Oct. 28, 1930. C. B. LOWE 1,779,438

DOOR HANDLE

Filed Aug. 16, 1928 2 Sheets-Sheet 1

Fig. 1.

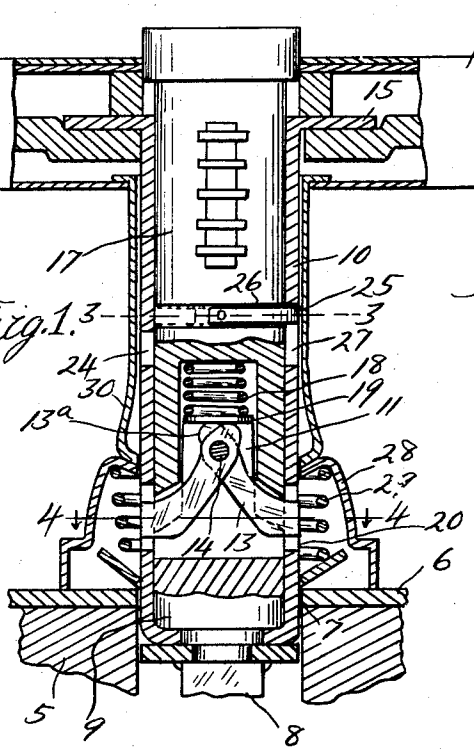


Fig. 2.

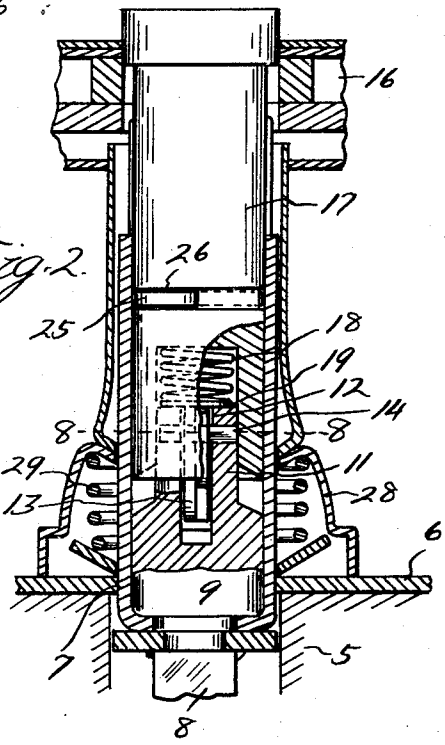


Fig. 3.

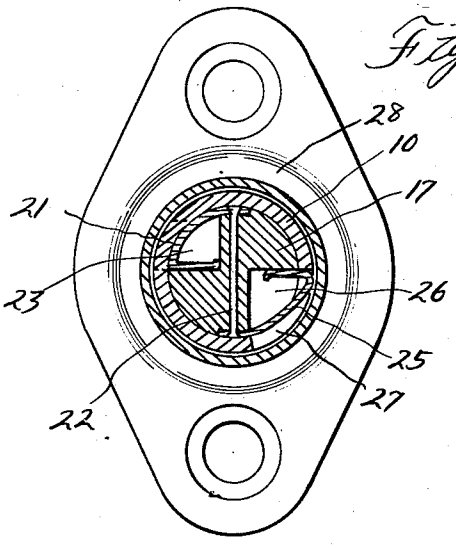
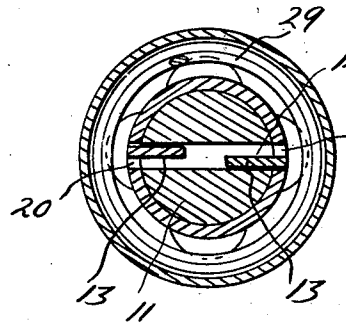


Fig. 4.



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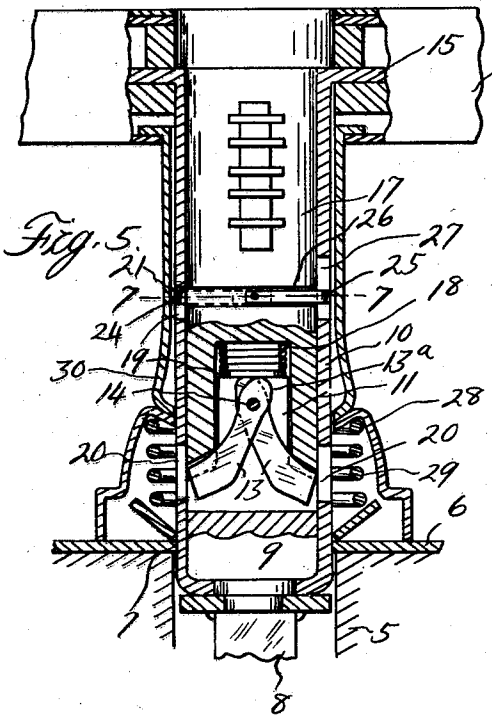
Attorneys

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DOOR HANDLE

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Fig. 5.



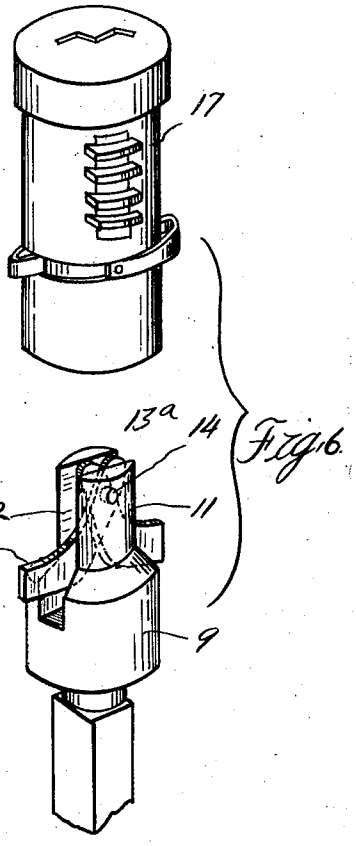


Fig. 6.

Fig. 7.

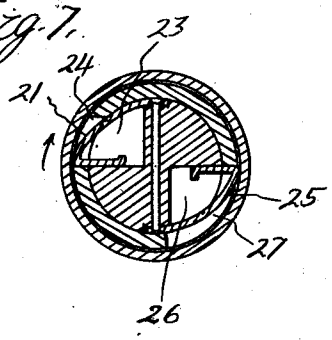
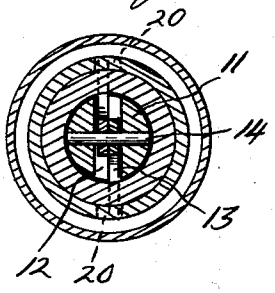


Fig. 8.



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UNITED STATES PATENT OFFICE

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DOOR HANDLE

Application filed August 16, 1928. Serial No. 300,032.

This invention relates to automobile door handles, and has for its principal object the provision of a door handle that normally operates to move the lock bolt into and out of operative relation to the striker plate carried by the door jamb, but which when in locked position, will be freely rotatable without imparting its movement to the lock bolt.

Another object of this invention is the mounting of a key-controlled lock barrel within a cylindrical portion of the door handle whereby the longitudinal movement of the lock barrel will serve to connect or disconnect the door handle from the lock shaft, secured to a control element within the lock. The inward movement of the lock barrel to effect the disconnection of the door handle from the lock shaft can be secured without the use of a key, but the outward movement of the lock barrel to again connect the door handle to the lock shaft can be effected only through the use of a properly bitted key operable in the lock barrel.

A further object of this invention is the provision of a plurality of dogs pivoted upon a portion of the lock shaft and arranged to be moved into and out of locking engagement with a portion of the door handle under the control of the movement of the lock barrel.

Other objects and advantages will be apparent from the following description, wherein reference is made to the accompanying drawings, illustrating a preferred embodiment of my invention and wherein similar reference numerals designate similar parts throughout the several views.

In the drawings:

Figure 1 is a longitudinal cross-section through a door handle and adjacent portions of a lock shaft, the handle being connected to the shaft for simultaneous rotation.

Figure 2 is a longitudinal cross-section through the same parts, the section being taken at substantially right angles to the section line in Figure 1.

Figures 3 and 4 are detail cross-sections taken substantially on the lines 3—3 and 4—4 of Figure 1.

Figure 5 is a longitudinal cross-section similar to Figure 1, but showing the lock shaft disconnected from the door handle.

Figure 6 is a diagrammatic perspective view of the forward portion of the lock shaft and the lock barrel in disassembled positions.

Figure 7 is a detail cross-section taken substantially on the line 7—7 of Figure 5, and

Figure 8 is a detail cross-section taken substantially on the line 8—8 of Figure 2.

Referring now to the drawings, the numeral 5 designates a portion of a vehicle door having a metallic cover plate 6 apertured as at 7 for the reception of the operating handle. A lock shaft 8 extends through the door and is fastened at its inner extremity in any desired manner to control means for moving the usual lock bolt or the like. It is to be understood that any desired form of door lock may be utilized in connection with my improved door handle, and no attempt is made to illustrate a complete door lock herein. The outer extremity of the lock shaft 8 is formed with a cylindrical portion 9 adapted to form a bearing for the rear extremity of an elongated hollow cylinder 10, as hereinafter described, and terminating at its forward portion in a neck 11 of reduced diameter and provided with a slot 12 substantially centrally of the neck 11 and adjacent portion of the bearing member 9, as can be best seen in Figure 6. Pivotally mounted within the slot 12 is a pair of latching dogs 13 preferably constructed substantially as shown and provided with forwardly extending curved extremities 13ª above the pivot pin 14.

The rear extremity of the elongated hollow cylinder 10 is inturned substantially as shown to form a stop for the rounded portion 9 of the lock shaft 8, and the outer extremity of the cylinder 10 is preferably formed with outward radial extensions 15 for securing the cylinder to the knob or lever portion 16 of the door handle. This lever portion 16 of the door handle may be of any suitable construction, and only so much thereof as is needed to show the positioning of the cylinder 10 and associated parts is illustrated herein. Within the forward portion of the cylinder 10 is slidably mounted a key-controlled tumbler lock

17, the rear extremity of which is formed as a hollow cylinder with its central recess of slightly greater diameter than the diameter of the neck 11 of the lock shaft (note Figures 1 and 2 and 5). The neck 11 extends within the recess in the rear portion of the lock barrel 17 and between the forward extremity of the neck 11 and the forward wall of the recess in the lock barrel is positioned a strong coil spring 18 to normally force the lock barrel forwardly as far as permitted by parts presently to be described. A flat washer 19 is preferably arranged between the rear extremity of the spring 18 and the neck 11 of the lock shaft with its rear surface in engagement with the forwardly extending portions 13ª of the latching dogs 13 so that the pressure of the spring 18 will be transmitted to the dogs 13 to spread their rear extremities as far apart as is permitted by the cylindrical rear extremity of the lock barrel, the rear wall of the lock barrel being preferably flared, substantially as shown, to form closely fitting stops for the dogs 13, as hereinafter described. A pair of diametrically opposed slots 20 are formed in the cylinder 10 in alignment with the rear extremities of the dogs 13, whereby the dogs can swing outwardly into the slots 20 whenever the lock barrel 17 is moved forward a sufficient distance to permit such outward swinging of the dogs. When the dogs 13 are positioned within the slots 20 the door handle is connected with the lock shaft 8 so that the lock shaft will be rotated simultaneously with the door handle. When, however, the dogs 13 are swung inwardly out of engagement of the slots 20 with the cylinder 10, the door handle is disconnected from the lock shaft 8 and can be freely rotated upon the bearing portion 9 of the lock shaft without communicating its rotation to the lock shaft. The inward swinging of the dogs 13 from their locking position, as shown in Figure 1, to their disconnected position, as shown in Figure 5, is effected by sliding the lock barrel 17 rearwardly from its outer position, as shown in Figure 1, to its inner position, as shown in Figure 5. Such inward sliding of the lock barrel 17 forces the flared rear wall of the lock barrel to swing the dogs 13 inwardly on their pivot pin 14 and withdraws the lower portions of the dogs from the slots 20, while at the same time, the coil spring 18 is further compressed because of the movement of the forward wall of the recess in the lock barrel relatively to the neck 11 of the lock shaft. Means are provided to limit the forward movement of the lock barrel 17 so that it cannot be entirely withdrawn from its position within the forward portion of the cylinder 10. Such means is best shown in Figures 1, 3 and 5 and comprises a leaf spring 25 secured at one extremity to the lock barrel, as by means of the pin 22 and having its opposite extremity free and partially extending within a recess 26 in the periphery of the lock barrel. Intermediate its ends, but adjacent its free extremity, the spring is formed with a bend normally extending within a comparatively long slot 27 formed in the wall of the cylinder 10. When the lock barrel 17 is free to slide forwardly the pressure of the spring 18 forces it forwardly until the forward edge of the spring 25 engages the forward wall of the long slot 27.

Means are also provided to automatically prevent the forward sliding of the lock barrel 17 after it has been slid to its inner position as shown in Figure 5 until a suitable key is fitted into the lock barrel and the lock barrel partially rotated. This locking means is best shown in Figures 1, 3 and 5, and comprises a leaf spring 21 riveted or otherwise suitably secured at one extremity to the lock barrel 17, as by the pin 22, while its free extremity is inbent and extends within a recess 23 in the periphery of the lock barrel (note Figure 3). As long as the lock barrel is in its forward position, as shown in Figure 1, the inner peripheral wall of the cylinder 10 will maintain the free portion of the spring 21 within the recess 23, but when the lock barrel is slid rearwardly a sufficient distance to bring the free portion of the spring 21 into alignment with a short slot 24 in the cylinder 10, the free portion of the spring 21 snaps outwardly into the slot 24 substantially as shown in Figure 5. The forward wall of the slot 24 is then contacted by the extended free portion of the spring 21 and limits outward movement of the lock barrel 17 until the extended free portion of the spring is withdrawn from the slot 24.

The withdrawal of the extended free portion of the spring 21 can be secured only by utilizing a properly bitted key to free the tumblers of the lock in the usual manner, whereupon the lock barrel 17 is partially rotated in the direction of the arrow in Figure 7. This partial rotation of the lock barrel brings the side wall of the slot 24 into engagement with the curved intermediate portion of the spring 21 forcing the free extremity of the spring 21 inwardly into the recess 23 until such free extremity is entirely withdrawn from engagement with the forward wall of the slot 24, whereupon the pressure of the compressed coil spring 18 will serve to slide the lock barrel forwardly until stopped by engagement of the spring 25 with the forward wall of the long slot 27. It will be noted from the showing in Figure 7 that the longer slot 27 is also of relatively greater width than the shorter slot 24, so that rotation of the lock barrel to completely withdraw the spring 21 from engagement with the forward wall of the slot 24 will not serve to also withdraw the spring 25 from within the longer slot 27. The spring 25 always remains within the slot 27 regardless of the position of the lock barrel

17. The forward sliding of the lock barrel after partial rotation thereof, as above described, serves to permit the outward swinging of the rear portions of the locking dogs 13 under the pressure of the spring 18 transmitted through the washer 19 to the forward extensions 13ª of the locking dogs. The outward swinging of the locking dogs enables their entrance within the aligned slots 20 of the cylinder 10 and so serves to again connect the door handle to the lock shaft. Turning movements imparted to the door handle will now be transmitted to the lock shaft, which is suitably secured to the control portion of the usual or any desired door lock.

An escutcheon 28, preferably of ornate appearance, is secured upon the door 5 in any suitable manner and is provided with a central portion extending forwardly from the door a sufficient distance to permit the mounting of a coil spring 29 between the door and the forward portion of the escutcheon. A spacer sleeve 30, also preferably of ornate appearance, is arranged to surround the cylinder 10 between the lever portion 16 of the door handle and the escutcheon 28, and being preferably secured at its forward extremity to the lever portion 16 of the door handle. The contacting portions of the spacer sleeve and escutcheon are spaced to provide ready rotation of the sleeve on the escutcheon.

In assembling my improved door handle, the cylinder 10 and spacer sleeve 30 are secured to the lever portion 16 of the door handle in any suitable manner, after which the lock shaft is introduced into the cylinder 10 through an aperture in the lever portion of the handle and permitted to pass through the cylinder until the rounded portion 9 of the shaft engages the inturned rear extremity of the cylinder. The lock shaft is then turned relatively to the cylinder 10 to bring the locking dogs 13, which have been pivotally mounted within the slot 12 of the lock shaft, into alignment with the slots 20 in the cylinder. The lock barrel is preliminarily assembled with the leaf springs 21 and 25 secured thereon, whereupon the coil spring 18 and washer 19 are inserted within the recess in the rear portion of the lock barrel. The lock barrel is then pushed into the forward portion of the cylinder 10 until the spring 25 snaps into the larger slot 27 in the cylinder, the recessed rear portion of the lock barrel meanwhile passing over the neck 11 of the lock shaft. Before this position is reached, the washer 19 contacts with the forward extremities 13ª of the locking dogs 13 and forces the rear extremities of the dogs outwardly into the slots 20. The device is now ready for use, though it is to be understood that suitable hidden means, such as set screws or the like can be utilized to more firmly secure the lock barrel within the lever portion of the handle if desired.

While it will be apparent that the illustrated embodiment of my invention herein disclosed is well calculated to adequately fulfill the objects and advantages primarily stated, it is to be understood that the invention is susceptible to variation, modification and change within the spirit and scope of the subjoined claims.

What I claim is:—

1. In combination with a door lock, a lock shaft secured adjacent one extremity to a movable portion of the door lock and carrying adjacent its opposite extremity a pair of pivotally mounted dogs, a door handle rotatably mounted with its rear portion encircling the free extremity of the lock shaft and provided with spaced slots for the reception of the rear portions of said dogs, a lock barrel mounted within the door handle for sliding and rotating movements, a spring arranged between the lock shaft and barrel to normally press the barrel forwardly and the rear portions of the dogs outwardly into said slots, and means carried by the lock barrel for swinging the dogs out of said slots when the barrel is slid rearwardly.

2. In combination with a door lock, a lock shaft secured adjacent one extremity to a movable portion of the door lock and carrying adjacent its opposite extremity a pair of pivotally mounted dogs, a door handle rotatably mounted with its rear portions encircling the free extremity of the lock shaft and provided with spaced slots for the reception of the rear portions of said dogs, a lock barrel mounted within the door handle for sliding and rotating movements, a spring arranged between the lock shaft and barrel to normally press the barrel forwardly and the rear portions of the dogs outwardly into said slots, means carried by the lock barrel for swinging the dogs out of said slots when the barrel is slid rearwardly, and key-controlled means for releasing the lock barrel from its rearmost position.

3. In combination with a door lock, a lock shaft secured adjacent one extremity to a movable portion of the door lock and carrying adjacent its opposite extremity a pair of pivotally mounted dogs, a door handle rotatably mounted with its rear portion encircling the free extremity of the lock shaft and provided with spaced slots for the reception of the rear portions of said dogs, a lock barrel mounted within the door handle for sliding and rotating movements, a spring arranged between the lock shaft and barrel to normally press the barrel forwardly and the rear portions of the dogs outwardly into said slots, means carried by the lock barrel for swinging the dogs out of said slots when the barrel is slid rearwardly, means to limit the forward movement of the lock barrel, and separate means for holding the barrel in its rear-

most position when it has been slid to such position.

4. The combination with a lock shaft having a slotted extremity, a pair of dogs pivotally mounted upon the slotted extremity of the lock shaft, a rotatable door handle including a cylinder having its rear portion encircling the slotted extremity of the lock shaft and provided with spaced slots for the reception of the rear portions of said dogs, a lock barrel mounted within the forward portion of the cylinder for sliding and rotating movements, a spring arranged between the barrel and said extremity of the lock shaft to normally press the barrel forwardly and the rear portions of the dogs outwardly into said slots, means to limit the forward movement of the lock barrel, and means carried by the lock barrel to engage the dogs to swing them out of engagement with said slots when the barrel is moved rearwardly.

5. The combination with a lock shaft having a slotted extremity, a pair of dogs pivotally mounted upon the slotted extremity of the lock shaft, a rotatable door handle including a cylinder having its rear portion encircling the slotted extremity of the lock shaft and provided with spaced slots for the reception of the rear portions of said dogs, a lock barrel mounted within the forward portion of the cylinder for sliding and rotating movements, a spring arranged between the barrel and said extremity of the lock shaft to normally press the barrel forwardly and the rear portions of the dogs outwardly into said slots, means to limit the forward movement of the lock barrel, means carried by the lock barrel to engage the dogs to swing them out of engagement with said slots when the barrel is moved rearwardly, and key-controlled means for holding the lock barrel in its rearmost position after it has been slid thereto.

6. The combination with a lock shaft having a slotted extremity, a pair of dogs pivotally mounted upon the slotted extremity of the lock shaft, a rotatable door handle including a cylinder having its rear portion encircling the slotted extremity of the lock shaft and provided with spaced slots for the reception of the rear portions of said dogs, a lock barrel mounted within the forward portion of the cylinder for sliding and rotating movements, a spring arranged between the barrel and said extremity of the lock shaft to normally press the barrel forwardly and the rear portions of the dogs outwardly into said slots, means to limit the forward movement of the lock barrel, means carried by the lock barrel to swing the dogs out of engagement with said slots when the barrel is moved rearwardly, and key-controlled means for holding the lock barrel in its rearmost position after it has been slid thereto, including a leaf spring fixed upon the lock barrel and normally compressed within the cylinder, the cylinder being provided with a slot for the reception of a portion of said leaf spring when the lock barrel is slid to its rearmost position.

7. In combination with a door lock, a lock shaft secured adjacent one extremity to a movable portion of the door lock, and carrying adjacent its opposite extremity a pair of movably mounted dogs, a door handle rotatably mounted adjacent the free extremity of the lock shaft, and provided with a pair of slots for the reception of the outer portions of said dogs and a slot spaced from said pair of slots, a lock barrel mounted within the door handle for sliding and rotating movements therein, means operable upon sliding movement of the lock barrel to connect the handle to the lock shaft or disconnect it therefrom through the medium of said dogs, and latching means cooperating with said spaced slot for maintaining the lock barrel in position disconnecting the handle from the lock shaft, and releasable by rotary movement of the lock barrel.

8. In combination with a door lock, a lock shaft secured adjacent one extremity to a movable portion of the door lock, and carrying adjacent its opposite extremity a pair of movably mounted dogs, a door handle rotatably mounted adjacent the free extremity of the lock shaft, and provided with a pair of slots for the reception of the outer portions of said dogs and a slot spaced from said pair of slots, a lock barrel mounted within the door handle for sliding and rotating movements therein, means operable upon sliding movement of the lock barrel to connect the handle to the lock shaft or disconnect it therefrom through the medium of said dogs, a leaf spring carried by the lock barrel and adapted to snap into said spaced slot when the lock barrel is moved to a position disconnecting the handle from the lock shaft, said spring being releasable from said slot by rotary movement of the lock barrel.

In witness whereof I hereunto set my hand.

CHARLES B. LOWE.