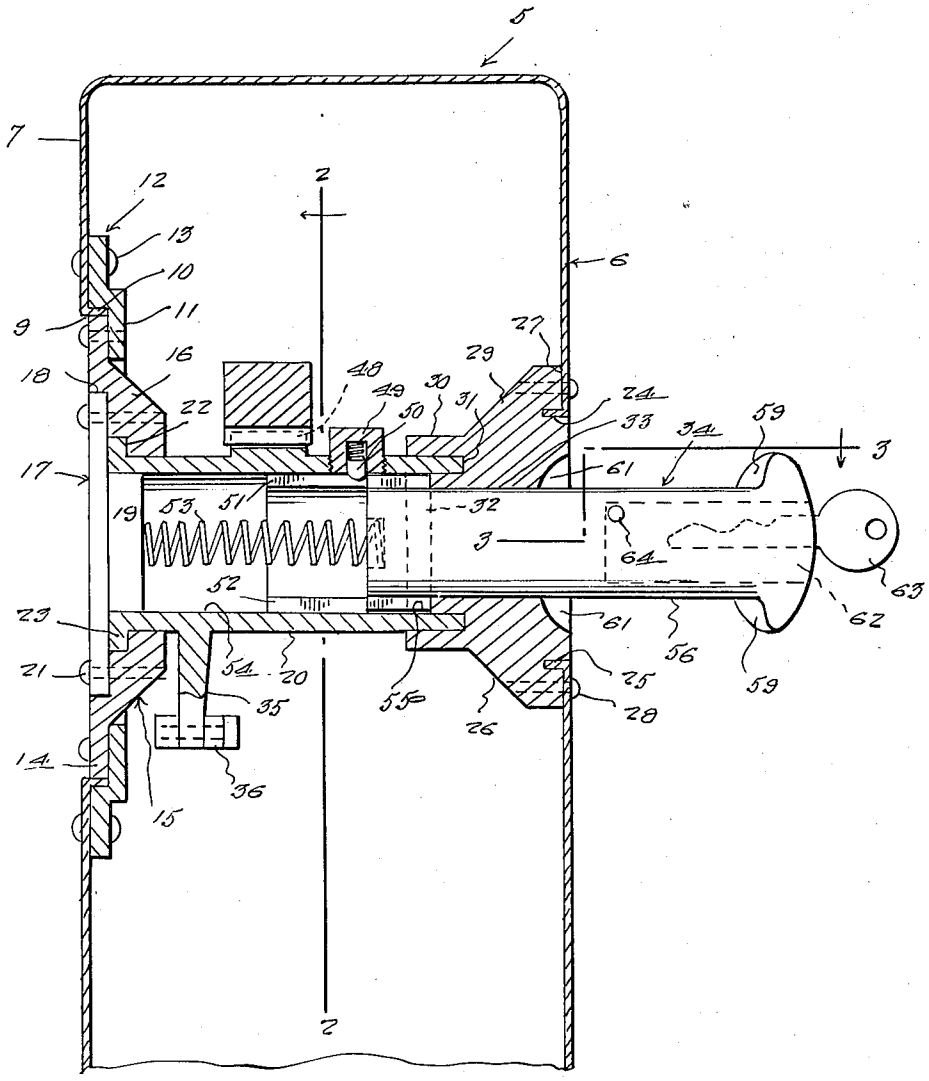
Jan. 23, 1934. L. M. HOLBROOK 1,944,642

DOOR HANDLE

Filed March 26, 1932 2 Sheets-Sheet 1

Fig. 1.



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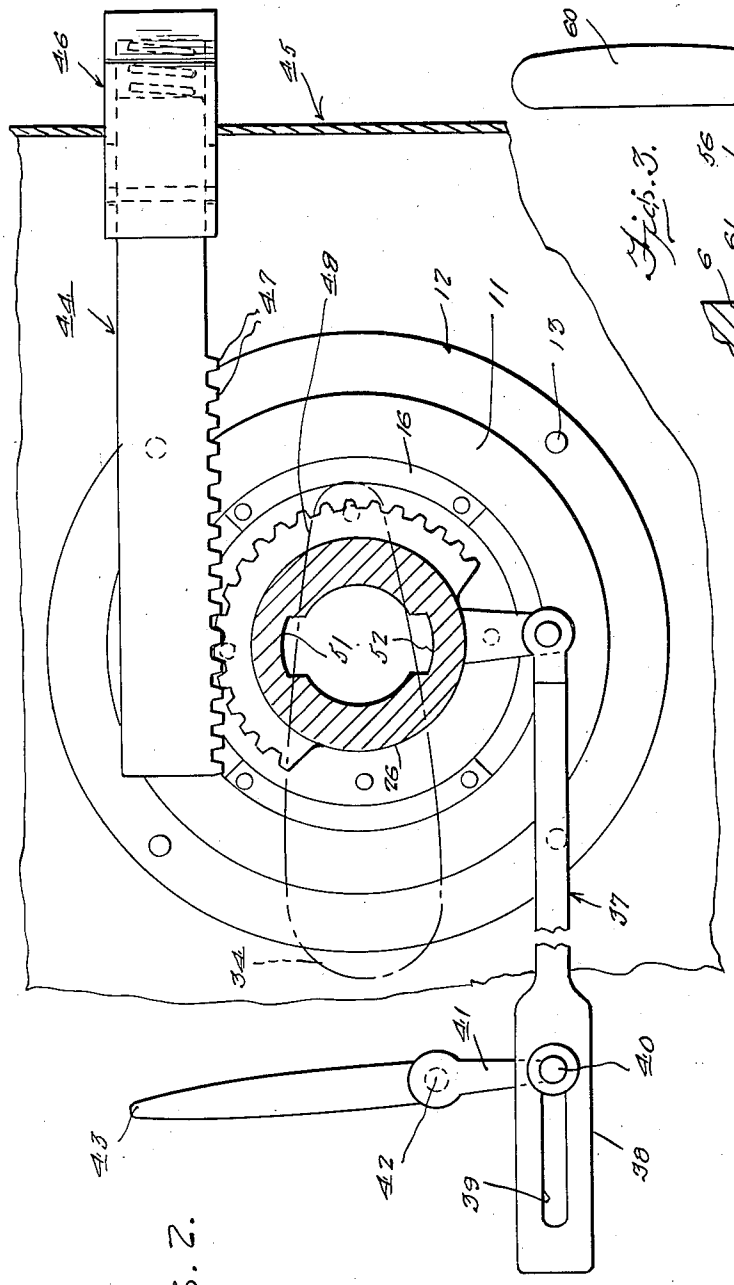


Fig. 2.

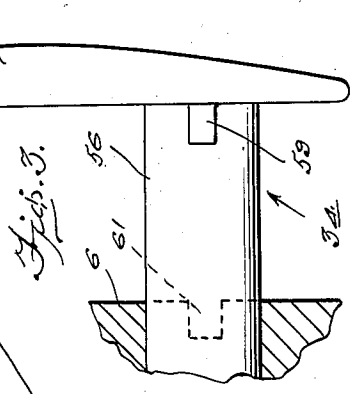


Fig. 3.

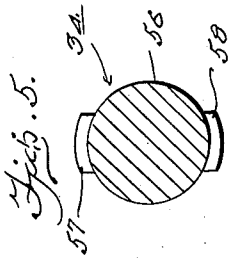


Fig. 5.

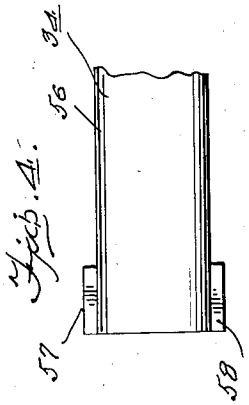


Fig. 4.

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UNITED STATES PATENT OFFICE

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DOOR HANDLE

Leslie Myers Holbrook, Hollywood, Calif.

Application March 26, 1932. Serial No. 601,368

7 Claims. (Cl. 70—91)

My invention relates to door handles, and particularly to door handle constructions for automotive vehicles, and it is the object of the invention to provide such a locking handle construction possessing new and novel structure and arrangement of parts, whereby the handle is positioned close to or flush with the outside of the body of the vehicle or the like when in locked position and extended from the body when in unlocked position, the handle being operable also from the inside of the vehicle.

Another important object of my invention is to provide a door handle structure of the type described which is simpler in construction and operation than existing types of door handle structures, and which has fewer and less costly parts, and which may be made with fewer manufacturing operations, the machining and other steps required being of elementary and simple character, and the assembly of the parts being easy and capable of being quickly performed.

Other objects and advantages of my invention will be apparent from a reading of the following description in connection with the drawings, wherein for purposes of illustration I have shown a preferred embodiment of my invention.

In the drawings:—

Figure 1 is a general vertical transverse sectional view through an automobile door or the like showing the construction and arrangement of the embodiment of the invention.

Figure 2 is a transverse sectional elevational view taken approximately on the line 2—2 of Figure 1 looking in the direction of the arrows.

Figure 3 is a sectional view taken on the line 3—3 of Figure 1 looking in the direction of the arrows.

Figure 4 is a view of the inward end of the handle per se.

Figure 5 is a transverse vertical sectional view through Figure 4 taken approximately on the line 5—5.

Referring in detail to the drawings, wherein like numerals refer to like parts throughout the same, the numeral 5 generally designates a portion of a modern automobile body or door construction the outer panel of which is represented by the numeral 6 and the inner panel thereof by the numeral 7. As the door handle construction is to be provided to be capable of being withdrawn except through the inner panel 7, this is provided with a large opening 9 provided with an outturned flange 10. Seated against the outward side of the panel 7 and provided with an outwardly offset annular or flange 11, is a stamping or casting 12 which is riveted or otherwise suitably secured as at 13 to the outward side of the panel 7 about the opening 9 in the manner shown. Attached to the inward side of the annulus or flange 11 is the flange 14 on a casting 15, whereby the casting 15 is removably carried by the stamping or casting 12. It will be observed that the radially outward edge of the flange 14 engages the radially inward side of the outturned flange 10 surrounding the opening in the inner door panel, while the radially inward edge of the stamping 12 engages the opposite or radially outward side of the flange 10. It will be observed that the casting 15 has a beveled axial enlargement 16 which extends into the space between the inner panel 7 and the outer panel of the door.

A retaining plate 17 adapted to seat its edges in a groove 18 in the inward face of the casting 15, has a plug formation 19 adapted to project into the inward end of a rotatable member 20 to be described. Detachable fastening means 21 traversing the retaining plate and entering the casting 15 permit easily removing the retaining plate 17 when desired. It will be observed that radially inwardly of the groove 18 the same side of the casting 15 is provided with another groove 22 for rotatably receiving a flange 23 on the inward end of the rotatable member 20 to be described.

In the outside panel 6 there is provided a relatively smaller opening 24 provided with an inturned flange 25 similar to the flange on the panel 7. A solid or otherwise suitably constructed block 26 has a groove to receive the flange 24. A portion 27 of the block 26 is reduced and extends to the groove so as to position the outer end of the block 26 flush with the outside surface of the panel 6. Suitable mounting means 28 for the block are passed through the panel 6.

As seen in the drawings, the block 26 is generally circular in cross section and has a beveled inwardly directed portion 29, on the small end of which is formed a cylindrical portion 30 which is axially counterbored to provide a deep groove 31 for rotatably receiving the outward end of the rotatable member 20 to be described. The cylindrical portion 30 of the block 26 is provided also with a shallow counterbore communicating with the groove 31, the bottom of which is indicated in dotted lines at 32. Centrally of the block 26 and communicating with the counterbore is an axial bore 33 for rotatably and slidably receiving the generally cylindrical shank portion of the handle which is generally designated 34.

From the lower side of the rotatable member 20 there depends and is affixed a lever or arm 35 to which is pivotally connected a forked end 36 on a generally horizontal link 37 which has at its other end an enlarged portion 38 provided with a longitudinal slot 39, in which slot operates a pin 40 on a crank arm 41 mounted on a pivot 42 operable by a suitable handle or lever arm 43 adapted to be disposed so as to be operable from the inside of the door. This mechanism is

adapted to operate the unlocking mechanism of the device of the invention from the inside of the door independently of the operation or position of the door handle 34, and without disturbing the door handle 34 when it is in the locked position.

Reference to Figure 2 will disclose the provision of a horizontally movable door locking bolt generally designated 44 which has one end movable through an opening in the appropriate edge panel 45 of the door or body structure of the vehicle. The numeral 46 generally designates a suitable flexibly mounted bolt end for engaging the stationary detent on the door jamb for locking the door. On the other end of the bolt 44 on the lower side thereof is a series of teeth 47 which is meshed with the teeth of a segmental gear 48 secured or formed upon the rotatable member 20, whereby rotation of the member 20 is rendered effective to extend and withdraw the bolt 44 for locking and unlocking purposes.

Referring particularly to Figure 1, it will be seen that the rotatable member 20 comprises a generally cylindrical tubular body whose outward end is plain and whose inward end is provided with the lateral flange 23 which is rotatably confined within the groove 22 in the body 15 already described. The operating arm 35 is mounted on the underside of the rotatable member 20 near the inward end thereof, and the gear segment 48 is placed on the upper side and partly around an intermediate portion of the rotatable member 20. Intermediate the gear segment 48 and the plain outward end of the rotatable member is a removable housing 49 containing a radially inwardly spring-pressed releasable detent 50 which radially projects into the interior of the rotatable member and into one of the longitudinal, diametrically opposed grooves 51, 52 which are located in a portion therein having a reduced bore, which grooves are, as seen in Figure 2, disposed in a vertical plane. By virtue of its position in the groove 51, the spring urged detent 50 acts in connection with the inward end of the shank portion of the handle 34 to maintain it yieldably against idle longitudinal sliding movement inwardly while it is in the extended position. A generally horizontal helical spring 53 disposed so as to act between the plug portion 19 of the retaining plate 17 and the inward end of the shank portion of the handle 34 is provided for projecting the handle outwardly when the lock means of the handle 34 are in the unlocked position. It will be observed that a portion of the interior of the rotatable member 20 having an enlarged bore as indicated at 54 extends to the inward end thereof.

The form and construction of the handle 34 will now be described. It comprises a generally cylindrical shank portion 34 on the inward end of which is a pair of diametrically opposed lugs or projections 57, 58 adapted to be positioned in the grooves 51, 52, respectively, whereby to connect the door handle 34 with the rotatable member 20 for rotating the member 20 by means of turning the handle 34 when the handle 34 is in an inward position. It will be obvious that when the handle 34 is pushed inwardly to a position in which the lugs or projections 57, 58 clear the inward end of the grooves 51, 52 and enter the portion 54, the handle 34 will be free to rotate in and relative to the member 20, and conversely, the rotatable member 20 will then be freely rotatable with respect to the handle 34 by means of the inside operator 43 independently of the handle 34 when it is in the locked position. When the handle 34 is in the extended unlocked position, it rotates with the tubular member 20 when the same is rotated by the inside operator. It will be observed that lugs or projections 59 of a stationary character are disposed at the outward end of the shank 56 and at its juncture with the transverse hand grip 60, whereby when the handle 34 is in the fully inward position with its lugs 57, 58 freely rotatable in the interior portion 54 of the member 20, the lugs 59 will be engaged in recesses 61 formed in the outward face of the block 26, whereby the handle 34 will be locked against rotation while seated approximately flush with the exterior of the door.

The handle 34 is equipped with a lock construction generally designated 62, seen in dotted lines in Figure 1, which has an arrangement whereby to project spreader bolts 64, upon manipulating the keys 63 which, when the handle is in the inward position extend radially so as to engage behind the inward end of the block 26 and in an annular space defined by the outward end of the portion of reduced diameter in the member 20 and the bottom of the counterbore which is indicated in dotted lines at 32. Within this space the spreader bolts are confined in a relatively rotatable manner, whereby the handle 34 is locked against outward withdrawal, and because of the interengagement of the lugs 59 and the recesses 61, which obtains in this disposition of the handle the handle is also held against relative rotation. This will produce a condition in which the hand grip 60 will be positioned very close to the outside of the body or door of the vehicle, a highly desirable feature where the development of stream line forms for vehicular bodies is considered.

Though I have shown and described herein a preferred embodiment of the invention, it is to be definitely understood that I do not desire to limit the application thereof to the construction and arrangement of parts herein, but any change or changes may be made, consistent with the spirit of the invention and the scope of the subjoined claims.

What is claimed is:—

1. A lock comprising a bolt, a rotatable tubular bolt operating member operatively connected to the bolt, a support carrying a pair of mountings whereby the rotatable member is supported, a portion of reduced interior diameter between the ends of the rotatable member, said portion being provided with longitudinal grooves, a door handle telescopable into said rotatable member and into the portion of reduced diameter, stop means on the handle slidably engageable in the grooves for connecting the handle and rotatable member for rotation, said stop means being adapted to abut a portion of one of the mountings when the handle is fully extended, the stop means being free of the grooves and portion of reduced diameter when in the fully pushed in position so that the door handle is disconnected from the bolt operating member.

2. A lock for a door having an inner and an outer panel, said lock comprising a bolt, a tubular bolt operating member connected to the bolt, a mounting secured in an opening in each panel for supporting the operating member rotatably between the panels, the outer mounting having in its inward end a groove rotatably receiving the adjacent end of the operating member and the inner mounting having an opening therethrough rotatably receiving a portion of the inner

end of the rotatable member, a retainer plate secured to the inner end of the inner mounting for abutting a portion of the rotatable member for maintaining it assembled to the mountings, a handle member slidable in a bore provided in the outer mounting and extending slidably into the tubular operating member, portions on the handle member for slidably engaging interior portions of the operating member whereby the handle member and operating member may be connected for rotation for operating the bolt.

3. A lock comprising a bolt, a tubular bolt operating member connected to the bolt, a support carrying a pair of mountings for supporting the operating member rotatably, one mounting having in its inward end a groove rotatably receiving the adjacent end of the operating member and the remaining mounting having an opening therethrough rotatably receiving a portion of the remaining end of the rotatable member, a retainer plate secured to the remaining mounting for abutting a portion of the rotatable member for maintaining it assembled to the mountings, a handle member slidable in a bore provided in the said one mounting and extending slidably into the tubular operating member, portions on the handle member for slidably engaging interior portions of the operating member whereby the handle member and operating member may be connected for rotation for operating the bolt, said interior portions of the operating member comprising a section of reduced interior diameter intermediate the ends of the operating member and provided with longitudinal grooves with which the portions on the handle member engage.

4. A lock comprising a bolt, a tubular bolt operating member connected to the bolt, a support carrying a pair of mountings for supporting the operating member rotatably, one of the mountings having a groove rotatably receiving the adjacent end of the operating member and the remaining mounting having an opening therethrough rotatably receiving a portion of the remaining end of the rotatable member, a retainer plate secured to said remaining mounting for abutting a portion of the rotatable member for maintaining it assembled to the mountings, a handle member slidable in a bore provided in one mounting and extending slidably into the tubular operating member, portions on the handle member for slidable engaging interior portions of the operating member whereby the handle member and operating member may be connected for rotation for operating the bolt, said interior portions of the operating member comprising a section of reduced interior diameter intermediate the ends of the operating member and provided with longitudinal grooves with which the portions on the handle member engage, and radially projectible means on the handle member adapted to be projected into the space between the portion of reduced diameter and said one mounting so as to abut said one mounting for locking the handle member against withdrawal outwardly, when the handle member is in the full inward position.

5. A lock comprising a bolt, a tubular bolt operating member connected to the bolt, a support carrying a pair of mountings for supporting the operating member rotatably, one of the mountings having a groove rotatably receiving the adjacent end of the operating member and the remaining mounting having an opening therethrough rotatably receiving a portion of the rotatable member, a retainer plate secured to the said remaining mounting for abutting a portion of the rotatable member for maintaining it assembled to the mountings, a handle member slidable in a bore provided in the outer mounting and telescopable into the tubular operating member, portions on the handle member for slidably engaging interior portions of the operating member when so telescoped whereby the handle member and operating member are connected for rotation for operating the bolt, said interior portions of the operating member comprising a section of reduced interior diameter provided with longitudinal grooves with which the portions on the handle member engage, and radially projectible means on the handle member adapted to be projected into the space between the portion of reduced diameter and said one mounting so as to abut the said one mounting for locking the handle member against withdrawal outwardly, when the handle member is in the full inward position, said portions on the handle member and the radially projectible means on the handle member being free of the tubular operating member when it is in the full inward position, lateral enlargements on the handle member engageable with openings in the said one mounting when the handle is in the full inward position whereby the handle is locked against rotation.

6. A lock comprising a bolt, a tubular bolt operating member connected to the bolt, a support carrying a pair of mountings for supporting the operating member rotatably, one of the mountings having a groove rotatably receiving the adjacent end of the operating member and the remaining mounting having an opening therethrough rotatably receiving a portion of the rotatable member, a retainer plate secured to said remaining mounting for abutting a portion of the rotatable member for maintaining it assembled to the mountings, a handle member slidable in a bore provided in said one mounting and extending into the tubular operating member, portions on the handle member for slidably engaging interior portions of the operating member whereby the handle member and operating member are connected for rotation for operating the bolt, and spring means interposed between and engaging the retainer plate and a socket in the inward end of the handle member for urging the handle member outwardly so as to engage the portions on the handle member with the interior portions of the operating member.

7. In a lock of the type described including a bolt and a support, a pair of mountings on the support each provided with an opening, a rotatable tubular bolt operating member operatively connected to the bolt, one of said mountings provided with a groove radially spaced from its opening rotatably receiving one end of said member, the remaining end of said member being rotatably supported in the opening of the remaining mounting, means on said remaining mounting engaging said remaining end of said member and holding said member assembled to the mountings, and handle means slidably and rotatably traversing one of said mountings and having a portion located in and engageable with said member for rotating the same.

LESLIE MYERS HOLBROOK.