June 15, 1943. J. P. MARURI 2,322,040

HANDLE AND LATCH OPERATING DEVICE

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Fig. 1.

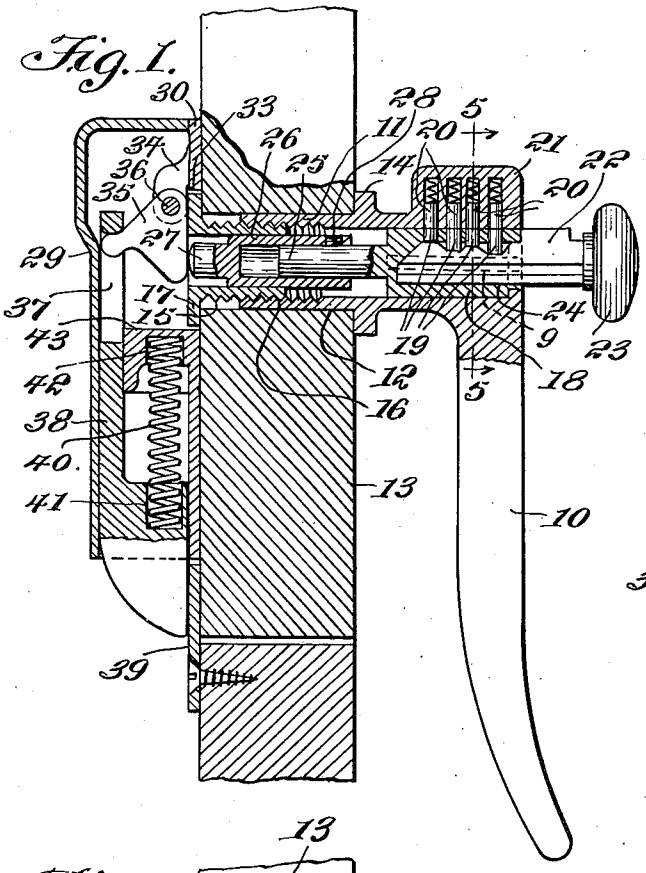


Fig. 3.

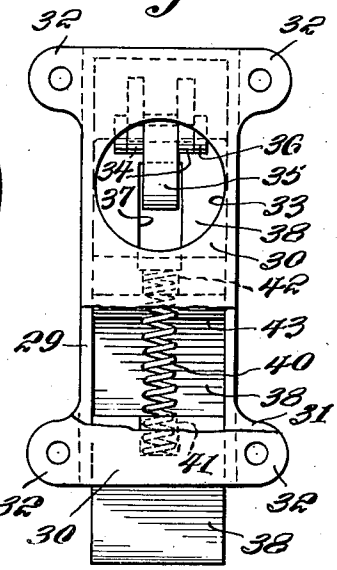


Fig. 4.

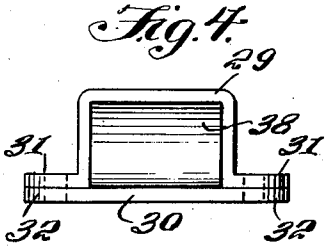


Fig. 2.

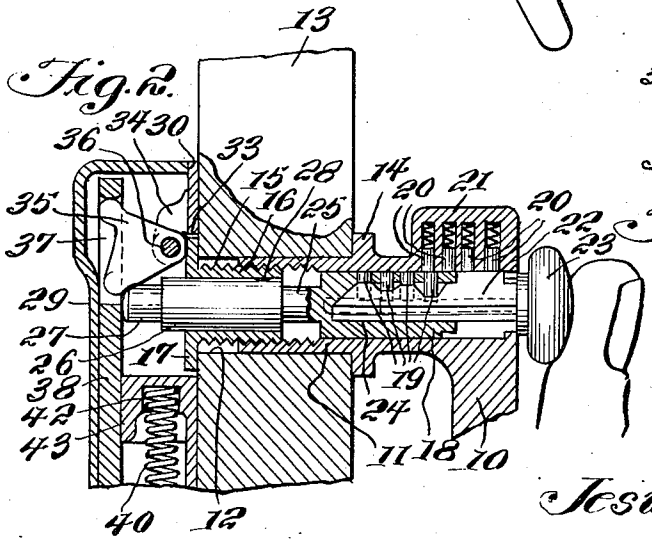
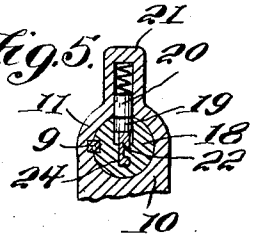


Fig. 5.



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Fig. 6.

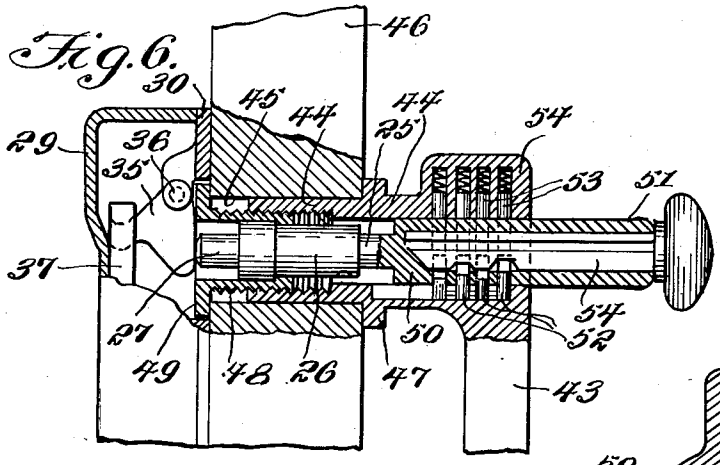


Fig. 7.

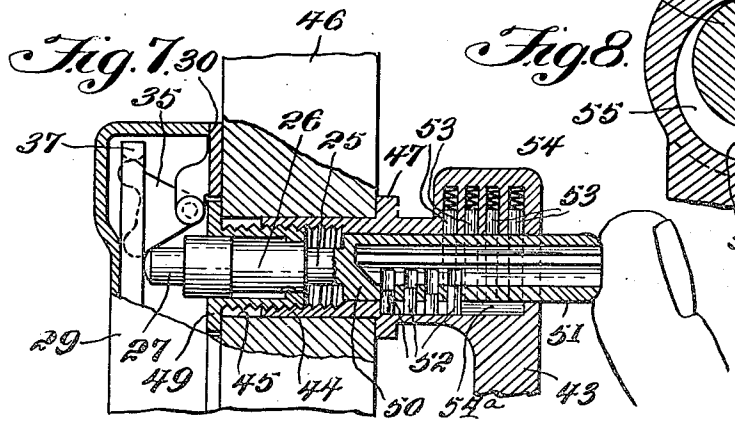


Fig. 8.

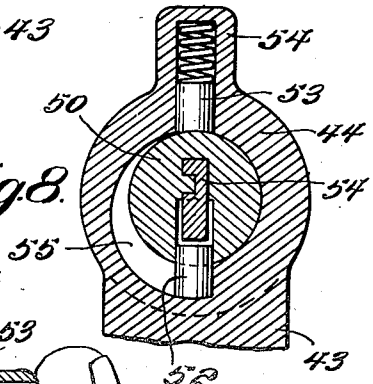
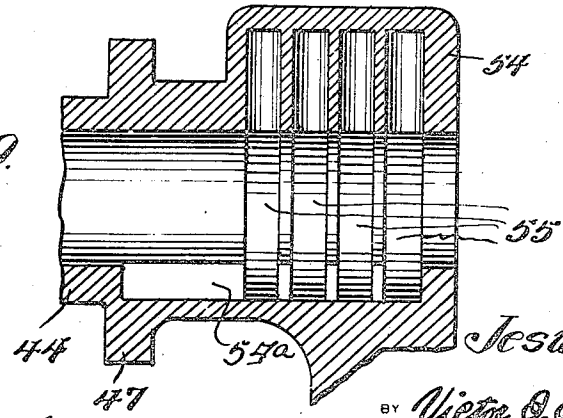


Fig. 9.



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2,322,040

HANDLE AND LATCH OPERATING DEVICE

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Application April 25, 1941, Serial No. 390,412

2 Claims. (Cl. 70—145)

This invention relates to a handle and latch operating device and has for an object to provide a rigid handle provided with a push button for operating a door latch, the handle being provided with a single unitary support which secures the handle to the door in such a manner as to hold the handle positively against any turning movement with relation to the door.

A further object is to provide a device of this character which will be formed of a few strong, simple and durable parts, which will be inexpensive to manufacture, and which will not easily get out of order.

With the above and other objects in view, the invention consists of certain novel details of construction and combinations of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings forming a part of this specification:

Figure 1 is a longitudinal sectional view of a handle and latch operating device constructed in accordance with the invention.

Figure 2 is a longitudinal sectional view of the device shown in Figure 1 with the push button shown in operative position to release the latch.

Figure 3 is a rear elevation of the latch mechanism with the inner plate of the casing broken away to expose the controlling spring.

Figure 4 is a bottom plan view showing the two-piece latch casing and latch bolt.

Figure 5 is a cross sectional view taken on the line 5—5 of Figure 1.

Figure 6 is a longitudinal sectional view of a modified form of handle and latch operating device.

Figure 7 is a view similar to Figure 6 but showing the lock drum being operated manually to release the latch after removal of the key.

Figure 8 is a cross sectional view showing the tumbler cam grooves in the lock housing.

Figure 9 is a fragmentary sectional view of the lock mechanism showing the lock drum in elevation.

Referring now to the drawings in which like characters of reference designate similar parts in the various views, 10 designates a handle formed of a bar and suitable for use on automobile doors, the handle being provided at the upper end with a tubular post 11 which forms an integral part of the handle and extends at a right angle thereto. The post has the inner end portion thereof disposed in an opening 12 formed in the door 13 of the vehicle. The post is provided with an outer flange 14 which contacts with the outer side of the door.

A tubular securing member 15 is threaded into the inner end of the tubular post, as shown at 16, and is provided with a flange 17 which contacts with the inner side of the door 13. The post and the securing member form a unitary support which secures the handle to the door in such manner as to hold the handle positively against any turning movement with relation to the door. The outer end of the post and the inner end of the securing member are fully open.

A lock drum 18, shown in Figure 5, is mounted in the outer end of the tubular post to slide longitudinally of the post, and is provided with key operated tumblers 19 which coact with spring pressed drivers 20 in a lock housing 21 formed integral with the outer end of the post, to lock the drum against endwise sliding movement in the tubular post 11. The drum is held against rotation by a spline 9 mounted in the bore of the tubular post and engaging a longitudinal groove in the drum.

A key 22 is provided, having a knob or button 23 forming a grip. When the key is inserted in the key slot 24 in the drum 18, the wards of the key will push the tumblers 19 from the position shown in Figure 1 to their outward position for pushing back the drivers 20 to unlock the drum from the housing and permit further inward movement of the key shoving the drum 18 inwardly longitudinally of the tubular post 11 to release the latching means.

The drum is provided with an adjustable latch releasing finger comprising a pin 25 which is disposed in axial alignment with the drum and upon which is telescopically received the tubular base 26 of a pin 27. An adjusting screw 28 is threaded through the tubular base into engagement with the pin 25 to adjust the tubular base longitudinally of the latter so that the pin 27 will lie flush with the outer face of the flange 17 of the tubular securing member 15 when the device is applied to doors of different thicknesses.

A two-piece latch casing is mounted on the inner face of the door and comprises a section 29 of U-shape cross section, as best shown in Figure 4, and an inner plate 30, both the section 29 and the plate 30 being provided with respective ears 31 and 32 through which securing means may be passed to hold the casing assembled and secure the same to the door, such

securing means being bolts, screws or other connectors.

The inner plate 30 is provided with a circular opening 33 which exposes the flange 17 of the tubular securing member 15, and adjacent the opening is provided with hinge ears 34 through which, and one corner of a substantially triangular cam 35, a pivot pin 36 is passed. The cam bears against the pin 27 and at the corner opposite of the pin is engaged in a longitudinal slot 37 formed in a latch bolt 38 which is normally held in door locking position against a wear plate 39 carried by the door through the medium of a helical compression spring 40 which is mounted at one end in a recess 41 in the latch bolt and at the other end is mounted in a recess 42 formed in a flange 43 which projects from the inner plate 30 of the latch casing and upon which the latch bolt is slidably engaged, as best shown in Figure 1.

In operation, the handle 10 is rigid and is held positively against any turning movement so that after the key 22 is inserted in the drum, the fingers may be closed upon the handle and the thumb placed against the button 23, as shown in Figure 2, to shove the key and drum endwise as a unit inwardly to impinge the pin 27 against the cam 35 and withdraw the latch bolt 38 against the pressure of its controlling spring 40 to unlock the door.

In the modified form of the invention shown in Figures 6–9 inclusive the latch can be opened by the key when inserted, but when the key is turned through a half turn for example, so as to render the tumblers inoperative, and then is removed, the latch can be operated by manually pressing in on the lock drum which is elongated to provide a button against which the operator's hand may be engaged.

In the modified form of the invention the door handle 43 is provided at its upper end with an integral tubular post 44 which has the inner end portion disposed in an opening 45 in the door 46 of the vehicle. The post is provided with an outer flange 47 which contacts with the outer side of the door and a tubular securing member 48 is threaded into the inner end of the tubular post and is provided with a flange 49 which contacts with the inner side of the door. The outer side of the post and the inner end of the securing member are fully opened.

A lock drum 50 is mounted in the outer end of the tubular post to slide longitudinally of the post and is provided with an extension 51 forming a button against which the operator's finger may be pressed to actuate the drum, see Figure 7. The lock drum is provided with key operated tumblers 52 which coact with spring drivers 53 in a lock housing 54 formed integral with the outer end of the tubular post 44, to lock the drum against endwise sliding movement in the tubular post, as previously described. However, instead of the lock drum being confined to rectilinear movement as previously described the lock drum is free to rotate when the key 54 is inserted to push back the tumblers 52 and render the drivers 53 inoperative.

In Figure 6 the key has been rotated through one half turn after insertion in the lock barrel in which position the cylindrical surface of the lock barrel hold the drivers 53 inoperative. At this time the tumblers 52 of the lock drum 50 are received in a groove 54*a* formed in the lower side of the lock housing at the deep ends of cam slots 55 formed circumferentially of the bore of the lock housing 54, see Figure 8. The groove 54*a* extends, as shown in Figures 7, 8 and 9, longitudinally of the lock housing and post to permit the lock drum 50 to be moved inwardly to effect the retraction of the latch bolt 38. In this position of parts the key may be removed and the operator's fingers may be pressed against the extension 51 of the lock drum to press the lock drum inwardly and release the latch mechanism which is identical with the latch mechanism previously described and hence the parts have been given identical reference characters.

When it is desired to again lock the latch mechanism in closed position the key is again inserted to rotate the lock drum in a retrograde direction. During this movement the walls of the cam slots force the tumblers 52 radially inward so that they will align and contact with the drivers 53 at the limit of movement of the lock drum under urge of the key. When the key is withdrawn the controlling springs of the drivers 53 will push the drivers 53 and tumblers 52 radially toward the axis of the lock drum in which position of the parts the drivers 53 will pass into the upper ends of the openings which receive the tumblers 52 in the lock drum and lock the lock drum to the lock drum housing so that the lock drum cannot be pushed in to release the latch mechanism until the key is again inserted.

From the above description it is though that the construction and operation of the invention will be fully understood without further explanation.

What is claimed is:

1. In a door lock, a tubular post adapted to extend through the door and embodying inner and outer sections, means for connecting the sections together for relative axial adjustment to vary the effective length of the post, a lock housing integral with the outer end of the post, a lock drum slidably mounted in the outer section of the post and lock housing, a finger extending inwardly from the inner end of the lock drum, a latch retracting finger having a tubular base slidably mounted in the inner section of the post and receiving said first finger, means connecting said first finger and base for relative axial adjustment to vary the effective length of the fingers, the lock drum having a key-slot, and key-released locking means carried by the lock housing and lock drum.

2. In a door lock, a tubular post adapted to extend through the door, a lock drum for retracting the bolt of the lock slidably and rotatably mounted in the post, a lock housing integral with the post, spring pressed drivers carried by the upper side of the housing, and tumblers carried by the lock drum, the lock housing being provided in its lower side with a groove extending longitudinally of the housing, and the housing being provided with cam grooves extending from the drivers of the lock housing to the longitudinal groove with their deep ends at the longitudinal groove.

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