July 11, 1933. W. C. DEVEREAUX 1,917,436

DOORLATCH MECHANISM

Filed July 28, 1930 2 Sheets-Sheet 1

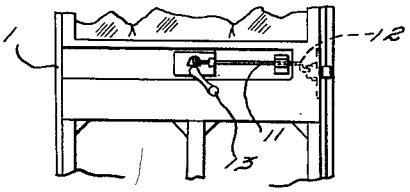


Fig. 1A.

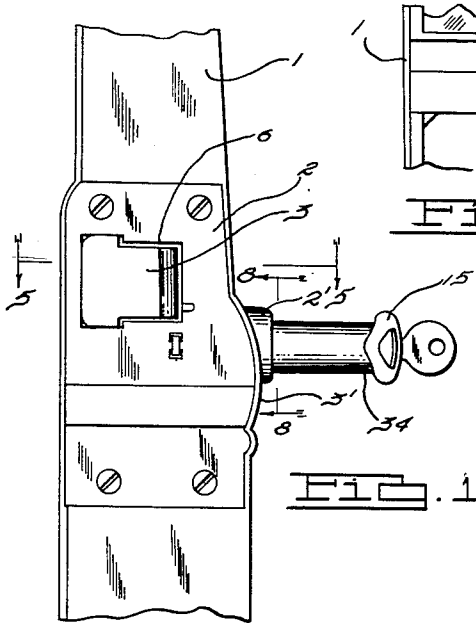


Fig. 1.

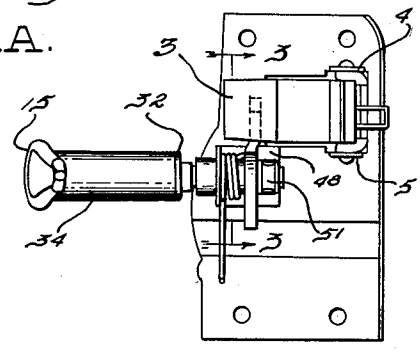


Fig. 2.

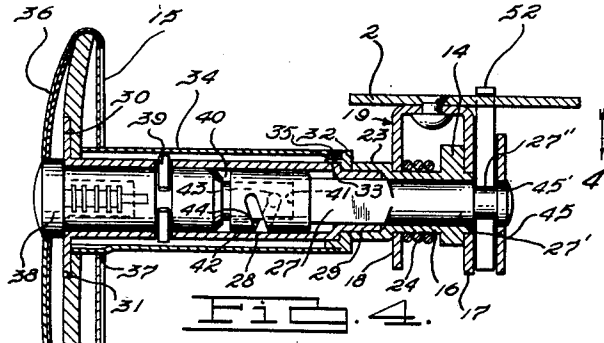


Fig. 4.

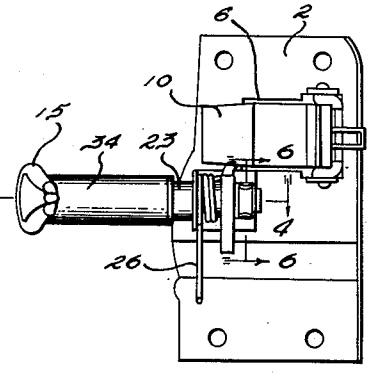


Fig. 2A

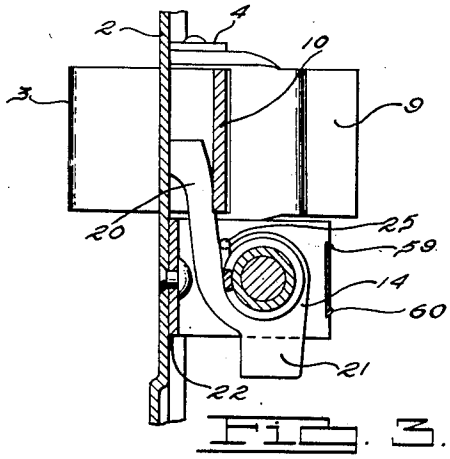


Fig. 3.

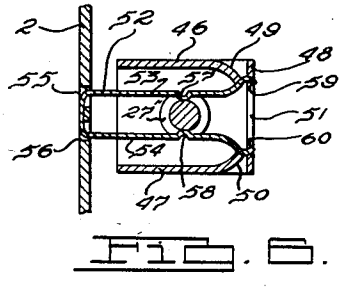


Fig. 5.

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DOORLATCH MECHANISM

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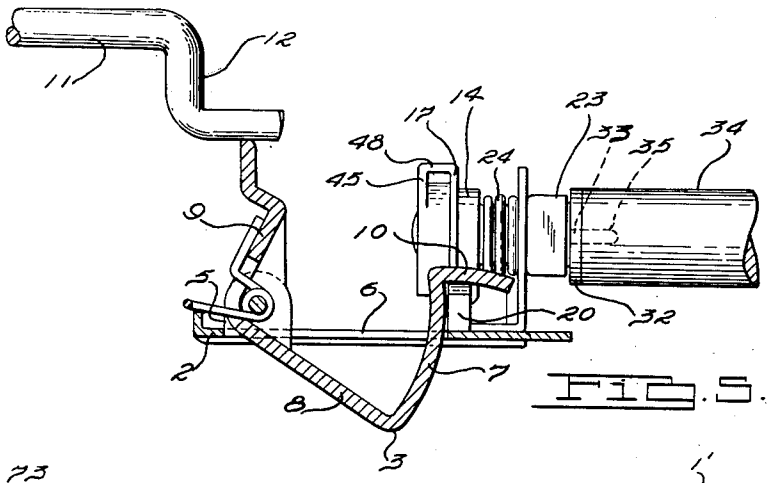


Fig. 5.

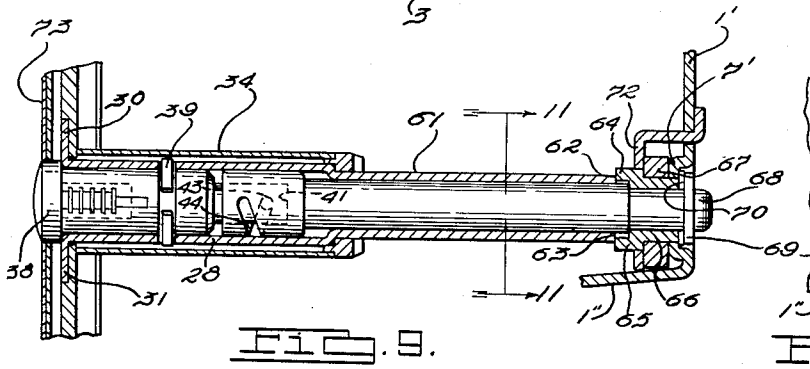


Fig. 9.

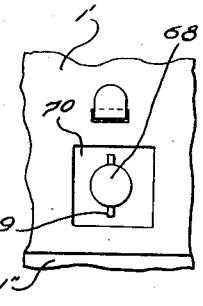


Fig. 10.

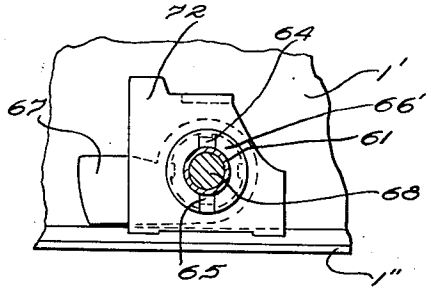


Fig. 11.

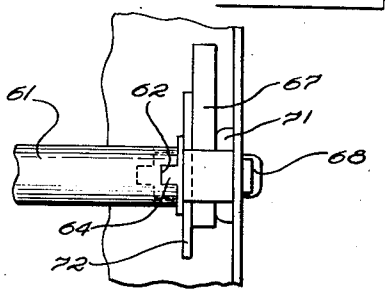


Fig. 12.

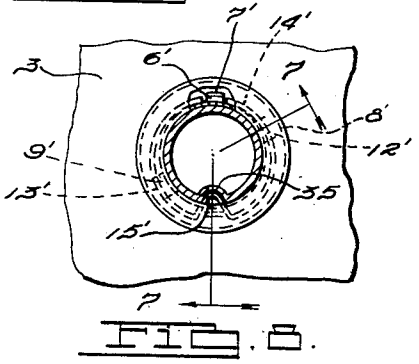


Fig. 8.

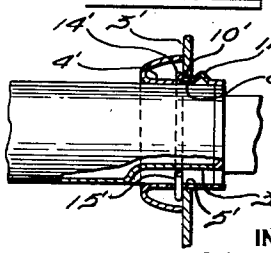


Fig. 7.

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UNITED STATES PATENT OFFICE

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DOORLATCH MECHANISM

Application filed July 28, 1930. Serial No. 471,368.

This invention relates generally to door latch mechanism, particularly to the handle assemblies thereof, and consists of certain novel features of construction, combinations and arrangements of parts that will be hereinafter more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a fragmentary edge elevation of a door with a latch structure embodying my invention applied thereto;

Figure 1A is a fragmentary elevation of the inner side of the door;

Figure 2 is an opposite edge elevation of the structure illustrated in Figure 1 and showing the sleeve of the handle withdrawn from the rollback stub shaft;

Figure 2A is a view similar to Figure 2 but showing the handle sleeve within the rollback stub shaft so that the rollback may be operated by the grip portion;

Figure 3 is a sectional view taken on the line 3—3 of Figure 2;

Figure 4 is a sectional view taken on the line 4—4 of Figure 2A;

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

Figure 6 is a sectional view taken on the line 6—6 of Figure 2A;

Figure 7 is a fragmentary sectional view through the outer panel of the door and through the handle escutcheon;

Figure 8 is a sectional view taken on the line 8—8 of Figure 1;

Figure 9 is a view similar to Figure 5 but showing a slightly modified construction;

Figure 10 is a fragmentary elevation of the construction illustrated in Figure 9;

Figure 11 is a sectional view taken on the line 11—11 of Figure 9;

Figure 12 is a fragmentary elevation of the structure illustrated in Figure 10.

Referring now to the drawings, 1 is a door; 2 is a latch case plate secured to the upright free edge of the door; and 3 is a latch bolt pivotally mounted between inturned lugs 4 and 5 respectively of the case plate and movable through an opening 6 in the latter. As shown, the latch bolt is substantially U-shape in configuration and the side walls 7 and 8 respectively thereof are provided at their inner edges with laterally extending flanges 9 and 10 respectively. 11 is a rockshaft having a crank portion 12 engageable with the flange 9 and operable from the inner side of the door by a suitable handle 13; and 14 is a rollback engageable with the lateral flange 10 of the bolt and operable from the outer side of the door by means of the handle 15. As shown, the rollback is rigid with a tubular stub shaft 16 that is journaled in the parallel walls 17 and 18 respectively of a U-shaped bracket 19 projecting laterally inwardly from the case plate 2, and is provided with arm portions 20 and 21 respectively. Preferably the arm 20 engages the latch bolt flange 10, while the arm 21 is engageable with the base 22 of the bracket to limit the inward swinging movement of the arm 20. The stub shaft 16 is provided upon the outer side of the bracket wall 18 with a squared portion 23 that opens outwardly, while a coil spring 24 is sleeved upon the stub shaft 16 between the rollback 14 and bracket wall 18 and has arm portions 25 and 26 respectively bearing against the rollback arm 20 and case plate 2. Thus with this construction the spring 24 causes the squared portion 23 of the shaft to be held against the outer face of the bracket wall 18; causes the rollback 14 to be held against the bracket wall 17; serves to maintain the stub shaft 16 in the bracket wall 17; and normally maintains the rollback arm 20 against the case plate 1. In the present instance, the handle 15 is T-shape in form and comprises a stem 27 of square cross section having a cylindrical portion 27′ journaled in the stub shaft 16 and provided upon the inner side of the bracket wall 17 with an annular groove 27″, a sleeve 28 movable longitudinally of the stem and provided at its opposite ends with a squared portion 29 and laterally extending flanges 30 and 31 respectively, a washer 32 rigid with the squared portion 29 of the sleeve at a point substantially three-sixteenths of an inch from the inner end thereof and having a peripheral notch 33, a tubular shank 34 enclosing the sleeve and having a depressed portion 35 received in the notch 33 of the washer, a grip portion

36 rigidly secured to the laterally extending flanges 30 and 31 respectively of the sleeve and having an opening 37 receiving the outer end of the shank 34, and a cylinder lock 38 extending through the grip portion 36 and secured by a split spring metal ring 39 to the sleeve 28. Preferably the rotating cylinder 40 of the lock is received within a socket 41 in a cylindrical portion 42 of the stem 27 and carries a laterally projecting pin 43 that engages a spiral groove 44 in said cylindrical portion 42 of the stem. Thus when the cylinder lock 38 is turned by a suitable key (not shown) the pin 43 will travel in the spiral groove 44 and will cause the grip 36, shank 34, lock 38, washer 32 and sleeve 28 to move in unison longitudinally of the stem 27. Preferably the spiral groove 44 is constructed and arranged in such a way that the longitudinal movement just mentioned is approximately three-sixteenths of an inch.

Preferably the bracket wall 17 is provided with an open return bent portion 45 that is substantially parallel to said bracket wall, and is provided with a circular opening 45′ that receives and constitutes a bearing for the cylindrical portion 27′ of the stem. The return bent portion 45 is also provided at the upper and lower edges thereof with laterally extending flanges 46 and 47 respectively that abut the inner face of the bracket wall 17 and are provided adjacent the return bend 48 with inturned tongue portions 49 and 50 respectively. The return bent portion 48 is also provided between the inner ends of said tongues 49 and 50 with a slot 51.

In the present instance the handle stem 27 is detachably held in the stub shaft 16 and return bent portion 45 of the bracket 19 by means of a substantially U-shaped retaining spring 52. As shown, the arm portions 53 and 54 respectively of this spring extend through spaced openings 55 and 56 respectively in the case plate 2 and between the bracket wall 17 and the open return bent portion 45 thereof. As shown, the arm portions 53 and 54 have opposed arcuate portions 57 and 58 that are received in the annular groove 27″ of the handle stem, and are provided at their inner free ends with flared portions 59 and 60 respectively that bear against the inner ends of the tongue portions 49 and 50 and extend through the slot 51.

Preferably an annular escutcheon 2′ surrounds the shank 34 of the handle and abuts the outer panel 3′ of the door. As shown, this escutcheon has a tubular portion 4′ return bent inwardly from its outer edge and extends through a circular opening 5′ in the panel 3′. A tongue 6′ is pressed outwardly from the tubular portion 4′ and engages a slot 7′ of corresponding width in the panel 3′, while other tongues 8′ and 9′ respectively at diametrically opposite sides of the tubular portion 4′ extend through slots 10′ and 11′ in the panel and have transverse ridges or corrugations 12′ and 13′ respectively that extend in rear of the slots 10′ and 11′ and constitute catches for holding the escutcheon rigid against the panel. A clamp ring 14′ fits around the tubular portion 4′ and has an embossed portion 15′ that is received in the depressed portion 35 in the handle shank 34 and serves to locate the handle in the correct position for unlocking. When the handle is unlocked the door latch can be operated by means of the handle.

In use, when the parts are assembled as described, the squared portion 29 of the sleeve 28 is moved into engagement with or is removed from the squared portion 23 of the stub shaft 16 by turning the cylinder portion 40 of the lock 38 by means of a suitable key (not shown). When the cylinder 40 of the lock is turned clockwise the squared portion 29 of the sleeve will be moved into the squared portion 23 of the stub shaft so that the grip portion 36 of the handle may be utilized to actuate the stub shaft 16 and rollback 14 to effect the retraction of the latch bolt. When the cylinder portion 40 of the lock is turned anti-clockwise by the key the squared portion 29 will be removed and thereby disengaged from the squared portion 23 of the stub shaft, hence the grip portion 36 of the handle may be rotated freely without affecting the stub shaft 16 or rollback 14. When the door is closed the case plate 2 is against the door jamb (not shown), hence the retaining spring 52 is inaccessible. As a result the stem 27 of the handle cannot be removed from the stub shaft 16 by any unauthorized person. It will also be noted that the engagement of the squared portion 29 of the sleeve with the squared portion 23 of the stub shaft and the engagement of the cylindrical portion 27′ of the stem with the stub shaft 16 and return bent portion 45 of the bracket wall 17, prevent the handle from wobbling. When the squared portion 29 of the sleeve is disengaged from the squared portion 23 of the stub shaft the engagement of the cylindrical portion 27′ of the stem with the stub shaft 16 and with the return bent portion 45 of the bracket wall 17 effectively prevents the handle from wobbling, notwithstanding the fact that it is then capable of being freely rotated relative to the stub shaft.

In Figures 9 to 12 inclusive I have illustrated a slight modification in which the handle sleeve 61 is relatively long and is provided at its inner end at diametrically opposite points thereof with notches 62 and 63 respectively that are adapted to receive lugs 64 and 65 respectively projecting from the stub shaft 66 upon which the rollback 67 is non-rotatably mounted. In this construction the stem 68 of the handle is held in the stub shaft 66 by means of a pin 69 that extends through the stem and engages a spring washer 70 bearing against a depressed por-

tion 71 of the case plate 2'. As shown, the case plate 2' is adapted to be secured at one side of the door and is provided at one edge with a lateral flange 1'' that is adapted to be secured to the outer free edge of the door. The depressed portion 71 and a bracket 72 secured to the case plate constitute the bearings for the stub shaft 66. Thus with this construction when the handle sleeve 61 is moved inwardly so that the recesses 62 and 63 at the inner end thereof receive the lugs 64 and 65, the grip portion 73 of the handle may be utilized for actuating the rollback 67. When the sleeve 61 is withdrawn from the lugs 64 and 65, the grip portion 73 and associated parts may be rotated freely without affecting the stub shaft 65 or rollback 67. Preferably the lugs 64 and 65 have different widths or thicknesses so that the recesses 62 and 63 of corresponding size can receive the lugs when the sleeve 61 and grip portion 73 are in one position only relative to the door.

What I claim as my invention is:

1. In a door latch mechanism, a bolt retracting member, a socket rigid with said member, and an operating handle having a stem extending freely through said member, a sleeve movable longitudinally of the stem into and out of said socket, and key actuated means for moving the sleeve.

2. In a door latch mechanism, an operating handle having a stem and a sleeve movable longitudinally of said stem, a rollback, a stub shaft for the rollback having a socket for receiving the sleeve, and a supporting bracket for the stub shaft having a bearing for the stem.

3. In a door latch mechanism, an operating handle having a stem, a rollback, a stub shaft for the rollback receiving the stem, and a supporting bracket for the stub shaft having a portion receiving and constituting a bearing for the stem.

4. In a door latch mechanism, a rollback, a stub shaft therefor, a supporting bracket for the stub shaft, and an operating handle having a stem journaled in portions of the stub shaft and bracket and having detachable means non-rotatably connected to the stub shaft.

5. In a door latch mechanism, a rollback, a stub shaft therefor having a socket portion, a supporting bracket for the stub shaft, and an operating handle having a stem journaled in portions of the stub shaft and bracket and having other means removably received in said socket.

6. In a door latch mechanism, a rollback, a stub shaft therefor, a supporting bracket for the stub shaft having an open return bent portion, a handle stem extending through the stub shaft and journaled in the return bent portion, and removable means between the bracket and return bent portion for detachably holding the stem in the stub shaft.

7. In a door latch mechanism, a bracket having an open return bent portion, a stub shaft journaled in the bracket, and a handle stem journaled in said stub shaft and return bent portion.

8. In a door latch mechanism, a bracket having an open return bent portion, a stub shaft journaled in the bracket, a handle having a stem journaled in the shaft and return bent portion, and removable means between the bracket and return bent portion detachably holding the stem in the shaft.

9. In a door latch mechanism, a bracket having an open return bent portion, a stub shaft journaled in the bracket and having a socket portion, a handle having a stem journaled in the shaft and return bent portion, and key actuated means movable into and out of said socket.

10. In a door latch mechanism, a bracket, a stub shaft journaled in said bracket, a rollback rigid with the shaft, and a spring associated with said shaft, bracket and rollback, holding the shaft against longitudinal movement in the bracket, and holding the rollback in a predetermined position relative to the bracket.

11. In a door latch mechanism, a bracket, a stub shaft journaled in said bracket and having a socket portion engaging one side of said bracket, a rollback on the stub shaft and engaging another side of said bracket, a spring associated with said shaft, rollback and bracket, holding the socket portion in engagement with the first mentioned side of the bracket, holding the rollback against the second mentioned side of the bracket, and temporarily holding both said shaft and rollback against rotation relative to said bracket.

12. In a door latch mechanism, a rollback, an operating member having a stem mounted for rotary movement only in said rollback, a sleeve movable longitudinally of the stem into operative engagement with the rollback, and actuating means for the sleeve including means connected with but rotatable relative to the stem and connected and movable lengthwise with the sleeve.

13. In a door latch mechanism, a rollback, an operating member having a stem mounted for rotary movement in said rollback, a member movable longitudinally of the stem into operative engagement with the rollback, and actuating means for said longitudinally movable member including key-actuated means connected with but rotatable relative to the stem and connected and movable longitudinally with said longitudinally movable member.

14. In a door latch mechanism, a rollback, an operating member having a stem mounted for rotary movement only, and an operating

connection between said member and rollback including a sleeve movable longitudinally of the stem into operative engagement with the rollback, and actuating means for the sleeve including key-actuated means connected with but rotatable relative to the stem and connected and movable longitudinally with said sleeve.

15. In a door latch mechanism, a bracket, a rollback associated with the bracket, a tubular stub shaft for the rollback journaled in the bracket and having a socket portion at one end, a handle having a stem extending freely through said tubular stub shaft and socket, and means for detachably connecting the stem to the rollback including key actuated means on the stem movable into and out of said socket.

16. In a door latch, a rotary stub shaft of tubular formation, a rollback carried by said stub shaft, an operating handle having a stem extending freely through the tubular stub shaft, and means for establishing an operating connection between said handle and rollback including means movable longitudinally of the stem and having a separable latching engagement with the stub shaft.

17. In a door latch, a rotary stub shaft of tubular formation, a rollback carried by said stub shaft, an operating handle having a stem extending freely through the tubular stub shaft, means at one end of the stub shaft for holding the stem against withdrawal from the stub shaft while permitting it to turn freely relative to the stub shaft and rollback, and means at the other end of the stub shaft for detachably connecting the handle to the stub shaft so that the stem, stub shaft and rollback will turn in unison.

18. In a door latch mechanism, a bracket having spaced portions, a tubular stub shaft journaled in the spaced portions of the bracket, a rollback on the shaft between and free relative to the spaced portions of the bracket, an operating handle having a stem extending freely through the tubular stub shaft, and a separable operating connection between the stem and rollback including means movable longitudinally of the stem into and out of latching engagement with the stub shaft.

19. In a door latch, a bracket, a tubular stub shaft journaled in said bracket, a rollback carried by the stub shaft, an operating handle having a stem extending freely through the shaft, means at one end of the stub shaft for holding the stem in the shaft, and means for establising an operating connection between the stem and rollback including means movable longitudinally of the stem and engageable with the other end of the stub shaft.

20. In a door latch, a rollback, a handle stem extending freely through said rollback, a stub shaft surrounding the stem within the rollback, said stub shaft being free relative to the stem and fixed to the rollback, and means associated with the stem for detachably connecting the stem to the stub shaft.

21. In a door latch, a rollback, an operating handle having a stem extending freely through the rollback, a stub shaft surrounding the stem within the rollback, said stub shaft being free relative to the stem and fixed to the rollback, and means for detachably connecting the handle to the stub shaft including a member movable longitudinally of the stem, and key actuated means associated with the handle for moving the member.

In testimony whereof I affix my signature.

WILLIAM C. DEVEREAUX.