souhaitée.

Vy A-A

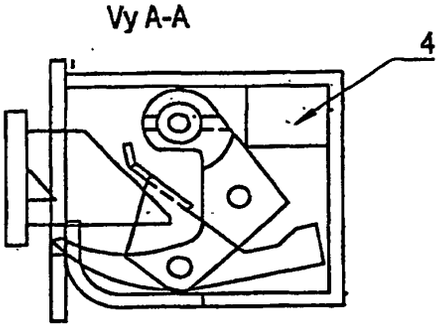


Fig 5

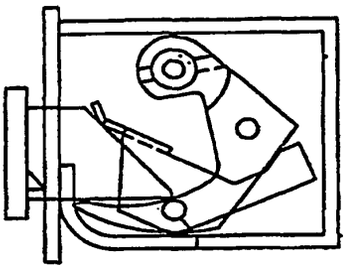


Fig 4

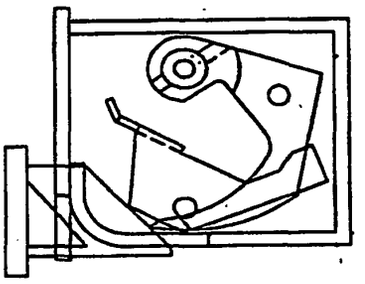


Fig 3

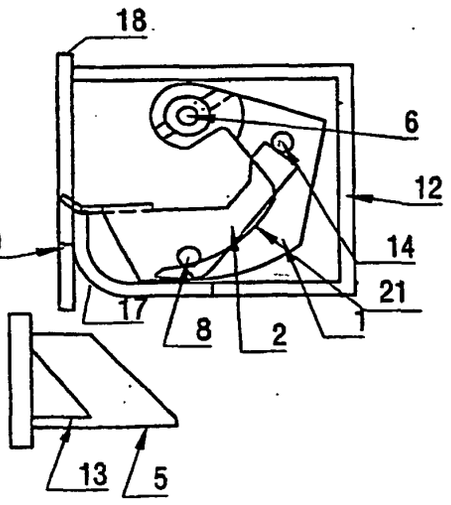


Fig 2

Fig 1

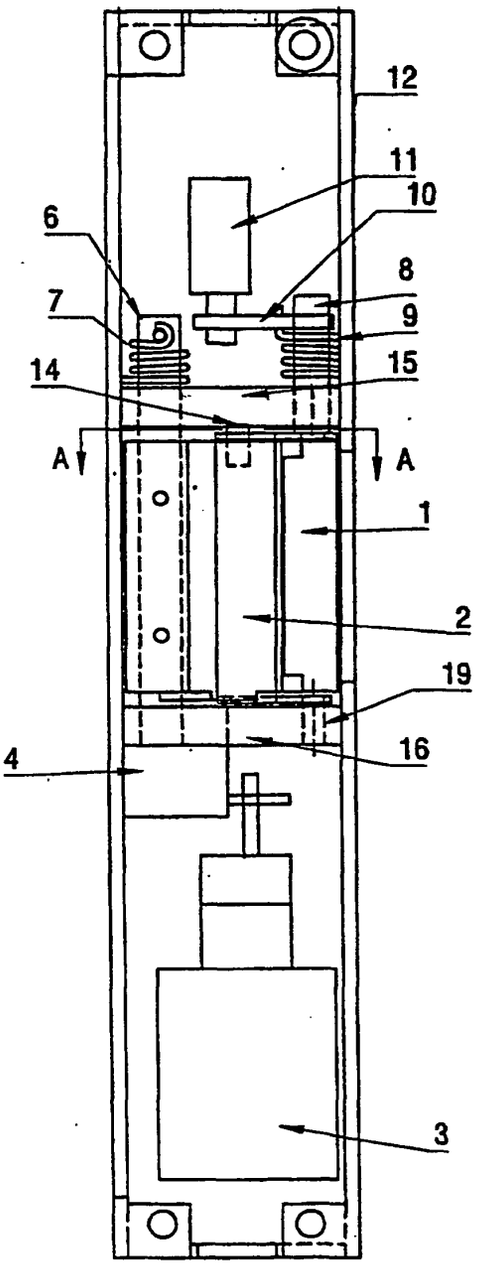


Fig 9

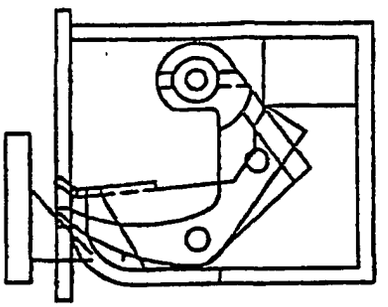


Fig 8

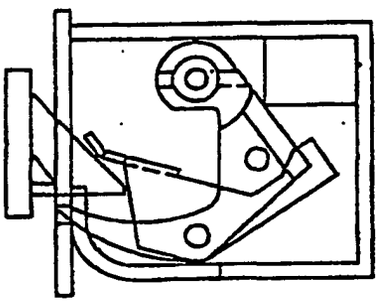


Fig 7

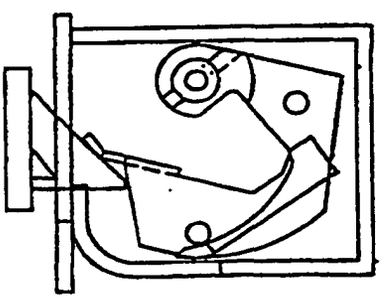


Fig 6

