May 16, 1933. R. E. MacBETH ET AL 1,909,697

SAFETY DOORLOCK

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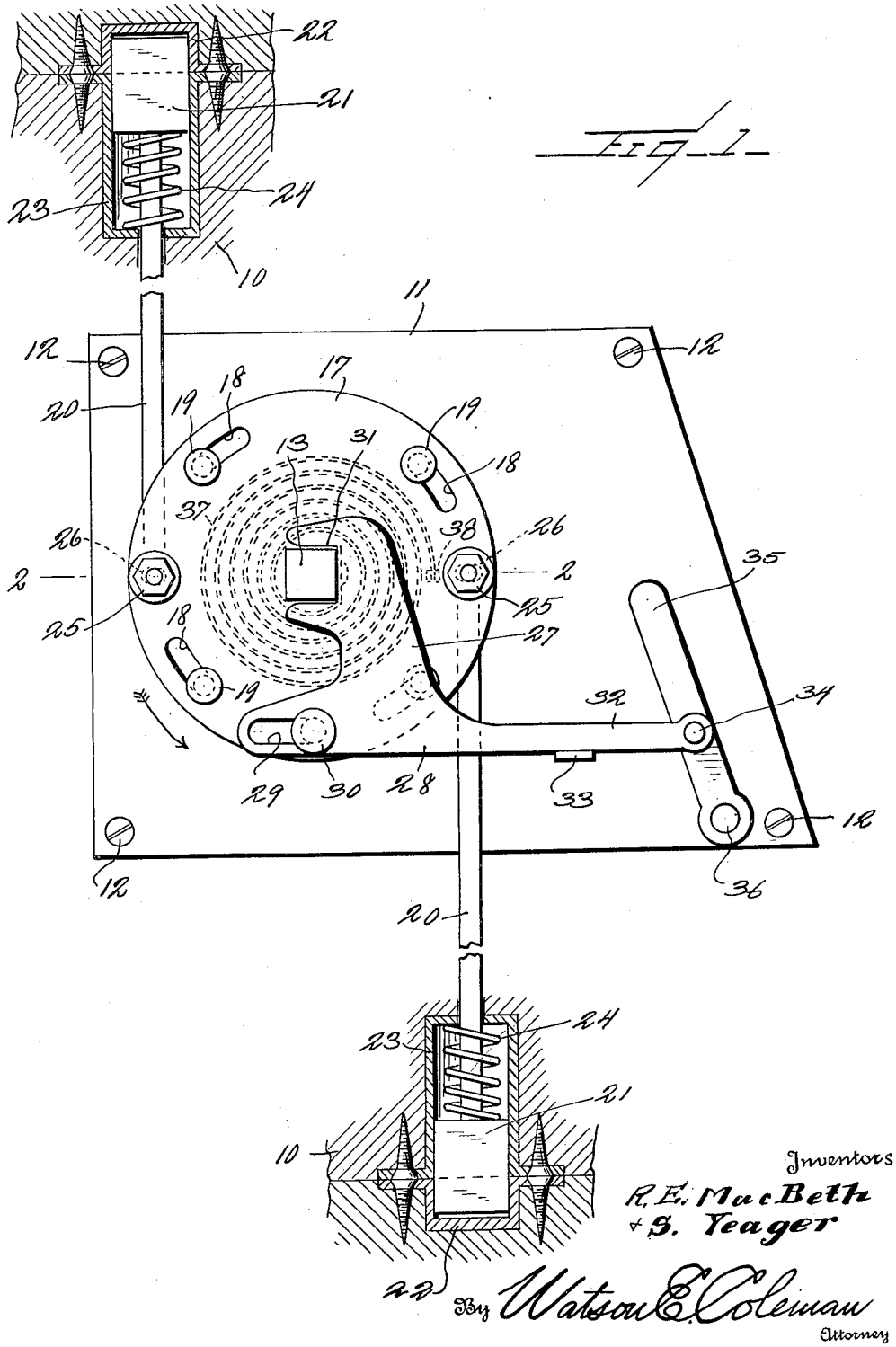


Fig. 1

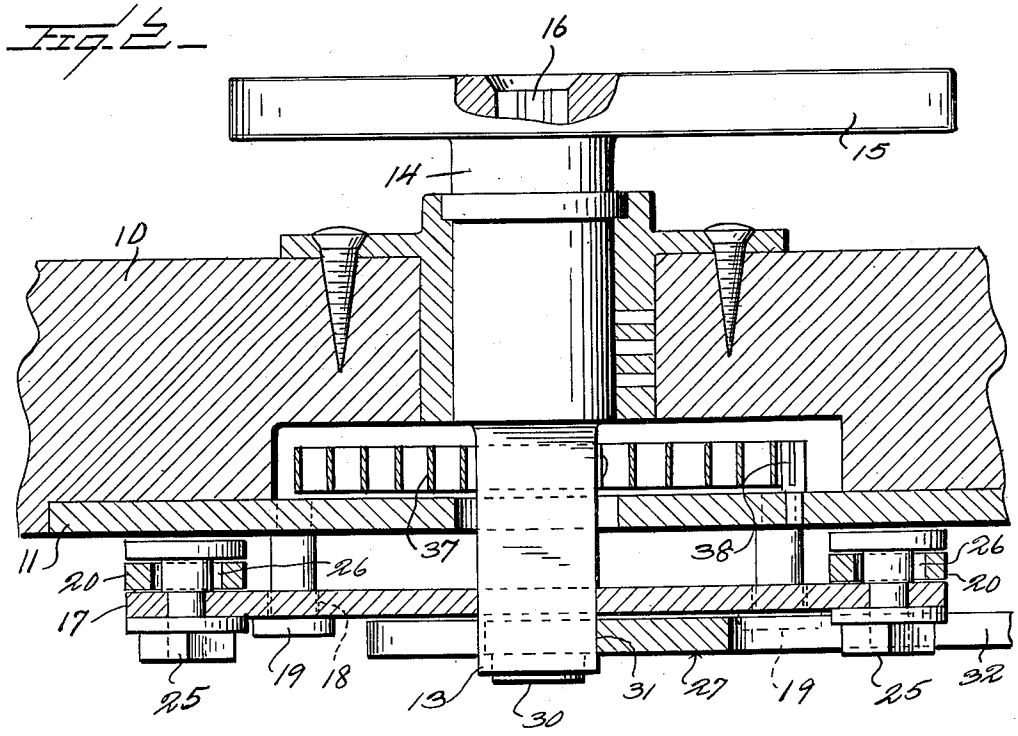
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Fig. 2.



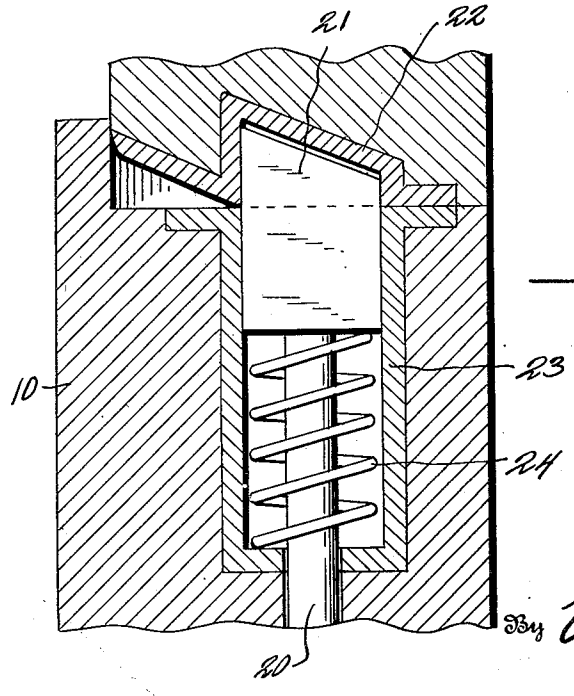


Fig. 3.

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UNITED STATES PATENT OFFICE

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SAFETY DOORLOCK

Application filed January 30, 1932. Serial No. 589,878.

This invention relates to locks and latches and particularly to locks of that character in which a plurality of bolts are thrown by the same locking or unlocking operation, the lock which we have devised being particularly suitable for automobile doors, though not limited thereto.

The general object of the invention is to provide a lock of this character having means whereby the locking bolts may be held projected by a dog thrown from the inside of the door, this dog when thrown preventing the retraction of the locks either by a key or by a rotation of the handle of the door.

A further object is to provide a lock of this character having a plurality of bolts preferably disposed so as to lock the door at its top and bottom, means on the door whereby all of the bolts may be simultaneously projected or retracted, this means being operable from the exterior of the door by a handle having a key operated lock, there being a dog located on the inside of the door and manually shiftable to lock the spindle of the handle from rotation, even when the handle has been released by means of a key.

Other objects will appear in the course of the following description.

Our invention is illustrated in the accompanying drawing, wherein:—

Figure 1 is an inside elevation of our improved door locking mechanism, the bolt casings and the adjacent portions of the door jamb being shown in section;

Figure 2 is a sectional view through a door showing the locking mechanism thereof, the section being taken on the line 2—2 of Figure 1;

Figure 3 is an enlarged sectional view through the door and its casing and showing the bolt keeper and one of the bolts.

Referring to these drawings, 10 designates a door such as an automobile door. Attached to the inside face of this door or if desired mounted within the door is a plate 11 which is made fast to the door in any suitable manner, as for instance, by the screws 12. Extending through this plate 11 is a shank 13 shown as square in cross section. This shank extends through the door 11 to the exterior thereof, but that part of the shank which extends exteriorly of the door is preferably cylindrical in cross section and is designated 14. This shank is provided with the handle 15. The round portion of the shank 14 is formed with the usual key hole slot 16 for the insertion of a key and is provided with any suitable lock such as is ordinarily found on automobile doors whereby upon the operation of a key, the handle may be freed for rotation to retract the bolts. We do not wish to be limited to any particular means whereby the door handle may be locked from rotation except as defined in the appended claims.

Mounted upon the square portion 13 of the shank is a disk 17 having a plurality of arcuate slots 18 formed adjacent its periphery. Flat headed screws 19 extend through these slots and into the plate 11, thus limiting the movement of the disk 17 and also holding the disk from deformation as it is rotated. Pivotally connected to the margins of the disk as will be later described are the bolt shanks 20 which extend tangentially of the disk and at their ends carry the bolts 21. These bolts 21 are located at the top and bottom of the door and when projected extend beyond the door 10 and into suitable keepers 22. These bolts 21 operate in casings 23 and are urged to a projected position by the compression springs 24. Each of the shanks 20 is mounted at its inner end upon the shank of a pin or bolt 25, the inner end of the shank 20 being formed with a laterally extending slot 26 into which the bolt passes, thus permitting the bolt shanks 20 to travel in a rectilinear direction when the disk is rotated in one direction or the other to project or retract the bolts.

Coacting with the square shank 13 is a dog and operating member designated generally 27. This is formed with a base portion 28 which is longitudinally slotted at 29. Passing through this slot and into the disk 17 is a screw 30 having a flat head like the screws or bolts 19. The body 27 extends upward from the base and at its upper end

is formed with a rectangular slot 31 just sufficiently wide and deep as to receive within it the square shank 13. The base 28 is connected to a shank 32 which rests upon a guide or support 33, the extremity of the shank being pivoted at 34 to an operating lever 35 pivoted at 36 to the plate 11.

It is obvious now that by pulling back upon the lever 35, the dog 27 will be retracted so as to disengage the slot 31 from its engagement with the square shank 13 of the handle. The slot 29 is of just sufficient length to permit this retraction of the dog 27 until the extremity of the slot 29 bears against the screw 30. A further retraction of the shank 32 by means of the lever 35 will then act to rotate the disk 17 in a counter-clockwise direction as shown by the arrow in Figure 1 which will act to retract the bolts 21 from their keepers 22. A spring 37 which is connected to the plate at 38 at one end and at its other end is operatively connected to the shank 13 will act as soon as the pressure on the lever 35 is released to return the bolts to their projected position but, of course, will not return the dog 27 to its locking position in engagement with the shank 13. This dog may be returned to its locking position in engagement with the shank 13 by means of the handle 35.

In the use of this device, assuming that it be not desired to lock the door from the inside against release by the handle 15 from the outside of the door, then the lever 35 is shifted so as to release the keeper from its engagement with the shank 13. Under these circumstances, the door bolts 21 may be shifted either by pulling still further rearward on the handle 35 or by operating the handle 15. If, however, it be desired to lock the door against opening from the outside, then the handle 35 is shifted to the extreme left in Figure 1 so that the keeper 27 will engage the shank 13. Under these circumstances, the door cannot be opened from the exterior and can only be opened from the interior by shifting the handle 35 to the right sufficiently to release the keeper 37 from its engagement with the shank 13 and then a further movement of the lever 35 to the right will release the bolts. In leaving the car, the handle 35 is, of course, shifted to its fully unlocked position. Then by the insertion of a key in the slot 16, the handle lock may be released and the handle turned to retract the bolts 21.

It will be seen that the lever 35 not only forms a means whereby the dog may be retracted from its locking position but also the means whereby the latches may be retracted.

It is to be particularly noted that this door is locked at top and bottom and that these bolts 21 will keep the door tight both at top and bottom. The locks now used on automobile doors do not do this and as a consequence, the door is liable to get out of shape and bind.

While we have illustrated certain details of construction and arrangements of parts which we believe to be particularly suitable for the purpose intended, we do not wish to be limited thereto as obviously many changes might be made without departing from the spirit of the invention as defined in the appended claims.

It will be understood that any suitable or usual keeper and latching bolt may be used and that as usual in automobile doors the keeper may be formed to provide a primary latching portion and a secondary latching portion so that the door, when closed, may be held by the secondary latching portion until the door is slammed and then held by the primary latching portion.

We claim:—

1. A lock for doors comprising a handle shank extending through the door and having a handle on one end, the handle shank at its end opposite the handle having a portion rectangular in cross section, a disk mounted upon said last named portion for rotation therewith, a plurality of latch bolts having shanks pivotally connected to the disk, a rotation of the disk in one direction acting to retract the bolts and in the opposite direction acting to project the bolts, means urging the disk and bolts to a bolt projected position, and a combined dog and actuator mounted upon said disk, the dog having a rectangular slot adapted when the dog is moved in one direction to engage the rectangular portion of the handle shank and hold it from rotation, the dog having limited sliding engagement with the disk whereby upon a movement of the dog in one direction the dog will be initially disengaged from the handle shank and will then act to rotate the disk in a direction to retract the bolts, and an operating lever to which the dog is pivoted.

2. A door lock of the character described, comprising a handle shank having a squared portion at one end and a handle at the opposite end, a disk mounted upon said handle shank for rotation therewith, the disk having arcuate slots, bolts passing through said arcuate slots, a plurality of door latching bolts, each bolt having a shank pivotally connected to the disk, resilient means urging the latching bolts to a projected position, a dog having a longitudinally extending slot, a member passing through said slot and engaging the dog with the disk, the upper end of the dog having an open ended slot adapted to snugly receive the squared handle shank when the dog is in one position, the slot being of sufficient length to permit the dog to be retracted

from its engagement with the handle shank upon a movement of the dog in one direction, and a lever to which the dog is operatively pivoted and whereby the dog may be retracted to first disengage the dog from the handle shank and then rotate the disk in a direction to retract the bolts.

3. In a door, a handle shank extending into the door from the exterior thereof, the exterior portion of the handle shank carrying a handle, the inner end of the handle shank being squared, a disk mounted upon the squared portion of the handle shank for rotation therewith, door latching bolts mounted upon the door and having shanks extending tangentially to the disk and pivotally engaged therewith, springs resiliently urging the bolts to a projected position, a dog, an operating device mounted upon the inside of the door, the dog having a slot, a pin passing through said slot and engaging the dog with the disk, the dog having an open-ended slot snugly engaging the squared portion of the handle shank, the first-named slot being of sufficient length to permit the second-named slot to release its engagement with the squared portion of the shank when the dog is retracted, a further retraction of the dog then acting to rotate the disk in a direction to release the bolts, and means operatively connected to the dog whereby it may be retracted or projected.

4. In a door, a handle shank extending into the door, a member mounted for rotation with the handle shank, a latch bolt having a shank operatively connected to said member wherby the latch bolt may be retracted as the member is turned in one direction or projected as the member is turned in the other direction, resilient means acting to project the latch bolt, a dog having limited sliding engagement with the rotatable member and in one position holding the rotatable member and the handle shank from rotation, and means for shifting the dog to initially release it from its holding position and then rotate said member in a direction to retract the bolt.

In testimony whereof we hereunto affix our signatures.

ROY EARL MacBETH.
SAM YEAGER.