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(54) Security door with disconnectable bolt mechanism

(57) It comprises a closing panel (1) with an internal face (1a) and an external face (1b), an espagnolette (2) mounted on the said internal face (1a) in a linearly guided way for be moved between an open and a closed position, and a pinion and toothed bar mechanism (3, 4) driven by an external handhold (5) for moving such espagnolette (2), means being provided for ungearing

such pinion and toothed bar mechanism (3, 4) and conceal the handhold (5) in a housing (9a) in an operatively inaccessible position when the espagnolette (2) is at such closed position, and at least first retaining means (12, 13) controlled by a lock device (6) with key (7) for retaining such pinion and toothed bar mechanism (3, 4) unengaged and the handhold (5) concealed while the espagnolette (2) remains at its closed position.

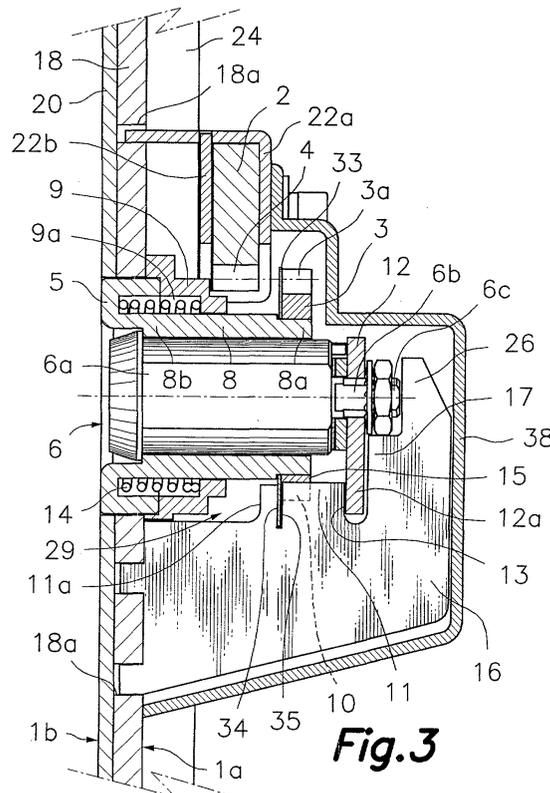


Fig.3

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Description

Field of the invention

[0001] This invention refers to a safety door with a disconnectable espagnolette mechanism and more specifically to a safety door provided with a lock in which the espagnolette mechanism is disconnected at same time as a driving handhold is concealed beyond the user's reach when a key is operated in such lock to leave the door at a closed position.

[0002] The safety door of this invention is useful, for example, for boxes for collecting coins in a dispensing machine or the like.

Background of the invention

[0003] Often, valuables are contained in boxes or housings provided with a door equipped with a lock having a key but located at a place where the public in general have access. This is the case, for example, of the money accumulated in the boxes for collecting coins the dispensing machines and the like usually have which are located in places where there is public. This money constitutes a temptation for some people who try to seize it forcing the door, the lock or both. Sometimes, the machines which incorporate such kind of doors are in little frequented or watched places namely during the night which offers the thieves the opportunity to use tough means and methods or to act relatively undisturbed for manipulating the lock. For this reason, there exists the need to have available a safety door which is as resistant to the vandal acts which use brute force as immune to undue manipulations using skill and experience.

[0004] Safety doors are known which comprise a closing panel having an internal face and an external face, an espagnolette mounted on the said internal face in a linearly guided way to move between an open position and a closed position and a pinion and toothed bar mechanism to move the said espagnolette, such pinion and toothed bar mechanism being driven from such external face and controlled by a lock device.

[0005] The utility model ES-A-1021795 discloses a lock comprising a sliding espagnolette which can be driven by a key or other manual means. A toothed bar is joined to the said espagnolette and a pinion is geared in such toothed bar. The said pinion is fixed on a drive shaft mounted on a balance bar so that it can tilt to ungear the pinion from the toothed bar. An electric engine is coupled to the drive shaft. When the key is not introduced in the lock, the opening and closing operations, that is to say, of moving the espagnolette in one or the other direction are carried out by the engine after such engine has been energised with any known means. When the key is introduced in the lock, it moves a part which tilts such balance bar, ungearing the pinion from the toothed bar so that the opening and closing opera-

tions can be carried out by hand with the key. However, the mentioned utility model does not describe nor suggests that the fact of ungearing the pinion from the toothed bar can be used as a safety measure because at every moment the espagnolette was connected, either through the hand key device or the power-operated gearing device, to means for carrying out the opening operations.

[0006] The utility model ES-A-0253211 discloses a closing device for safety doors which comprises, at one side of the door, a toothed wheel linked through a shaft to a knob located at the opposite side of the door. Such toothed wheel is geared on opposite sides with a pair of toothed bars which transmit its motion to guided elements connected to bolts for locking on the doorframe. The toothed wheel has a polygonal central hole and the said shaft has a polygonal cross section except in an intermediate length in which it has a circular cross section. The shaft is mounted so that it can axially move against the force of a spring sliding through the toothed wheel and with it, according to the axial position of the shaft with respect to the toothed wheel, this later can be driven or not by the knob. A part with a ramp surface is connected to the latch of a key and contact ta butt of the shaft so that when moving the latch by the action of the key opening, the ramp like part slides moving the shaft against the strength of the spring and connecting the toothed wheel with the knob. A closing action of the key carries out an opposite motion disconnecting the toothed wheel from the knob. However, this system has the drawback that the knob, as well is the shaft is coupled with the toothed wheel as if it is not, is always in a situation accessible from outside the door and nor the panel of the door nor the closing mechanism nor the lock are conditioned to resists vandal acts.

[0007] An object of this invention is to provide a safety door having an espagnolette mechanism which can be disconnected from the drive means when the espagnolette is in a closed position, and to remain disconnected by the action of a lock with key.

[0008] Another object of this invention is to provide a safety door in which means for driving the espagnolette include a handhold which can be concealed in a housing of the door when the espagnolette is in closed position and to remain retained in such situation inaccessible by the action of the said lock with key.

[0009] Another object of this invention is to provide a safety door provided with a plurality of safety measures and reinforcing means to resist manipulations and vandal actions carried out from outside, remaining closed.

Description of the invention

[0010] Above and other objects are achieved, according to this invention, providing a safety door which comprises a closing panel, with an internal face and an external face, an espagnolette mounted on the said internal face, linearly guided to move between an open po-

sition and a closed position, and a pinion and toothed bar mechanism to move such espagnolette. Such pinion and toothed bar mechanism is driven and controlled by a lock device accessible from the said external face. The safety door is characterised in that it comprises means for ungearing such pinion and toothed bar mechanism when the espagnolette is at such closed position, and at least first retaining means controlled by such lock device, for retaining the said pinion and toothed bar mechanism in an ungeared situation leaving the espagnolette at a closed position.

[0011] For this, the toothed bar of the said pinion and toothed bar mechanism is linked to the espagnolette, for example, directly mechanised to it and the pinion is fixed at one external end of a shaft, which is passed through an opening of the said panel. At one end of the external side of the said shaft a handhold is joined, so that the shaft, the pinion and such handhold become integral to each other constituting a driving assembly, which is conveniently guided with respect to the panel in order it can rotate on its own shaft between an open angular position, corresponding to the open position of the espagnolette, and a closed angular position corresponding to the closed position of the espagnolette, and at same time, move along its own shaft from a live position in which the pinion is geared with the toothed bar and in a dead position, in which the pinion is ungeared from the toothed bar. In addition, at such live position, the handhold protrudes on the external face of the panel so that it is accessible to be caught and driven by the user, while in such dead position . the handhold is concealed in a housing of the panel, so that one external surface of the handhold remains level with or slightly sunk with respect to the external face of the panel of the door and, therefore, it is functionally inaccessible. The device comprises an elastic member arranged for pushing the shaft, pinion and handhold assembly towards a live position, therefore such first retaining means are capable to retain the shaft, pinion and handhold assembly at a dead position against the strength of the said elastic member when the assembly is at the said closed angular position.

[0012] The safety door comprises second retaining means for retaining the shaft, pinion and handhold assembly at the said live position at any angular position of it except at the closed angular position, at which such second retaining means allow to axially move the shaft, pinion and handhold assembly from the live position to the dead position, such move can be carried out by hand pushing from the external face of the panel against the strength of the elastic member. These second retaining means in addition prevent the rotation of the shaft, pinion and handhold assembly rotation in any position axial to it except in the dead position.

[0013] The said shaft is hollow and defines an internal housing having an opening at the said end of the internal side of the shaft and another opening at such end of the external side and such lock device is mounted in the said

internal housing of the shaft. The lock device is of the cylindrical kind and comprises an external body, inserted in such housing and internally fixed on the shaft, and an internal body which can be coaxially rotated with respect to the said external body by means of a key introduced from the said opening of the end of the external side of the shaft. The said internal body of the lock shows a keyhole for such key at an external end level or slightly sunk with respect to the said external surface of the handhold and has an internal end which protrudes at the said end of the internal side of the shaft. At least a latch , which forms part of the said first retaining means and which has the shape of a plate substantially perpendicular to the shaft, is fixed to the said internal end protruding from the internal body of the lock and which shows an overhanging portion. The key allows to rotate the internal body and the said latch fixed to it, between a position of closed lock in which the shaft, pinion and handhold assembly can be axially moved between its dead and live positions without any hindrance interferes with the latch, and a position of closed lock, which can only be reached when the shaft, pinion and handhold assembly is at its dead position, in which the said overhanging portion of the latch is located on a first butt integral with a support fixed to the internal face of the panel, with which the shaft, pinion and handhold assembly remains retained at its dead position preventing any axial move thereof.

[0014] Bearing in mind that the axial move of the shaft, pinion and handhold assembly from its live position to its dead position, that is to say the move of ungearing the pinion and toothed bar mechanism , is only allowed by the second retaining means when the said assembly is at its closed angular position, that is to say, when the espagnolette is closed, the latch of the first retaining means retains the driving assembly at a situation at which the espagnolette is closed, the pinion and toothed bar mechanism is ungeared and the handhold is concealed in an operatively inaccessible position. In this situation, the key can be withdrawn and, without it, it is virtually impossible to unlawfully manipulate the closing mechanisms of the safety door to open it.

[0015] But, in addition to the above described mechanisms the safety door of this invention incorporates other safety devices against the unlawful skills and the use of the brute force that makes it virtually impregnable and which will be described below.

Short description of the drawings

[0016] These and other characteristics and advantages will result more apparent from following description detailed of an example of embodiment with reference to the drawing appended in which:

Fig. 1 is an exploded isometric view of the safety door of this invention including detailed enlarged views showing a gearing barrier (on the left) and a

pinion (on the right) by their faces opposite to those shown in the overall view

Fig. 2 is a cross section view of the opening/closing device of the safety door of Fig. 1 in an open situation;

Fig. 3 is a cross section view of the closing/opening device of the safety door of Fig. 1 in closed situation; Fig. 4 is an isometric view of the external side of the safety door with the opening/closing device at the open situation;

Fig. 5 is an isometric view of the internal side of the safety door with the opening/closing device thereof at same open situation as that of Fig. 4;

Fig. 6 is an isometric view of the internal view of the safety door with the closing/opening device at same open situation as that of Fig. 5 but with a protecting cover withdrawn to best show the mechanisms;

Fig. 7 is an isometric view of the internal side of the safety door without the protecting cover and with the opening/closing mechanism in a partly closed situation, that is to say, with the espagnolette at the closed position but with the pinion and toothed bar mechanism geared;

Fig. 8 is an isometric view of the external side of the safety door with the closing/opening mechanism in a closed situation; and

Fig. 9 is an isometric view of the internal side of the safety door without the protecting cover and with the closing/opening device in a closed situation, that is to say, with the espagnolette in the closed position and the pinion and toothed bar mechanism ungeared.

Detailed description of an example of embodiment

[0017] Initially referring to Fig. 1, the safety door with the disconnectable espagnolette mechanism of this invention comprises a closing panel 1 composed of a back plate 18 and an armour plate 20, of a very hard metallic material and having substantially same sizes, which are strongly joined to each other as it is shown in the remaining figures, for example, by tack weld.

[0018] The closing panel 1 globally shows, an internal face 1a, and external face 1b and a opening 1c through it in a central position. The back plate 18 defines such internal face 1a of panel 1 and incorporates an opening 19 which forms part of the said opening 1c and a series of holes and anchoring cuts 18a, 18b for fixing several components which will be described below and which constitute the closing/opening device of the door of this invention. The armour plate 20 defines such external face 1b of panel 1 and includes an opening 21 coincident with the said opening 19 of the back plate 18 to jointly form opening 1c of panel 1. When they are joined forming panel 1, armour plate 20 prevents the vision and access from the external face 1b of panel 1 to such holes and anchoring cuts 18a, 18b of the back plate 18 in which are anchored the components of the closing/

opening device, preventing its manipulation.

[0019] In the example illustrated, the panel 1 is hinged by one of its sides by means of a hinge 25 fixed on a supporting body 24 tightly anchored in a cut 18b of the back plate 18. On the internal face 1a of the panel 1 and above an opening 19, are anchored elements 22a, 22b for supporting an espagnolette 2 which incorporates elongated holes 2b through which are passed guiding stubs 28 anchored in the back plate 18 by means of which such espagnolette 2 can move linearly guided in a cross direction between a closed position in which a closing end 2a of the espagnolette 2 protrudes from a side edge of the panel 1 to be secured as it is conventional within a recess or stop (not shown) of a doorframe (not shown) and an open position in which such closing end 2a is concealed behind the internal face 1a of panel 1. At a lower part of the espagnolette 2 is incorporated, for example by mechanisation, a gearing of a toothed bar 4 accessible through a notch 22c of the anchoring element 22a.

[0020] Through the opening 1c of panel 1 a shaft 8 is passing which has joined to an external end 8b thereof a handhold 5, preferably having a circular shape. In the example illustrated, the handhold 5 is integral with the shaft 8. In the internal face 1a of the panel 1 and around the opening 1c, is arranged a housing and guiding part 9 provided with a housing 9a capable to house the handhold 5 and a cylindrical passageway which is acting as support and guide for the shaft 8. The said housing and guiding part 9 is fastened on the back plate by means of fastening means 23. At an internal end 8a of the shaft 8, a pinion 3 is fixed, for example by means of setscrews 3b. The said pinion 3 can gear with the toothed bar 4, the length of the shaft 8 being bigger than that of the passage of the housing and guiding part 9 with which a drive assembly formed by such shaft, pinion and handhold 8,3, 5 is guided with respect to the panel 1 so that it can be linearly moved along its own shaft between a live position (Fig. 2), in which the pinion 3 is geared with the toothed bar 4, and a dead position (Fig. 3) in which the pinion 3 is ungeared from the toothed bar 4 and at same time rotate about its own shaft between an open angular position, corresponding to the open position of the espagnolette 2 and a closed angular position, corresponding to the closed position of the espagnolette 2. The relation of lengths between the shaft 8 and the passage of the housing and guiding part 9 is such that when the drive assembly 8, 3, 5 is at such live axial position, that is to say, when the pinion 3 is geared with the toothed bar 4, the handhold 5 protrudes from the external face 1b of panel 1 so that it is accessible to be seized and rotated from the external face 1b to rotate the pinion 3 through the shaft 8 this way driving the toothed bar 4 to move the espagnolette 2 between its positions open and closed, while in such dead position the handhold 5 remains housed and concealed in such housing 9a so that it is functionally inaccessible from the external face 1b of the panel 1. It will be understood that the rotation

angle of the shaft 8 between the said open and closed angular positions is small that is why the pinion 3 has only teeth 3a in a portion of its circumference, as it is best shown in the enlarged detail on the right of Fig. 1.

[0021] As it is best shown in Fig. 2 and 3, between the handhold 5 and a protrusion of the bottom of the housing 9 an elastic member is compressed, such as a compression helical spring 14 arranged for pushing the set shaft, pinion and handhold 8, 3, 5 assembly towards a live position (Fig. 2) and they are provided with first retaining means 12, 13 for retaining the drive assembly 8, 3, 5 in the dead position (Fig. 3) against the strength of such elastic member 14 when such assembly is at such closed angular position. The travel of the drive assembly 8, 3, 5 from the live position to the dead position can be carried out by hand pushing the handhold 5 from the external face 1b of the panel 1 against the strength of the elastic member 14.

[0022] Such first retaining means 12, 13 are controlled by a cylindrical lock device 6, driven by a key 7. For this, the shaft 8 is hollow and defines an internal housing with an opening at such end of the internal side 8a and another opening at such end of the external side 8b, such lock device 6 being mounted on such internal housing of the shaft 8. The lock device 6 comprises an external body 6a fixed inside the shaft 8 and an internal body 6b which can be coaxially rotated with respect to such external body 6a by means of such key 7 between a position of open lock and a position of closed lock. An external end of the internal body 6b includes a keyhole for the key 7, which can be introduced through the end of the external side 8b of the shaft 8, while an internal end of the internal body 6b protrudes at the end of the internal side 8a of the shaft 8 and shows flat side faces and a threaded final stem 6c by means of which at such internal end, protruding from the internal body 6b a latch 12 is fixed.

[0023] In the example of embodiment illustrated the said latch 12 has the shape of a substantially flat plate and perpendicular to the shaft 8, which shows at one end an elongated hole through which is inserted the internal end protruding from the internal body 6b, adjusting at its flat side faces and is secured by means of a nut installed in the said end threaded stem 6c. The latch 12 shows an overhanging extended portion 12a which, when the shaft, pinion and handhold 8, 3, 5 assembly is at its dead position (Fig. 3) and the internal body 6b of the lock device 6 is rotated to its position of closed lock, it is located on a first butt 13 integral with a support 16 fixed on the internal face 1a of the panel 1, that is to say, on the back plate 18, at which position the drive assembly 8, 3, 5 remains retained at its dead position preventing any axial travel thereof, which makes virtually impossible to open the door without having the key, bearing in mind that at the said dead position, of the drive mechanism 8, 3, 5, the espagnolette is at its closed position, the pinion and toothed bar mechanism is un-gearred and the handhold 5 is concealed in the housing

9a in a situation operatively inaccessible. When from such situation the internal body 6b is rotated to its position of open lock, such overhanging extended portion 12a of the latch 12 escapes out of the first butt 13 allowing the axial travel of the drive assembly 8,3,5 towards its live position (Fig. 3) by the strength of a spring 14, so that the pinion and toothed bar mechanism is geared and the handhold 5 protrudes from the external face 1b of the panel 1 at an operatively accessible situation.

[0024] For best safety, the door comprises a second butt 17 integral with such support 16 and facing the first butt 13 at a predetermined distance from it, so that such overhanging extended portion 12a of the latch 12 is located, when the internal body 6b is at such closed lock position between such first and second butts 13, 17, with which the second butt 17 prevents an eventual axial travel of the shaft, pinion and handhold 8, 3, 5 assembly more inwardly its dead position, for example, due to an undue manipulation. A third butt 26 integral with such support 16 is facing the end of the internal body 6b to which is fixed the latch 12, in order to prevent, in addition, an eventual axial travel of the shaft, pinion and handhold assembly 8, 3, 5 more inwardly its dead position, for example in the case that the latch 12 would fail due to the use of brute force applied to the internal body 6b of the lock 6 from the external face 1b of the panel 1.

[0025] The safety door of this invention in addition comprises second retaining means 10, 11 for retaining the shaft, pinion and handhold 8, 3, 5 assembly at its live position at any angular position thereof except at the closed angular position, in which the said second retaining means 10, 11 allow the axial travel of the drive assembly 8,3,5 towards the dead position. In addition, such second retaining means 10, 11 prevent the rotation of the drive assembly 8, 3, 5 at any axial position thereof except at the dead position. With this, it is guaranteed that the axial travel of the drive assembly 8, 3,5 from the live position to the dead position is only possible at a single angular position thereof which corresponds to the closed position of the espagnolette 2, and that the rotation of the drive assembly 8,3,5 for driving the travel of the espagnolette 2 from the closed position to the open position is only possible at the live axial position of the drive assembly 8, 3, 5.

[0026] Such second retaining means 10, 11 comprise a protruding part 15 fixed to the shaft 8, which has a flat face 15a perpendicular to the shaft 8 and an axial notch 10 formed on its periphery, and a wing 11 axially oriented and provided with an internal edge 11a. Advantageously, such protruding part 15 is provided by a toothless portion of the pinion 3 (see the detail on the right of the Fig. 1) and such wing 11 is joined to the support 16 fixed on the internal face 1a of the panel 1, that is to say, of the back plate 18, protruding from it in such a position that when the drive assembly 8, 3, 5 is at its live position (Fig. 3), such lower edge 11a of the wing 11 remains facing such flat face 15a preventing it moves at any angular position thereof except at the closed angular position in

which the wing 11 remains facing such axial notch 10 allowing the axial travel of the drive assembly 8, 3, 5 between its dead and live positions by the insertion of the wing 11 in the axial notch 10. In addition, the side edges of the axial notch 10 prevent the rotation of the drive assembly 8, 3, 5 while, being at the said closed angular position, it is axially moving and also while the drive assembly 8, 3, 5 is at its dead position (Fig. 2) advantageously locked by the latch 12.

[0027] The safety door of this invention still incorporates third retaining means 27 elastically loaded for retaining the espagnolette 2 at the closed position. In the example of embodiment illustrated, such retaining means consist in a conventional device of elastically loaded balls 27 arranged so that such ball is pushed against a flat surface of the espagnolette 2 in which a recess is provided (not shown). A portion of such ball is housed in such recess when the espagnolette 2 is at the closed position retaining it at such position while the pinion 3 is unengaged from the toothed bar 4.

[0028] As an additional safety measure, the door of this invention incorporates a barrier part 29 (see the detail on the left of Fig. 1) which has a flat annular body leaning against a face of the pinion 3 facing the back plate 18, a central hole 30 broached in the shaft 8 so that it can freely rotate about itself, an appendage 31 which surrounds the pinion 3 and which ends at a end 31 formed and arranged to be fixed at the protruding internal end 6c of the internal body 6b of the lock device 6 with which such barrier part 29 is rotated with the key 7 according to such positions of open and closed lock of the internal body 6b of the lock device 6. The said annular flat body of the barrier part 29 comprises a portion of gearing barrier 33 which, when the lock device 6 is at its closed lock position (Fig. 3) is superposed to the said portion with teeth 3a of the pinion 3 so that it remains interposed between such teeth 3a of the pinion 3 and the gearing of the toothed bar 4 preventing it to be geared even in the case that a breakage of the internal body 6b of the lock device 6 occurs due to the use of brute force applied to it from the external face 1b of the panel 1. When the internal body 6b of the lock device 6 is placed at its position of open lock (Fig. 2) an indent 36 of the barrier part 29 is located in front of the portion with teeth 3a of the pinion 3 so that it allows to be geared with the gearing of the toothed bar 4. As an additional safety measure, the flat annular portion of the barrier part 29 in addition comprises a portion of safety latch 34 which is introduced in a cross slot 35 of the support 16 (Fig. 2 and 3) when the internal body 6b of the lock device 6 adopts its position of closed lock and an indent 37 which allows the passage of the support 16 when the internal body 6b of the lock device 6 adopts its position of open lock.

[0029] The operation of the safety door of this invention is described below with reference to Fig. 4 to 9. Normally, the panel 1 is fixed hinged by one of its sides to, for example, a frame (not shown) by means of a hinge

25 and the closing end 2a of the espagnolette 2 can protrude from the opposite side edge of the panel 1 to be conventionally secured in a recess or butt (not shown of the frame).

[0030] Fig. 4 to 6 show from the front and from the back the safety door in an open situation (Fig. 2), in which the espagnolette 2 is at its open position, concealed behind the panel 1, the drive assembly 8, 3, 5 is at its live position, with the handhold 5 operatively accessible and the lock device 6 is at its position of open lock. In this position, the key 7 remains seized within the keyhole of the lock 6. Normally, the closing/opening mechanism located at the internal face 1a of the panel 1 is protected by a protecting cover 38, as shown in Fig. 5. A user who wishes to close the safety door must, first rotate the panel 1 with respect to the hinge 25 until adjusting the panel 1 to the frame (not shown). Then, hand rotate the handhold 5 from its open angular position to the closed angular position for moving the espagnolette 2 to its closed position. In this position, the panel 1 of the door remains interlocked in the frame although the pinion and toothed bar mechanism 3, 4 remains geared and the lock 6 remains open (Fig. 7). The small angle rotated by the handhold 5 has produced a related rotation of the shaft 8 and of all the lock device 6 fixed to it, so that as well the latch 12, at the internal part as the key 7, at the external part (not shown in Fig. 7), adopt an horizontal position. Then, the user will axially press the handhold 5 inwardly against the strength of the spring 14 until concealing it in the housing 9a (Fig. 8) out of any possibility of operative access and at same time it will ungear the pinion and toothed bar mechanism 3,4 (Fig. 9). Last, without releasing the handhold (5), he will rotate the key 7 in the lock 6 a quarter of turn (Fig. 8) with which the latch 12 will be situated between the butts 13, 17 blocking the possibility of axial displacement of the drive assembly 8, 3, 5 and portion of gear barrier 33 will remain interposed between the teeth 3a of the pinion 3 and the toothed bar 4 (Fig. 9). In addition, as it is conventional, in this position the key 7 is released and the user can, for example, withdraw it from the lock 6 and take it with him. To newly open the door, the user must introduce first the key 7 in the keyhole of the lock 6 and follow the steps above described in the reverse sense with the difference that when the latch 12 is released from its grip between the butts 13, 17, the drive assembly 8, 3, 5 will be automatically expelled by the spring 14, gearing the pinion and toothed bar mechanism and withdrawing the handhold 5 from the housing 9a up to its operatively accessible position in order that the user can seize it and rotate it to move the espagnolette 2 to the open position.

[0031] A man of the art will be easily capable to introduce several modifications and variations without they are out of the scope of this invention as it will be defined by the claims appended.

Claims

1. Safety door with a disconnectable espagnolette mechanism, of the kind which comprises a closing panel (1) with an internal face (1a) and an external face (1b), an espagnolette (2) mounted on such internal face (1a) in a linearly guided way for moving between an open position and a closed position and a pinion and toothed bar mechanism (3,4) for moving such espagnolette (2) such pinion and toothed bar mechanism (3,4) being driven and controlled by a lock device (6) accessible from such external face (1b), **characterised in that** it comprises means for ungearing such pinion and toothed bar mechanism (3,4) when the espagnolette (2) is at such closed position, and at least first retaining means (12, 13) controlled by such lock mechanism (6) for retaining such pinion and toothed bar mechanism (3, 4) at an ungeared situation leaving the espagnolette (2) at the closed position.
2. Door, according to claim 1, **characterised in that** such pinion and toothed bar mechanism (3, 4) comprises a toothed bar (4) joined to the espagnolette (2) and a pinion (3) joined to an end of the internal side (8a) of a shaft (8), which is passed through an opening (1c) of such panel (1) and has a handhold (5) joined to an end of the external side (8b) thereof, the assembly being formed of such shaft, pinion and handhold (8,3,5) guided with respect to the panel (1) so that it can rotate between an open angular position, corresponding to the open position of the espagnolette (2) and a closed angular position, corresponding to the closed position of the espagnolette (2), and axially move between a live position in which the pinion (3) is geared with the toothed bar (4) and a dead position in which the pinion (3) is ungeared from the toothed bar (4).
3. Door according to claim 2, **characterised in that** in such live position the handhold (5) protrudes from the external face (1b) of the panel (1) so that it is accessible to be seized and in such dead position the handhold (5) is concealed in a housing (9a) of the panel (1) so that it is functionally inaccessible.
4. Door, according to claim 3, **characterised in that** it comprises an elastic member (14) arranged for pushing the said shaft, pinion and handhold assembly (8,3,5) towards the live position, the shaft, pinion and handhold assembly (8,3,5) being retained by the said first retaining means (12, 13) at the dead position against the strength of such elastic member (14) when such assembly is at the said closed angular position.
5. Door, according to claim 3, **characterised in that** it comprises second retaining means (10,11) for retaining the shaft, pinion and handhold assembly (8, 3, 5) at such live position at any angular position thereof except at the closed angular position, in which such second retaining means (10, 11) allow the joint axial travel of the shaft, pinion and handhold (8, 3, 5) towards the dead position, such travel can be carried out by hand push on the handhold (5) from the external face (1b) of the panel (1) against the strength of the elastic member (14).
6. Door, according to claim 5, **characterised in that** such second retaining means (10,11) in addition prevent the rotation of the shaft, pinion and handhold assembly (8, 3, 5) at any axial position thereof except the dead position.
7. Door, according to claim 5, **characterised in that** it comprises third retaining means (27) elastically loaded for retaining the espagnolette (2) at the closed position, such retaining means being chosen out of a group including an elastic loaded ball (27) arranged with such ball pushed against a surface of the espagnolette (2) and a recess in the surface of the espagnolette (2) arranged for housing a portion of the ball when the espagnolette (2) is at the closed position.
8. Door, according to claim 1, **characterised in that** such first retaining means (12, 13) comprise at least a latch (12) connected to a part of such lock device (6) driven by a key (7).
9. Door, according to claim 2, **characterised in that** such shaft (8) is hollow and defines an internal housing with an opening in such end of the internal side (8a) and another opening at the said end of the external side (8b) and such lock device (6) is mounted on such internal housing of the shaft (8) and comprises an external body (6a) fixed on the shaft (8) and an internal body (6b) which can be coaxially rotated with respect to such external body (6a) by means of a key (7) introduced from the end of the external side (8b) between an open lock position and a closed lock position, such first retaining means (12,13) comprising at least a latch (12) fixed at one end of such internal body (6b) protruding from the said end of the internal side (8a) of the shaft (8).
10. Door according to claim 9, **characterised in that** such latch (12) has the shape of a plate substantially perpendicular to the shaft (8) fixed by one end to the internal body (6b) of the lock (6) and with an extended overhanging portion (12a), such extended overhanging portion (12a), when the internal body (6b) is in that closed lock position, is located on a first butt (13) integral with a support fixed to the internal face (1a) of the panel (1) with which it re-

tains the shaft, pinion and handhold assembly (8, 3, 5) at its dead position preventing any axial travel thereof, and, when the internal body (6b) is at such open lock position, it is located outside such first butt (13) allowing the axial travel of the shaft, pinion and handhold assembly (8, 3, 5) between its dead and live positions.

11. Door, according to claim 10, **characterised in that** it comprises a second butt (17) integral with the said support (16) and facing the first butt (13) at a predetermined distance thereof, so that such extended overhanging portion (12a) of the latch (12) is located, when the internal body (6b) is at such closed lock position, between such first and second butts (13, 17), with which the second butt (17) prevents an eventual axial travel of the shaft, pinion and handhold assembly (8, 3, 5) more inwardly its dead position due to an undue manipulation.

12. Door according to claim 11, **characterised in that** it comprises a third butt (26) integral with the said support (16) and facing the end of the internal body (6b) to which the latch (12) is fixed, in order to additionally prevent an eventual axial travel of the shaft, pinion and handhold assembly (8,3,5) more inwardly its dead position due to an undue manipulation.

13. Door, according to claim 5, **characterised in that** such second retaining means (10, 11) comprise a protruding part (15) fixed on the shaft (8) which has a flat face (15a) perpendicular to the shaft (8) and an axial notch (10) formed on its periphery and a wing (11) axially oriented and provided with an internal edge (11a) such wing (11) being joined to a support (16) fixed on the internal face (1a) of the panel (1) and protruding thereof in such a position that the said lower edge (11a) remains facing such flat face (15a) preventing the axial travel of the shaft, pinion and handhold assembly (8, 3, 5) when it is in such live position at any angular position except the closed angular position, in which the wing (11) remains facing such axial notch (10) and is inserted in the axial notch (10) preventing the rotation of the shaft, pinion and handhold assembly (8, 3, 5) when it is moving between the dead and the live positions being at same closed angular position, and when the shaft, pinion and handhold assembly (8, 3, 5) is at the dead position.

14. Door, according to claim 13, **characterised in that** such protruding part (15) is provided by a toothless portion of the pinion (3).

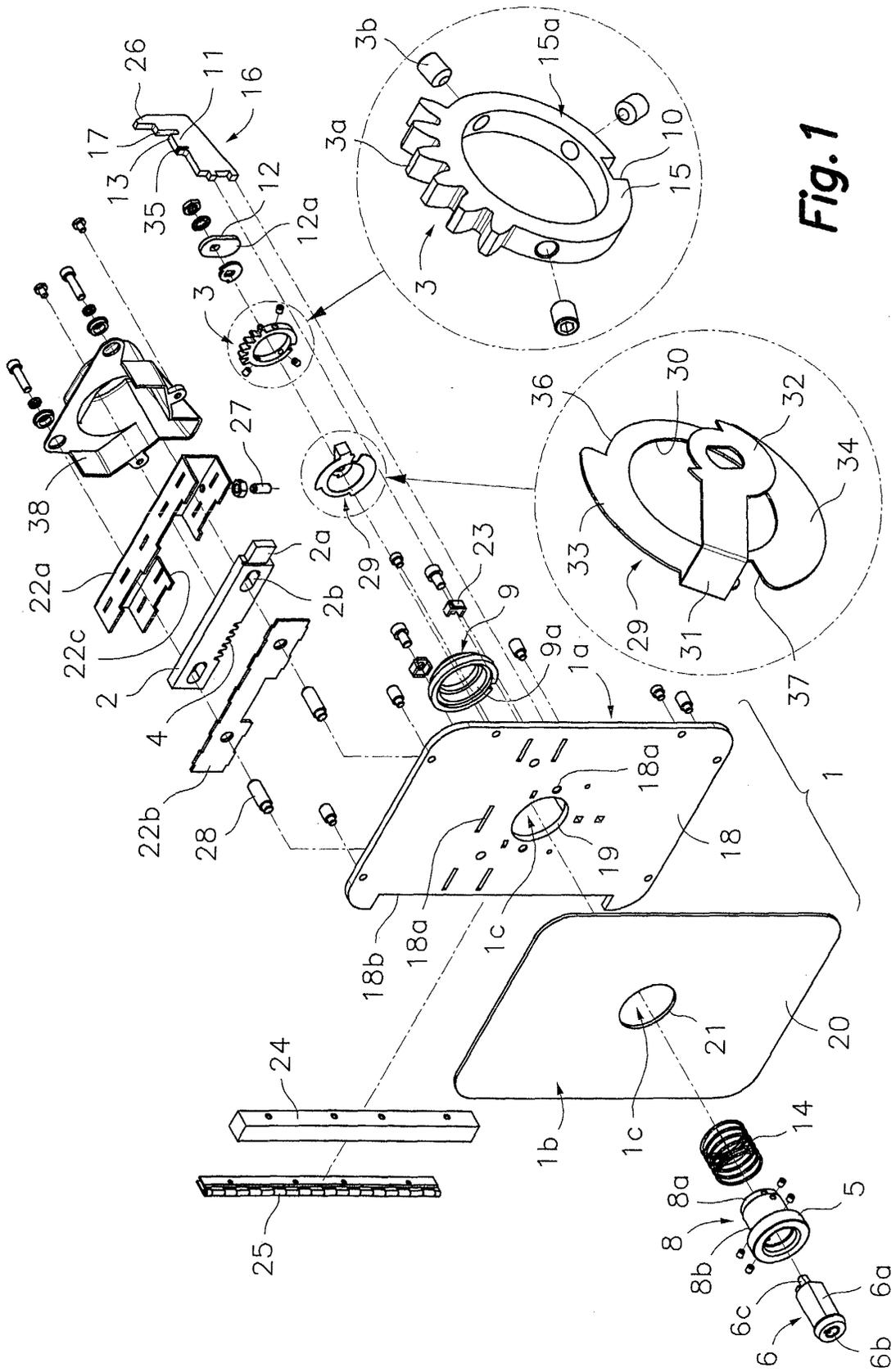
15. Door, according to claim 9, **characterised in that** it comprises a barrier part (29) which has a flat annular body leaning on a face of the pinion (3) facing

the back plate (18), with a portion of barrier of gearing (33) protruding from its periphery and a central hole (30) broached on the shaft (8) so that it can freely rotate about itself, and an appendage (31) which starts from the periphery of such flat annular body, surrounds the pinion (3) and ends at a end (31) fixed to such internal protruding end (6c) of the internal body (6b) of the lock device (6) such barrier part (29) being rotated by the key (7) jointly with the internal body (6b) of the lock device (6) for interposing such portion of gearing barrier (33) between teeth (3a) of the pinion (3) and the toothed bar (4) preventing its gearing when the lock device (6) is at its position of closed lock.

16. Door, according to claim 15, **characterised in that** the said flat annular body of the barrier part (29) in addition comprises a portion of safety latch 34 which is introduced in a cross slot (35) of a support (16) fixed on the back plate (18) preventing the axial travel of the drive assembly (8,3,5) when the lock device (6) is at its closed lock position; and an indent (36) which is located facing such teeth (3a) of the pinion (3) allowing it to be geared with the toothed bar (4) and an indent (37) allowing such support (16) to pass and with it the axial travel of the drive assembly (8, 3, 5) when the internal body (6b) of the lock device (6) adopts its open lock position.

17. Door, according to any of the claims 3 to 7, **characterised in that** such closing panel (1) comprises: a back plate (18) which defines such internal face (1a) of the panel (1) and incorporates a passing opening (19) for the shaft (8)) and a series of anchoring holes and/or cuts (18a, 18b) for fixing several components which include at least one supporting and guiding element (22a, 22b) for the espagnolette (2), at least an element (23) for fixing the housing (9a) of the handhold (5), a support (16) of several members of the first (12, 13) and second (10, 11) retaining means, and at least a supporting body (24) of an hinge (25); and an armour plate (20) which defines such external face (1b) of the panel (1) and includes an opening (21) for passing the shaft (8), such back and armour plates (18, 20) having sizes substantially equal and they are tightly joined to each other, with respective openings (19, 21) aligned for forming the said opening (1c) of the panel (1) and with the armour plate (20) preventing the vision and the access to such anchoring holes and/or cuts (18a, 18b) from the external face (1b) of the panel (1).

18. Door, according to claim 17, **characterised in that** such back and armour plates (18, 20) are of a very hard metallic material and comprise at least a tack weld between them to keep them tightly fixed to each other.



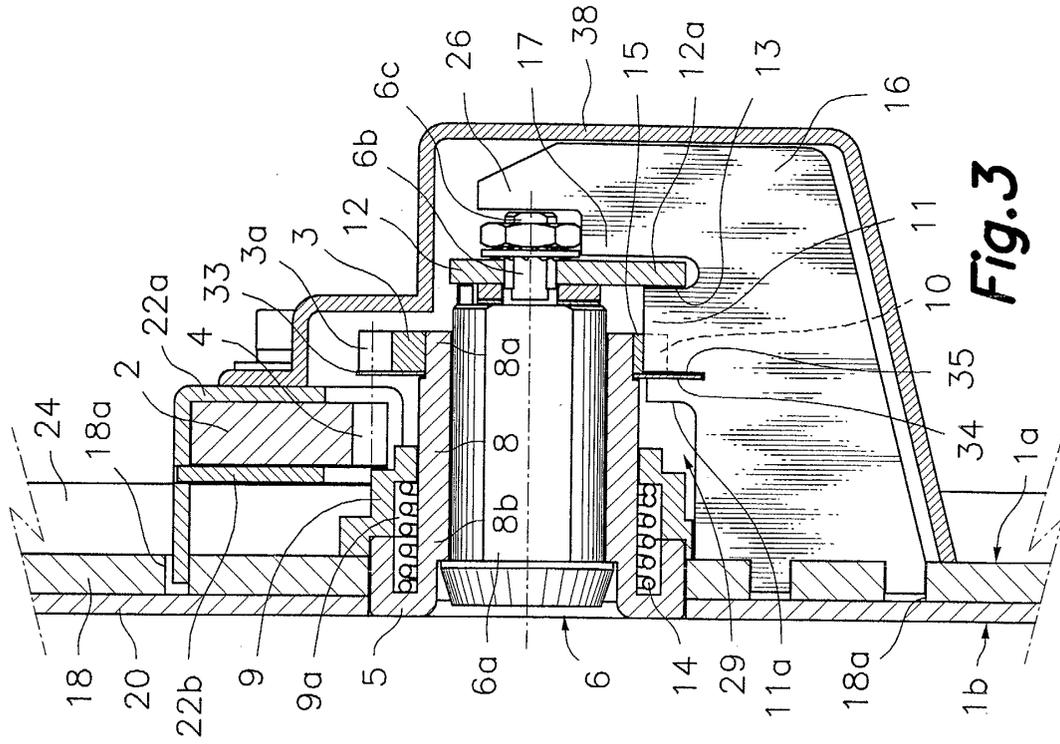


Fig.3

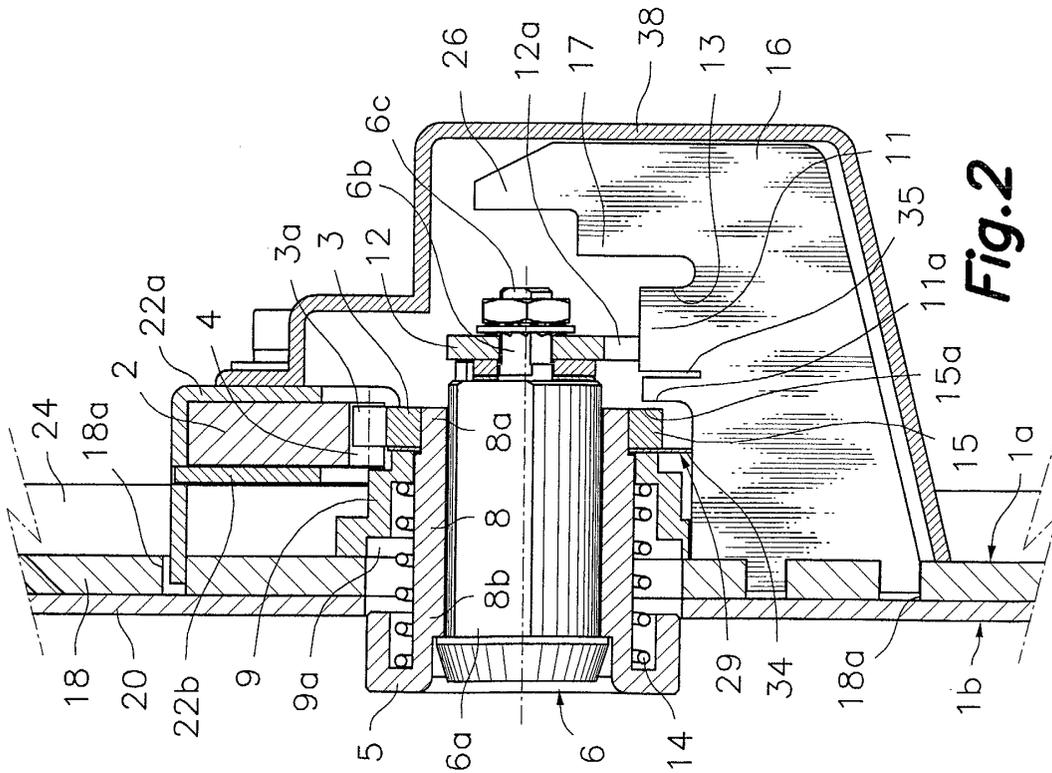


Fig.2

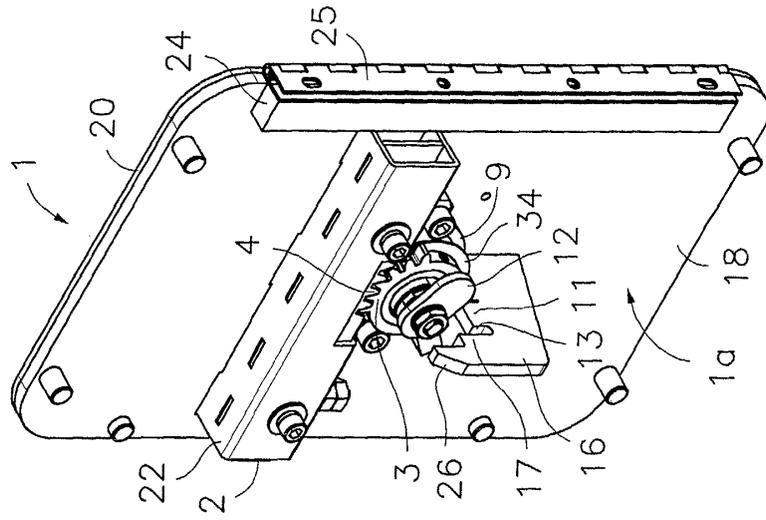


Fig. 6

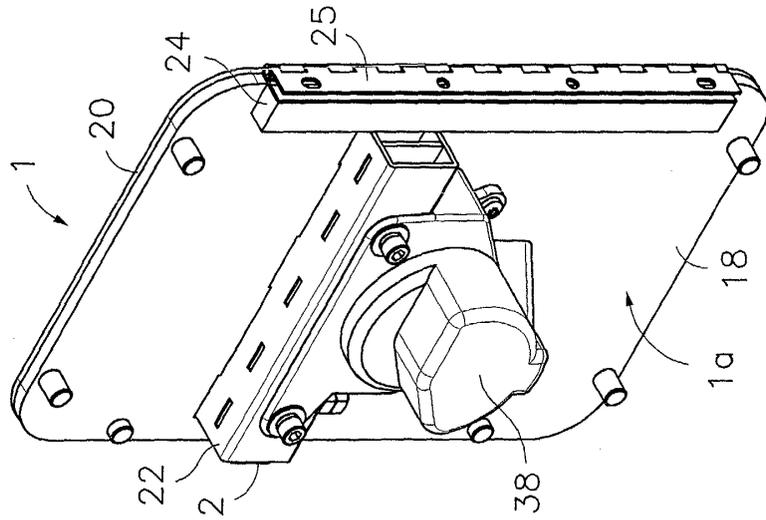


Fig. 5

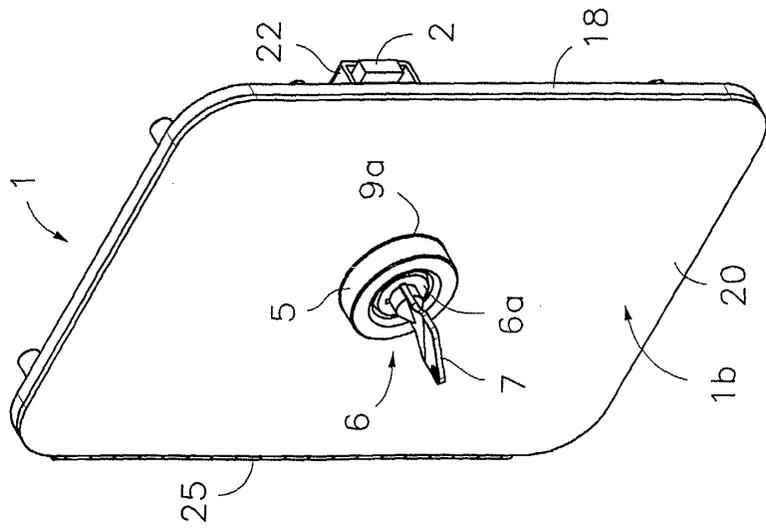


Fig. 4

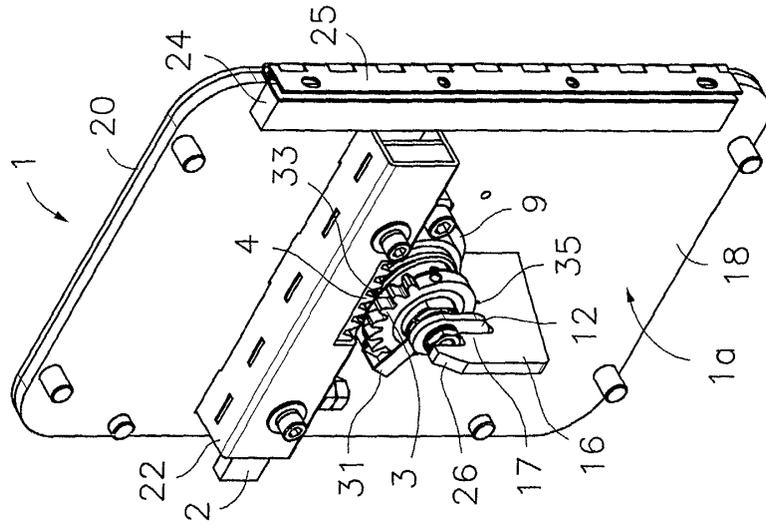


Fig. 9

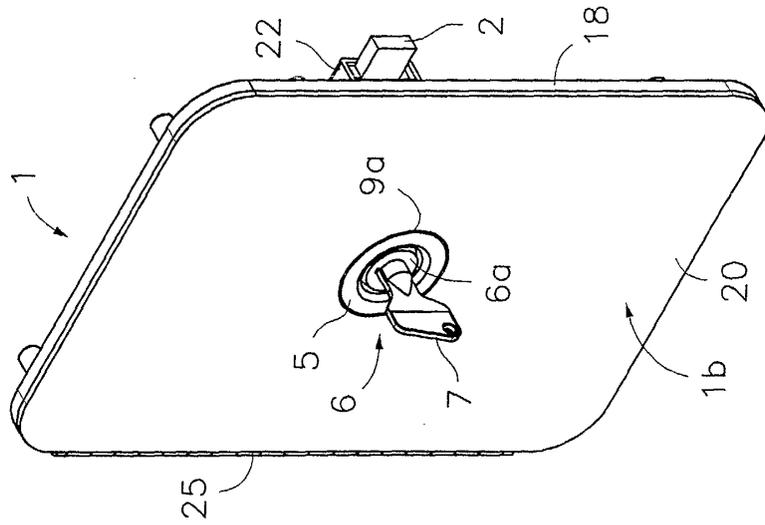


Fig. 8

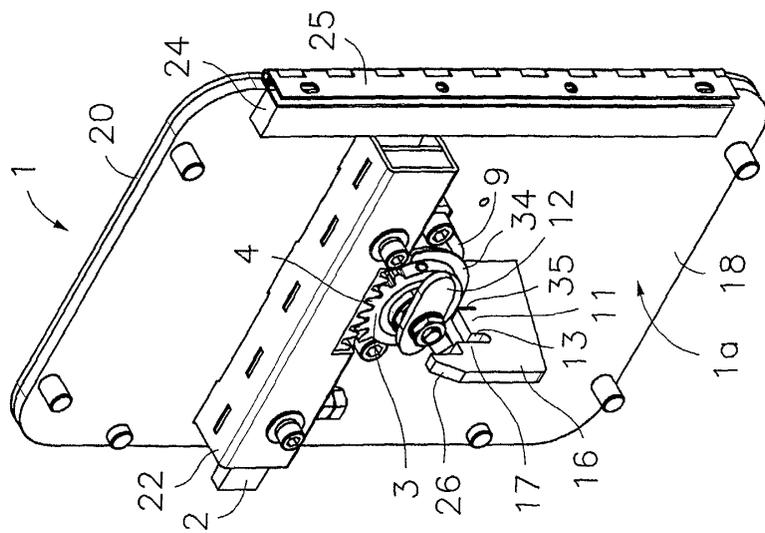


Fig. 7



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Application Number
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MUNICH		6 May 2003	Henkes, R
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