Aug. 13, 1929. E. L. WILSON 1,724,630

DOOR LATCH

Filed March 7, 1927 2 Sheets-Sheet 1

Fig. 1.

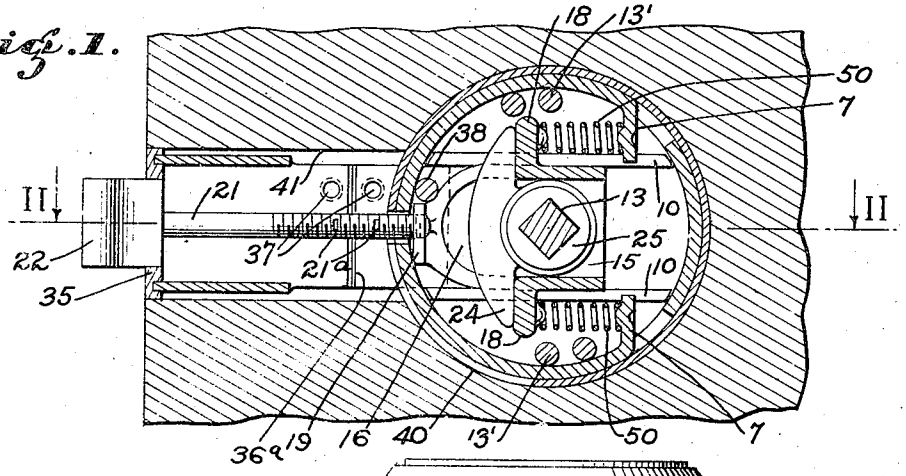


Fig. 2.

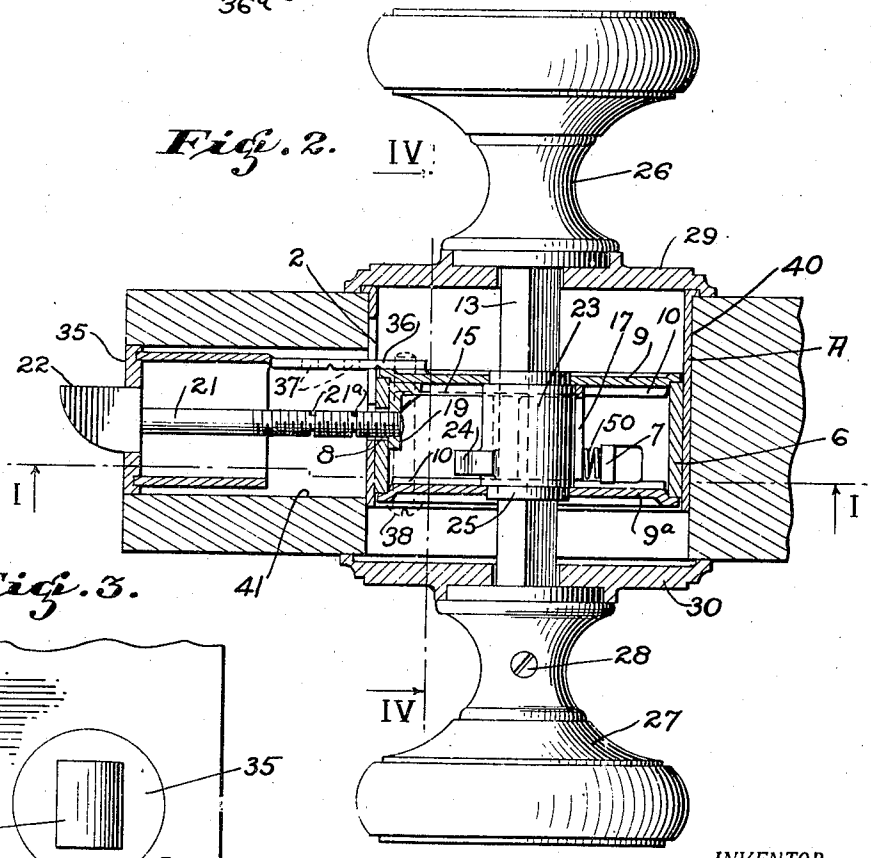
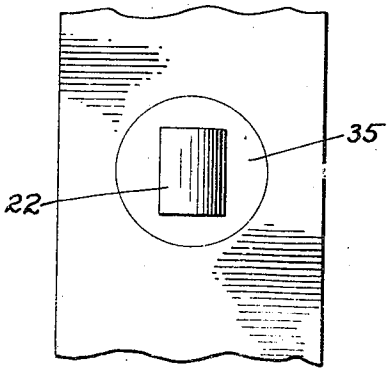


Fig. 3.



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Fig. 4.

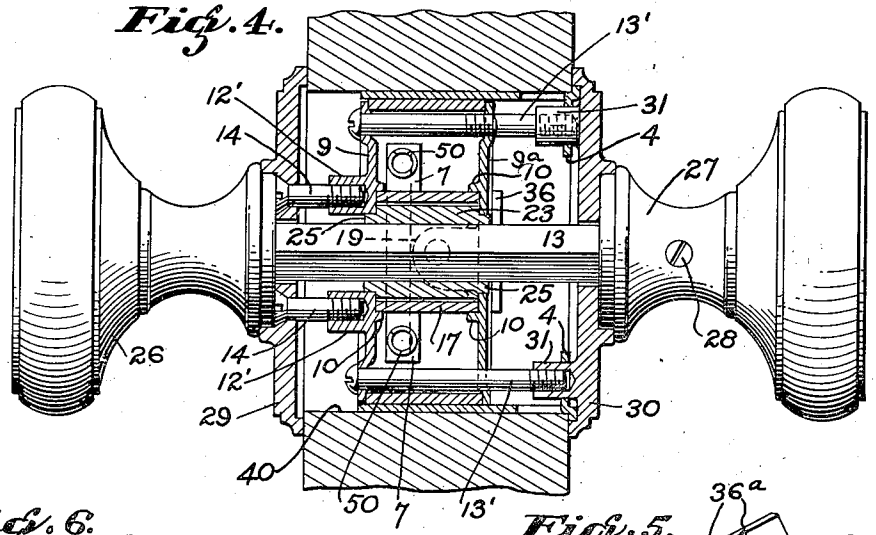


Fig. 6.

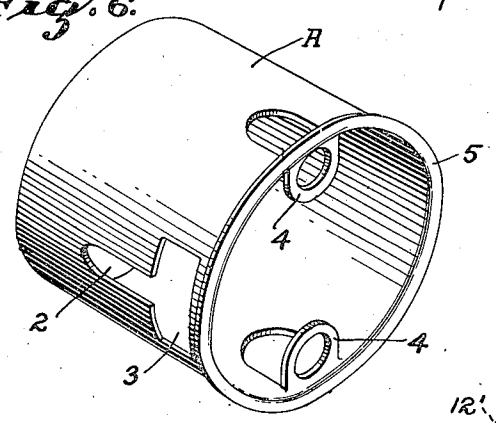
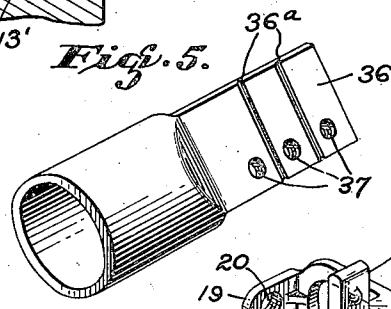


Fig. 5.



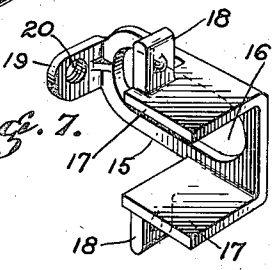


Fig. 7.

Fig. 8.

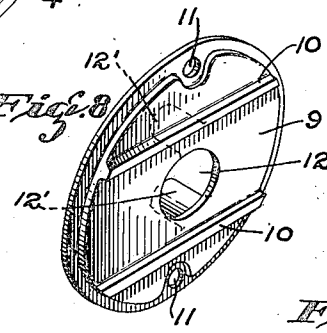


Fig. 9.

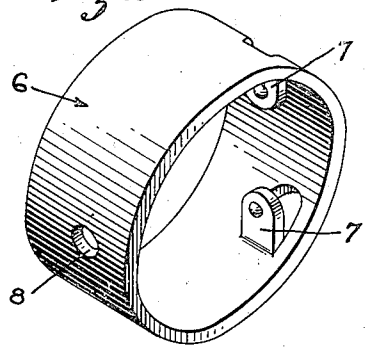
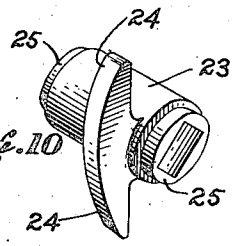


Fig. 10.



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Patented Aug. 13, 1929. 1,724,630

UNITED STATES PATENT OFFICE.

ELLIS L. WILSON, OF SAN ANSELMO, CALIFORNIA.

DOOR LATCH.

Application filed March 7, 1927. Serial No. 173,257.

This invention relates to latches and especially to door latches such as are used in homes, apartment houses, hotels and the like.

The object of the present invention is to generally improve and simplify the construction and operation of door latches, to simplify the parts of the latch so as to reduce the cost of manufacture, to reduce the number of parts required, to produce a latch which may be quickly and readily installed in a door, to produce a latch which is reversible for left and right hand installations and further to produce a latch which is adjustable to doors of varying thickness and which is also adjustable to or away from the edge of the door. One form which the invention may assume is shown by way of illustration in the accompanying drawings in which—

Fig. 1 is a side elevation of the latch in section taken on line I—I, Fig. 2,

Fig. 2 is a plan view in section taken on line II—II, Fig. 1,

Fig. 3 is an end view of the latch-guiding plate,

Fig. 4 is a vertical section taken on line IV—IV, Fig. 2,

Fig. 5 is a perspective view of one part of the latch housing,

Fig. 6 is a perspective view of the main latch housing,

Fig. 7 is a perspective view of the retractor plate,

Fig. 8 is a perspective view of one of the end plates used in conjunction with the auxiliary latch housing,

Fig. 9 is a perspective view of the auxiliary latch housing,

Fig. 10 is a perspective view of the rollback.

Referring to the drawings in detail and particularly Figs. 1, 2, 3 and 6, it might be stated that the major portion of the latching mechanism is contained in a main latch housing generally indicated at A. This housing may be formed by die operations or it may be cast. It is generally cylindrical in shape and elongated. It is otherwise provided with a T-shaped slot generally indicated at 2 and 3 and it is furthermore provided with a pair of inturned lugs 4—4 and an annular end flange 5, the function of which will hereinafter be described. An auxiliary latch housing is also employed. This is perhaps best illustrated in Fig. 9 and is generally indicated at 6. This housing may also be formed by die operations or casts as desired. It is cylindrical in shape but approximately only half as long as the main housing A. It is provided with two inturned lugs 7—7. The exterior diameter of the auxiliary housing is the same as the interior diameter of the main housing as it is mounted within the main housing when the latch is assembled. It is provided with two end plates generally indicated at 9 and 9^a. These plates are substantially identical in construction and the description of one should suffice. One of the end plates is best illustrated in Fig. 8. The plate is flat and the inner surface is provided with two track members such as indicated at 10—10. The plate is also provided with 2 perforations or holes 11—11 to receive assembling bolts, and with a central opening 12 through which a spindle 13 extends. One of the plates is provided with two lugs on its exterior surface which are indicated at 12′—12′, these lugs being best illustrated in Figs. 4 and 8. There are two end plates employed such as indicated at 9 and 9^a. They engage the opposite ends of the auxiliary housing and they are secured thereto by means of bolts 13′—13′ and 14—14 as will hereinafter be described. Adapted to be mounted interior of the auxiliary housing between the end plates 9 and 9^a is the retractor plate which is best illustrated in Fig. 7. It consists of a side plate 15 which has an elongated slot 16 formed therein. On the upper and lower edges of the side plate 15 are inturned lugs 17—17 and formed on the lugs 17 are upturned lugs 18—18 which cooperate with the rollback member hereinafter to be described. The forward end of the side plate is also provided with an inturned lug as indicated at 19 and this is perforated and threaded as at 20 to receive and secure a threaded bolt 21 which is in turn secured to a latch or bolt 22; also mounted within the auxiliary housing is the rollback member which is best illustrated in Fig. 10. The rollback consists of a hub section 23 and a pair of rollback lugs 24. The hub has an opening formed therein extending from end to end which is preferably square in shape. The spindle 13 extends through the square opening in the rollback member and it also forms a partial support therefor. The ends of

the hub member are turned down or slightly decreased in diameter as indicated at 25—25 and these turned down portions extend through the openings 12 in the end plates 9 and 9ª and are freely turnable therein. The spindle 13 carries a pair of knobs of ordinary construction such as indicated at 26 and 27, knob 27 being the inner knob and the knob 26 the outer knob. These knobs are secured to the spindle in any suitable manner or as here shown by means of said screws 28. The latch is otherwise provided with a pair of escutcheon plates 29 and 30. These may be circular in contour or otherwise shaped as conditions may demand. The escutcheon plate 30 is provided with a pair of inner lugs 31 which are drilled and threaded to receive the securing bolts 13′. The inner escutcheon plate 29 is drilled to permit the screws 14 to pass therethrough, the inner ends of the screws being received by the lugs 12′—12′ which are drilled and threaded for their reception. The bolt or latch 22 is guided and retained by means of a circular end plate 35. This plate forms a closure for the outer end of the latch housing which is best illustrated in Fig. 5. The latch housing is tubular and elongated as illustrated and the inner end is provided with a flat plate-like extension such as shown at 36. This plate-like extension has two or more holes drilled therein as indicated at 37 to receive a bolt 38 (see Fig. 2), this bolt serving the function of securing the latch housing with relation to the end plate 9 and the auxiliary housing. The bolt also serves the function of securing the latch housing and the end plate 35 against endwise movement with relation to the door, thus eliminating the use of fastening screws as far as the end plate 35 is concerned.

In actual operation to install the latch such as here constructed, it is only necessary to drill two holes in the door, a large hole transversely or through the face of the door as generally indicated at 40 and a hole 41 through the edge of the door which is disposed at right angles to the hole 40. These holes may be drilled with an ordinary auger or bit and the operation of preparing the door is accordingly very simple. When the holes have been drilled, housing A is inserted and it is forced inwardly until the end flange 5 engages the exterior face of the door as shown in Fig. 4. The auxiliary housing 6 with the end plates 9 and 9ª applied and with the retractor and rollback in position interior thereof is next inserted in the housing and the escutcheon plate 30 applied. The bolts are then passed through the openings 11—11 of the end plates and screwed on to the lugs 31 and the auxiliary housing is adjusted so as to assume a position substantially in alignment with the latch housing opening 41, the latch housing containing the plate 35. The latch 22 and the latch bolt 21 may next be inserted and the latch is rotated so as to bring the bolt into threaded engagement with the lug 19 of the retractor plate and it is turned until proper adjustment is obtained. The bolt 38 may then be inserted and the latch housing is then locked against endwise movement. The inner escutcheon plate 29 is finally placed in position and the screws 14 inserted. This locks the housing and latching mechanism as a whole in place. The spindle may then be inserted through the openings in the escutcheon plates and through the rollback and the knobs applied in the usual manner by fastening the said screws 38 when the operation of said installation is completed. With the latch installed, it is only necessary to turn either knob to open the door. Turning movement of the knob transmits turning movement to the spindle, this in turn rotates the rollback member and the lugs on the rollback member will thus engage one or another of the lugs 18 on the retractor plate, the retractor plate is thus moved rearwardly within the auxiliary housing against tension of springs such as indicated at 50 (see Fig. 1), these springs being secured between the lugs 18 and the inturned lugs 7—7 of the auxiliary housing. Rearward movement of the retractor plate is of course transmitted through the bolt 21 and as this is attached to the latch 22, the latch will be retracted. Reverse turning movement or release of a knob causes the reverse movement of the retractor plate and the latch is thus projected. The side plate 15 on the retractor plate is guided between the track members 10—10 of the plate 9 while the outer ends of the lugs 17 are guided between the track members 10 of the end plate 9. The retractor as a whole is thus substantially supported and permanently guided and a latch action with comparatively little play or lost motion is obtained. The latch constructed as here illustrated is not only adjustable to doors of different thickness, but the latch may be adjusted to and away from the edge of the door. The first adjustment, i. e., to doors of different thickness is obtained by sliding the auxiliary housing inwardly or outwardly within the main housing and then securing it by means of the bolts 13′ and 14. The latter adjustment, i. e., to and away from the edge of the door is obtained by notching the bolt 21 as indicated at 21ª (see Figs. 1 and 2) and by scoring or weakening the plate 36 of the latch housing along the lines indicated at 36ª (see Fig. 5). If a maximum distance from the spindle to the edge of the door is required the installation is made as shown in Figs. 1 and 2. On the other hand if it is desired to bring the spindle and knobs closer to the edge of the door it is accomplished by cutting or breaking the bolt at

the notched portions 21[a] and similarly cutting or breaking the plate 36 along the score lines 36[a] so as to shorten the same. The present drawings show three different adjustments but more or less may be employed as desired. The latch is also adjustable for right and left hand installations as it is only necessary to rotate the latch 22 to bring its flat face in one direction or another as the case may be. By referring to Fig. 6 it will be noted that a T-shaped slot is employed as indicated at 2 and 3. The enlarged portion of the slot indicated at 3 is employed for the insertion of the plate 36 of the latch housing and the slot 2 for the insertion of the latch bolt 21, the hole 8 in the auxiliary housing being also employed for the same purpose. The slots 2 and 3 are long as this is necessary to permit adjustment of the auxiliary housing with relation to the main housing when doors of different thickness are being fitted.

The mechanism as a whole is exceedingly simple and substantial in construction. The parts are so designed that they may be either cast or formed by die operations. They are further designed to permit quick and ready assembly both at the factory and when installed in doors.

While certain features of the present invention are more or less specifically described and indicated, I wish it understood that various changes may be resorted to within the scope of the appended claims; similarly, that the materials and finish of the several parts employed may be such as the manufacturer may dictate or varying conditions or uses may demand.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In a latch of the character described a main housing, an auxiliary housing mounted therein, a spindle extending through the auxiliary housing, a rollback and cooperating retractor mounted within the auxiliary housing and means permitting lateral adjustment of the auxiliary housing, the rollback and the retractor with relation to the main housing.

2. In a lock of the character described a main housing, an auxiliary housing mounted therein, a spindle extending through the auxiliary housing, a rollback and cooperating retractor mounted within the auxiliary housing and means permitting lateral adjustment of the auxiliary housing, the rollback and the retractor with relation to the main housing, a bolt, a bolt housing, an adjustable connection between the latch housing and the auxiliary housing to secure the bolt housing against removal and an adjustable connection between the bolt and the retractor.

3. A device adapted to be inserted and secured in a door having two openings formed therein, one extending through the face of the door and the other extending through the edge of the door and communicating with the first-named opening, said device comprising a main housing, an escutcheon plate engaging one face of the door and forming a closure for one end of the housing, an auxiliary housing insertable in the main housing, a rollback and a cooperating retractor mounted within the auxiliary housing, means for adjusting the auxiliary housing to and away from the escutcheon plate and for securing the auxiliary housing when adjusted, a second escutcheon plate engaging the opposite face of the door and means securing the second-named escutcheon plate to the auxiliary housing.

4. A latching device for doors having two openings formed therein substantially as described comprising a main housing insertable in one of the openings, an escutcheon plate engaging one face of the door and forming a closure for one end of the housing, an auxiliary housing mounted within the main housing, a rollback and a retractor mounted within the auxiliary housing, a second escutcheon plate engaging the opposite face of the door and means for securing the auxiliary housing with relation to the respective escutcheon plates.

5. A latching device for doors having two openings formed therein substantially as described comprising a main housing insertable in one of the openings, an escutcheon plate engaging one face of the door and forming a closure for one end of the housing, an auxiliary housing mounted within the main housing, a rollback and a retractor mounted within the auxiliary housing, a second escutcheon plate engaging the opposite face of the door and means for securing the auxiliary housing with relation to the respective escutcheon plates, said means permitting adjustment of the auxiliary housing between the escutcheon plates.

6. A latching device for doors having two openings formed therein substantially as described comprising a main housing insertable in one of the openings, an escutcheon plate engaging one face of the door and forming a closure for one end of the housing, an auxiliary housing mounted within the main housing, a roll-back and a retractor mounted within the auxiliary housing, a second escutcheon plate engaging the opposite face of the door and means for securing the auxiliary housing with relation to the respective escutcheon plates, a spindle extending through the escutcheon plates, the auxiliary housing and the rollback and knobs secured on the opposite ends of the spindle.

7. In a latch of the character described, a tubular elongated main housing, a tubular

shaped auxiliary housing insertable therein, a pair of end plates, one for each end of the auxiliary housing, a rollback member journaled between the end plates, a retractor cooperating with the rollback and also disposed between the end plates, means on the end plates whereby the retractor is guided and maintained in cooperating position with relation to the rollback.

8. In a latch of the character described, a tubular elongated main housing, a tubular shaped auxiliary housing insertable therein, a pair of end plates, one for each end of the auxiliary housing, a rollback member journaled between the end plates, a retractor cooperating with the rollback and also disposed between the end plates and a pair of track members on each end plate whereby the retractor is guided and maintained in cooperating position with relation to the rollback.

9. In a latch of the character described, a tubular elongated main housing, a tubular shaped auxiliary housing insertable therein, a pair of end plates, one for each end of the auxiliary housing, a rollback member journaled between the end plates, a retractor cooperating with the rollback and also disposed between the end plates and a pair of track members on each end plate whereby the retractor is guided and maintained in cooperating position with relation to the rollback and spring actuated means supported by the auxiliary housing and engaging the retractor.

10. In a lock of the character described, a tubular elongated main lock housing, a tubular shaped auxiliary housing insertable therein, a pair of end plates, one for each end of the auxiliary housing, a rollback member journaled between the end plates, a retractor cooperating with the rollback and also disposed between the end plates, means on the end plates whereby the retractor is guided and maintained in cooperating position with relation to the rollback, a bolt housing, an adjustable connection between the bolt housing and the auxiliary housing, a bolt in the bolt housing and an adjustable connection between the bolt and the retractor.

11. A device of the character described comprising a main housing, a tubular shaped auxiliary housing insertable therein, a pair of end plates for the auxiliary housing, one for each end of the same, tracks on each end plate, a rollback member journalled between the end plates, a retractor having lugs thereon cooperating with the rollback member and slidably mounted between said tracks in said auxiliary housing, said auxiliary housing being laterally adjustable within said main housing.

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