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(72) Inventors:
• **Otegui, Odriozola, Eduardo Jesus**
20305 Irun (ES)
• **Goni Urbieta, Fernando**
20305 Irun (ES)

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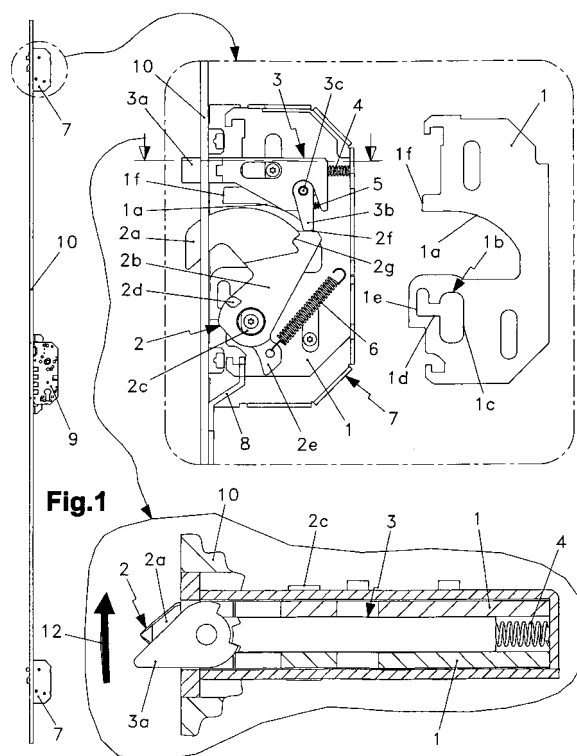
(74) Representative: **Mollekopf, Gerd Willi**
Kahler Käck Mollekopf,
Vorderer Anger 239
86899 Landsberg a. Lech (DE)

(71) Applicant: **Talleres De Escoriaza, S.A.**
20305 Irun (Guipuzcoa) (ES)

(54) **Automatic reversible auxiliary lock for multi-point locks**

(57) In view of the aforementioned, this invention claims an arrangement of an automatic and reversible auxiliary lock comprising a sandwich structure comprising a rotatory plate being V-shaped and having bevelled front, hereinafter hook, an sliding horizontal trigger having tilting and bevelled head being V-shaped, mounted on a vertical turning axis, hereinafter tilting trigger, a first compression spring, a second compression spring and a drive spring, being all assembled and operative between two twin vertical plates which, with vertical sliding adjustment, are attached to the side walls of the auxiliary lock housing; the hook comprises a head and a foot, the head being behind the bevelled front and being flat and having such thickness that the sides remind matching the outside of the vertical plates, whereas the foot is encircled by sliding adjustment between the vertical plates, and said hook turns around the first axis being in the foot and, with respect to the extended operative position and the arrangement of the closing frame of the door in the lock, said first axis is escorted by a pair of forward collateral pegs and by a rear pierced wing, whereas, with respect to the rest operative position or the mechanism disposed to the automatic trigger of the closing when the door is driven to the frame, this hook having an horizontal shoulder and two side projections with "L" shape having the concavity in the rearwards; the tilting trigger is meant to adopt both tilted positions where, with respect to the closing turn of the door over the frame, the forward bevel in the tilting head remains behind with respect to the forward bevel of the front of the hook, and said tilting trigger having in the lower and rear part a vertical trigger being mounted on the second axis of turn being transverse to

the body of the tilting trigger itself and, with respect to the rest position of the hook, this vertical trigger is meant to adopt a forward operative position, the tip being over the horizontal shoulder of the hook; the first compression spring operates between the rear front of the tilting trigger and the auxiliary lock housing.



Description

BACKGROUND OF THE INVENTION

[0001] In locksmithing field, auxiliary lock is meant to be the additional closing point where the central lock is disposed and which is actuated to close and/or open and it is actuated by said central lock by means of bolts.

[0002] This invention concerns an auxiliary lock being automatic and reversible; being automatic since the central lock is not necessary for the closing, and the closing is performed driving the door to the closing position on its frame; being reversible since the mechanism itself is used for door in the right or in the left without any modification. The automatic lock function allows the independence of the auxiliary locks of the central lock against the attempt thereof to force the withdrawal of the lever applying outer external strength; this action will not have an effect on the auxiliary locks, since these can only be open through the bolts when they are driven by means of the legal movement of opening (by means of a handle or a key) performed by the mechanism of the said central lock.

[0003] The present Addition Patent concerns some improvements to a central lock device for multi-point closing systems having automatic auxiliary locks.

PRIOR ART

[0004] Generally, a mechanism establishing a closing sequence where the exit of the closing lever is not possible until a trigger device is previously actuated is necessary to achieve the automatic closing.

[0005] There are mechanisms where the operative sequence is achieved by means of intermediate withholdings keeping the lever in a withdrawn position until the door reaches the final closing position in the frame and this lever is facing the lock.

[0006] This type of mechanism has a complex make-up, assembly, number of pieces and functional relation therewith; this means a risk of dysfunctions being avoided and guaranteeing the necessary reliability by means of a suitable accuracy in the manufacture and assembly which result in a high-cost product which will be applicable in medium-high installations. This is a problem referring the central lock, and logically, it is a problem to lesser extent for less entity mechanisms, such as auxiliary locks.

[0007] The above has still more relevance trying the mechanism to be reversible and achieving this faculty by minimum or no modification in the mechanism.

[0008] The automatic reversible auxiliary lock comprises a sandwich structure comprising a rotatory level being hook-shaped with bevelled front in "V", hereinafter hook, a sliding horizontal trigger having a tilting head with a "V" bevelled edge, hereinafter tilting trigger, a first compression spring, a second compression spring and a drive spring, all being assembled and operative between two twin vertical plates which, with vertical sliding adjustment,

are attached to the side walls of the auxiliary lock housing; the hook comprises a head and a foot, the head being behind the bevelled front and being flat and having such thickness that the sides remind matching the outside of the vertical plates, whereas the foot is encircled by sliding adjustment between the vertical plates, and said hook turns around the first axis being in the foot and, in respect to the extended operative position and the arrangement of the closing frame of the door in the lock, said first axis is escorted by a pair of forward collateral pegs and by a rear pierced wing, whereas, in respect to the rest operative position or the mechanism disposed to the automatic trigger of the closing when the door is driven to the frame, this hook having an horizontal shoulder and two side projections with "L" shape having the concavity in the rearwards; the tilting trigger is meant to adopt both tilted positions where, with respect to the closing turn of the door over the frame, the forward bevel in the tilting head remains behind with respect to the forward bevel of the front of the hook, and this tilting trigger having in the lower and rear part a vertical trigger being mounted on the second axis of turn being transverse to the body of the tilting trigger itself and, with respect to the rest position of the hook, this vertical trigger is meant to adopt a forward operative position, the tip being over the horizontal shoulder of the hook; the first compression spring operates between the rear front of the tilting trigger and the auxiliary lock housing; the second compression spring operates between the rear part of the vertical trigger and the body of the tilting trigger itself; the drive spring is between the lower end coupling the pierced rear wig of the hook and the upper end coupling the auxiliary lock housing in a suitable place being higher than the first axis; the vertical plates operate between both upper and lower positions of the stop over the auxiliary lock have coupling with a coupling bolt with the central lock and have a very deep forward neck where the head and a 4-shaped window play, comprises a vertical rear branch sliding tightly with respect to the first axis of the hook, and horizontal and vertical forward branches, where the forward pegs of the hook play with looseness, and the vertical plates form a forward vertical front.

[0009] Briefly, the functional philosophy is based on starting from a rest position and separated door from the frame, where the hook and the tilting trigger are in emerging position so that the automatic trigger of closing, by moving the door to the frame, a first impact and beginning of withdrawal occurs by the hook (releasing the withholding between the vertical trigger and the horizontal shoulder) and then the tilting trigger is withdrawn and remains in this position permanently so that the hook can freely leave once it reaches the lock in the frame; therefore, the automatic closing movement is an operative sequence where the hook and the tilting trigger perform together. To close, the action over the key or handle shall withdraw the hook and keep it in this position so that, separating the door from the frame, as the tilting trigger will be the first to release the frame, this shall reach its emerging

position (placing the vertical trigger in withholding position) before the hook leaves again, so that said hook remains withdrawn and, therefore, the system is loaded to perform a new automatic trigger. In this method, the closing both by means of the key and the handle depends on the user's care and the turn may not complete the movement, but it shall be sufficient to perform the operative withholding of the hook allowing simultaneously the separation of the door from the frame, if there is excessive looseness between each other.

SUMMARY OF THE INVENTION AND ADVANTAGES

[0010] In view of the aforementioned, this invention claims an arrangement of an automatic and reversible auxiliary lock comprising a sandwich structure comprising a rotatory plate being V-shaped and having bevelled front, hereinafter hook, an sliding horizontal trigger having tilting and bevelled head being V-shaped, mounted on a vertical turning axis, hereinafter tilting trigger, a first compression spring, a second compression spring and a drive spring, being all assembled and operative between two twin vertical plates which, with vertical sliding adjustment, are attached to the side walls of the auxiliary lock housing; the hook comprises a head and a foot, the head being behind the bevelled front and being flat and having such thickness that the sides remind matching the outside of the vertical plates, whereas the foot is encircled by sliding adjustment between the vertical plates, and said hook turns around the first axis being in the foot and, with respect to the extended operative position and the arrangement of the closing frame of the door in the lock, said first axis is escorted by a pair of forward collateral pegs and by a rear pierced wing, whereas, with respect to the rest operative position or the mechanism disposed to the automatic trigger of the closing when the door is driven to the frame, this hook having an horizontal shoulder and two side projections with "L" shape having the concavity in the rearwards; the tilting trigger is meant to adopt both tilted positions where, with respect to the closing turn of the door over the frame, the forward bevel in the tilting head remains behind with respect to the forward bevel of the front of the hook, and said tilting trigger having in the lower and rear part a vertical trigger being mounted on the second axis of turn being transverse to the body of the tilting trigger itself and, with respect to the rest position of the hook, this vertical trigger is meant to adopt a forward operative position, the tip being over the horizontal shoulder of the hook; the first compression spring operates between the rear front of the tilting trigger and the auxiliary lock housing; the second compression spring operates between the rear part of the vertical trigger and the body of the tilting trigger itself; the drive spring is between the lower end coupling the pierced rear wing of the hook and the upper end coupling the auxiliary lock housing in a suitable place being higher than the first axis; the vertical plates operate between both upper and lower positions of the stop over the auxiliary lock have

coupling with a coupling bolt with the central lock and have a very deep forward neck where the head and a 4-shaped window play, comprises a vertical rear branch sliding tightly with respect to the first axis of the hook, and horizontal and vertical forward branches, where the forward pegs of the hook play with looseness, and the vertical plates form a forward vertical front.

[0011] Another feature of the feature comprises, with respect to the rest position the door has when it is separated from the frame, the vertical plates being in the upper position, the drive spring being stressed, the tilting trigger being in the most emerging operative position or the most relaxed position with respect to the first compression spring, the vertical trigger is in its forward operative position or most relaxed position with respect to the second compression spring, whereas the tip is supported on the horizontal shoulder of the hook, and the forward pegs of the hook are against the upper edge of the horizontal branches of the window.

[0012] Another feature of the invention is that, in a position where the door is within the frame but without reaching the end of the travel of the closing, the tilting trigger being partially withdrawn against the first compression spring, the hook having the front bevelled against the frame of the door since it has not reached the lock yet, the drive spring being more stressed, the vertical trigger not being supported against the horizontal shoulder of the hook, the forward pegs thereof being against the upper edge of the horizontal branches of the window and the upper edge of the head keeping a convenient separation from the upper edge of the forward neck of the plates.

[0013] Another feature of the present invention is that, in a position where the door has reached the end of the closing travel and the hook has already entered the lock of the frame, the vertical plates being in the lower position of the stop against the auxiliary lock housing, the drive spring being relaxed, the tilting trigger being partially withdrawn against the first compression spring, the forward pegs of the hook being in a point along the vertical forward branch of the window being "4"-shaped and the vertical wall of the projections being "L"-shaped of the head of the hook remain adjacent and aligned horizontally with respect to the vertical forward fronts of the plates.

[0014] Another feature of the present invention is that, in the closing position in the frame, when driving the bolt in the opening movement, the vertical plates are displaced in such that the forward pegs perform a first travel in the vertical forward branch of the window until reaching the horizontal branch thereof, and then, since they are withdrawn from the stops, the lower edge of the horizontal branch can readily push over the forward pegs allowing the withdrawing turn of the hook until the complete exit from the lock when the separation movement of the door from the frame occurs, and the lifting of the plates is driven to the upper position simultaneously.

[0015] Another feature of the present invention is that, in the separation movement of the door from the frame,

the bevel of the bevelled front of the head of the hook being in the direction of the movement, is held up with respect to the bevelled tip of the tilting trigger such that the latter comes out firstly when the door opens and the hook secondly. Then, when the separation from the door is complete, the hook reaches its rest position where the tip of the vertical trigger is supported on the horizontal shoulder of the hook.

[0016] This arrangement requires a reduced number of pieces, a simple composition and the pieces are readily connected assuring a reliable operation, and the manufactures and assembly are substantially low-cost. These features will be apparent with the description of the working and the graphic representation of a preferred embodiment.

[0017] In order to advance the essence of the operation we will start from an initial position where the door is separated from the frame which it has to close over; this position is rest position or the loading of the mechanism for the automatic trigger; both the hook and the trigger lean out substantially to strike the frame when the door is being closed, therefore the trigger is in the forward end of the operative travel and the oscillating trigger is mounted thereon keeps the exit of the hook by supporting the tip over the shoulder of the hook; in the closing movement of the door, firstly the hook strikes the frame and starts the withdrawal, secondly the trigger strikes in such that the tip of the oscillating trigger cannot interfere in the shoulder when the hook shall verify the exit, and this happens when the hook reaches the position of the lock and uses the resilient impulse of the drive spring; while the hook slides over the frame searching for the lock, the forward pegs are arranged in the horizontal branch of the window being "4"-shaped, maintaining the vertical plates in the upper position; when the hook exits, said pegs remain between the edges of the forward vertical branch (thereby the vertical plates fall down to the lower operative position because of gravity) and the vertical front of the plates remain adjacent and horizontally aligned with the projections being "L"-shaped in the hook. The central lock is actuated to open, and the impulsion of the bolt turning the vertical plates into the upper position occurs, causing that the horizontal branch of the "4"-shaped windows push the side pegs of the hook and the hook comes out the lock; then, by separating the door from the frame, firstly the trigger leaves and recovers the forward operative position where the trigger is placed such that the tip will interfere in the shoulder of the hook when the latter leaves (secondly) the frame, stopping said hook in the loading position being ready for a new automatic trip.

[0018] In the closing position, two safety catches are operated to avoid the withdrawal of the hook by pushing from the tip; the first safety catch is the pegs remaining between the edges of the forward vertical branch of the window being "4"-shaped; the second is the adjacent horizontal confrontation of the front portion of the vertical plates with respect to the L-shaped projections of the head of the hook. Therefore, there is not any intermediate

withholding during this functional sequence, as known in other devices. The arrangement in the different planes and angles of the tilting head and bevels of the hook, assures that the door closing movement the hook will always strike the frame firstly in an operative way. The tilting head of the trigger assures that, if it were in the wrong position having a bevel in front of the hook (depending on the closing turn of the door), when striking the frame, it would tilted to the correct backward position, and the sequence would occur according to the above without interfering in it; once the door is closed, by opening, the tilted position of the head is maintained during the opening by means of a groove effect being assured by the impulse of the first compression spring.

[0019] The reversibility is achieved by the bevels being "V"-shaped of the hook and the tilting head of the trigger, along with said capacity of tilting thereof.

[0020] The improvement comprises an additional shoulder in the upper edge of the head of the hook, which, with respect to the operative travel of the hook exit, is placed in front of the horizontal shoulder and it is meant to operate with the tip of the oscillating vertical tip of the trigger in the same way as said horizontal shoulder.

[0021] According to this arrangement, from the rest position of the door when separated from the frame and the mechanism being ready for the automatic trigger after the complete opening movement or mechanism loading has been performed, the vertical plates are tested to be in the upper position, the hook being in withdrawal position such the head is almost matching the front portion of the door, the drive spring being close to the relative maximum stress, the tilting trigger being in the most emerging operative position or the most relaxed position with respect to the first compression spring, the vertical trigger is in its forward operative position or most relaxed position with respect to the second compression spring, whereas the tip is supported on the horizontal shoulder of the hook, and the forward pegs of the hook are against the upper edge of the horizontal branches of the window. This situation is equivalent to the disclosed with respect to the horizontal shoulder.

[0022] Additionally, when the door is in the frame but without reaching the end of the closing travel, the tilting trigger is completely withdrawn against the first compression spring, the vertical trigger is not supported on the additional shoulder of the hook, the bevelled front portion of the hook is against the frame of the door since it has not reached the lock yet, the vertical plates remain in the upper position, the drive spring is less stressed, the forward pegs of the hook are against the upper edge of the horizontal branches of the window making the upper edge of the head maintain a suitable separation from the upper edge of the forward neck of the plates, in order to avoid possible frictions which shall obstruct the exit of the hook.

[0023] Likewise, when the door is closed, the hook being in the lock of the frame and the tilting trigger being completely withdrawn, when performing the opening

movement by means of a handle or a key when the total travel to be performed is not completed, if the looseness between the door and the frame is such that the door can be separated from the frame, an intermediate position of the separation travel occurs when the hook has left the lock but it still maintains its tip supported against the frame and driven by a relative relaxed estate of the drive spring, and when the head of the tilting trigger has already left the frame, it is placed in the emerging position or the most relaxed position with respect to the first compression spring where, with respect to the exit of the hook, the tip of the vertical trigger is behind the additional shoulder and it remains interposing in the travel of the horizontal shoulder of the hook during the operative exit trajectory of said hook.

[0024] Consequently, the new introduced improvement keeps the working method of the invention, where both the hook and the tilting trigger take part in the automatic closing, and it adds a new method, where only the tilting trigger takes part by withdrawing the hook in the new additional shoulder, if the opening movement is performed in a complete way, both by means of the handle and the key.

DRAWINGS AND REFERENCES

[0025] This invention will be more described in greater detail by reference to the no limiting drawings given by way of an example only.

[0026] Figure 1 shows an enlarged detail of the auxiliary lock according to the invention corresponding to a multi-point lock having a central lock (9) and both upper and lower closing points. This enlarged detail shows that one of the twin vertical plates (1) being rearwards from the viewer is apart; accordingly, a section in the upper portion of the tilting trigger (3) is illustrated being the object of a new enlarged detail where the direction of the closing turn (12) of the door is indicated. This figures shows that the mechanism is in the rest position corresponding to a door (10) being separated from the frame (11) and ready for the automatic trigger in the closing movement.

[0027] Figure 2 is a perspective view illustrating the body of the tilting trigger (3), without the tilting head (3a).

[0028] Figure 3 is a perspective view of the tilting head (3a) of the tilting trigger (3).

[0029] Figure 4 is a perspective view illustrating the oscillating vertical trigger (3b).

[0030] Figure 5 is a perspective view illustrating the hook (2).

[0031] Figures 6 to 9 are orthogonal projection views of the hook (2). Figure 6 is a side view according to figure 1. Figure 7 is the lower portion according to figure 6. Figure 8 is the left profile according to figure 6. Figure 9 is the right profile according to figure 6.

[0032] Figures 10 to 13 show different positions of the closing movement (figures 10 to 12) and opening movement (figure 13). Figures 10 and 11 illustrate that the

back vertical plate (1) is withdrawn, like in the figure 1; whereas the vertical plate (1) is placed in figures 12 and 13.

[0033] Figure 14 is similar to figure 1, but referring to the now concerned improvement.

[0034] Figures 15 and 16 are, respectively, similar to figures 5 and 6, but referring to the new configuration of the hook (2).

[0035] Figure 17 is similar to figure 11 and it shows a closing moment in the door (10) over its frame (11), when the hook (12) has not entered the lock (11 a) yet.

[0036] Figure 18 is the subsequent moment of figure 17 and the hook (2) within the lock (11 a) is illustrated.

15 The references used in the figures are as follows:

[0037]

1. Twin vertical plates
- 20 1 a. Front neck of the plates (1)
- 1 b. Window being 4-shaped of the plates (1)
- 1 c. Rear vertical branch of the window (1 b)
- 1 d. Horizontal branch of the window (1 b)
- 1 e. Front vertical branch of the window (1 b)
- 25 1 f. Forward vertical front of the plates (1)
2. Hook
- 2 a. Head of the hook (2)
- 2 b. Foot of the hook (2)
- 2 c. First axis of turn of the hook (2)
- 30 2 e. Pierced wing of the hook (2)
- 2 f. Horizontal shoulder of the hook (2)
- 2 g. Projections being L-shaped of the hook (2)
- 2 h. Additional shoulder of the hook (2)
3. Tilting trigger
- 35 3 a. Tilting head of the trigger (3)
- 3 b. Oscillating vertical trigger portion in the trigger (3)
- 3 c. Second axis of turn of the trigger (3b)
4. First compression spring
5. Second compression spring
- 40 6. Drive spring
7. Auxiliary lock housing
8. Bolt
9. Central lock
10. Door
- 45 11. Frame
- 11 a. Lock in the frame (11)
12. Direction of closing turn of the door (10).

DISCLOSURE OF A PREFERRED EMBODIMENT

50 **[0038]** In connection with the above-mentioned drawings and references a preferred execution method of the object of this invention is illustrated, referring to an automatic and reversible auxiliary lock for multi-point locks. According to figure 1, it comprises a sandwich structure consisting of a rotatory plate being hook-shaped with bevelled front having "V"-shaped, hereinafter hook (2), a sliding horizontal trigger having a tilting head with a "V"

bevelled edge (3a) mounted on a vertical axis of turn, hereinafter tilting trigger (3), a first compression spring (4), a second compression spring (5) and a drive spring (6), all being assembled and operative between two twin vertical plates (1) which, with vertical sliding adjustment, are attached to the side walls of the auxiliary lock housing (7); the hook (2) comprises a head (2a) and a foot (2b), the head (2a) being behind the bevelled front and being flat and having such thickness that the sides remind matching the outside of the vertical plates (1), whereas the foot (2b) is encircled by sliding adjustment between the vertical plates (1), and said hook (2) turns around the first axis (2c) being in the foot (2b) and, with respect to the extended operative position and the arrangement of the closing frame (11) of the door (10) in the lock (11a), said first axis (2c) is escorted by a pair of forward collateral pegs (2d) and by a rear pierced wing (2e), whereas, with respect to the rest operative position or the mechanism disposed to the automatic trigger of the closing when the door (10) is driven to the frame (11), this hook (2) having an horizontal shoulder (12f) and two side projections with "L" shape (2g) having the concavity in the rearwards; the tilting trigger (3) is meant to adopt both tilted positions where, with respect to the closing turn of the door (10) over the frame (11), the forward bevel in the tilting head (3a) remains behind with respect to the forward bevel of the front of the hook (2), and said tilting trigger (3) having in the lower and rear part a vertical trigger (3b) being mounted on the second axis of turn (3c) being transverse to the body of the tilting trigger itself (3) and, with respect to the rest position of the hook (2), this vertical trigger (3b) is meant to adopt a forward operative position, the tip being over the horizontal shoulder (2f) of the hook (2); the first compression spring (4) operates between the rear front of the tilting trigger (3) and the auxiliary lock housing (7); the second compression spring (5) operates between the rear part of the vertical trigger (3b) and the body of the tilting trigger itself (3); the drive spring (6) is between the lower end coupling the pierced rear wig (2e) of the hook (2) and the upper end coupling the auxiliary lock housing (7) in a suitable place being higher than the first axis (2c); the vertical plates (1) operating between both upper and lower positions of the stop over the auxiliary lock housing (7), having a coupling with a coupling bolt (8) with the central lock (9) and having a very deep forward neck (1a) where the head (2a) and a 4-shaped window (1b) play, the latter comprising a vertical rear branch (2c) sliding tightly with respect to the first axis (2c) of the hook (2), and horizontal (1d) and vertical forward branches (1e), where the forward pegs (2d) of the hook (2) play with looseness, and the vertical plates (1) form a forward vertical front (1f). The shapes of the tilting trigger (3), the head (3a), the trigger portion (3b) and the hook (2) are disclosed with greater detail in figures 2 to 9.

[0039] According to this arrangement, figure 1 represents the rest position where the door (10) is separated from the frame (11) and the mechanism is in loading po-

sition and ready for the automatic trigger; the vertical plates (1) therefore are in upper position, the drive spring (6) is stressed, the tilting trigger (3) is in the most emerging operative position or the most relaxed position with respect to the first compression spring (4), the vertical trigger (3b) is in its forward operative position or most relaxed position with respect to the second compression spring (5), whereas the tip is supported on the horizontal shoulder (2f) of the hook (2), and the forward pegs (2d) of the hook (2) are against the upper edge of the horizontal branches (1d) of the window (1b).

[0040] According to this invention, referring to the working direction, the hook (2) is displaced with respect to the tilting head (3a) from the tilting trigger (3) and, when the door is being closed (10), the frame (11) strikes the first of the "V"-shaped bevels of the hook (2) and then the tilting head (3a).

[0041] Starting from this position, when the door (10) is driven to the frame (11) according to the arrow (12) (figure 1), the hook (2) strikes the frame before the tilting head (3a) of the trigger (3) and the position shown in figure 10 is reached when the hook (2) is more withdrawn than the trigger (3); here the drive spring (6) is more stressed, the trigger portion (3b) has the tip separated from the shoulder (2f) and the pegs (2d) are placed along the horizontal branch (1d) of the window (1b) of the twin vertical plates (1). It will be better understood by observing the enlarged section in figure 1 that the tilting function of the head (3a), along with the double bevel shape of the head and the hook (2), cause the reversibility of the auxiliary lock without taking part, and being just the design.

[0042] Another feature of this invention is that, when the door (10) is in the frame (11) according to the position shown in figure 11, without reaching the end of the travel of the closing, the tilting trigger (3) is completely withdrawn against the first compression spring (4), the hook (2) has the bevelled front against the frame (11) of the door (10) because it has not reached the lock (11a) yet, the vertical plates (1) remain in the upper position, the drive spring (6) is more stressed, the upper trigger portion (3b) is not supported on the horizontal shoulder (2f) of the hook (2), the forward pegs (2d) of the hook (2) are against the upper edge of the horizontal branches (1d) of the window (1b) and the upper edge of the head (2a) maintains a suitable distance from the upper edge of the forward neck (1a) of the plates (1); this distance allows the exit of the hook (2) not to be obstructed by the vertical plates (1).

[0043] According to this invention, in a position (figure 12) when the door (10) has reached the end of the closing travel and the hook (2) has entered the lock (11a) of the frame (11), the vertical plates (1) are placed in the lower position being a stop against the auxiliary lock housing (7), the drive spring (6) is relaxed, the tilting trigger (3) is completely withdrawn against the first compression spring (4), the forward pegs (2d) of the hook (2) are in a point along the forward vertical branch (1e) of the window

(1b) being "4"-shaped and the vertical wall of the projections being "L"-shaped (2g) of the head (2a) of the hook (2) remain adjacent and horizontally aligned with respect to the forward vertical fronts (1f) of the plates (1). As it can be seen, in this position, by forcing the withdrawal of the hook (2) actuating over itself, the forward pegs (2d) thereof work as stop against the rear edge of the forward vertical branch (2e) comprising a safety catch; if this safety catch failed, the forward vertical front of the vertical plates (1f) along with the vertical wall of the projections being "L"-shaped would work as safety catches.

[0044] Referring to the opening movement by means of a central lock (9), according to this invention, in a position (figure 13), the door (10) is closed in the frame (11), when driving the bolt in the opening movement, the vertical plates (11) are displaced in such direction that the forward pegs (2d) perform a first travel (empty) in the forward vertical branch (1 e) of the windows (1 b) until reaching the horizontal branch (1d) thereof, when the projections being "L"-shaped (2g) of the head (2a) of the hook (2) and the forward vertical fronts (1f) of the plates (1) are not facing up each other, eliminating the blocks and allowing the lower edge of the horizontal branch (1d) to push over the forward pegs (2d) in the direction of the turn of withdrawal of the hook (2) until reaching the complete exit of the lock (11 a) when the separation from the door with respect to the frame (10) is possible, as the rise of the plates (1) to the upper position is driven. In this respect, once the hook (2) has been completely withdrawn to reach the position in figure 11 in an inverse movement, according to the invention, when separating the door (2) from the frame (11), the bevel of the bevelled front of the head (2a) of the hook (2) being in the direction of the movement, is backward from the bevelled tip of the tilting trigger (3) and, when completing the separation from the door (10), the hook (2) reaches the rest position when the tip of the vertical trigger portion (3b) remains supported on the horizontal shoulder (2f) of the hook (2); this means the trigger (3) is the first to leave the frame (11) to recover the position shown in figure 10 and remains waiting for the exit of the hook (2) to withhold as seen in figure 1.

[0045] Accordingly, the oscillating vertical trigger portion (3b) has an independent movement, tilting or linear with respect to the tilting trigger (3), so that, in case the auxiliary locks jump manually, without closing the door, when withdrawing them by means of a handle or key, the hook (2) on the way back is able to withdraw the vertical trigger portion (3b), so that the horizontal shoulder (2f) then remains behind the vertical trigger portion (3b), when the vertical trigger portion (3b) returns to the starting position, and therefore the hook (2) remains withdrawn and in the trigger position.

[0046] A preferred method of execution of the improvement according to the Patent of Invention comprises an additional shoulder (2h) being in the upper edge of the head (2a) of the hook (2) which, relative to the operative travel of exit of said hook (2), is placed in front of the

horizontal shoulder (2f) and it is meant to operate with the tip of the oscillating vertical trigger portion (3b) of the trigger (3) in the same way as said horizontal shoulder (2f). Figures 15 and 16 clearly illustrate this new arrangement of the hook (2).

[0047] According to this arrangement, figure 14 illustrates that, from the rest position where the door (10) is separated from the frame (11) and the mechanism is ready for the automatic trigger after completing the opening movement or mechanism loading by means of a handle or key, it is established that the vertical plates (1) are in the upper position, the hook (2) is in withdrawn position such the head (2a) is substantially in the level of the front portion of the door (10), the drive spring (6) is close to the relative maximum stress, the tilting trigger (3) being in the most emerging operative position or the most relaxed position with respect to the first compression spring (4), the vertical trigger portion (3b) is in its forward operative position or most relaxed position with respect to the second compression spring (5), whereas the tip is supported on said additional shoulder (2h) of the hook (2), and the forward pegs (2d) of said hook (2) are against the upper edge of the horizontal branches (1 d) of the window (1b). This is, the position shown in figure 14 is the result of a complete closing movement or mechanism loading, by means of a key or by means of a handle.

[0048] In this point, it is relevant to state that the automatic closing depends exclusively on the tilting trigger (3), which, when striking the frame (11) and being withdrawn, it releases the withholding executed by the vertical trigger portion (3b) over the additional shoulder (2h); see that the withdrawn position (not shown) of the hook (2) makes this not interact with the frame (1). Figure 17 illustrates this position where the tilting trigger (3) is completely withdrawn against the first compression spring (4), the vertical trigger portion (3b) is not supported on the additional shoulder (2h) of the hook (2), the hook (2) has a bevelled front against the frame (11) of the door (10) because it has not reached the lock (11a) thereof yet, the vertical plates (1) remain in the upper position, the drive spring (6) is less stressed, the forward pegs (2d) of said hook (2) are against the upper edge of the horizontal branches (1d) of the window (1 b) making the upper edge of the head (2a) keep a convenient distance from the upper edge of the forward neck (1a) of the plates (1) (to avoid frictions damaging the correct operation). Once the hook (2) has reached the lock (11a) in the frame (11), as the withholding of the additional shoulder (2h) is released, the position shown in figure 18 occurs.

[0049] In the improvement the horizontal shoulder (2f) of the latter is operative so that the mechanism is loaded waiting for a subsequent automatic trigger, although it is possible to verify the withdrawal of the door (10) from the frame (11) because a movement of incomplete opening (by means of a key or handle) has been performed and there is an specific looseness between the door (10) and the frame (11); however, the additional shoulder (2h) is operative when a movement of complete opening (be-

cause of the user's care or because the looseness between the door and the frame is so reduced that completing the movement is required to allow the withdrawal) occurs. In this case, the mechanism is loaded such that the hook (2) is inhibited in the automatic trigger and only the tilting trigger (3) performs. The combination of said two working methods involves a more applicative versatility, since it can be easily adapt to installations having different looseness between the door (10) and the frame (11).

Claims

1. Automatic and reversible auxiliary lock for multi-point locks, being **characterized by** comprising a sandwich structure consisting of a rotatory plate being hook-shaped with bevelled front having "V"-shaped, hereinafter hook (2), a sliding horizontal trigger having a tilting head with a "V" bevelled edge (3a) mounted on a vertical axis of turn, hereinafter tilting trigger (3), a first compression spring (4), a second compression spring (5) and a drive spring (6), all being assembled and operative between two twin vertical plates (1) which, with vertical sliding adjustment, are attached to the side walls of the auxiliary lock housing (7); the hook (2) comprises a head (2a) and a foot (2b), the head (2a) being behind the bevelled front and being flat and having such thickness that the sides remind matching the outside of the vertical plates (1), whereas the foot (2b) is encircled by sliding adjustment between the vertical plates (1), and said hook (2) turns around the first axis (2c) being in the foot (2b) and, with respect to the extended operative position and the arrangement of the closing frame (11) of the door (10) in the lock (11a), said first axis (2c) is escorted by a pair of forward collateral pegs (2d) and by a rear pierced wing (2e), whereas, with respect to the rest operative position or the mechanism disposed to the automatic trigger of the closing when the door (10) is driven to the frame (11), this hook (2) having an horizontal shoulder (12f) and two side projections with "L" shape (2g) having the concavity in the rearwards; the tilting trigger (3) is meant to adopt both tilted positions where, with respect to the closing turn of the door (10) over the frame (11), the forward bevel in the tilting head (3a) remains behind with respect to the forward bevel of the front of the hook (2), and said tilting trigger (3) having in the lower and rear part a vertical trigger portion (3b) being mounted on the second axis of turn (3c) being transverse to the body of the tilting trigger itself (3) and, with respect to the rest position of the hook (2), this vertical trigger portion (3b) is meant to adopt a forward operative position, the tip being over the horizontal shoulder (2f) of the hook (2); the first compression spring (4) operates between the rear front of the tilting trigger (3) and the

auxiliary lock housing (7); the second compression spring (5) operates between the rear part of the vertical trigger (3b) and the body of the tilting trigger itself (3); the drive spring (6) is between the lower end coupling the pierced rear wing (2e) of the hook (2) and the upper end coupling the auxiliary lock housing (7) in a suitable place being higher than the first axis (2c); the vertical plates (1) operating between both upper and lower positions of the stop over the auxiliary lock housing (7), having a coupling with a coupling bolt (8) with the central lock (9) and having a very deep forward neck (1 a) where the head (2a) and a 4-shaped window (1 b) play, the latter comprising a vertical rear branch (2c) sliding tightly with respect to the first axis (2c) of the hook (2), and horizontal (1d) and vertical forward branches (1e), where the forward pegs (2d) of the hook (2) play with looseness, and the vertical plates (1) form a forward vertical front (1f).

2. Automatic and reversible auxiliary lock for multi-point locks according to claim 1, being **characterized by**, referring to the rest position where the door (10) is separated from the frame (11) the vertical plates (1) are in upper position, the drive spring (6) is stressed, the tilting trigger (3) is in the most emerging operative position or the most relaxed position with respect to the first compression spring (4), the vertical trigger portion (3b) is in its forward operative position or most relaxed position with respect to the second compression spring (5), whereas the tip is supported on the horizontal shoulder (2f) of the hook (2), and the forward pegs (2d) of the hook (2) are against the upper edge of the horizontal branches (1d) of the window (1 b).

3. Automatic reversible auxiliary lock for multi-point locks according to any of the previous claims, being **characterized by**, referring to the working direction, the hook (2) is displaced with respect to the tilting head (3a) from the tilting trigger (3) and, when the door is being closed (10), the frame (11) strikes the first of the "V"-shaped bevels of the hook (2) and then the tilting head (3a).

4. Automatic reversible auxiliary lock for multi-point locks according to any of the previous claims, being **characterized by**, when the door (10) is in the frame (11) without reaching the end of the travel of the closing, the tilting trigger (3) is partially withdrawn against the first compression spring (4), the hook (2) has the bevelled front against the frame (11) of the door (10) because it has not reached the lock (11a) yet, the vertical plates (1) remain in the upper position, the drive spring (6) is more stressed, the vertical trigger portion (3b) is not supported on the horizontal shoulder (2f) of the hook (2), the forward pegs (2d) of the hook (2) are against the upper edge of the horizontal

branches (1 d) of the window (1 b) and the upper edge of the head (2a) maintains a suitable distance from the upper edge of the forward neck (1a) of the plates (1).

5. Automatic reversible auxiliary lock for multi-point locks according to any of the previous claims, being **characterized by**, when the door (10) has reached the end of the closing travel and the hook (2) has entered the lock (11 a) of the frame (11), the vertical plates (1) are placed in the lower position being a stop against the auxiliary lock housing (7), the drive spring (6) is relaxed, the tilting trigger (3) is completely withdrawn against the first compression spring (4), the forward pegs (2d) of the hook (2) are in a point along the forward vertical branch (1 e) of the window (1 b) being "4"-shaped and the vertical wall of the projections being "L"-shaped (2g) of the head (2a) of the hook (2) remain adjacent and horizontally aligned with respect to the forward vertical fronts (1 f) of the plates (1).
6. Automatic reversible auxiliary lock for multi-point locks according to any of the previous claims, being **characterized by**, when the door (10) is closed in the frame (11), when driving the bolt in the opening movement, the vertical plates (11) are displaced in such direction that the forward pegs (2d) perform a first travel (empty) in the forward vertical branch (1e) of the windows (1b) until reaching the horizontal branch (1d) thereof, when the projections being "L"-shaped (2g) of the head (2a) of the hook (2) and the forward vertical fronts (1f) of the plates (1) are not facing up each other, eliminating the blocks and allowing the lower edge of the horizontal branch (1d) to push over the forward pegs (2d) in the direction of the turn of withdrawal of the hook (2) until reaching the complete exit of the lock (11 a) when the separation from the door (10) with respect to the frame (11) is possible, as the rise of the plates (1) to the upper position is driven.
7. Automatic reversible auxiliary lock for multi-point locks according to any of the previous claims, being **characterized by**, when separating the door (10) from the frame (11), the bevel of the bevelled front of the head (2a) of the hook (2) being in the direction of the movement, is backward from the bevelled tip of the tilting trigger (3) and, when completing the separation from the door (10), the hook (2) reaches the rest position when the tip of the vertical trigger portion (3b) remains supported on the horizontal shoulder (2f) of the hook (2) retaining said hook.
8. Automatic reversible auxiliary lock for multi-point locks according to any of the previous claims, being **characterized by**, the oscillating vertical trigger portion (3b) has an independent movement, tilting or

linear with respect to the tilting trigger (3), so that, in case the auxiliary locks jump manually, without closing the door, when withdrawing them by means of a handle or key, the hook (2) on the way back is able to withdraw the vertical trigger portion (3b), so that the horizontal shoulder (2f) then remains behind the vertical trigger portion (3b), when the vertical trigger portion (3b) returns to the starting position, and therefore the hook (2) remains withdrawn and in the trigger position.

9. Auxiliary lock for multi-point locks according to any of the previous claims, being **characterized by**, an additional shoulder (2h) being in the upper edge of the head (2a) of the hook (2) which, relative to the operative travel of exit of said hook (2), is placed in front of the horizontal shoulder (2f) and it is meant to operate with the tip of the oscillating vertical trigger portion (3b) of the trigger (3) in the same way as said horizontal shoulder (2f).
10. Automatic reversible auxiliary lock for multi-point locks, according to any of the previous claim, being **characterized by**, from the rest position where the door (10) is separated from the frame (11) and the mechanism is ready for the automatic trigger after completing the opening movement or mechanism loading by means of a handle or key, it is established that the vertical plates (1) are in the upper position, the hook (2) is in withdrawn position such the head (2a) is substantially in the level of the front portion of the door (10), the drive spring (6) is close to the relative maximum stress, the tilting trigger (3) being in the most emerging operative position or the most relaxed position with respect to the first compression spring (4), the vertical trigger portion (3b) is in its forward operative position or most relaxed position with respect to the second compression spring (5), whereas the tip is supported on said additional shoulder (2h) of the hook (2), and the forward pegs (2d) of said hook (2) are against the upper edge of the horizontal branches (1d) of the window (1 b).
11. Automatic reversible auxiliary lock for multi-point locks, according to any of the previous claim, being **characterized by**, when the door (10) is in the frame (11) without reaching the end of the travel of the closing, the tilting trigger (3) is completely withdrawn against the first compression spring (4), the hook (2) has the bevelled front against the frame (11) of the door (10) because it has not reached the lock (11 a) yet, the vertical plates (1) remain in the upper position, the drive spring (6) is more stressed, the upper trigger portion (3b) is not supported on the horizontal shoulder (2f) of the hook (2), the forward pegs (2d) of the hook (2) are against the upper edge of the horizontal branches (1 d) of the window (1 b) and the upper edge of the head (2a) maintains a suitable

distance from the upper edge of the forward neck (1 a) of the plates (1).

12. Automatic reversible auxiliary lock for multi-point locks, according to any of the previous claim, being **characterized by**, when the door (10) is closed, the hook (2) being in the lock (11 a) of the frame (11) and the tilting trigger (3) being completely withdrawn, when performing the opening movement by means of a handle or a key when the total travel to be performed is not completed, if the looseness between the door (10) and the frame (11) is such that the door can be separated from the frame, an intermediate position of the separation travel occurs when the hook (12) has left the lock (11a) but it still maintains its tip supported against the frame (11) and driven by a relative relaxed estate of the drive spring (6), and when the head (3a) of the tilting trigger (3) has already left the frame (11), it is placed in the emerging position or the most relaxed position with respect to the first compression spring (4) where, with respect to the exit of the hook (2), the tip of the vertical trigger portion (3b) is behind the additional shoulder (2h) and it remains interposing in the travel of the horizontal shoulder (2f) of the hook (2) during the operative exit trajectory of said hook (2).
13. Automatic reversible auxiliary lock for multi-point locks, according to any of the previous claim, being **characterized by**, when the complete opening or the mechanism loading is performed by means of a key or handle, the tip of the vertical trigger portion (3b) is interposed over the additional shoulder (2h), and therefore, the closing or trigger depend exclusively on the tilting trigger (3), since the hook (2) cannot interact with the frame (11).

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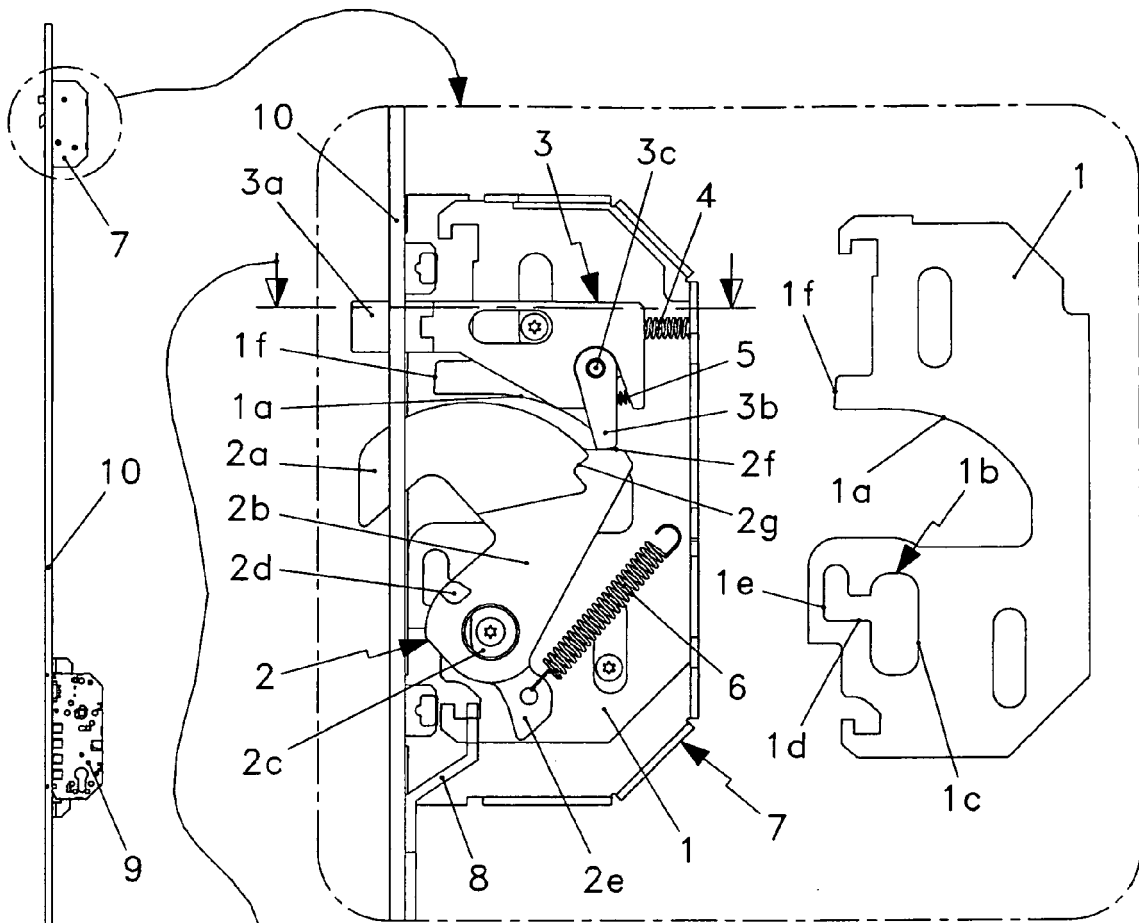
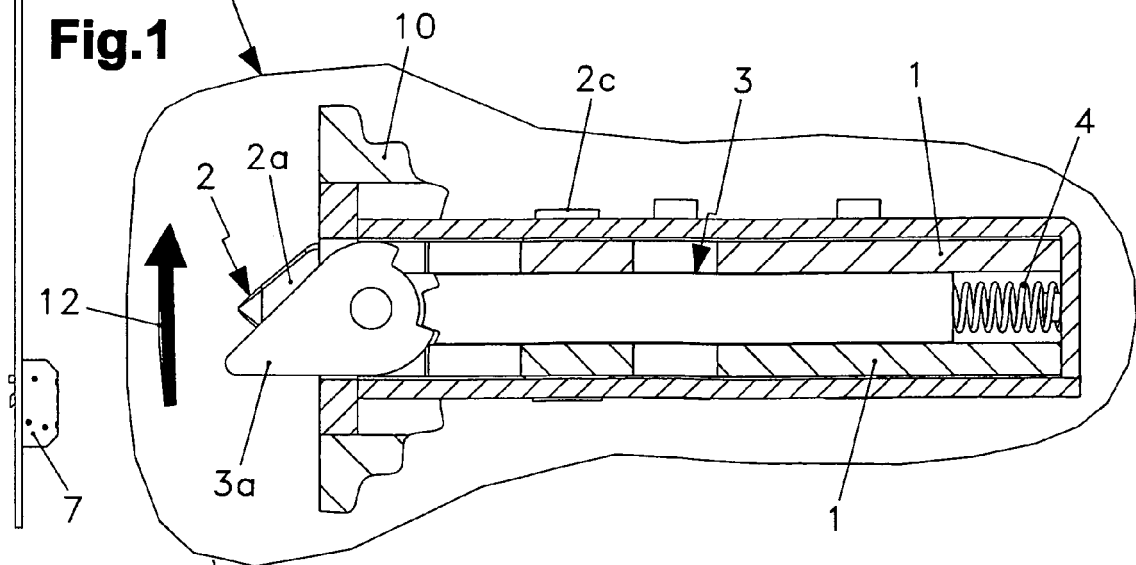


Fig.1



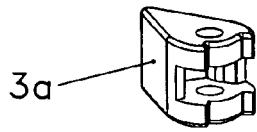


Fig.3

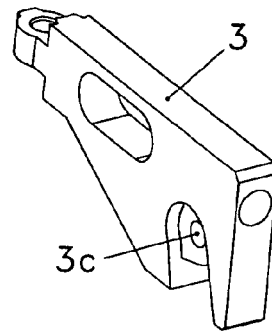


Fig.2

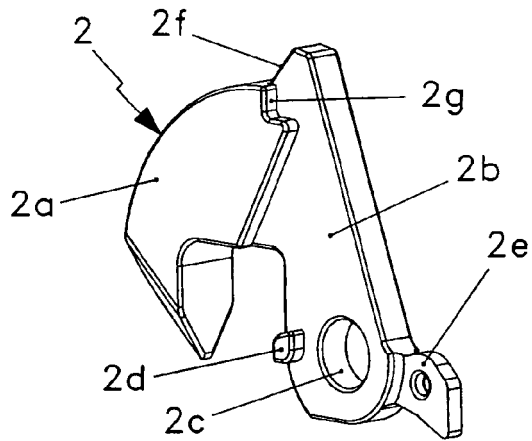


Fig.5

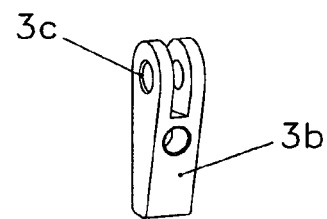


Fig.4

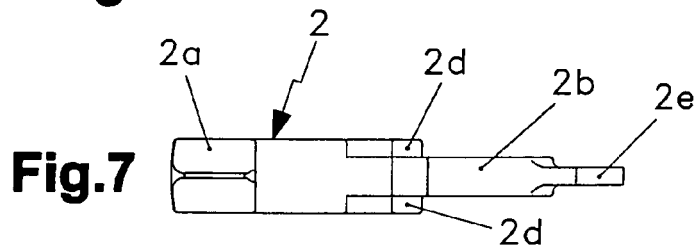


Fig.7

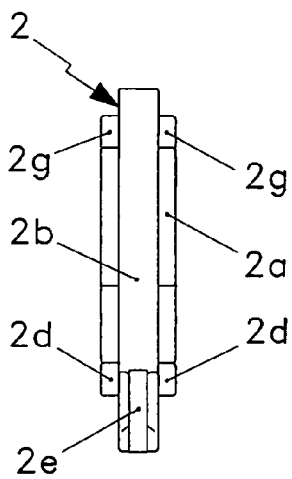


Fig.9

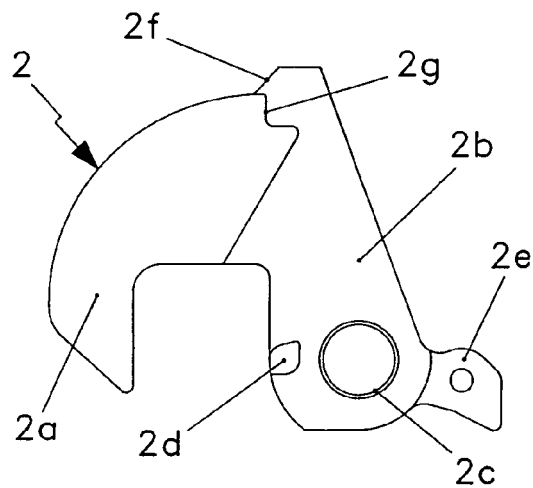


Fig.6

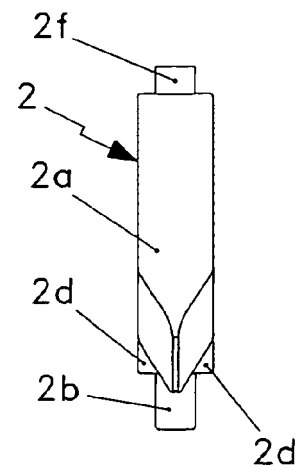


Fig.8

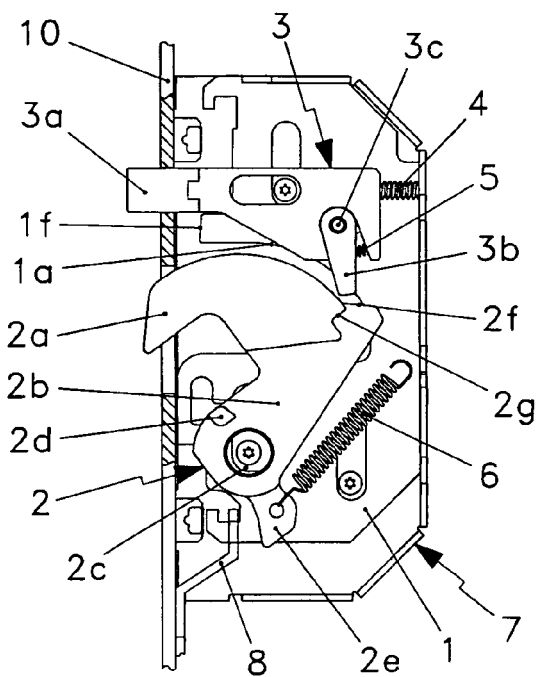


Fig.10

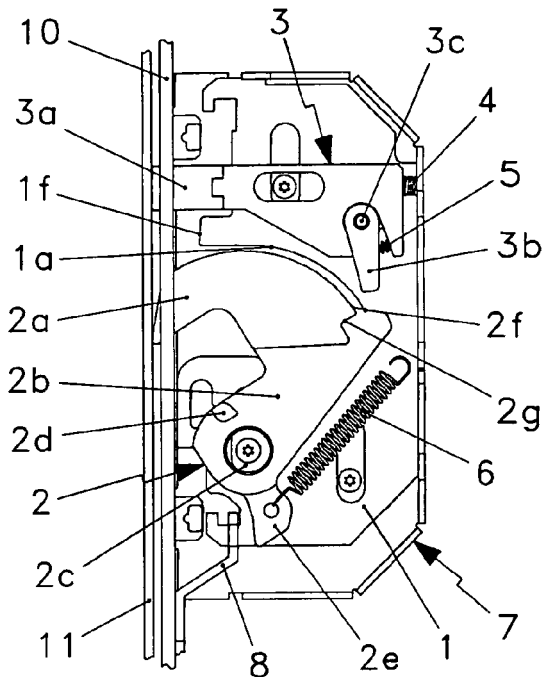


Fig.11

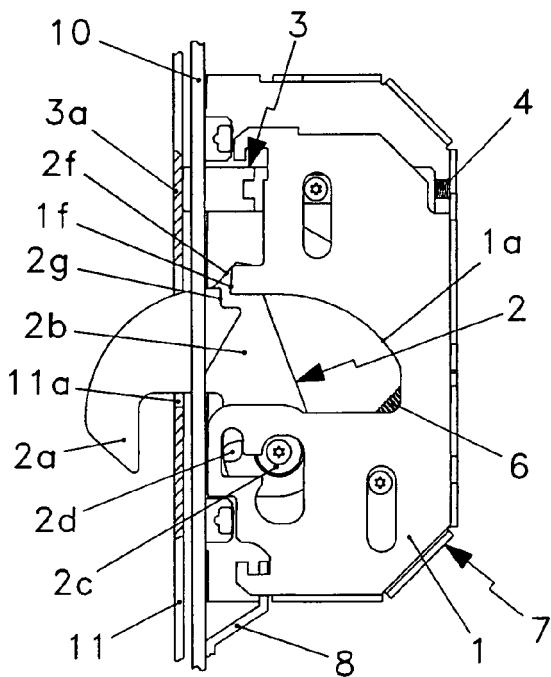


Fig.12

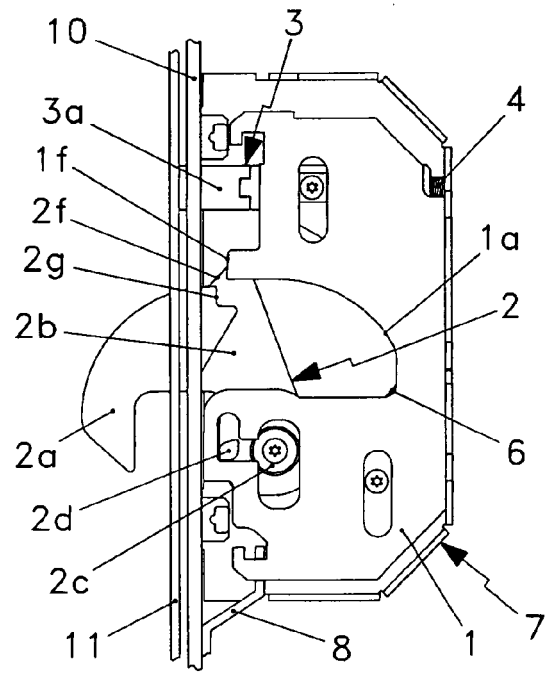


Fig.13

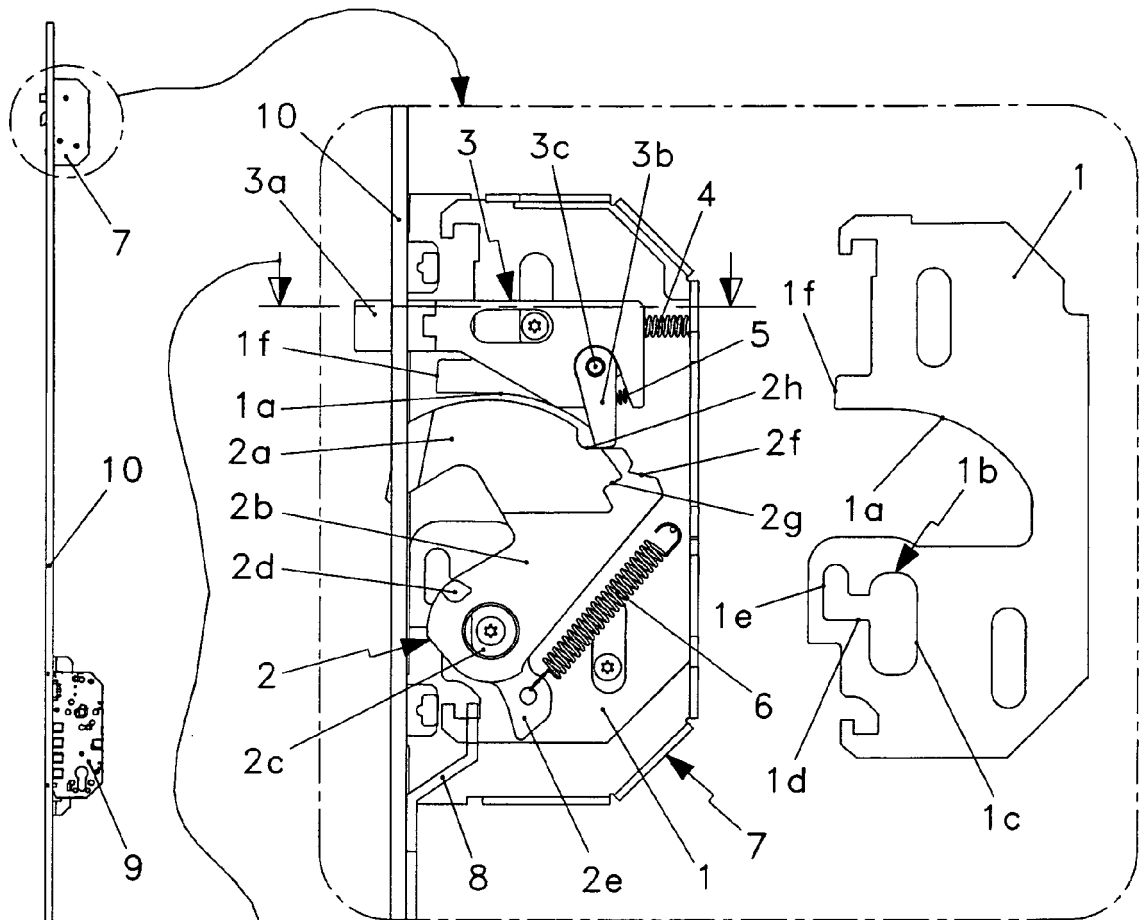
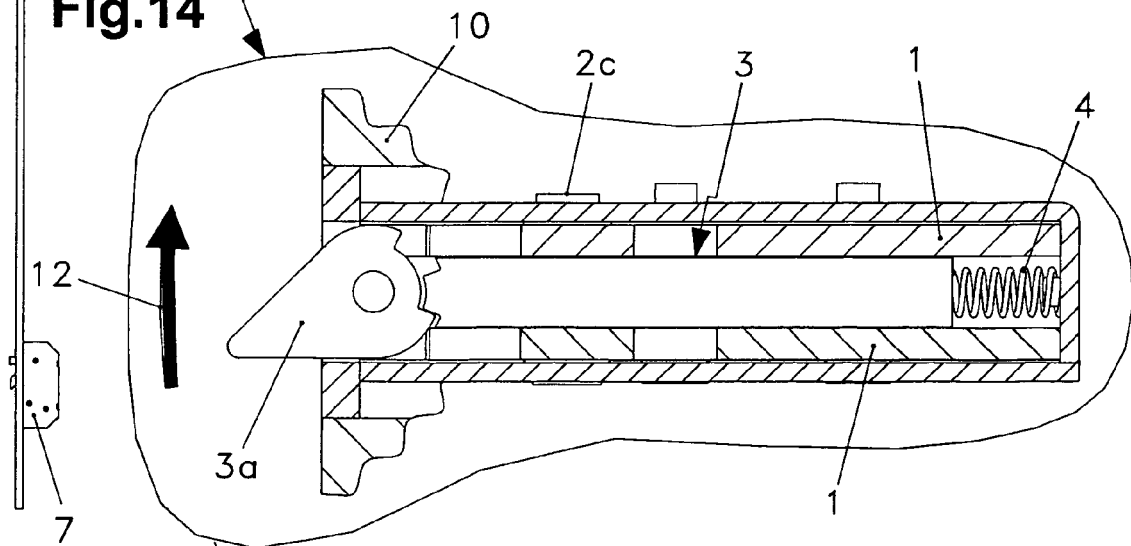


Fig.14



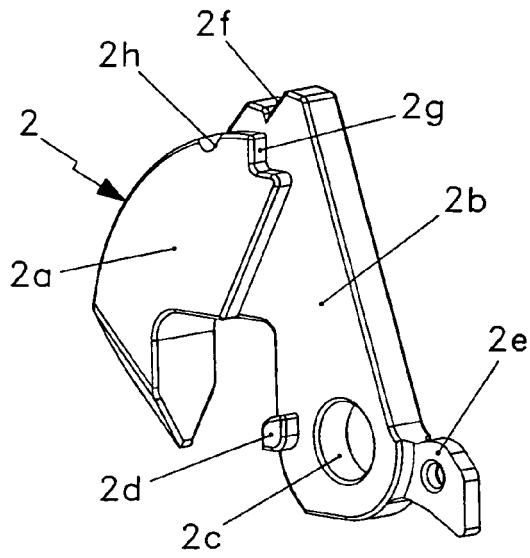


Fig.15

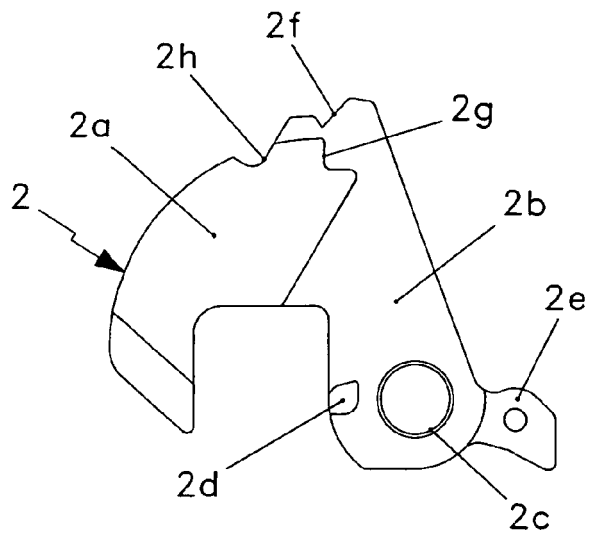


Fig.16

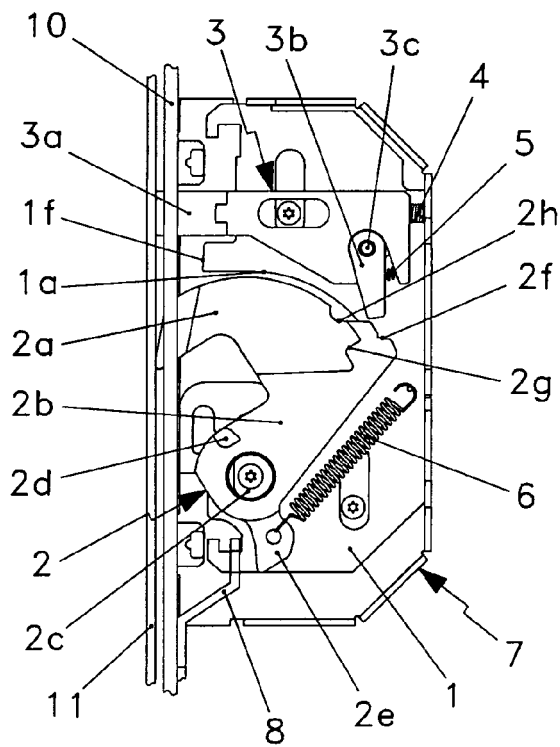


Fig.17

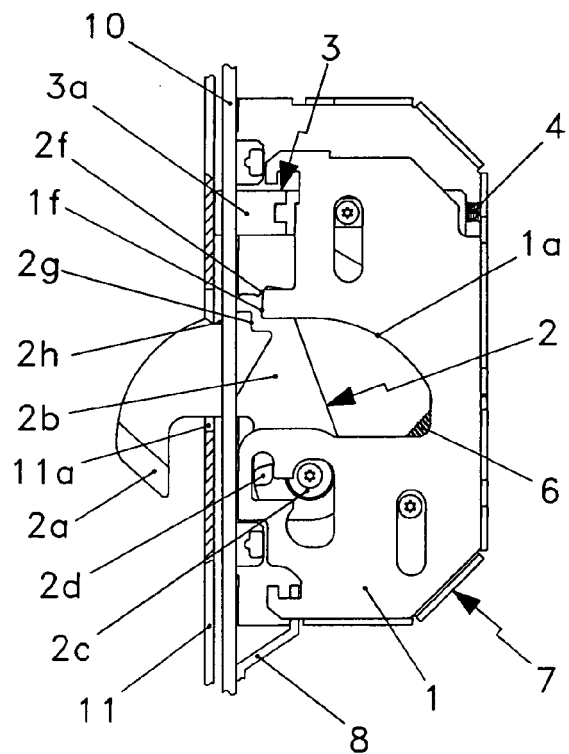


Fig.18



EUROPEAN SEARCH REPORT

Application Number
EP 08 01 9717

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 100 63 784 A1 (WILKA SCHLIESTECHNIK GMBH [DE]) 27 June 2002 (2002-06-27) * the whole document *	1-13	INV. E05C9/18 E05B63/20
A	EP 1 640 536 A (WINKHAUS FA AUGUST [DE]) 29 March 2006 (2006-03-29) * the whole document *	1-13	
A	EP 1 555 365 A (WINKHAUS FA AUGUST [DE]) 20 July 2005 (2005-07-20) * the whole document *	1-13	
			TECHNICAL FIELDS SEARCHED (IPC)
			E05C E05B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 19 February 2009	Examiner Wagner, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 08 01 9717

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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19-02-2009

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 10063784	A1	27-06-2002	NONE	

EP 1640536	A	29-03-2006	AT 365852 T	15-07-2007
			DE 102004046931 A1	13-04-2006
			DK 1640536 T3	29-10-2007
			ES 2287869 T3	16-12-2007

EP 1555365	A	20-07-2005	AT 386184 T	15-03-2008
			DE 102004002270 A1	04-08-2005
