(No Model.)

H. E. RUSSELL.

LATCH.

No. 606,246. Patented June 28, 1898.

Fig. 1.

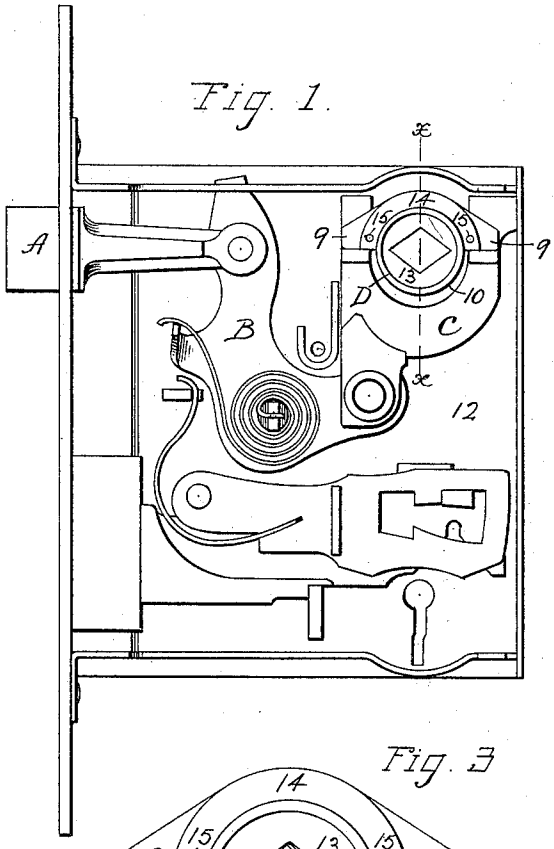


Fig. 2.

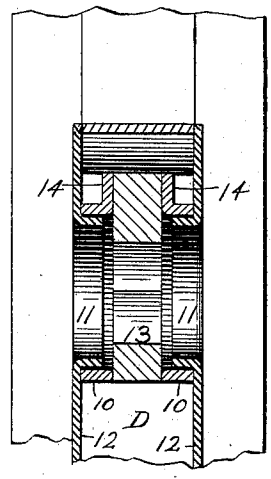


Fig. 5.

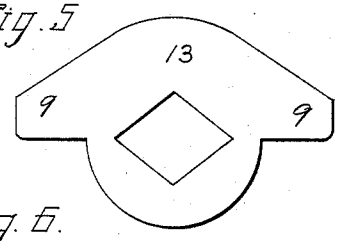


Fig. 3.

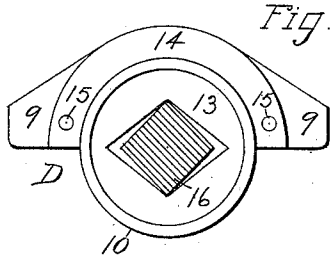


Fig. 6.

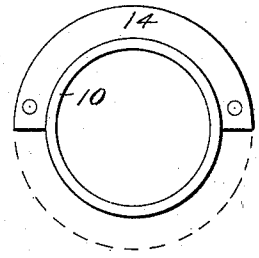


Fig. 4.

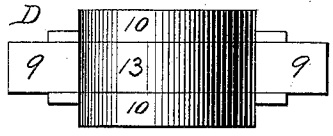


Fig. 7.

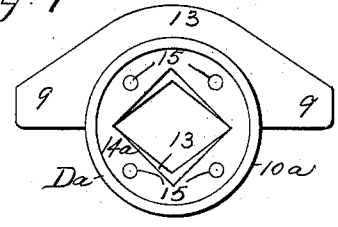
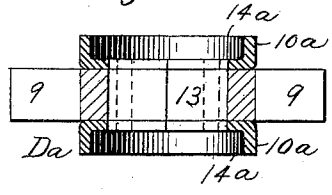


Fig. 8.



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UNITED STATES PATENT OFFICE.

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LATCH.

SPECIFICATION forming part of Letters Patent No. 606,246, dated June 28, 1898.

Application filed November 9, 1897. Serial No. 657,976. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. RUSSELL, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Latches, of which the following is a specification.

My invention relates to improvements in latches; and the main objects of my improvement are to furnish an improved bearing for the latch-hub, to make provision for having the spindle stand at varying angles to the latch-case, and to construct the latch-hub from sheet metal.

In the accompanying drawings, Figure 1 is a front elevation of my latch arranged in the case of a combined latch and lock, the cap-plate being removed. Fig. 2 is an enlarged sectional view of the latch-hub and a portion of the case on the line *x x* of Fig. 1. Fig. 3 is a detached plan view of the latch-hub together with a section of the spindle. Fig. 4 is an edge view of the same. Fig. 5 is a detached plan view of the cam-piece or body of the hub. Fig. 6 is a like view of one of the trunnion-pieces for the hub. Fig. 7 is a detached plan view of the hub with the trunnion-pieces having an inner instead of an outer flange, and Fig. 8 is a sectional view of the same.

In Fig. 1, A designates the latch-bolt; B, its angle-lever; C, the slide, and D the latch-hub; but the latch-bolt and its operating mechanism are not peculiar to my invention, and any other latch-bolt and latch-bolt-operating mechanism may be substituted therefor.

The hub D is in the main of an ordinary form, having cams or wings 9 and trunnions 10; but I make the trunnions hollow and preferably with internal bearing-faces to receive inwardly-projecting bosses 11 on the side plates 12 of the latch. In the preferred form these plates 12, as well as the hub, will be formed of sheet metal, in which case I form the bosses 11 integral with said side plates by turning or swaging in a portion of the metal, as shown in Fig. 2. It is not, however, essential to my invention that these bosses or the hub shall be formed of sheet metal.

I prefer to form the hub D in three pieces of sheet metal—the cam-piece or web 13 and two trunnions. The cam-piece or body of the hub 13 is cut to form in dies from a flat piece of sheet metal, as shown by the detached plan view of such piece, Fig. 5. This web or cam piece is much thinner than the length of the hub measured in the direction of its axis. The trunnions 10 are of tubular form and provided with external flanges 14, turned at right angles to the sides of said trunnions, as shown in the detached plan view Fig. 6. If desired, the flange 14 may at first be formed entirely around the trunnion, as indicated by the broken circular line in Fig. 6, and then the portion indicated by said line may be removed to form the flange 14, which extends only about half-way around the trunnion. These trunnions are then placed with their flanges on the broad sides of the cam-piece or web and are rigidly secured in place by any desired number of rivets 15 passing through said flanges and web.

The hollow trunnions of the latch-hub may bear upon the inside of the bosses 11, as in ordinary latches; but I prefer to insert said bosses within the hollow trunnions of the hub, so that the bearing-faces are the inside of the hub-trunnions and outside of the bosses within the case, as shown in Fig. 2. In this construction no shoulders are necessary on the trunnions, as the ends of said trunnions bear against the inner faces of the side plates to limit the endwise movement of the hub. The bearings thus formed can be readily milled, so as to insure a nice fit. The ends of the hub do not project through the side plates, as in ordinary latches, and the bearing length of the spindle-hole in the hub is much less than in ordinary latches, so that the spindle may rock or tilt to stand at different angles to the latch-case and still work properly whenever the latch-case is not set parallel to the door.

In some cases as a further means to prevent binding I form the hole in the hub of a diamond shape, as shown, making the shortest diameter of the hole about equal to and so as to fit the ordinary square spindle 16, Fig. 3, at its opposite diagonal corners, as shown. This will permit the spindle to operate properly, although the latch may not be set parallel to the face of the door, while at

the same time the spindle is prevented from moving diametrically in the hub.

In Figs. 7 and 8 the latch-hub D^a is of the same general form as in the preceding figures, only the trunnions 10^a have an inwardly-extended flange 14^a, the trunnions being secured to the cam-piece 13 by rivets 15, passing through said flanges and cam-piece, as before. Said rivets are indicated in broken lines in Fig. 8. If desired to keep the bearing length of the spindle-hole of the same thickness as the web or cam piece, the hole in the flange 14^a may be larger than the hole in said web, so that said flange will not bear on the spindle.

I claim as my invention—

1. The combination of a latch-case having inwardly-projecting bosses, with a latch-hub having hollow side trunnions with internal bearings into which internal bearings said bosses are received and upon the interior of which bosses the hub has its bearing, substantially as described.

2. A latch-hub consisting of a web or cam piece containing the bearing-hole for the spindle and hollow trunnions rigid with said web-piece, and with their inner diameter large enough to clear the spindle, whereby the spindle may rock or tilt within the hub on said rigid web, substantially as described and for the purpose specified.

3. A latch-hub consisting of the web or cam piece with broad sides, and two separately-formed tubular trunnion-pieces having at their base a flange with its sides extending at a right angle to the axis of said trunnions and resting upon the broad sides of said web or cam piece, the said flanges being rigidly secured to said web, substantially as described.

4. A latch-hub for a square spindle having a diamond-shaped spindle-hole as viewed in the longitudinal direction of the spindle, the shortest diameter of which hole is fitted to the diagonally opposite corners of the spindle, substantially as described.

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