April 9, 1929. W. F. HAMPTON 1,708,444

LATCH FOR VEHICLE OR HOUSE DOORS

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Fig. 1.

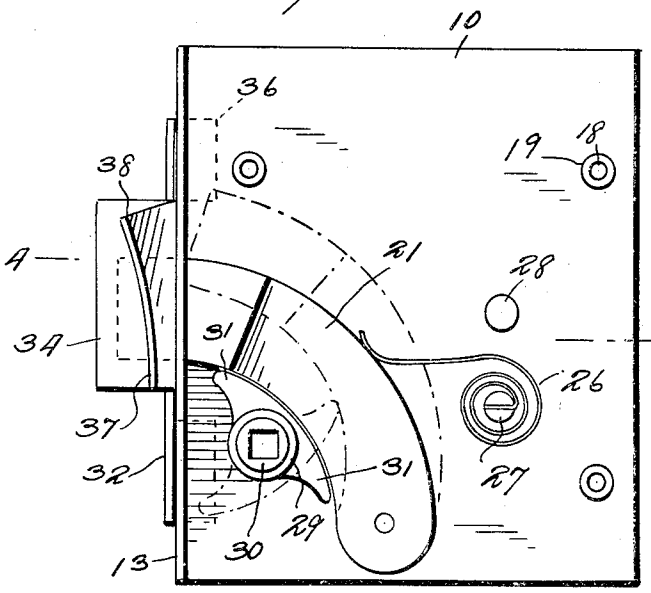


Fig. 2.

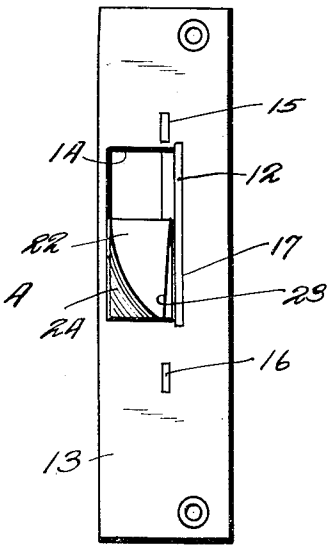


Fig. 3.

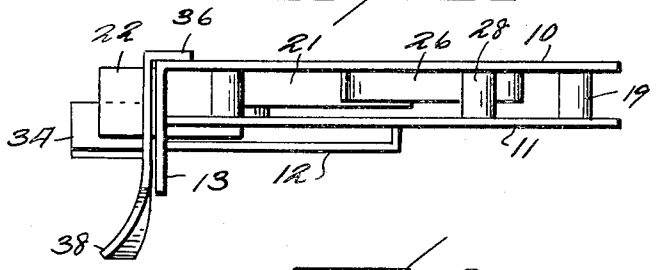


Fig. 4.

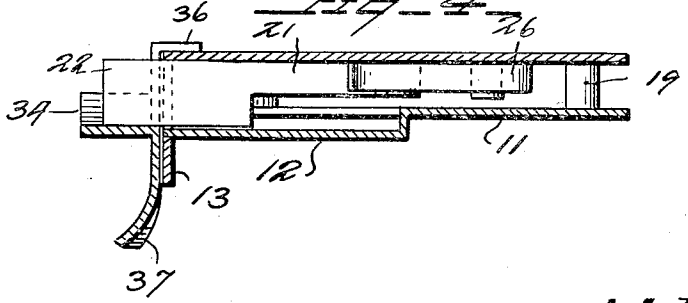
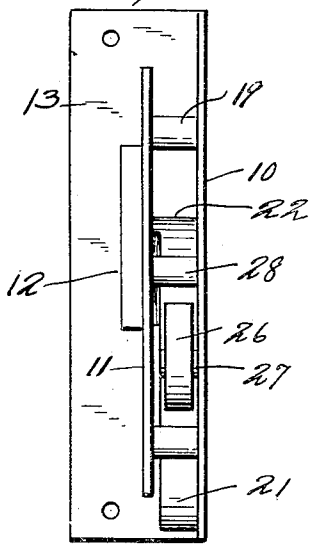


Fig. 5.



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Fig. 10.

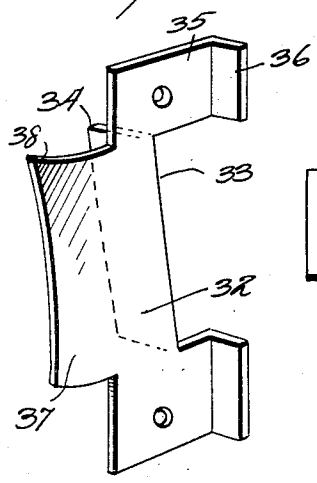


Fig. 12.

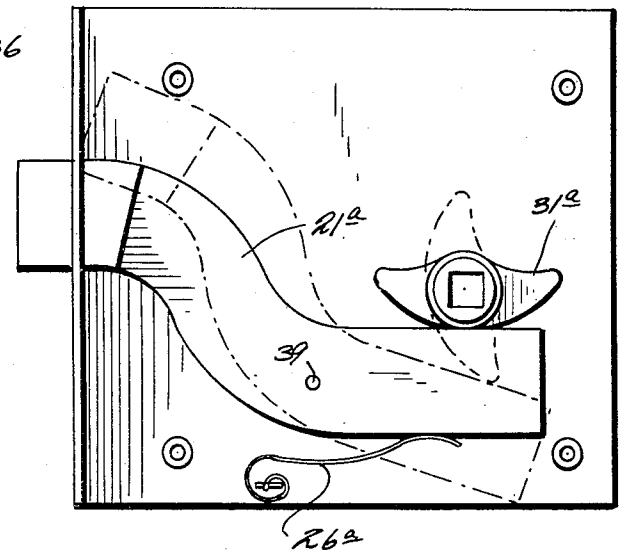


Fig. 7.

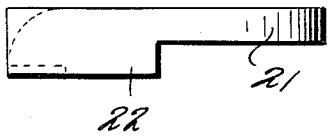


Fig. 11.

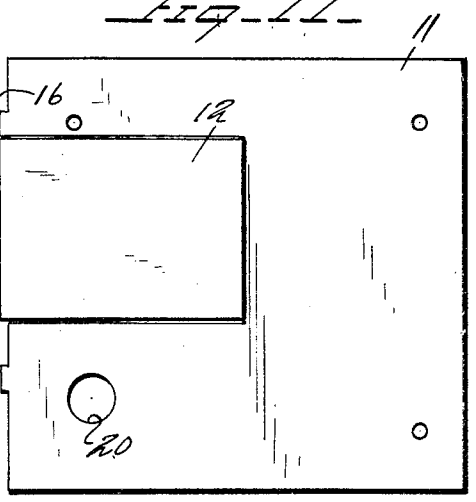


Fig. 6.

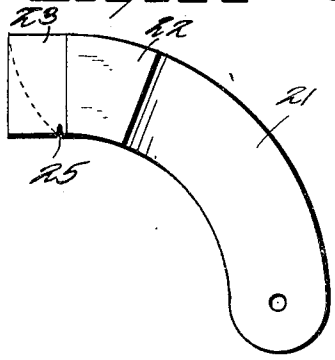


Fig. 9.

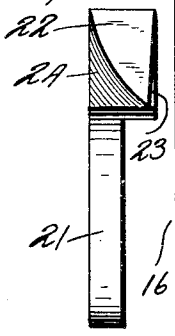
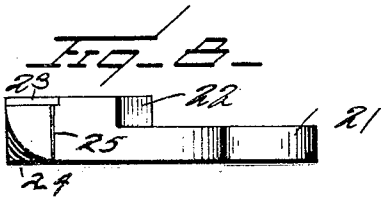


Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLARD F. HAMPTON, OF HUTCHINSON, KANSAS.

LATCH FOR VEHICLE OR HOUSE DOORS.

Application filed September 1, 1927. Serial No. 216,977.

This invention relates to latches such as are used on coaches, automobiles or other forms of vehicles or house doors, and particularly to mortise latches.

The general object of the invention is to provide a latch which will continually act to pull the door tight against the jamb.

A further object is to provide a latch of this character which will permit the door to be pushed shut and the latch member to catch in the keeper without requiring any lifting of the latch.

Another object is to provide a latch structure which can be made so thin that when used as a mortise latch it can be put into the thinnest of doors.

A still further object is to provide a latch which is so constructed that it cannot be disengaged from the keeper by inserting a sharp instrument between the keeper and the door and lifting up on the instrument and the latch bolt.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a face view of one plate of the latch casing, the bolt thereon and the keeper plate, the other plate of the latch casing being removed;

Figure 2 is a front elevation of the latch casing and latch;

Figure 3 is a top plan view of the structure shown in Figure 1 but with the front plate in place;

Figure 4 is a sectional view on the line 4—4 of Figure 1 with the front plate in place;

Figure 5 is a rear elevation of the structure shown in Figure 1;

Figure 6 is an elevation of the latch bolt shown in Figure 1;

Figure 7 is a top plan view thereof;

Figure 8 is an under side plan view thereof;

Figure 9 is a front elevation thereof;

Figure 10 is a perspective view of the striker plate or keeper;

Figure 11 is a front elevation of one of the casing plates;

Figure 12 is an elevation of the inside of the lock casing with one plate removed, showing a modified form of latch bolt and actuating means.

Referring to these drawings, and particularly to Figures 1 to 4, 10 designates one plate as, for instance, the inside plate of a latch casing, 11 designating the outside plate. This outside plate, as shown in Figure 11, is formed with an outwardly deflected portion 12. The plate 10 is formed with a laterally extending flange 13 constituting the front of the latch casing and this flange having an opening 14 for the bolt and being provided with apertures 15. As shown in Figure 11, the plate 11 is formed with projecting tongues or lugs 16 which are engageable in these slots 15. This flange 13 is also formed with a longitudinally extending slot 17 within which the front edge of the offset portion 12 engages. By these projections 16 and the projecting edge of the offset portion 12, this front plate 11 is engaged with the flange 13. The plate 11 is engaged with the plate 10 by means of transversely extending screws, rivets or other like means inserted through the apertures 18 and inserted through spacing sleeves 19 in the usual manner.

The plates 10 and 11 are formed, of course, with apertures 20 (see Figure 11) forming the bearings for the shaft or trunnion of an actuating device. Pivotally mounted upon the plate 10 is an arcuately curved bolt 21 (see Figures 6 to 9), the outer end of this bolt being thickened, as at 22. The side face of this bolt, as shown in Figure 2, at the outer end of the bolt is inclined, as at 23, and the opposite face of the bolt is beveled at 24 (see Figures 2 and 8). The off-set portion 12 of the plate 11 accommodates the thickened portion of the bolt. The under face of the bolt adjacent its free end is formed with the transversely extending notch 25 whose purpose will be later stated. A spring 26 which is supported by means of a cleft pin 27 is coiled around this pin and has its free end bearing upon the upper face of the bolt 21. A stop 28 extending from the front plate 10 limits the upward movement of the bolt by engaging with the spring.

Disposed in the bearings in the plates 10 and 11 is a bolt actuating or lifting member comprising a barrel 29 having reduced portions 30 fitting the apertures 20 in the plates 10 and 11 and these are formed with a square passage through which a knob shank may be disposed or into which a key may be disposed. Mounted upon the barrel 29 is a cam 31 having a curved face which, when the bolt is locked, engages the curved under face of the bolt, as shown in Figure 1. This cam is formed so as to extend out in

opposite directions from the spindle or barrel 29 so that when the knob or key is turned and the spindle rotated, the bolt will be lifted from the position shown in full lines in Figure 1 to the position shown in dotted lines therein, thus retracting the bolt. When the knob or key is released, the spring 26 will project the bolt.

The keeper or "strike" is shown in Figure 10 and designated generally 32. This is formed of a thin plate of metal cut out, as at 33, so as to provide a rearwardly extending flange 34 extending at an angle to the face of the plate. The arms 35 defining the upper and lower ends of this cut-away portion 33 are angularly bent, as at 36, to provide stops limiting the inward movement of the door by engaging the latch casing, as shown in Figure 3. The plate 32 is extended, as at 37, to form a wing and this wing is upwardly and inwardly turned slightly, as at 38, (see Figures 1, 3 and 4). Thus as the door is pushed to, this inclined surface of the wing 38 will cause the bolt to rise or swing upward on its pivot until the bolt can pass the keeper plate and drop into the recess 33, the bolt then resting against the plate 34.

As shown in Figure 10, the plate 34 is disposed at an angle to the longitudinal axis of the striker plate and at the same angle as the angle of face 23 so that when the bolt is dropped behind the keeper plate, this inclined face 23 will bear flat against the inclined face of the flange 34, thus securing uniform contact over the whole face of the forward end of the bolt with the face of the flange 34. It will be seen that the bolt under the action of the spring 26 moves downward, with its inclined face against the inclined face of the flange 34 and that this acts to wedge the door closed and hold the door from any rattling. This eliminates the use of rubber bumpers in automobile doors, which in turn will eliminate the sagging of automobile doors. With this form of bolt and keeper plate, an automobile door can be pushed shut and the bolt will catch or engage the keeper without requiring any lifting of the bolt positively by the knob or key. This construction will also prevent cold air from coming into the house from around the door as the latch is continually acting to pull the door against the jamb.

In Figure 12, I have illustrated a modified form of bolt which is designated 21a. In this construction the bolt is fulcrumed at 39 intermediate its ends, the bolt rearward of this fulcrum or pivot pin 39 extending horizontally under normal circumstances, and forward of this pivot pin the bolt is upwardly extended, then outwardly extended through the opening 14 in the flange 13. The actuating cam 31a is disposed in this case above the rear end of the bolt so that as it is rotated it will depress this rear end and thus retract the forward end of the bolt from the keeper plate. It is obvious that the actuating cam 31a may be turned in either direction and accomplish the same end. A spring 26a acts to project the bolt.

The spindle of the actuating member may be made to receive a knob or to receive a key which is capable of being removed from the spindle so that upon removal of the key the door will be locked and it will be impossible to open the door without inserting the key. The notch 25, it will be observed, when the bolt is in latching position will be disposed between the keeper plate 32 and the outer face of the flange 13. If a knife blade or blade of thin metal is inserted between these two parts, it will engage the notch 25 and upon an attempt to raise the bolt the knife or other implement will jam against the plate 13 so that the bolt cannot be lifted by this means. If it were not for this notch 25, a thin-bladed implement could be inserted as described and the bolt raised. It will be understood that the forward end of the bolt 12 in Figure 12 is of the same construction as the forward end of the bolt in Figure 1 and is to be used with a keeper of like character.

It will be seen that this lock may be made extremely thin so that it may be used as a mortise latch in the thinnest of doors. While this latch is particularly designed for a mortise latch, it may be applied to the face of a door without mortising. It is also obvious that the device may be modified in many minor respects without departing from the spirit of the invention as defined in the appended claims.

I claim:—

1. A latch including a casing, the casing comprising two parallel plates, one of said plates being formed with a laterally extending flange extending across the edge of the other plate, said flange being formed with an opening, a bolt disposed between the plates and pivotally engaged therewith for movement in a vertical plane, the extremity of the bolt normally passing out through said opening in the flange, a spindle rotatably mounted in said plates and having a cam on the inside face thereof engageable with the bolt to raise it, a spring acting to lower the bolt and project the same, and a keeper with which the bolt coacts, said keeper comprising a plate cut away to provide a bolt-receiving opening, the cut-away portion of the plate having an inwardly extending flange against which the side face of the bolt extremity engages, said flange being downwardly and laterally inclined and the face of the bolt being downwardly and laterally inclined.

2. A latch including a casing, the casing comprising two parallel plates, one of said plates being formed with a laterally extending flange extending across the edge of the other plate, said flange being formed with an opening, a bolt disposed between the plates and pivotally engaged therewith for movement in a vertical plane, the extremity of the bolt normally passing out through said opening in the flange, a spindle rotatably mounted in said plates and having a cam on the inside face thereof engageable with the bolt to raise it, a spring acting to lower the bolt and project the same, and a keeper with which the bolt coacts, said keeper comprising a plate cut away to provide a bolt-receiving opening, the cut-away portion of the plate having an inwardly extending flange against which the side face of the bolt extremity engages, said flange being downwardly and laterally inclined and the face of the bolt being downwardly and laterally inclined, the keeper being formed above and below the cut-away portion with laterally projecting stops and beyond the cut-away portion with a wing, the upper corner of which extends inwardly and laterally at an inclination, the outer face of the bolt being inclined to bear flat against the face of said inclined flange on the keeper and the inner face of the bolt being beveled to ride up over said beveled wing.

In testimony whereof I hereunto affix my signature.

WILLARD F. HAMPTON.