July 16, 1929. M. H. TONCRAY 1,720,304

LATCH SPINDLE AND LOCK ASSEMBLY

Filed June 25, 1926

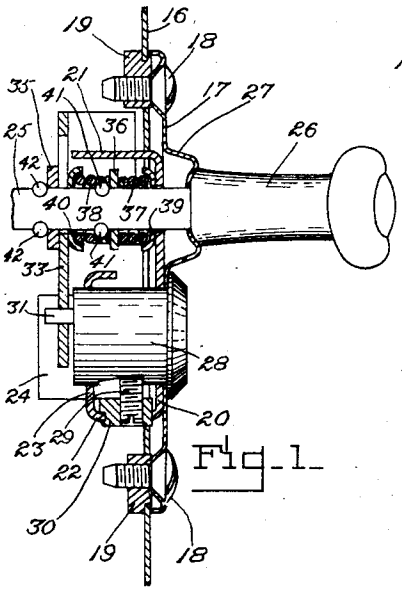


Fig_1_

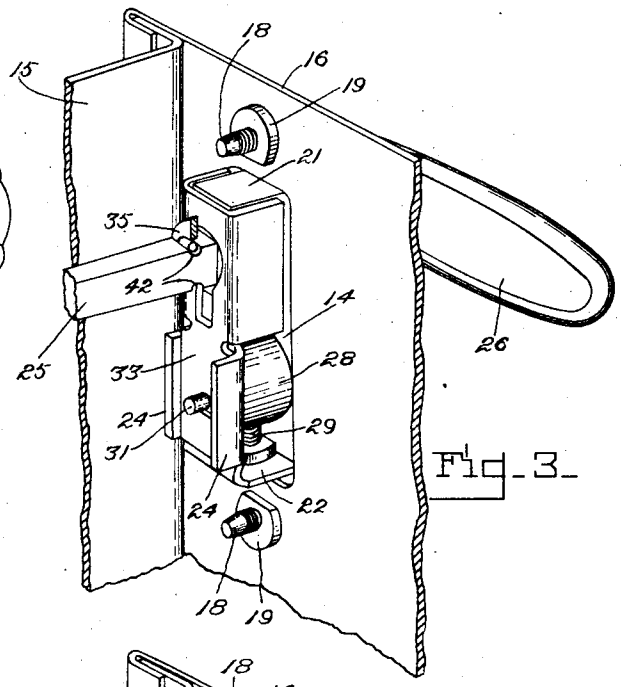


Fig_3_

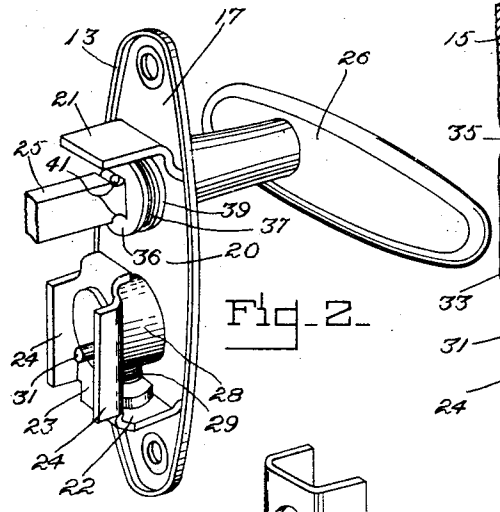


Fig_2_

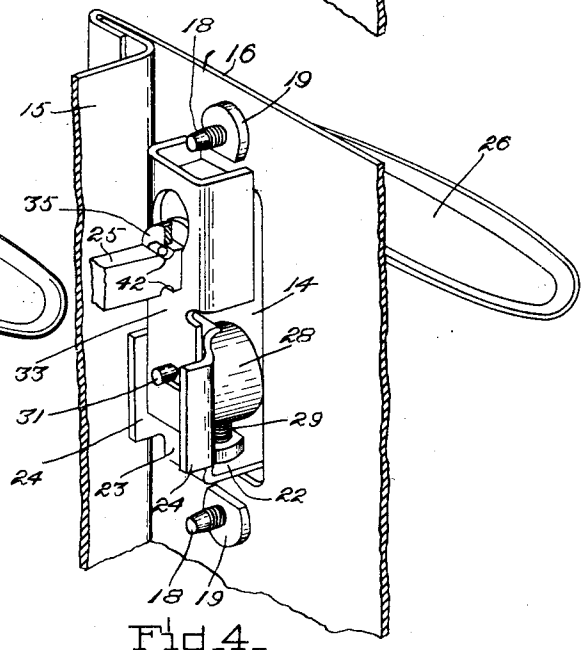


Fig_4_

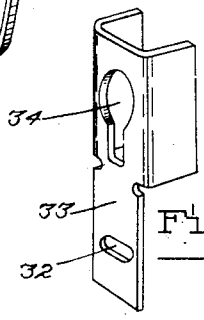


Fig_5_

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UNITED STATES PATENT OFFICE.

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LATCH SPINDLE AND LOCK ASSEMBLY.

Application filed June 25, 1926. Serial No. 118,597.

This invention relates to combined latches and locks adapted especially, although not exclusively, to use in connection with the doors of closed automobile bodies. Such doors are usually provided with latch-operating spindles each having an operating handle at the outer side of the door and extending into or through the door and into cooperative engagement with the latch mechanism. At least one door of such a body is also usually provided with a key-operated lock for locking the corresponding spindle against operation to release the latch. Devices of this character, as heretofore constructed, have usually included escutcheon plates secured by screws to the exterior of the door and by which the latch spindles and locks have been carried, and such devices have been to a certain extent ineffective by reason of the fact that, by removing the escutcheon plate screws, the latch spindle or lock, or both, can be removed, permitting operation of the latch, either by the latch spindle itself or by an inserted screw driver or other implement, thereby defeating the purpose of the lock.

The present invention has for its object to provide a simple and inexpensive, but effective construction of this character in which the lock, when in locking position, not only secures the latch spindle against operation, but also prevents removal of any part of the assembly from the door even though the screws for attaching the escutcheon plate be removed.

The foregoing and other objects of the invention, together with means whereby the latter may be carried into effect, will best be understood from the following description of a preferred form thereof illustrated in the accompanying drawings. It will be understood however that the particular construction described and shown has been chosen for illustrative purposes merely, and that the invention, as defined by the claims hereunto appended, may be otherwise embodied without departure from the spirit and scope thereof.

In said drawings:

Fig. 1 is a vertical section showing the combined latch spindle and lock assembly in place in the door, the lock being shown in locking position.

Fig. 2 is a perspective view of a portion of the assembly separate from the door, the locking bolt and certain other parts being omitted.

Fig. 3 is a perspective view, partly broken away, of the complete assembly in place in the door, the parts being shown in unlocked position.

Fig. 4 is a similar view showing the parts locked.

Fig. 5 is a detail perspective view of the bolt.

The invention is herein shown as applied to a metal automobile door including a latch pillar 15 and an outside panel 16. The latch spindle and lock assembly is carried by an escutcheon plate 17 which is secured to the outer face of the panel 16 by screws 18 which engage clinch nuts 19 carried by said panel. The escutcheon plate 17 carries a yoke comprising a base portion 20 engaging the inner face of said plate and fitting within an edge flange 13 on the latter, said base portion having at its upper end an inwardly turned lug 21 and at its lower end a similarly inwardly turned portion 22 the inner end of which is bent upwardly, as shown at 23, into a position substantially parallel to the base 20, and is formed with a pair of inwardly turned parallel guide flanges 24. The panel 16 is provided with an opening 14 in which said yoke is seated when the escutcheon plate is secured in place, said yoke substantially fitting said opening. The latch spindle 25, which is of square or other non-circular cross section, is rotatably mounted in alined openings in the escutcheon plate 17 and the base portion 20 of the yoke and is provided at the outer side of the door with a suitable operating handle 26. The opening in the escutcheon plate 17 for the spindle 25 is preferably formed in a raised hollow boss 27, said boss and the adjacent end of the hub of the handle 26 being formed with engaging spherical surfaces to permit slight variations in the alinement of the spindle in order to permit the latter to be readily engaged with latch mechanism (not shown) at the inner side of the door. Mounted in alined openings in the escutcheon plate 17 and in the base 20 and upturned portion 23 of the yoke is a barrel lock 28 of any suitable construction having its outer end accessible from the exterior of the door, but having its shell secured in place against removal from the exterior by means at the inner side of the escutcheon plate, said means as shown

comprising a set screw 29 engaging said shell and threaded into a clinch nut 30 carried by the inwardly turned portion 22 of the yoke. The rotary plug of the lock 28 has an eccentric stud 31 which engages a slot 32 in a sliding bolt 33 the lower end of which is guided between the flanges 24 and the upper end of which is of channel shape with the ledge of the channel turned forwardly into proximity with the inner face of the panel 16, said flanges embracing the lug 21 to guide the upper end of said bolt. The web of the channel shaped portion of the bolt 33 is formed with a key-hole slot 34 through which the latch spindle 25 passes, the upper or larger end of said slot being of sufficient diameter to permit said spindle to turn freely therein, and the lower or narrower end of said slot being adapted to engage said spindle and hold the same against turning. The spindle 25 carries at the inner side of the bolt 33 a collar or washer 35 and between said bolt and the base 20 of the yoke a second collar or washer 36. Interposed between the collar 36 and the yoke and bolt respectively are springs 37 and 38 the ends of which are received by cup washers 39 and 40. The springs 37 and 38 serve to take up all play between the several parts and prevent rattling, and also act to clamp the base portion 20 of the yoke against the inner face of the escutcheon plate 17, the latter parts being also held in assembled relation by the lock 28.

The parts above referred to are of simple construction and may be easily assembled. The base 20 of the yoke having been assembled with the escutcheon plate, the lock barrel 28 is inserted from the outer side and secured in place by the set screw 29. The latch spindle 25 is then also inserted from the outer side and the cup washer 39, spring 37 and washer 36 slipped thereon in the order named from the inner end. The spring 37 is then slightly compressed, as shown in Fig. 2, and the washer 36 secured in place by upsetting the metal of the spindle as shown at 41 by means of a suitable punch. The spring 38 and cup washer 40 are then applied to the spindle, the bolt 33 put in place and properly engaged with the lug 21, flanges 24, and stud 31, and the washer 35 also applied. The spring 38 is then slightly compressed and the metal of the spindle further upset as shown at 42 immediately inside the washer 35, thereby holding the parts on the spindle permanently assembled. The bolt 33 is moved into unlocked position with the larger end of the key-hole slot 34 opposite the spindle 35, as shown in Fig. 3, the yoke seated in the opening 14 in the door panel 16, and the escutcheon plate 17 secured in place by the screws 18, the inner end of the spindle 25 being suitably engaged with the latch mechanism at the inner side of the door.

With the parts in the position shown in Fig. 3, the handle 26 may be freely manipulated to operate the latch through the spindle 25. In order to lock the door, the plug of the lock 28 is turned into locking position, causing the eccentric stud 31 to move the bolt 33 from the position shown in Fig. 3 into the position shown in Figs. 1 and 4. This brings the narrow portion of the key-hole slot 34 into engagement with the latch spindle, securing the latter against rotation, and also projects the upper end of the bolt beyond the upper end of the yoke, preventing withdrawal of the assembly from the opening 14 by engagement of said bolt with the inner side of the panel 16.

The channel shape of the upper end of the bolt 33 provides an extremely rigid construction, which, when said bolt is in locking position, secures the assembly against withdrawal from the outer side of the door by any ordinary force which can be applied at this point. The set screw 29, which is inaccessible from the exterior, prevents the removal of the lock barrel, while the upset portions 42 of the spindle similarly prevent withdrawal of said spindle from the assembly, so that improper operation of the latch is effectually prevented even though the escutcheon plate screws 18 be removed.

Having thus described my invention, I claim:

1. The combination with a door and a latch operating member extending into the door from the exterior thereof, of means for locking said member against operation to release the latch and for simultaneously locking said member to the door against removal from the latter.

2. The combination with a door and a latch operating member extending into the door from the exterior thereof, of means for locking said member against operation to release the latch and for simultaneously locking both said member and said locking means to the door against removal from the latter.

3. The combination with a door, of a latch spindle assembly secured to said door and comprising an escutcheon plate, a spindle mounted to turn in said plate, a lock carried by said plate, and a bolt operable by said lock to secure said spindle against turning and also coacting with the door to secure said assembly in place.

4. The combination with a door having an outside panel provided with an opening, of a latch spindle assembly seated in said opening and including an escutcheon plate secured to the exterior of said panel, a spindle mounted to turn in said plate and extending into said door, a lock seated in

said plate and accessible from the exterior thereof, means at the inner side of said plate for securing said lock in place therein, and a bolt movable by said lock into and out of a position to lock said spindle and to prevent removal of said assembly from said opening by engagement with the inner side of said panel.

5. The combination with a door panel having an opening, of a latch spindle assembly seated in said opening and including a spindle and a sliding bolt, said bolt having a channel shaped portion whose web is formed with a keyhole slot to receive said spindle and whose legs are adapted to engage the inner side of said panel when said spindle is in the narrow portion of said slot.

6. The combination with a door panel having an opening, of an escutcheon plate secured to the exterior of said panel, a yoke carried by said escutcheon plate and seated in and substantially fitting said opening, a lock carried by said yoke, a spindle extending through said plate and yoke, and a bolt operated by said lock to lock said spindle, said bolt being within said panel and when in locking position projecting beyond said yoke.

7. A latch spindle assembly comprising an escutcheon plate, a yoke carried by said plate, a lock carried by said yoke, a spindle extending through said plate and yoke, a bolt operated by said lock to lock said spindle, said bolt when in locking position projecting beyond said yoke, a collar on said spindle between said yoke and bolt, a second collar on said spindle at the inner side of said bolt, and springs interposed between said first-named collar and said yoke and bolt respectively.

8. The combination with a door, of a latch spindle and lock assembly secured to the exterior of said door, said assembly including a latch spindle, means for preventing withdrawal of said spindle from the assembly, a lock, means inaccessible from the exterior of the door for securing said lock in place in the assembly, and means operated by said lock for locking said spindle against operation to release the latch and for locking the assembly as a whole to the door against removal from the latter.

9. The combination with a door, of an assembly including a latch spindle and locking means, and means for detachably securing said assembly to the exterior of the door, said locking means, when in locking position, securing said spindle against operation and also acting to secure said assembly to the door independently of said detachable securing means.

10. The combination with a door, of a latch spindle, and locking means coacting with said spindle to secure the same against operation and also coacting with said door to prevent withdrawal of said spindle therefrom.

11. The combination with a door, of a latch spindle, and locking means coacting with said spindle to secure the same against operation and also coacting with said door to prevent removal of said locking means therefrom.

12. The combination with a door, of a latch spindle, and locking means coacting with said spindle to secure the same against operation and also coacting with said door to prevent removal of said spindle and said locking means therefrom.

13. The combination with a door and an assembly including a latch spindle extending into the door from the exterior thereof, of means for detachably securing said assembly to the exterior of the door, and locking means for securing said spindle against turning, said locking means, when in locking position, acting also to secure said assembly to said door independently of said detachable securing means.

In testimony whereof I affix my signature.

MILLARD H. TONCRAY.