

April 8, 1958

M. FRESARD ET AL.
SECURITY LOCKS

2,829,513

Filed May 14, 1953

2 Sheets-Sheet 1

Fig. 1

Fig. 2

Fig. 3

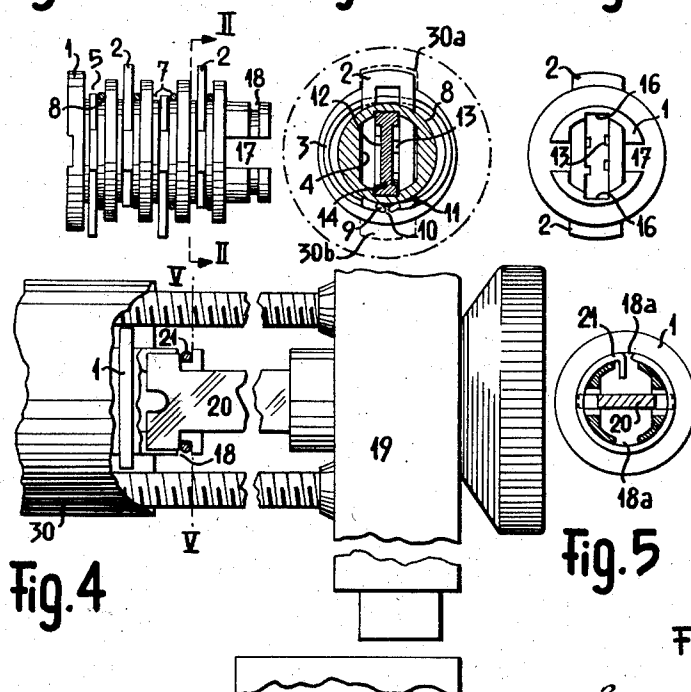
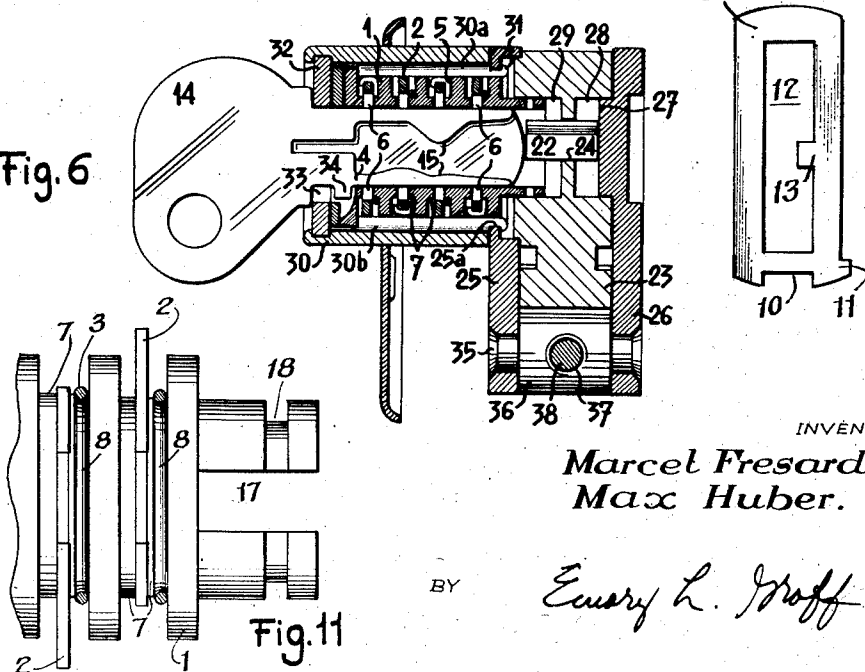


Fig. 6

Fig. 12



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2 Sheets-Sheet 2

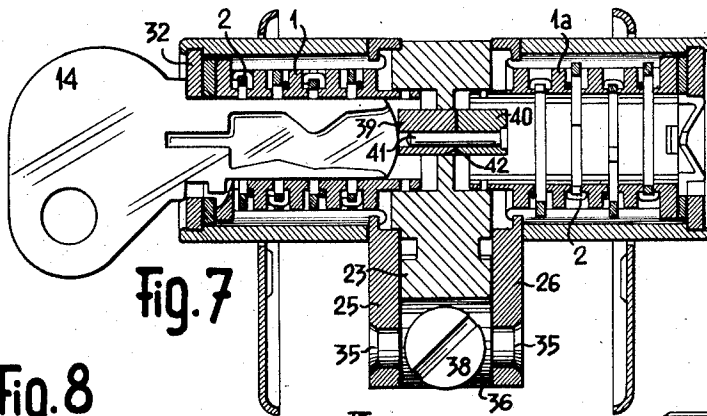


Fig. 7

Fig. 8

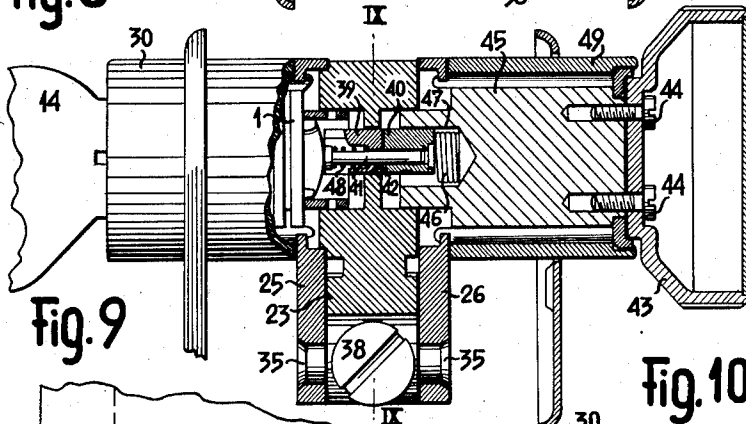
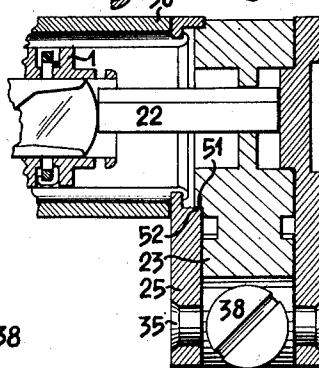
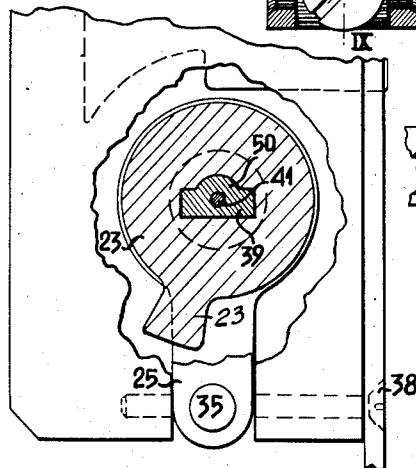


Fig. 9

Fig. 10



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1

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SECURITY LOCKS

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Claims priority, application Switzerland May 20, 1952 10

6 Claims. (Cl. 70—364)

The present invention has for its subject a security lock of the type comprising a cylinder capable of turning in a casing which is itself cylindrical, said cylinder carrying locking plates capable of sliding transversely in the cylinder against the action of springs, the cylinder having an axial bore of substantially rectangular cross-section.

This security lock is characterized in that the end of the cylinder opposite the key has a transverse groove perpendicular to the larger sides of the section of the axial bore, this being provided on its opposite sides, of smaller width, with a groove adapted to serve as a guide for the key, the whole being so arranged as to allow of driving, by means of a transmission member engaging the end of the cylinder, the various bolts and catches, said cylinder carrying said locking plates being a portion of the cylindrical device disclosed and claimed in application Serial No. 354,995, filed May 14, 1953, now Patent No. 2,775,884, issued January 1, 1957. Also, in application Serial No. 354,998, filed May 14, 1953, now abandoned, there is disclosed and claimed a padlock having a component part thereof said cylindrical device of said Patent No. 2,775,884.

A number of forms of construction of the lock according to the invention are shown, by way of example, in the accompanying drawings, wherein:

Fig. 1 is a view in side-elevation of the cylinder.

Fig. 2 is a section on the line II—II of Fig. 1.

Fig. 3 is an end view of the cylinder.

Fig. 4 shows a lock in which the cylinder is adapted to drive the bolt.

Fig. 5 is a section on the line V—V of Fig. 4.

Fig. 6 shows, in axial section, a lock in which the cylinder is adapted to drive a control catch of a latch bolt fitted in a door.

Fig. 7 shows, in partial section a lock in which the cylinder is adapted to drive a catch for actuating a catch bolt fitted into a door, a second cylinder, similar to the first, being provided for driving the catch also from the inside of a door.

Fig. 8 also shows, in partial section, a lock in which the cylinder is adapted to drive a catch for controlling a catch bolt enclosed in a door, an operating knob enabling said catch bolt to be operated from the inner side of the door.

Fig. 9 is a sectional view on the line IX—IX of Fig. 8.

Fig. 10 shows, in part, a lock of the type shown in Fig. 6 adapted to be mounted in a door of considerable thickness.

Fig. 11 shows in detail the right hand portion of the cylinder of Figure 1 particularly setting forth, on a larger scale, the grooves, the shoulders, and the springs.

Fig. 12 shows in greater detail one of the plates, serving as locking members, of the lock and particularly sets forth the stop portion which determines the position of said plate transversely in the cylinder.

Said safety lock is of the type comprising a cylinder 1 provided with plates 2 serving as locking members. Said plates 2 are capable of sliding transversely in the cylin-

2

der 1 against the action of spring 3. The body of the cylinder has an axial bore 4 of substantially rectangular cross-section and its outer wall has as many grooves 5 as the cylinder has plates 2. The bottom of each groove 5 has two oppositely located orifices 6 through which passes the corresponding plate 2.

Two annular shoulders 7 are provided opposite one another on the opposite faces of each groove. The springs 3, which are of annular shape, are located in each groove 5. Each of the springs 3 bears against one of the two shoulders 7 and is guided by a groove 8 provided in this.

The ends 9 of each spring 3 are bent and hooked to the same side of each plate in a notch 10 thereof (see Fig. 2).

Each plate 2 has a shoulder 11 forming the stop determining the position of each plate transversely in the cylinder. Further, each plate has a central opening 12 into which projects a pin 13.

The opening 12 has a shape corresponding with that of the cross-section of the key 14 and the pin 13 is adapted to produce, by co-operating with one of the ramps 15, provided on the side faces of the key, the retraction of the corresponding plate into the cylinder when the key is engaged in this.

Further, it is to be observed, that for guiding the key in the cylinder, the axial bore of the latter has on its two opposite faces of smallest width, a groove 16 in which the key slides.

When the key has been withdrawn from the cylinder 1, the plates 2, under the action of the springs 3, move transversely in the cylinder 1 and their side, opposite to this in which the notch 10 is formed, projects either into a groove 30a, or into a groove 30b, provided in the casing 30. In this position the plates 2 thus lock the cylinder 1 relatively to the casing 30.

On the contrary, when the key is engaged in the cylinder 1, the ramps 15, by coming into contact with the pin 13 of each of the plates 2, produce the retraction of the latter into the interior of the cylinder 1. This is thus released and can be turned.

The end of the cylinder opposite the key is provided with a transverse groove 17 perpendicular to the large sides of the substantially rectangular cross-section of the axial bore 4.

An annular groove 18 is further provided in the outer wall of the cylinder and the grooves 16 determine in the bottom of the groove 18 two opposite openings 18a.

When the cylinder is adapted to move a bolt 19 by means of an interposed transmission member 20, one end of this is provided with an enlarged shape so as to be capable of being introduced into the groove 17 and to be retained in this by an annular spring 21 engaging with the groove 18 and of which one end is hooked in one of the openings 18a (see Fig. 5).

Fig. 6 shows in axial section a lock in which the cylinder 1 is adapted to drive, through the medium of a transmission member 22, a catch 23 for controlling a catch bolt, not shown, and which is assumed to be enclosed in a door. Said transmission member 22 is formed by a shaped part of which one end engages with the transverse groove 17, provided at the end of the cylinder 1, while the other end of the part 22 is engaged in a seating 24 of corresponding shape, provided in the catch 23.

It is to be observed that the catch 23 is guided between two flanges 25 and 26, the latter having a cylindrical projection 27 engaging with a bore 28 of the catch.

The inner end of the cylinder 1 is itself engaged in a bore 29 opposite the bore 28.

The cylindrical casing 30 in which the cylinder 1 turns is secured to a flange 25. In fact, the end of the casing 30 engages with a circular opening 25a of the flange

25, which opening is concentric with the axis of the cylinder 1. The edge 31 of the end of the casing 30 is bent in such a manner as to secure the flange 25 rigidly to the casing 30. The cylinder 1 is itself held in the casing 30 by a washer 32 forced into the outer end of the said casing. It is to be observed that the washer 32 has a notch 33 which is provided to allow the passage of a pin 34 provided on the key. The pin 34 prevents the key from being inserted into the cylinder or withdrawn therefrom when in a position which is not correct. Thus, when the key is withdrawn from the cylinder, the plates 2 are engaged effectively with the grooves 30a and 30b of the casing 30.

A spacing member 36 maintains the flanges 25, 26 and the catch 23 in position by means of two extensions 35 passing through the flanges 25 and 26 and which are riveted to each flange.

The spacing member 36 is itself provided with a screwed bore 37 adapted to receive the screw 38 for securing the cylinder catch block, in the part of the lock in which slides the catch bolt, not shown.

The lock shown in Fig. 7 is of the same type as that shown in Fig. 6. However, it is also provided with a second cylinder 1a identical with the first cylinder 1 and is adapted to permit operation by means of a lock key from the inner side of the door on which it is mounted.

In this lock the transmission member comprises two shaped parts 39 and 40, having a rib 50 ensuring the centering of the transmission member relatively to the cylinders, the two parts being connected together axially by a rod 41 allowing them to turn relatively to one another along the axis of rotation of the cylinders 1 and 1a. The catch has an opening 42 of a shape corresponding with that of the cross-section of the transmission member 39, 40.

Further, the member 39, 40 is capable of sliding in the said opening 42. The depth of this and the length of each of the two parts 39 and 40 forming the transmission member are so selected that the engagement of the key in one of the cylinders, for example the cylinder 1, disengages the catch of the shaped part 40, in connection with the other cylinder 1a, in such a manner as to render the drive in rotation of one of the cylinders independent of that of the other cylinder.

The lock shown in Fig. 8 is of the same type as that shown in Fig. 7. However, in this latter form of construction, the catch 23, instead of being actuated from the inner side of the door by the key, is controlled by an operating knob 43 secured by screws 44 to a cylindrical part 45 capable of being turned in a tubular casing 49 about the same axis as the cylinder 1.

A member for connecting the two shaped parts 39, 40, allows actuation of the catch 23, either by the cylinder 1, or by the knob 43. Similarly to Fig. 7, the two parts 39, 40 are connected together by a rod 41 and can turn relatively to one another about the axis of rotation of the cylinder. The member 39, 40 is also capable of sliding in an opening 42 of the catch 23. However, it is to be observed that a spring 46, mounted in a bore 47 of the part 45, acts on the part 40 for holding this in engagement with an opening 42 of the catch 23, when the key is not engaged in the cylinder 1. Further, a spring 48 threaded on the rod 41, tends to maintain the two parts 39, 40 in contact with one another. The rod 41 is fixed rigidly to the part 40 by one of its ends, while its other end is adapted to come into contact with the end of the key when the latter is fitted into the cylinder 1. When fitting the key into the cylinder, the latter presses against the rod 41, the latter disengages the part 40 from the opening whereby the catch 23 is disconnected from the knob 43. Under the action of the spring 48, the part 39 follows the movement of the rod 41, whereby the cylinder 1 is coupled to the catch 23 through the medium of the part 39.

This construction of the transmission in two parts 39

and 40, held one against the other by a spring 48 enables the key to be fitted into the cylinder 1 and to entrain the catch 23 even in the case when this has been stopped in an intermediate position by the operating knob 43. In this case the engagement of the key produces the disengagement of the catch and the operating knob 43. The part 39 then does not engage the opening 42 of the catch under the action of the spring 48 until the cylinder has reached the angular position occupied by the catch 23.

The two parts 39 and 40, forming the transmission member, on the one hand between the cylinder 1 and the catch 23 and, on the other hand, between the operating knob 43 and the catch 23, have the general shape of a rectangular prism on one of the large faces of which is provided a rib 50 (see Fig. 9).

The rib 50 is provided on the one hand for ensuring the guiding and the centering of the transmission member relatively to the cylinder and, on the other hand, so as to allow only one relative angular position between the key and the catch.

It is to be observed that according to the thickness of the door into which one of the locks shown in Figs. 6 and 8 is to be fitted, the casing 30 may be selected of different length as also the parts 39 and 40.

In the case in which the casing 30 is selected of greater length than the cylinder (see Fig. 10), the catch 23 is no longer guided by the end of the cylinder 1 engaging with the bore 29, but simply by a cylindrical projection 51 provided on one of the faces of the catch and engaging with a bore 52 provided in the flange 25.

As will appear from the foregoing description, one and the same cylinder 1 is used for all the various mountings of the lock described. Further, the catch 23 is the same in all types of locks above described wherein the cylinder is adapted to control a catch bolt fitted into a door.

We claim:

1. A safety lock, comprising, in combination, a cylindrical casing, at least one rotatably mounted cylindrical body having a generally rectangular cross-sectional bore therethrough positioned in said casing, said bore having short sides and long sides constituting the wall surfaces thereof, a plurality of axially spaced and circumferential grooves in the outer surface of the wall of said body, the bottom wall of each groove having two oppositely positioned orifices therein, each of said orifices extending through the cylindrical body wall from the wall surface of the bore to the bottom portion of each groove, the opposite faces of each groove having an annular shoulder, one opposite to the other, one of said shoulders having a second groove therein, a plurality of slidably mounted locking plates having central openings and spaced pins extending into said openings from the inner plate walls thereof, each of said plates being positioned transversely in said cylindrical body with respect thereto and in said orifices, and an annularly shaped spring means in each of said grooves and guided in each of said second grooves for urging said plates transversely in said cylindrical body, said cylindrical body having at its end portion a transverse groove perpendicular to the long sides of said bore and an annular groove in the outer wall thereof, a locking bolt, and a transmission member means operatively connected both to said cylindrical body at least at said transverse groove thereof and to said locking bolt for transferring the motion of said cylindrical body to said locking bolt.

2. A safety lock in accordance with the lock of claim 1, said cylindrical body including longitudinal guiding groove means in the inner wall surface thereof for receiving a key, said annular groove in the outer wall of said cylindrical body having two oppositely positioned openings therein, each of said openings extending through the cylinder wall from the top wall of said guiding groove means to bottom portion of said annular groove, said

5

transmission member means including at one end thereof a widened portion engaging said cylindrical body at said transverse groove, an annular spring means positioned in said annular groove connected to said transmission member means and to said cylindrical body at one of said oppositely positioned openings for holding said widened portion in said transverse groove means, whereby said transmission member means is retained in the end of the cylindrical body.

3. A safety lock, comprising, in combination, a cylindrical casing, a rotatably mounted cylindrical body having a generally rectangular cross-sectional bore therethrough positioned in said casing, said bore having short sides and long sides constituting the inner wall surfaces thereof, said cylindrical body including a longitudinal guiding groove means in an inner wall surface thereof for receiving a key, a plurality of axially spaced and circumferential grooves in the outer surface of the wall of said body, the bottom wall of each groove having two oppositely positioned orifices therein, each of said orifices extending through the cylindrical body wall from the wall surface of the bore to the bottom portion of each groove, the opposite faces of each groove having an annular shoulder, one opposite to the other, one of said shoulders having a second groove therein, a plurality of slidably mounted locking plates having central openings and spaced pins extending into said openings from the inner plate walls thereof each of said plates being positioned transversely in said cylindrical body with respect thereto and in said orifices, and an annularly shaped spring means in each of said grooves and guided in each of said second grooves for urging said plates transversely in said cylindrical body, said cylindrical body having at its end portion a transverse groove perpendicular to the long sides of said bore, said cylindrical casing having at the end adjacent to said cylindrical body two flanges secured thereto, a locking bolt, a transmission member operatively connected to said cylindrical body at said transverse groove thereof, a catch operatively connected to said locking bolt, said catch being guided between said flanges and being operatively connected to said transmission member and to said cylindrical body, one of said flanges adjacent to the cylindrical body having a circular opening concentric with said cylindrical body, and means for securing said casing rigidly to one of said flanges, whereby said catch is operatively connected to the transmission member and the motion of said cylindrical body is transferred to said locking bolt through said transmission member and said catch.

4. A safety lock, comprising, in combination, a cylindrical casing, a first rotatably mounted cylindrical locking device in said casing, said locking device including a cylindrical body having a generally rectangular cross-sectional bore therethrough positioned in said casing, said bore having short sides and long sides constituting the wall surfaces thereof, a plurality of axially spaced and circumferential grooves in the outer surface of the wall of said body, the bottom wall of each groove having two oppositely positioned orifices therein, each of said orifices extending through the cylindrical body wall from the wall surface of the bore to the bottom portion of each groove, the opposite faces of each groove having an annular shoulder, one opposite to the other, one of said shoulders having a second groove therein, a plurality of slidably mounted plates having central openings and spaced pins extending into said openings from the inner plate walls thereof, each of said plates being positioned transversely in said cylindrical body with respect thereto and in said orifices, and an annularly shaped spring means in each of said grooves and guided in each of said second grooves for urging said plates transversely in said cylindrical

6

dical body, said cylindrical body having at its end portion a transverse groove perpendicular to the long sides of said bore, said cylindrical casing having at the end adjacent to the cylindrical locking device two flanges secured therein, a transmission member operatively connected to said cylindrical body at said transverse groove thereof, a locking bolt, a catch operatively connected to said locking bolt, said catch being guided between said flanges and being operatively connected to said cylindrical locking device, and a second cylindrical locking device positioned directly opposite to said first locking device, said second device being similar to said first locking device, said flanges being also secured to said second locking device, each of said flanges having a circular opening concentric with the respective cylindrical body of said cylindrical locking device, whereby said transmission member can be operatively connected to each of said locking devices, means for securing said casing rigidly to said flanges, said transmission member comprising two shaped parts operatively connected axially by a rotatably mounted rod means for allowing said parts to turn relatively to each other about the axis of rotation of each of said cylindrical devices, said transmission member being slidably positioned in said catch in an opening therein, whereby said transmission member is operatively connected to said catch, said opening being coextensive with each of said oppositely positioned cylindrical devices, each of said parts of said transmission member being of a predetermined length, whereby, when a key is inserted into one of said cylindrical devices, the said catch is disengaged from the part of the transmission member connected to said other cylindrical device.

5. A safety lock in accordance with the lock of claim 1, including a catch operatively connected to said locking bolt, said cylindrical casing having at the end adjacent to the end of the cylindrical body two flanges secured thereto, said catch being guided between said flanges and being operatively connected to said transmission member means and to said cylindrical casing and an operating knob positioned directly opposite to said cylindrical body, said flanges being also secured to said operating knob, said transmission member means comprising two shaped parts connected axially by a rotatably mounted rod means for allowing said parts to turn relatively to each other about the axes of rotation of said cylindrical body and said operating knob, said operating knob having a bore, a spring means positioned in said bore for urging said transmission member towards said cylindrical body, a second spring means threaded on said rod adjacent said cylindrical device for maintaining said two shaped parts in contact with each other, whereby when a key is inserted into said cylindrical device, said catch is disengaged from the part of the transmission member means connected to said operating knob.

6. A safety lock in accordance with the lock of claim 5 wherein the two shaped parts of the transmission member means have the general shape of a rectangular prism, one of the large faces thereof having a rib means for centering the transmission member means relatively to the cylindrical body and for allowing only one relative angular position between the catch and a key.

References Cited in the file of this patent

UNITED STATES PATENTS

1,328,074	Bennett	Jan. 13, 1920
1,352,239	Baird	Sept. 7, 1920
1,908,701	Falk	May 16, 1933

FOREIGN PATENTS

347,872	Germany	Jan. 27, 1922
556,316	Germany	Aug. 6, 1932