

E. M. & J. E. MIX.
COMBINED LOCK AND LATCH.

No. 521,984.

Patented June 26, 1894.

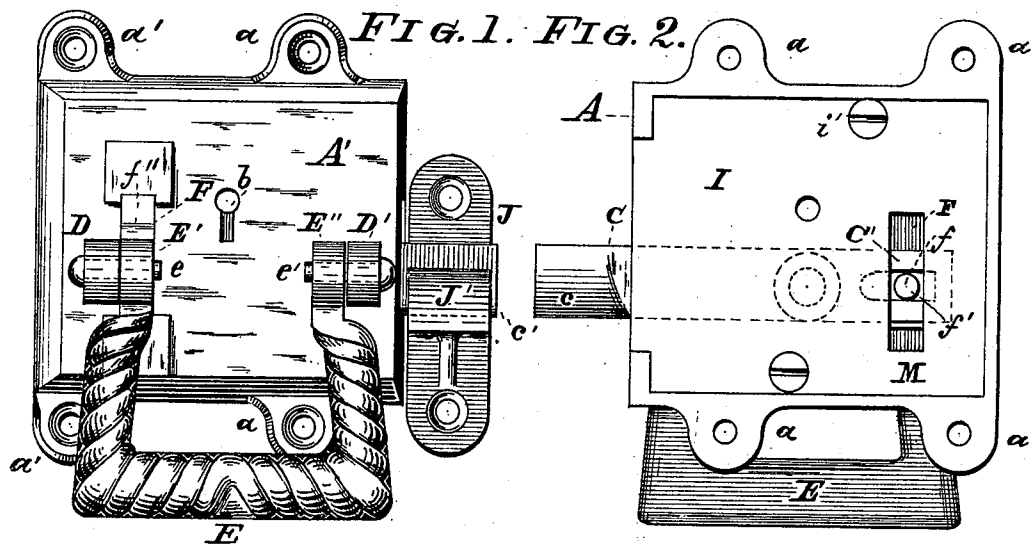
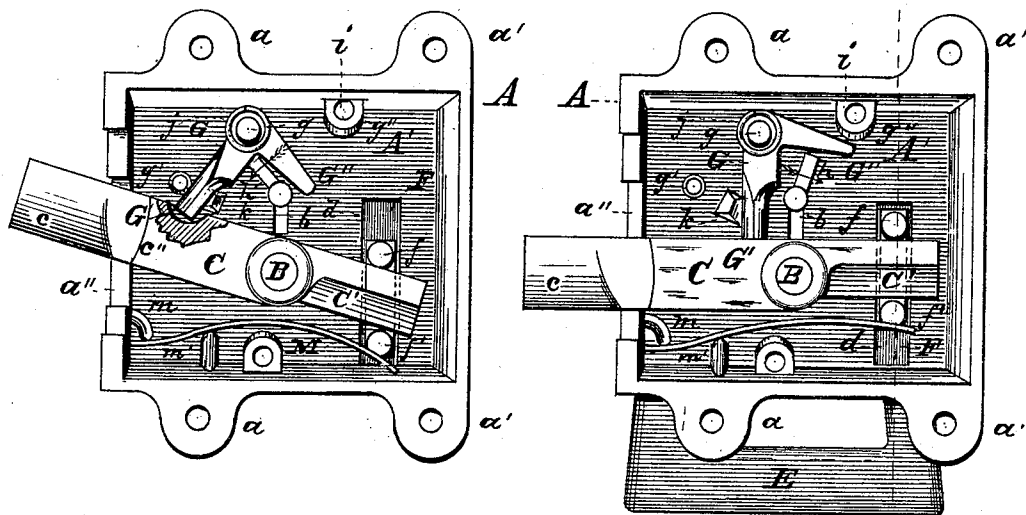
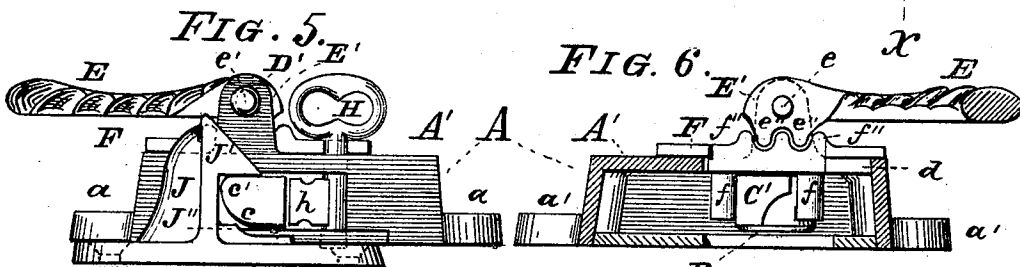


FIG. 3.

FIG. 4.



Witnesses:

Wm. H. Dopp
Ch. Stark

B Inventors:

Eugene M. Mix
James E. Mix
by *Michael J. Stark* Attorney

(No Model.)

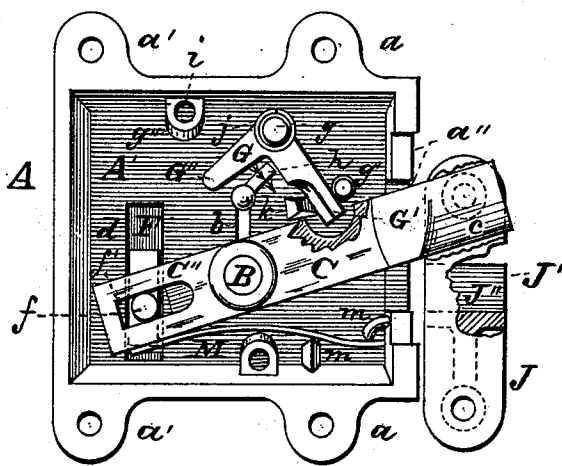
2 Sheets—Sheet 2.

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FIG. 7.



Witnesses:

Wm. H. Depp
Ch. Stark

Inventors:

Eugene M. Mix
by *James E. Mix*
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UNITED STATES PATENT OFFICE.

EUGENE M. MIX AND JAMES E. MIX, OF BUFFALO, NEW YORK, ASSIGNORS
TO OLIVER F. SWIFT, OF SAME PLACE.

COMBINED LOCK AND LATCH.

SPECIFICATION forming part of Letters Patent No. 521,984, dated June 26, 1894.

Application filed February 12, 1894. Serial No. 499,955. (No model.)

To all whom it may concern:

Be it known that we, EUGENE M. MIX and JAMES E. MIX, citizens of the United States, residing at Buffalo, in the county of Erie and State of New York, have jointly invented certain new and useful Improvements in a Combined Lock and Latch; and we do hereby declare that the following description of our said invention, taken in connection with the accompanying sheet of drawings, forms a full clear, and exact specification.

This invention has general reference to improvements on a combined lock and latch; and it consists, essentially, in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described and then pointed out in the claims.

In the drawings already referred to, which serve to illustrate our said invention more fully, Figure 1 is a front view of our combined lock and latch and its keeper. Fig. 2 is a back view of the same. Fig. 3 is a similar view with the back plate removed and showing the latch in an open position. Fig. 4 is a like view illustrating the latch in a locked position. Fig. 5 is an end view of the combined lock and latch and its keeper. Fig. 6 is a transverse sectional view in line *x x* of Fig. 4. Fig. 7 is a back view of the lock and latch slightly modified.

Like parts are designated by corresponding letters of reference in all the figures.

The object of our present invention is the production of a very simple and efficient combined lock and latch. To attain this result, we construct this combined lock and latch of a case A, preferably of rectangular shape and having perforated lugs *a a'*, by means of which the lock is secured to a door, not shown. This casing has in about its center and projecting from the inner side of its face plate A' a stud B, upon which is pivoted a bolt C. This bolt has at its rear end a narrow portion C', forming the short arm of said bolt, while its opposite or long arm, being the one projecting through an opening *a''*, in one end of the casing A, is curved as shown at *c*. It also has one corner slightly rounded, as shown at *c'*, the object of which will hereinafter more fully appear. From the front side of the face

plate there are projecting two lugs D D', to which is pivoted a U-shaped handle E, by means of pivots, bolts, screws or similar fastening *e e'*, passing through the heads E' E'' of said handle E and through the said lugs D D'. Directly adjoining the lug D there is a slot-hole *d*, in the face plate which is covered by a slide F, of substantially I-shape. This slide has projecting from its back and passing through the slot-hole *d* two studs *f f'*, placed sufficiently far apart to admit the narrow end of the bolt C between them. Upon the face of this slide F there are located several projecting teeth *f''* forming a rack, and so designated hereinafter, wherewith engage similar teeth *e''*, Fig. 6, formed on the head E' of the handle E, and which teeth form a portion of a pinion and will hereinafter be termed the pinion. This pinion and rack move the slide F when the handle E is actuated, and the slide, in turn, operates the bolt C by partly rotating it around its pivot B.

In the face plate A' there is a key-hole *b*; and projecting from its inner side there is a further stud *g*, upon which is pivoted a bell-crank G, the longer arm G' of which when in a perpendicular position, as shown in Fig. 4, bears against the bolt C and thereby prevents the same from being rotated upon its stud B, while when said bell-crank G is moved by the bit *h* of the key H into the position shown in Figs. 3 and 7, said bolt is free to move, a recess *c''*, in the bolt allowing it to pass said long arm G'. The movement of this long arm G' in one direction is limited by a stop *g'* projecting from the inner side of the face plate, and in the opposite direction by the short arm G'' coming in contact with a stop *g''*, which latter stop is provided with a screw-threaded hole *i*, for the reception of one of the screws *i'*, Fig. 2, wherewith the back plate I is fastened to the casing.

The bell-crank G is considerably thinner than the bolt C so as to afford room for a coil spring *j*, Figs. 3 and 4, placed upon the stud *g* and interposed between the said bell-crank G and the back plate I, to keep the bell crank against the inner side of the face plate A'. Adjoining the stop *g'* there is a double incline *k*, over which the long arm G' of the bell crank G moves and which, in conjunc-

tion with the action of the coil spring *j*, gives the desired snap to the movement of said bell-crank when actuated by the key *H* and also retains the said bell crank in one or the other of the two positions shown respectively in Figs. 3 and 4.

In the casing *A* there are two projections *m m'*, between which is held a curved blade spring *M*, the free end of which bears against the stud *f''* and through it and the slide *F*, upon the bolt *C* and handle *E* in such manner as to keep them normally in the position shown in Figs. 1, 2, 4, 5 and 6, that is to say: in a horizontal position.

It will now be observed that by lifting the handle *E*, (the bell crank *G* being in the position shown in Fig. 3 and disengaging the bolt *C*), the pinion *e''* engaging the rack *f''* will move the slide *F* downwardly and the studs *f f'* on the back of the slide will move the short arm of the bolt with it and its long arm upwardly, thus disengaging the said bolt from its keeper *J* and allowing the door to which the lock may be attached to be opened, while if the door be closed, the bolt *C* will move upon the incline *J'* of said keeper and as soon as it has passed the apex will drop (by the action of the blade spring *M*.) into the notch *J''*. If now the key *H* be turned from the position shown in Fig. 3 in the direction indicated by the arrow shown on the bit *h* in Fig. 4, the bell-crank will be moved into the position shown in Fig. 4, and thus lock the bolt in its horizontal position. It will be further observed that the entire mechanism of this combined lock and latch is extremely simple and inexpensive, all the parts being capable of being readily produced in the process of casting in brass, bronze, or iron, and assembled without much hand or machine labor.

The combined lock and latch is especially adapted for use upon refrigerators, but it is also capable of being employed on cupboards and in various other structures, without change or modification.

We have heretofore stated that the end of the bolt *C* is curved at *c*. This curvature, which, however, may be a bevel, if desired, assists the bolt in ascending the incline *J'* of the keeper *J*, while the rounded corner *c'* assists the said bolt in passing into the notch *J''*.

The slide *F* is longer than the slot-hole *d* in the face plate *A'* so as to fully cover the same and thereby prevent the introduction of dirt or other foreign bodies into the casing *A*, which would interfere with the operation of the locking mechanism.

By actuating the bolt *C* by the rack and pinion mechanism we are enabled to forcibly pass the said bolt into the notch *J''* of the keeper, an advantage which cannot be obtained by the action of the spring *M* alone.

The outer faces of the casing and its keeper may be plain or ornamented in various manners without interfering with the action of its mechanism.

We have heretofore described the slide *F* as being provided with two studs *f f'* engaging the short arm *C'* of the bolt *C*. This, however, may be modified as shown in Figs. 2 and 7 by slotting the short arm *G''* at *f'* and by providing but one stud *f* on the slide *F*, said stud *f* engaging the slot *f'* in the manner shown. This modification requires the spring *M* to act directly upon the short arm *C'* of the bolt *C* but does not otherwise change the construction of the lock, and is one of several equivalents of the device described.

Having thus fully described our invention, we claim as new and desire to secure to us by Letters Patent of the United States—

1. In a combined lock and latch, the combination, with a suitable case having the lugs *D D'* projecting from its face; of a U-shaped handle pivoted to said lugs; a pinion on the said handle, a slide having on its face a rack engaging said pinion, and on its back a stud, a pivoted bolt having a slotted aperture on its short arm engaging the stud on the slide, and a suitable keeper, as and for the object stated.

2. In a combined lock and latch, the combination, with the casing having the lugs projecting from its face-plate, of a U-shaped handle having the pinion on one of its heads; a slide upon said face-plate having a rack engaging said pinion and studs projecting from its back; and a pivoted bolt the short arm of which engages the said studs on the slide, as and for the purpose stated.

3. In a combined lock and latch, the combination, with the casing having the lugs projecting from its face-plate, of a U-shaped handle having a pinion on one of its heads; a slide upon the face-plate and having a rack engaging said pinion and studs projecting from its back through a slot-hole in the face-plate; a pivoted bolt the short arm of which passes between the studs on the slide, and the long arm of which projects from the casing and engages a keeper, and locking mechanism for the bolt consisting of a bell-crank, the spiral spring, the limiting stops and the double incline, as and for the purpose stated.

4. In a combined lock and latch, the combination, with a suitable casing, of a pivoted bolt actuated by a handle, as described, of locking mechanism for the said bolt consisting of the pivoted bell-crank the spiral spring upon the pivot of the bell-crank, the stops limiting the movement of the bell-crank, and the double incline, as and for the use and purpose specified.

In testimony that we claim the foregoing as our invention we have hereunto set our hands in the presence of two subscribing witnesses.

EUGENE M. MIX.
JAMES E. MIX.

Attest:

F. G. HUSTED,
O. F. SWIFT.