

No. 665,772.

Patented Jan. 8, 1901.

A. L. DIFFENDAFFER.  
LOCK.

(Application filed Jan. 22, 1900.)

(No Model.)

Fig. 1.

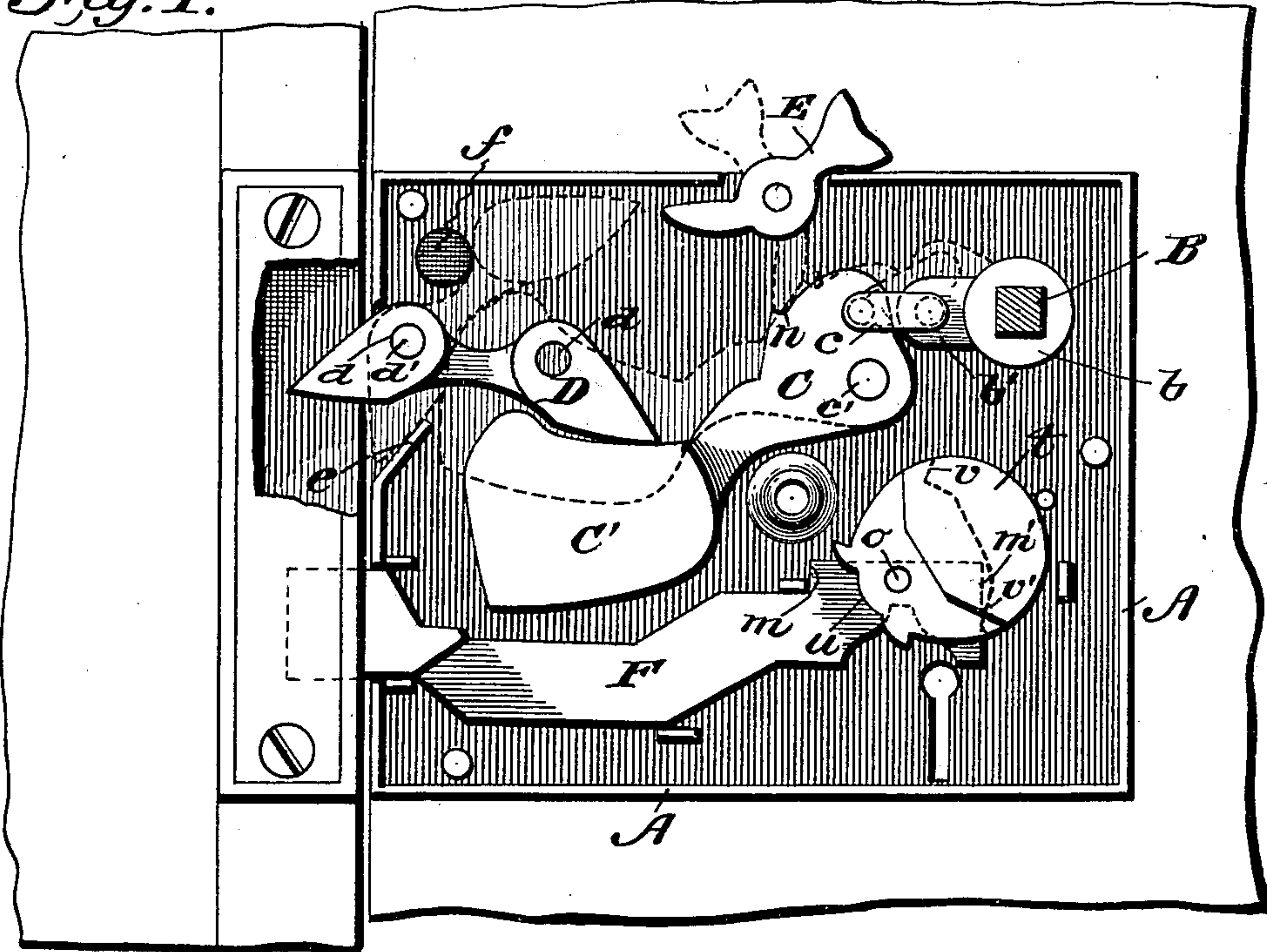


Fig. 2.

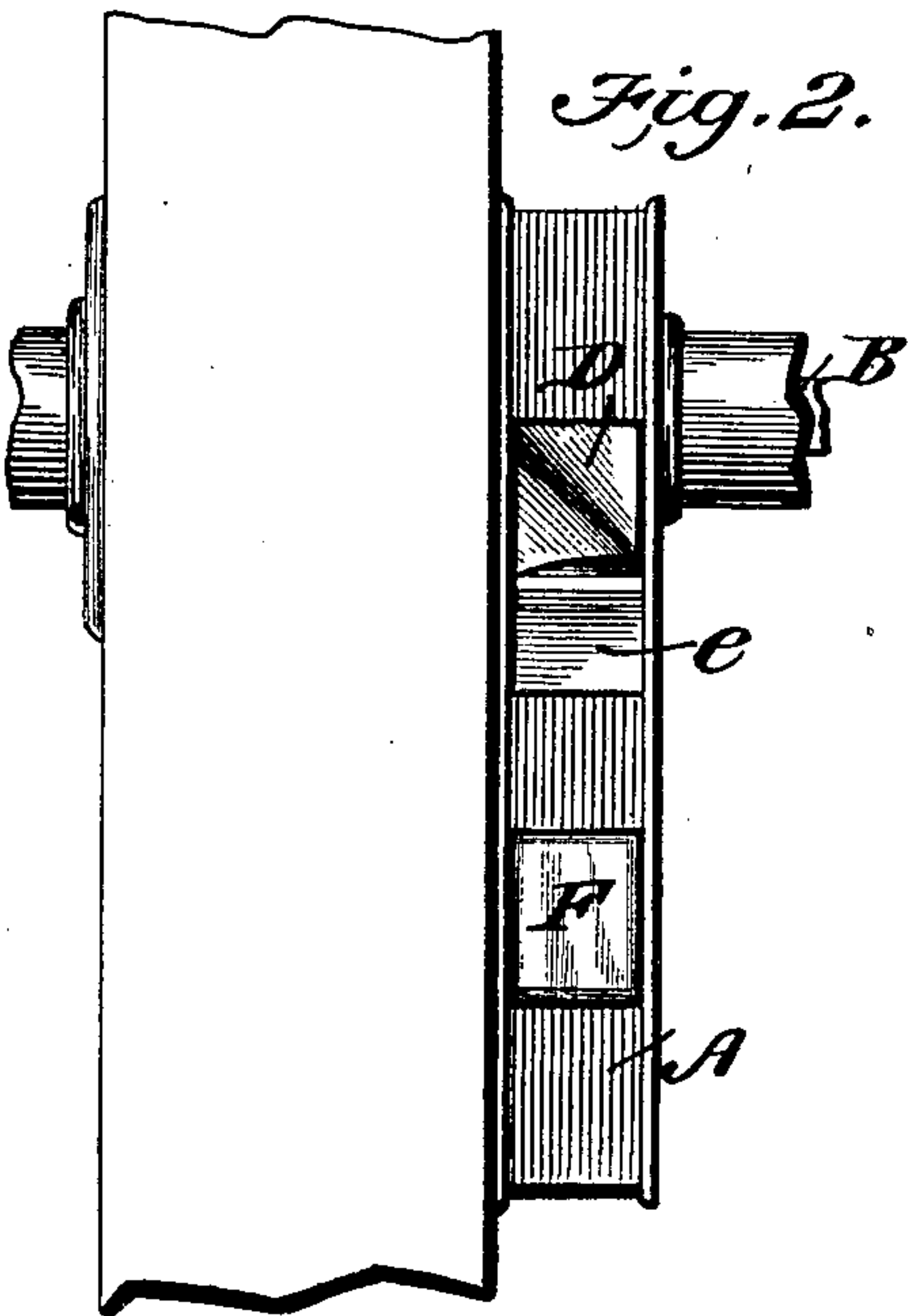


Fig. 3.

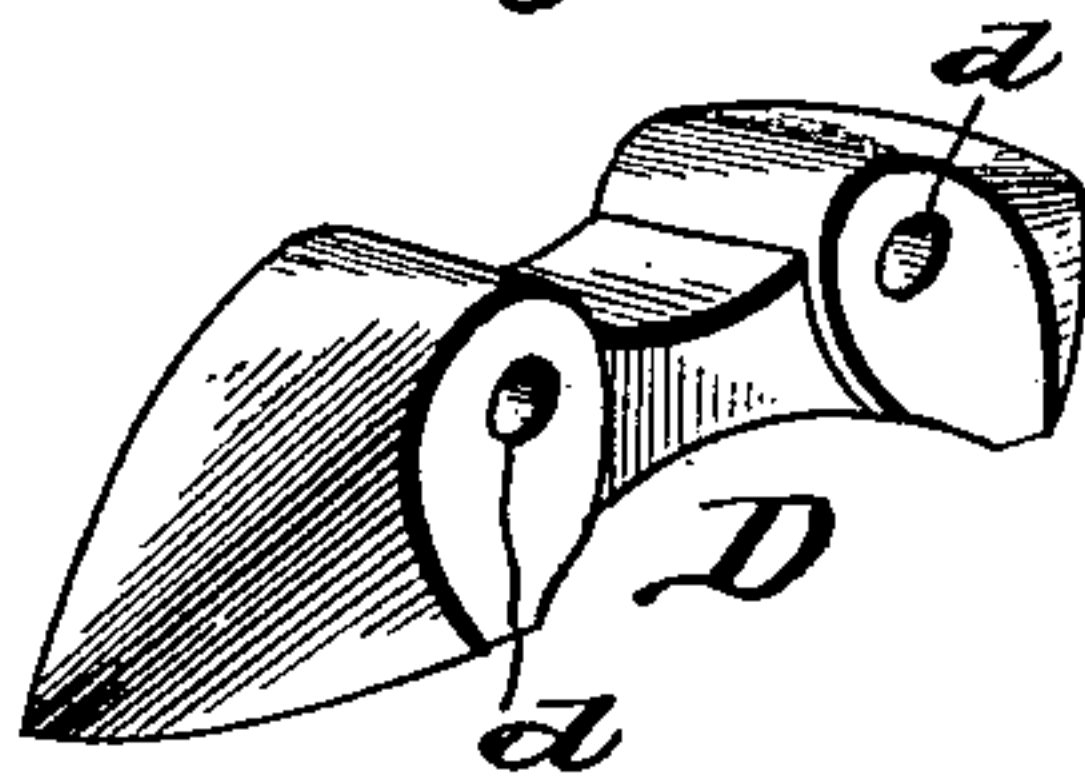
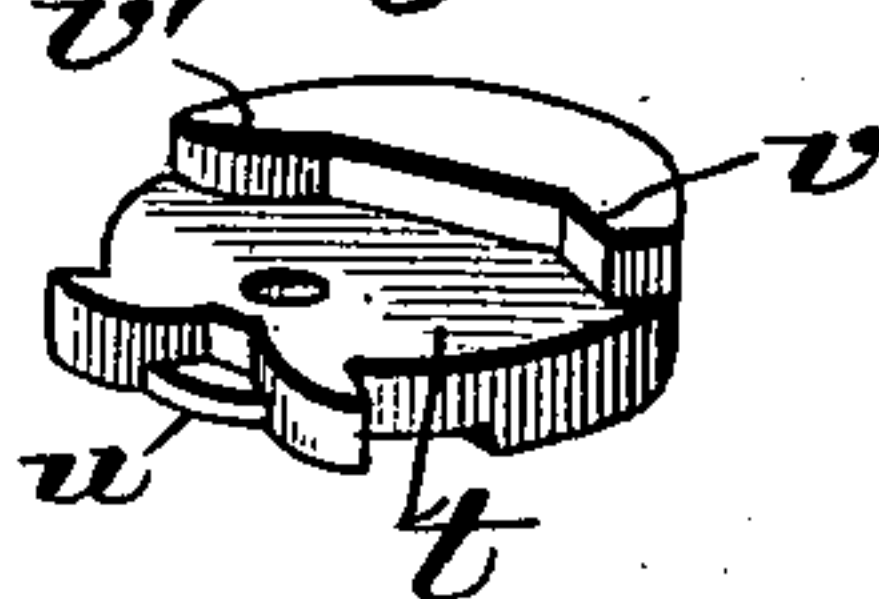


Fig. 4.



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# UNITED STATES PATENT OFFICE.

ALEXANDER LEE DIFFENDAFFER, OF LA BELLE, MISSOURI.

## LOCK.

SPECIFICATION forming part of Letters Patent No. 665,772, dated January 8, 1901.

Application filed January 22, 1900. Serial No. 2,328. (No model.)

*To all whom it may concern:*

Be it known that I, ALEXANDER LEE DIFFENDAFFER, of La Belle, in the county of Lewis and State of Missouri, have invented  
5 a new and useful Improvement in Locks, of which the following is a specification.

My invention is in the nature of an improved gravity latch-lock in which springs are entirely dispensed with and a simple and  
10 practical reversible lock provided in which the parts act with great sensitiveness and free from all hammering action and noise.

Gravity latch-locks heretofore constructed had the latch portion, which impinges against  
15 the keeper on the door-jamb, connected with the weight which actuated it or else made to form the weight itself, and in closing the door the impact of the latch against the keeper caused the latch to move a relatively large  
20 mass of metal, whose inertia opposed the quick-closing action and created much friction on the abrading parts and considerable noise, as well as a hammering action that was detrimental to the lock.

My invention provides a very light and reversible latch-bolt and combines with it a  
25 separate and independent weight connected to and operated by the knob-shaft, so that the action of the latch-bolt in closing the door is independent of the weight and devices connecting it with the knob-shaft, and a night-latch may be applied to lock the latch-bolt  
30 so that it cannot be opened by the knob, but which night-latch may be applied or set and the door then closed without interfering with the same.

My invention also consists in the novel construction and arrangement of the key-bolt and its locking-tumbler, as will be hereinafter  
40 more fully described, with reference to the drawings, in which—

Figure 1 is a front view of the lock with the face-plate removed. Fig. 2 is an edge  
45 view; Fig. 3, a perspective detail of the latch-bolt, and Fig. 4 a perspective detail of the key-bolt tumbler.

In the drawings, A is the lock-case, and B its knob-shaft, which has upon its squared  
50 portion a sleeve *b*, with a short crank *b'*, connected by a short link *c* with an arm C at a point above its fulcrum *c'*. This arm is extended to one side and bent downwardly and

enlarged at the end to form the weight C'. This weighted arm C C' is held by its own  
draft strain on the link *c*, so that the said  
55 weight does not rest against any other surface, and hence has no bearing to hammer against when it drops.

D is the double-headed and reversible latch-bolt, whose ends are made symmetrical and  
60 with similar beveled faces inclined in two planes and provided at each end with pivot-seats *d d*, either one of which is adapted to fulcrum upon the pivot-pin *d'*, which is set  
65 above an external recess very close to the edge flange of the lock-frame. This edge flange is turned inwardly at *e* below the latch-bolt to form the external recess in the edge  
70 of the lock, into which turns by a rotary action the protruding end of the double beveled and pointed latch-bolt when the inner end of the latter rises in closing the door, as shown  
75 by dotted lines. When said inner end rises, its jar or impact is broken by a pad or cushion *f*, of soft rubber or other material, and the outer end merely turns inwardly into the  
80 external recess in the edge of the lock without entering the lock-frame. The reversible latch-bolt D is substantially straight from end to end on its lower side and its points  
85 project in opposite directions. To lighten it as much as possible, the connecting-shank is of smaller cross-section than the heads. To open the latch-bolt through the knob-shaft, the latter is turned in either direction, and  
90 the pull on the link *c* lifts the weighted arm C C', and the latter striking the inner end of the latch-bolt raises it, the parts being restored to their former position by gravity. By making the latch-bolt with symmetrical  
95 ends it may be reversed and applied to either right or left hand doors.

E is a night-latch fulcrumed upon a pin in the lock-frame and projecting at its upper  
end through an opening in the rim of the lock,  
95 while its lower end is arranged when tilted to drop into a notch *n* in the weighted arm and prevent it from being lifted by the rotation of the knob-shaft.

With the construction of latch-lock as thus  
100 described it will be seen that the night-latch may be engaged with the notch *n* of the weighted arm and the door then closed without straining any of the parts, since only the



small reversible latch-bolt is moved in the act of closing the door. When, however, the door is closed, it is impossible to raise the latch-lock, as the weighted lever-arm through which motion is transmitted is locked by the night-latch.

F is the key-bolt. This has an elevated portion  $mm'$ , forming locking-abutments and bearing in the middle a short pin  $o$ , upon which is pivotally hung a weighted rotary tumbler  $t$ . The latter has bearing-surfaces  $u$  for the key, which bearing-surfaces vary with the bits of different keys. The tumbler has a recessed portion  $v v'$  on its back side that engages the bolt to lock it in either position. When the key-bolt is thrown by the key, the bit of the latter strikes the bearing  $u$  of the tumbler and throws it over to one side or the other on its pivot-pin. When thrown over to the right, as shown, the shoulder  $v'$  of the tumbler drops down behind the end  $m'$  of the key-bolt and prevents it from being shifted except by the key, and when thrown over to the left the other shoulder  $v$  drops behind the shoulder  $m$  of the raised portion of the key-bolt and locks it, so that it cannot be moved in the opposite direction except by the key.

In my lock it will be seen that both the latch-bolt and key-bolt are constructed and arranged without any springs, and the small weight and inertia of the latch-bolt render it very sensitive and free from friction, and as it is not directly connected with the actuating-weight the hammering action of the latter is avoided.

If desired, the pin  $o$  of the tumbler  $t$  may be stationary and on the lock-case A immediately above the keyhole instead of being carried on the bolt F.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A gravity latch-lock comprising a relatively light reversible latch-bolt having double heads with a pivot-seat in each head and each head beveled in two planes to a point, a weighted lift-arm made heavier than the latch-bolt and connected to the knob-shaft and underlying the inner head of the latch-bolt, but wholly disconnected therefrom and arranged to lift the latch-bolt but allow the same to rise without movement of the heavy lift-arm when slamming the door substantially as described.

2. In a lock the combination with the relatively light latch-bolt pivoted with its greatest weight inside its fulcrum, an independent weighted lifting-arm for the same connected to the knob-shaft and underlying the inner end of the latch-bolt but wholly disconnected from it, so as to lift the same without itself being moved by the movement of the latch in slamming the door, and a night-latch or detent pivoted above and adapted to engage the lifting-arm without locking the latch-bolt substantially as described.

3. A latch-lock having a case with an external recess in the edge of the same with a wall or flange  $e$  for separating the recess from the interior chamber of the case, and a latch-bolt pivoted above said external recess and arranged to turn into the same without entering the internal chamber of the lock-case as described.

4. In a latch-lock a reversible double-headed latch-bolt each head being beveled in two planes and arranged substantially in a straight line on the under side and pointing in opposite directions and each head being provided with a fulcrum-seat and connected by a reduced shank substantially as described.

5. The combination in a lock, of a key-bolt having locking-abutments; and a rotary tilting tumbler pivoted to the bolt with its weight above its center of motion, and having on each side of its center a locking-shoulder adapted when tilted to lock against the locking-abutments of the bolt substantially as described.

6. A lock comprising a relatively light latch-bolt pivoted with the greater portion of its weight inside its fulcrum, a lift-arm for the same wholly disconnected from the latch-bolt and weighted at a point beneath the same, said lift-arm being fulcrumed at its other end and having an extension upwardly from its fulcrum, a knob-shaft with crank-arm opposite said upward extension and a horizontal link connecting said crank-arm and upward extension and supporting the weighted end of the lift-arm as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALEXANDER LEE DIFFENDAFFER.

Witnesses:

J. S. McREYNOLDS,  
WM. H. KEACH.