(No Model.)

N. CLARK.

LATCH.

No. 373,442. Patented Nov. 22, 1887.

Fig. 1.

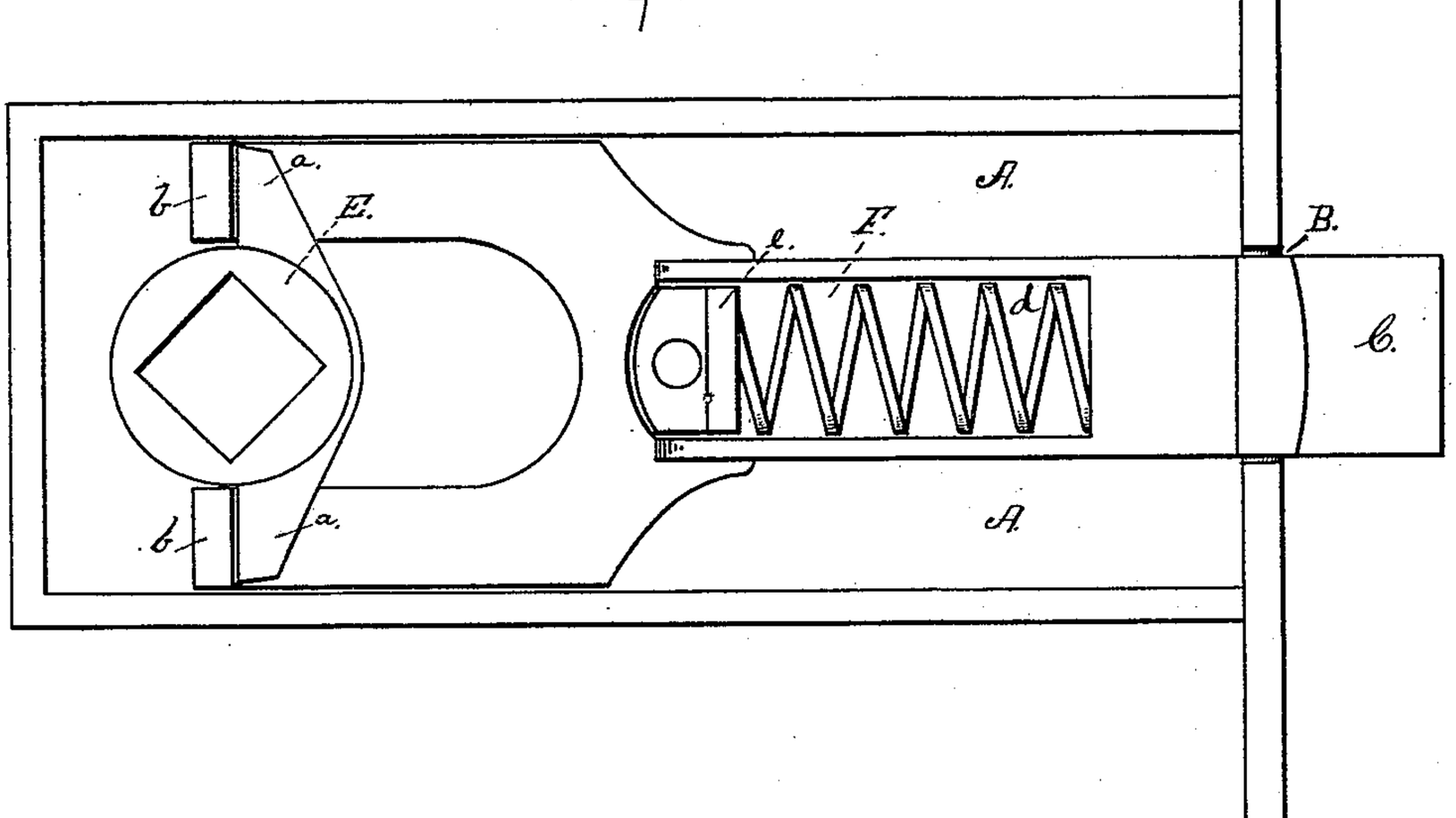


Fig. 2.

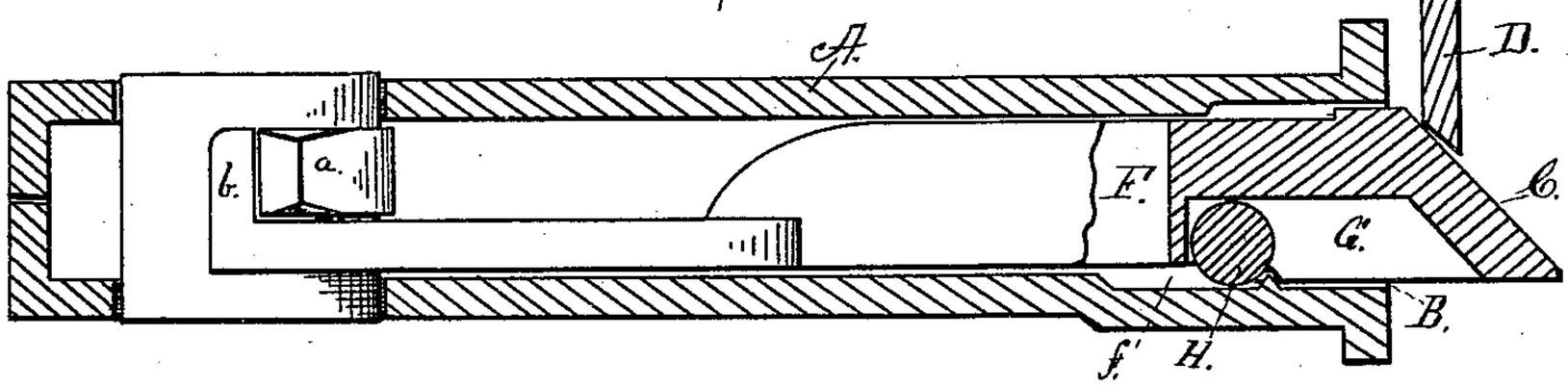
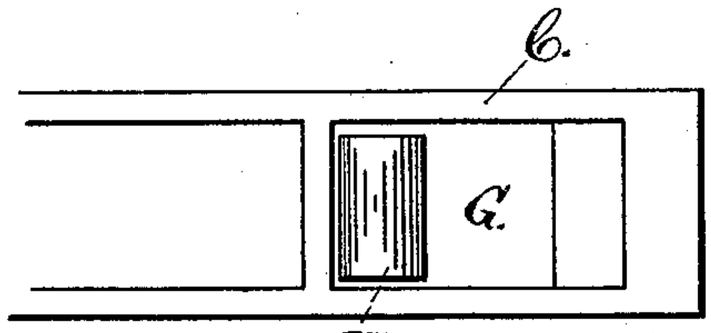


Fig. 3.



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LATCH.

SPECIFICATION forming part of Letters Patent No. 373,442, dated November 22, 1887.

Application filed March 16, 1887. Serial No. 231,078. (No model.)

To all whom it may concern:

Be it known that I, NORMAN CLARK, a citizen of the United States, residing at Sterling, in the county of Whiteside and State of Illinois, have invented certain new and useful Improvements in Latches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention has reference to improvements in latches, and pertains especially to providing novel means for avoiding the friction between the bolt and its contiguous case, caused by the usual mode of forcing said bolt back into the case in the process of opening and closing, but more particularly in closing the door. As is well known, the end of the reciprocating bolt has its outer end (or the end which engages the strike-plate in the door-frame, and thus holds the door closed) beveled on the side which strikes the said plate in the operation of closing the door. The contact of the strike-plate against the protruding end of the bolt is in a line perpendicular to that of the compelled withdrawal of the bolt. The percussion, therefore, indirectly causes the bolt to withdraw solely by means of the bevel aforesaid. It is obvious that the percussion at its initiative, and at the very instant when the bolt must make its escape inward, tends directly to strongly force the back of said bolt against the contiguous wall of the opening in the case through which the bolt protrudes. The intense friction thus caused necessitates force in closing the door, and the consequent jar is sooner or later destructive of the parts; and the difficulty of forcing the bolt back against such extreme friction makes the operation impracticable except when the parts are in proper relation; and as doors sag and swell and on outside and exposed doors the parts of the latch rust, the closing of the door frequently cannot be effected without assisting the withdrawal of the bolt by turning the knob.

I know that devices have heretofore been used in attempting to obviate the before-named difficulty; but, so far as they have fallen under my observation, such devices have been either too fragile or too expensive to go into general or common use.

In my invention, which consists of a friction-roller in certain relation to adjacent parts, I combine the essential elements of cheapness, simplicity, and durability.

In the drawings, Figure 1 represents a simple form of latch containing my invention, viewed from the bevel side of the bolt. Fig. 2 is a cross-section of said latch, exhibiting the character and location of my invention. Fig. 3 is the end of the bolt where my invention is located, viewed reversely from Fig. 1.

A is the usual case, having the opening B, through which the bolt C protrudes to engage the strike-plate D, attached to the inner face of the door-frame.

E is the usual tumbler or rock-shaft, journaled in the case A, and provided with external hard knobs and lateral flanges, *a*, which severally engage the lugs *b* on the inner bifurcated end of the bolt C in the usual way, and thus actuate the latter.

F is the usual coiled spring, placed in a suitable recess, *d*, in the bolt C, and having its outer end placed against the outer end of said recess and its inner end against the stop *e*, affixed to the case A. A recess, G, is formed in the back of the bolt C, near the outer end of the latter, of sufficient depth and width to accommodate the movements, hereinafter described, of the roller H.

H is a short metallic cylindrical pin or roller placed transversely of the bolt C in the recess *f*, formed in the inner wall of the case A adjacent to the recess G in the bolt C. The roller H therefore occupies parts of both the recess G and the recess *f*, and the relative location of these recesses is such that when the bolt C is at its outward limit the inner wall of the recess G is the diameter of the roller inward from the outer wall of the recess *f*. The outward movement of the bolt C therefore always brings the roller H against the outer wall of the recess *f*, and thus insures said roller being in the proper place and position to carry the bolt C inward when the latter movement occurs, and also holds said roller transversely of said bolt.

The diameter of the roller H and the depth of recesses G and *f* are such relatively as to cause said roller to hold the bolt C free from

contact with the adjacent side of the case A and the walls of the opening B therein. The result is that when the outer end of the bolt C comes in contact with the strike-plate D the roller H receives the blow and instantly carries the bolt C inward, said roller traversing both recesses. When contact with the outer end of the bolt C has ceased, the spring F throws the bolt C outward and the inner wall of the recess G pushes the roller H out against the outer wall of the recess *f* in position for successive use.

The recesses G and *f* can be of circular form, and a ball may be substituted for the roller H, but I prefer the present form, as distributing the pressure over a larger surface, and therefore precluding any wear of the parts.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

The combination of the bolt C, provided with recess G, the case A, provided with recess *f*, the roller H, interposed between the bolt and the adjacent side of the case, and spring F, substantially as shown, and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

NORMAN CLARK.

Witnesses:
GEO. H. DRAKE,
R. B. WITMES.