

April 22, 1941.

M. PAPST

2,239,301

DOOR LOCK PARTICULARLY FOR AUTOMOBILES

Filed June 27, 1935

2 Sheets-Sheet 1

Fig.1

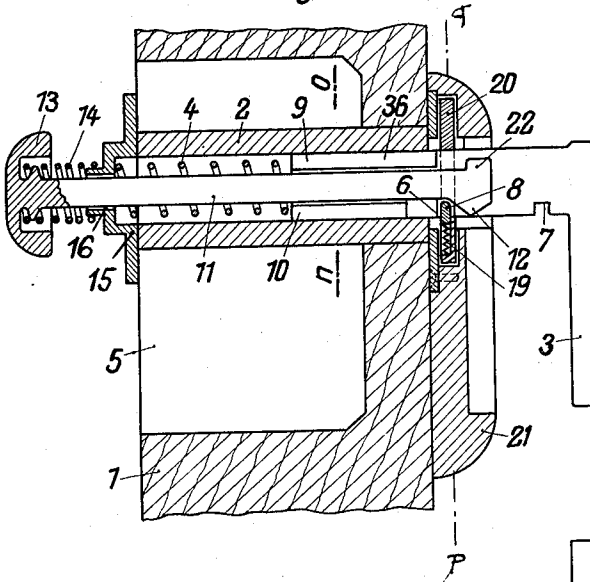


Fig.4

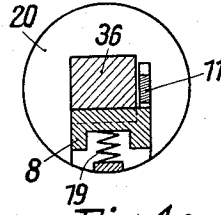


Fig. 4a

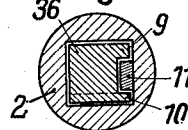


Fig.3

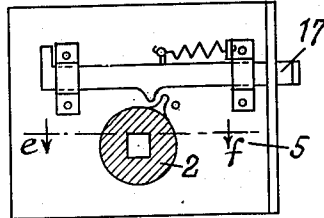


Fig. 2

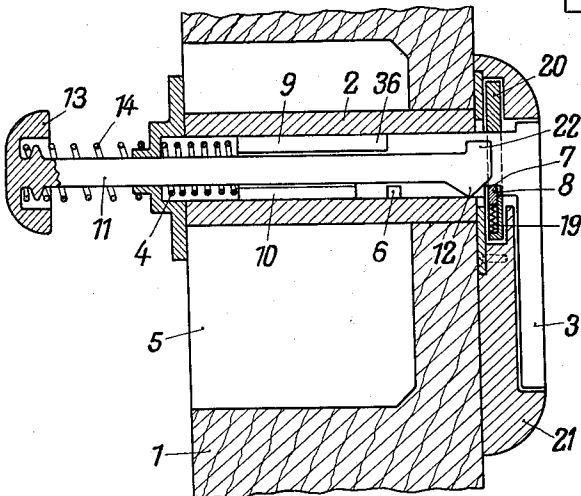
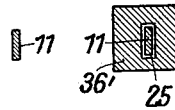


Fig.5 Fig.7



8- Fig. 6

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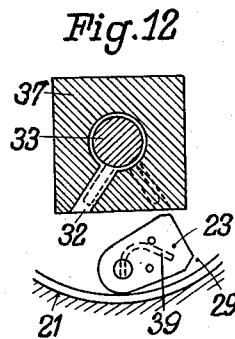
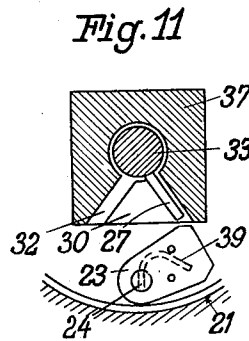
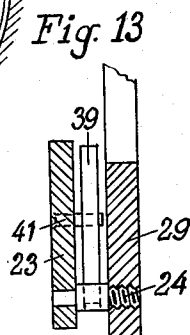
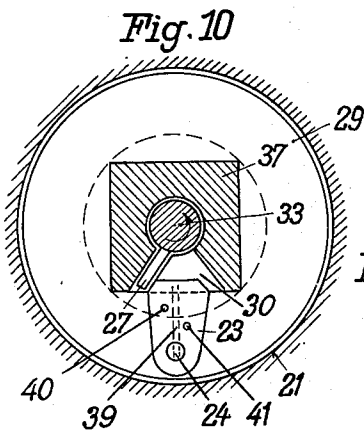
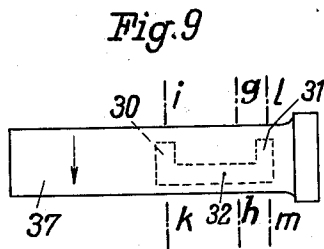
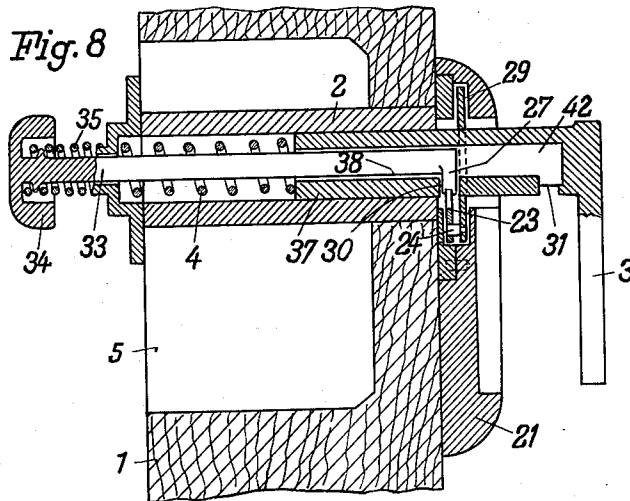
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UNITED STATES PATENT OFFICE

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DOOR LOCK PARTICULARLY FOR
AUTOMOBILES

Max Papst, Paris, France

Application June 27, 1935, Serial No. 28,691
In Germany December 16, 1932

19 Claims. (Cl. 292—1)

My invention relates to locks and more particularly to door locks for automobiles, this application being a continuation in part of my co-pending application filed September 8, 1933, Serial No. 683,608.

An object of my invention is to provide means whereby the handle of a lock for a motor car door or the like may be made inaccessible to inadvertent force or surreptitious action when the door is closed, and to provide means by which the handle may be released from its inaccessible position.

A further object of my invention is to provide means by which the door may be readily opened from within by a suitable knob or the like on the inside.

The invention consists essentially of a lock with a latch spindle and handle wherein the handle may be thrust toward the door and into a recess when the door is closed.

The invention furthermore consists of means for retracting the handle into its inaccessible position and for restoring it to operative position from within a room or a car having doors provided with a lock as per my invention.

Further objects, features and advantages of my invention will be apparent from the following description and appended drawings of examples embodying it.

In the drawings are:

Fig. 1 a longitudinal section along line *e—f* of Fig. 3 showing a lock with a latch spindle as per my invention, the handle being in its operative position;

Fig. 2 a similar view with the handle in its retracted or inoperative position;

Fig. 3 is a schematical view of a conventional lock provided with a latch spindle as per Figs. 1 and 2 of which only one part is shown;

Fig. 4 a cross section along line *p—q* of Fig. 1;

Fig. 4a a cross section along line *n—o* of Fig. 1;

Figs. 5 and 6 cross sections of parts of the blocking means employed in my invention;

Fig. 7 a cross section of a modified part;

Fig. 8 a longitudinal section of another embodiment of my invention;

Fig. 9 a top plan view of the handle shown in Fig. 8;

Figs. 10 to 12 views of various positions of the blocking member for arresting the handle in its two end-positions;

Fig. 13 is a section through the lower part of Fig. 10, showing the mounting of blocking member and its spring.

Referring now to Figs. 1 to 7, numeral 1 indi-

cates the door to which the invention is applied. 5 is a lock in the door with a latch bolt as schematically shown in Fig. 3. The latch spindle is constructed essentially of two telescopic members. One of these members is adapted to operatively engage the lock to open it and may be so designed as to form the roll-back 2. The second spindle member is a shank 36 provided with a transverse handle arm 3 at the outside of the door. The roll-back has a square bore as clearly shown in Fig. 4a. Shank 36 has a substantially rectangular cross section and is adapted to slide in the bore of the roll-back. A spring 4 bears with one end against a cap 15 attached to the door lock by suitable means which are not shown. The other end of spring 4 bears against shank 36 thus tending to extend the telescopic members 2 and 36. To the front side of the door an escutcheon, handle housing or recess seat 21 is fitted which is constructed to receive the handle arm 3, thus preventing the handle and consequently the lock spindle from being turned when the handle is thrust towards the door.

A plate or disc 20 is mounted on the handle shank in such a manner that it will rotate together with the handle shank, the latter, however, being movable in an axial direction relative to said disc. For this purpose the disc 20 has a square hole through which the square portion of the handle shank may pass. The disc is housed in a recess of the escutcheon 21, and is thus prevented from altering its position relative to the door. The disc carries a snap lock or blocking member 8 adapted to engage under the action of a spring 19 either one of the two notches 6 and 7 provided in the handle shank.

The handle shank 36 is on one side machined so that it forms two guiding rails 9 and 10 between which is guided a rod or spindle 11 extending through the collar 16 of cap 15 and through the roll-back 2, which assists in carrying same by the intermediary of shank 36. This rod 11 has a non-circular, for instance rectangular cross-section and is provided at its right hand end with a head having a nose 12 and a lug 22, and at its left hand end with a knob or equivalent gripping means 13. A spring 14 is adapted to return the rod to its original position relative to the roll-back after having been pulled out or pushed in by manipulation of knob 13. Spring 14 is preferably weaker than spring 4.

Nose 12 is wedge shaped so that it will, by engaging and passing the blocking member 8 when rod 11 is moved in one axial direction or the other, remove said blocking member from notch 6 or

notch 7 respectively. In order to accomplish this, the top of the blocking member is not uniformly shaped in its entire length. Its larger portion at the left in Fig. 4, is sharp edged as shown in Fig. 5, so that the blocking member is able to arrest the shank against the action of spring 4 when the blocking member engages one of the notches 6 or 7. Contrary to this portion, the right hand and smaller portion of the top edge of the blocking member, is rounded off as in Fig. 6 so that the nose 12, when engaging it, is able to urge the blocking member against the pressure of spring 19 out of the notches.

Lug 22 of the rod 11 protrudes into the path of the rail 9 which it may engage for the purpose of retracting the shank and handle into the inoperative position.

The device functions as follows: When in its operative position of Fig. 1, the handle 3 protrudes outside the door and may be gripped and turned. Blocking member 8, engaging notch 6, prevents the handle from being pushed still further towards the outside by spring 4, and also from being thrust inward into the inaccessible position. In this position, the nose 12 is situated at the outside of the blocking member 8, that means: between the latter and the handle. When the handle is turned, the turning movement is transmitted to the roll-back 2 by means of the square shank 36.

The handle 3 may be brought into its non-operative position of Fig. 2 by rod 11 being pulled to the left through means of knob 13. If this is done, nose 12 at first disengages the blocking member 8 from slot 6. Then, the lug 22 of rod 11, engaging the end of rail 9, takes the handle shank along and pulls the handle into its housing 21. Nose 12, having passed the blocking member 8, permits the latter to snap into the notch 7 under the action of spring 19 so as to arrest the handle in its inaccessible position. When knob 13 is released, rod 11 is moved towards the handle under the action of spring 14 until nose 12 bears against blocking member 8 without, however, retracting it from notch 7 since the force of spring 14 does not suffice to overcome the friction between the blocking member and the shank, and the force of spring 19.

In order to return the handle from its inoperative position of Fig. 2 into the operative position of Fig. 1, knob 13 is pushed to the right side so that nose 12 disengages blocking member 8 from slot 7, whereupon the handle 3 is pressed outward by spring 4 until blocking member 8 catches notch 6 and automatically arrests the handle in its operative position. Rod 11 is kept in its position as per Fig. 1 under the action of spring 14.

In this position, the door is to be opened from the outside by turning handle 3 and from the inside by turning knob 13 since a turning moment, exercised on rod 11, is transmitted to the roll-back 2 with the help of shank 36 as clearly apparent from Fig. 4a.

The rod 11 need not be placed at the side of the handle shank as shown in Figs. 4 and 4a. It is also possible to arrange it within an axial channel 25 in the square shank 36' of handle 3 as illustrated in Fig. 7.

In the embodiment illustrated in Figs. 8 to 12, the arrangement of the two telescopic members of the latch spindle is the same as in the preceding example. Roll-back 2 has a square bore into which the square shank 37 of handle 3 fits. The rod or spindle 33 has a circular cross section, and the handle shank 37 is provided with a blind

cylindrical bore 42 and with two slots 30 and 31 connected with each other by a longitudinal groove 32 (see Fig. 9). The combination of the slots with this groove is also apparent from Fig. 11 which is a cross section on line *i-k* or *l-m*, and from Fig. 12 which is a cross section on line *g-h* of Fig. 9. The shank 37 is non-rotatably sliding in the roll-back 2 and spring 4 tends to push the shank outward. Spindle 33 is adapted to slide in the bore of shank 37 and is provided with a lug 27 at its one end and with a knob 34 at its other end, the latter being accessible from within the room or car provided with the lock as per the invention. A spring 35, preferably of less strength than spring 4, is so arranged that it tends both to turn the spindle 33 in the direction of the arrow in Fig. 9 as well as to shift the spindle 33 longitudinally to the right side. In other words, the spring 35 tends to hold the spindle 33 against rotation as well as against axial displacement from its resting position.

A plate or disc 29 is mounted on shank 37 in a similar manner as plate 20 in the preceding example. Plate 29 carries a pin 24, a blocking member 23 being pivoted on this pin and normally held in the position as per Fig. 10 by a spring 39 preferably fastened to pin 24 and adapted to bear against two pins 40 and 41 which are secured to the blocking member 23. Spring 39 is not shown in Fig. 8 in order not to overcrowd it with lines. Figs. 8 to 10 illustrate said blocking member 23 engaging the slot 30 of the handle shank and thereby arresting the handle in its extended position.

In order to move the handle into its inaccessible position, knob 34 of spindle 33 is turned from within in the direction of the arrow of Fig. 10 so that the lug 27 causes the blocking member 23 to leave the slot 30 whereby spring 39 is tensioned as shown in Fig. 11. Knob 34 then, pulled inward, shifts the spindle 33 in the same direction so that lug 27 takes the shank of handle 3 along until the roll back 2 and shank 37 are in their telescoped position, and the handle 3 is housed in its escutcheon 21. While the handle shank 37 is being pulled in, the blocking member 23 occupies the position shown in Fig. 12. As soon, however, as slot 31 exactly registers with blocking member 23, the latter is able to engage automatically said slot 31 and to arrest the handle in its inaccessible position. Thereafter, when knob 34 is released, spindle 33, under the action of spring 35, will at first turn about its axis while lug 27 slides from the end of slot 30 to the entrance of the longitudinal groove 32. Spring 35 will then shift the spindle 33 toward the handle 3 while lug 27 travels within the groove 32 as far as slot 31' where lug 27 and blocking member 23 take the same position relative to slot 30 as illustrated in Fig. 10.

In order to remove the handle 3 from its escutcheon, spindle 33 is again to be turned in the direction of the arrow so that the blocking member 23 is tilted. Thus, handle 3 is unlocked and free to be pushed outward by spring 4 until blocking member 23 automatically catches slot 30. When spindle 33 is released, spring 35 will return it to its position of Fig. 10.

The door is to be opened from the inside by turning knob 34 in a direction contrary to that of the arrow in Fig. 10. If this is done, lug 27 bears against the end wall of slot 30 and transmits the turning moment to shank 37 and hence to the roll-back 2.

My invention is particularly useful for auto-

mobile doors. It will, however, be advantageously applied also to doors of compartments of any kind as for instance for rooms in dwellings or for cabin doors in ships. I wish it to be understood, therefore, that the term "car" as used in the following claims is to embrace any kind of a compartment that is equipped with my invention.

I claim:

1. A spindle for door locks of motor cars and the like comprising inner and outer telescopic members non-rotatively connected together, one of said members adapted to operatively engage the lock to open it, the other having an operating handle, means for extending said members, and means for holding said members in telescoped position, and means extending through the lock engaging member to release the members from telescoped position.

2. A spindle for door locks of motor cars and the like comprising inner and outer telescopic members non-rotatively connected together, one of said members adapted to operatively engage the lock to open it, the other having an operating handle, a spring for extending said members, and means engaging said members to hold them in telescoped position, and means for disengaging said engaging means whereby the spring returns the members to extended position, said disengaging means comprising a spindle extending through the lock engaging member.

3. A spindle for door locks of motor cars and the like comprising inner and outer telescopic members non-rotatively connected together, one of said members adapted to operatively engage the lock to open it, the other having an operating handle, a spring for extending said members, and means engaging said members to hold them in telescoped position, and means for disengaging said engaging means whereby the spring returns the members to extended position, said disengaging means comprising a spindle extending through the lock engaging member and having means tending to hold the spindle against rotation.

4. A spindle for door locks of motor cars and the like comprising inner and outer telescopic members non-rotatively connected together, one of said members adapted to operatively engage the lock to open it, the other having an operating handle, a spring for extending said members, and means engaging said members to hold them in telescoped position, and means for disengaging said engaging means whereby the spring returns the members to extended position, said disengaging means comprising a spindle extending through the lock engaging member, and being accessible from the side of the lock remote from the handle.

5. In a door lock the combination of a roll-back, a handle at the outside of the door and a handle shank, said shank telescopically and non-rotatably connected with said roll-back, means at the outside surface of the door for preventing turning of said handle when engaged by said handle, a blocking member adapted to arrest said shank in its telescoped and in its extended position, a rod extending from the inside of the compartment into said roll-back and adapted to be manipulated for removing said blocking member from its arresting position.

6. A door lock comprising a latch bolt, a roll-back for operating said latch bolt, a handle at the outside of the door and a handle shank, said shank telescopically and non-rotatably con-

nected with said roll-back, means at the outside surface of the door for preventing turning of said handle when engaged by said handle, a blocking member adapted to arrest said shank in its telescoped and in its extended position, a spring adapted to urge said shank into its extended position, a rod extending from the inside of the compartment into said roll-back, means on one end of the rod for manipulating it from the inside of the compartment, and means on the other end of said rod for removing said blocking member from its arresting position and means in connection with said rod adapted to engage said shank and to take it along into the telescoped position when said rod is pulled from the inside of the compartment.

7. A door lock as claimed in claim 6 further comprising means in connection with said rod for turning said roll back to retract said latch bolt.

8. A door lock as claimed in claim 6 in which said rod is provided with a spring tending to return it to its original position.

9. A door lock as claimed in claim 6, two transverse recesses and a longitudinal recess in said shank, said rod non-rotatably guided in said longitudinal recess and said blocking member adapted to enter either one of said transverse recesses.

10. A door lock comprising a latch bolt, a roll-back for operating the latch bolt, a handle at the outside of the door and a handle shank, said shank telescopically and non-rotatably connected with said roll-back, means at the outside surface of the door for preventing turning of said handle when engaged by said handle, two recesses in said shank, a member non-rotatably connected with said shank and secured against axial movement, a blocking member carried by said aforementioned member and adapted to engage either one of said recesses, a rod extending from the inside of the compartment into said roll-back and into a portion of said shank and adapted to be manipulated for removing said blocking member from said recesses.

11. In a door lock, a handle adapted to be pushed into an inaccessible position, a spring tending to push the handle in the contrary direction, a shank connected to said handle, a guiding element adapted to receive said shank, a central bore in the latter, two radial slots and a longitudinal groove connecting said slots in said shank, a spindle adapted to slide in said shank, a lug at the end towards said handle and gripping means at the other end of said spindle, a spring tending to turn and to longitudinally displace said spindle, a blocking member adapted to enter either one of said radial slots so as to arrest said shank in either one of the two end positions; and said lug adapted to slide in said slots and said groove, and to remove said blocking member from its arresting positions.

12. In a door lock a handle adapted to be pushed into an inaccessible position, a spring tending to push said handle into its operative position, a shank connected to said handle, a guiding element adapted to receive said shank, two notches in said shank corresponding to its two end positions, a rod adapted to be guided along said shank, a nose and a lug at the end towards said handle and grip means at the other end of said rod, a blocking member adapted to engage with one edge either one of said notches, a second spring tending to pull said rod towards said handle, said lug adapted to engage said

shank for retracting it, and said nose adapted to engage said blocking member and to remove it from its arresting positions.

13. A spindle for a door lock comprising two telescopic members, one of said members adapted to transmit an opening movement to the bolt of the lock, the other member provided with a handle at the outside of the door, a spring adapted to extend said other member, a blocking member adapted to automatically engage and arrest said other member in its telescoped and in its extended position, and means operative from the inside of the compartment for removing said blocking member from its arresting position and for retracting said other spindle member into its telescoped position.

14. A spindle for a door lock comprising two telescopic members, one of said members adapted to transmit an opening movement to the bolt of the lock, the other member provided with a handle at the outside of the door, a spring adapted to extend said other member, a blocking member adapted to automatically engage and arrest said other spindle member in its telescoped and in its extended position, and means operative from the inside of the compartment for removing said blocking member from its arresting positions, for retracting said other spindle member into its telescoped position, and for turning said other spindle member in order to open the lock.

15. A spindle for a door lock comprising two telescopic members, one of said members adapted to transmit an opening movement to the bolt of the lock, the other member provided with a handle at the outside of the door, a spring adapted to extend said other member, a blocking member adapted to automatically engage and arrest said other spindle member in its telescoped and in its extended position, a rod extending from the inside of the compartment into said first member and into a portion of said second member, said rod provided with means for turning it, with second means for retracting said other member into its telescoped position, and with third means for removing said blocking member from its arresting position.

16. A spindle for a door lock comprising two telescopic members, one of said members adapted to transmit an opening movement to the bolt of the lock, the other member provided with a handle at the outside of the door, a spring adapted to extend said other member, a blocking member adapted to automatically engage and arrest said other spindle member in its telescoped and in its extended position, a rod extending from the inside of the compartment into said first member and into a portion of said second member, said rod provided with means for turning it, with second means for retracting said

other member into its telescoped position, and with third means for removing said blocking member from its arresting positions, and a spring for returning said rod into its position of rest.

17. A door lock including an outside handle retractable into and projectable from a recess in the outer side of a door to which said lock is applied, yieldable means exerting a constant force tending to project said outside handle from said recess, an inside handle, means for releasably holding said outside handle in retracted position against the action of said yieldable means, and means connecting said handles to retract said outside handle by operation of said inside handle and to release said holding means to permit said yieldable means to project said outside handle independently of said connecting means.

18. In a door lock of the character described the combination with a door of a rotative headed rod having non-circular cross-section and passing into the door, a roll-back surrounding said rod and being non-rotatively connected therewith, a knob carried by the said rod, the knob being arranged to operate the roll-back from the inside of the compartment when the door is closed, a coil spring encircling the rod and constructed and arranged to urge the knob towards the roll-back, a sliding member, the said rod being arranged longitudinally within the sliding member, the said member having a transverse handle arm, the door having a recess seat in its outer surface, constructed to receive the handle arm, a blocking means for securing the sliding member in its innermost position and the handle arm in its seat, and a spring constructed and arranged to overcome the force of said coil spring and to move the sliding member and unseat the handle arm when the said member is unlocked.

19. In a door lock of the character described, the combination with a door of a rotative rod having non-circular cross-section and passing into the door, a roll-back surrounding said rod, a knob carried by said rod, the knob being arranged to operate the roll-back from the inside of the compartment, when the door is closed, a coil-spring encircling the rod and constructed and arranged to hold the rod in a definite position in relation to the roll-back, a sliding member, the rod being arranged longitudinally of the sliding member and in engagement therewith, the said member having a transverse handle arm, the door having a recess seat on its outside constructed to receive the handle arm, means for securing the sliding member in its innermost position and the handle arm in its seat, and a second spring, stronger than said coil spring, adapted to move the sliding member and unseat the handle arm when the said member is released.

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