

(No Model.)

H. B. IVES.

BOLT.

No. 378,067.

Patented Feb. 14, 1888.

Fig. 1

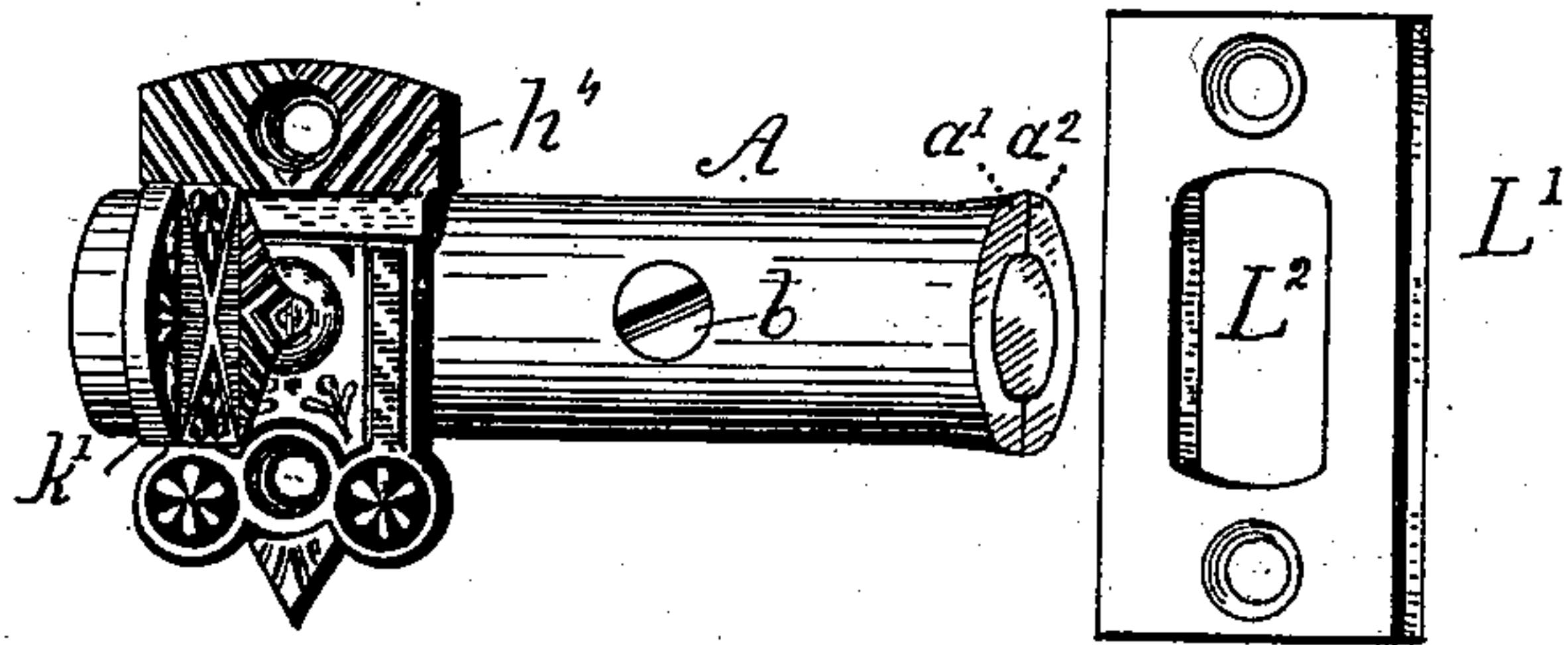


Fig. 2

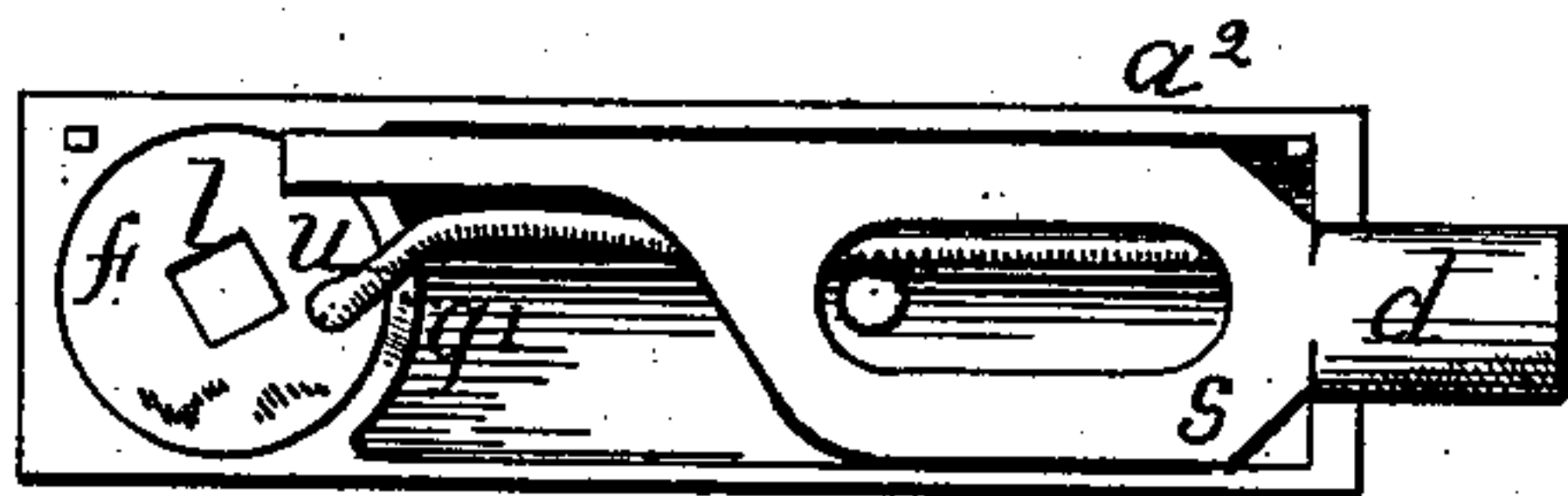


Fig. 3

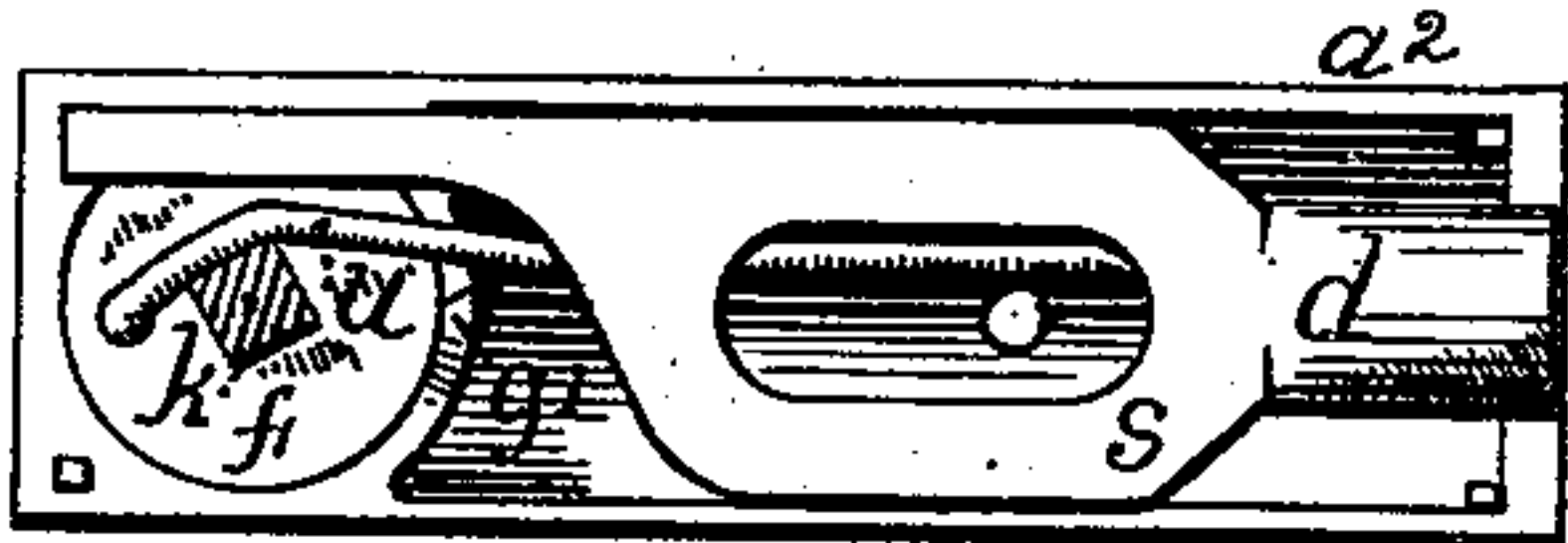


Fig. 4

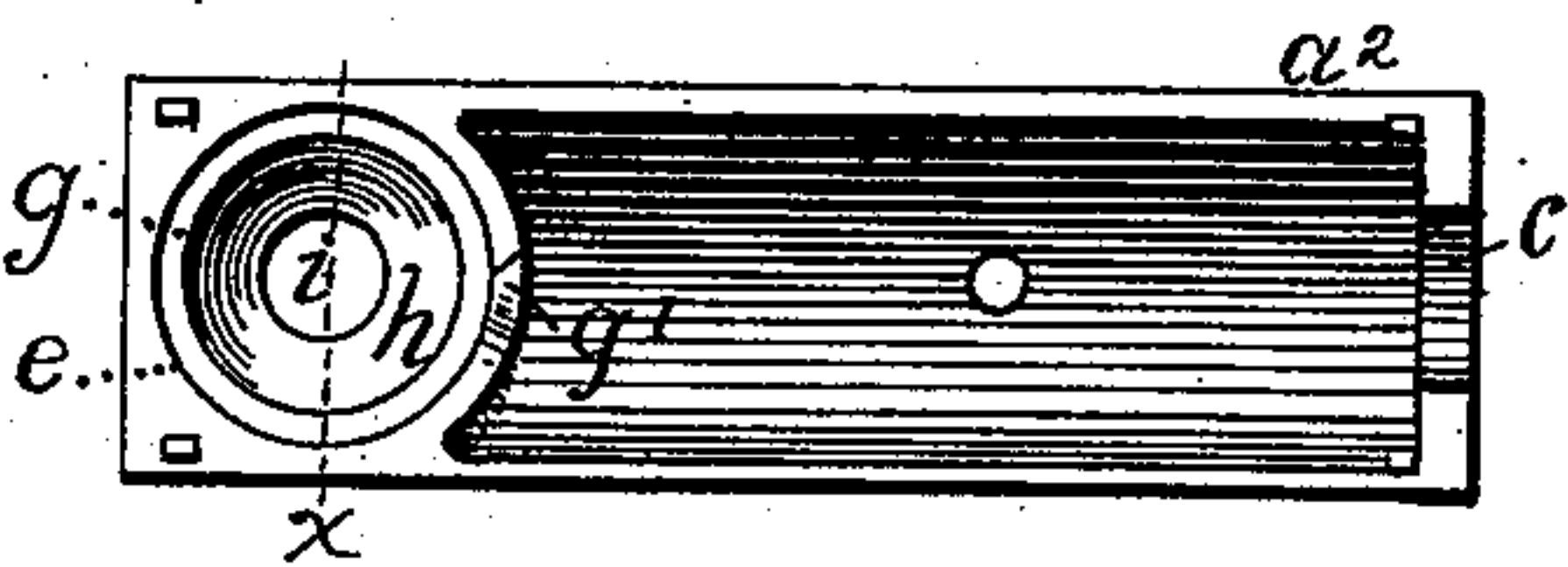


Fig. 5



Fig. 6

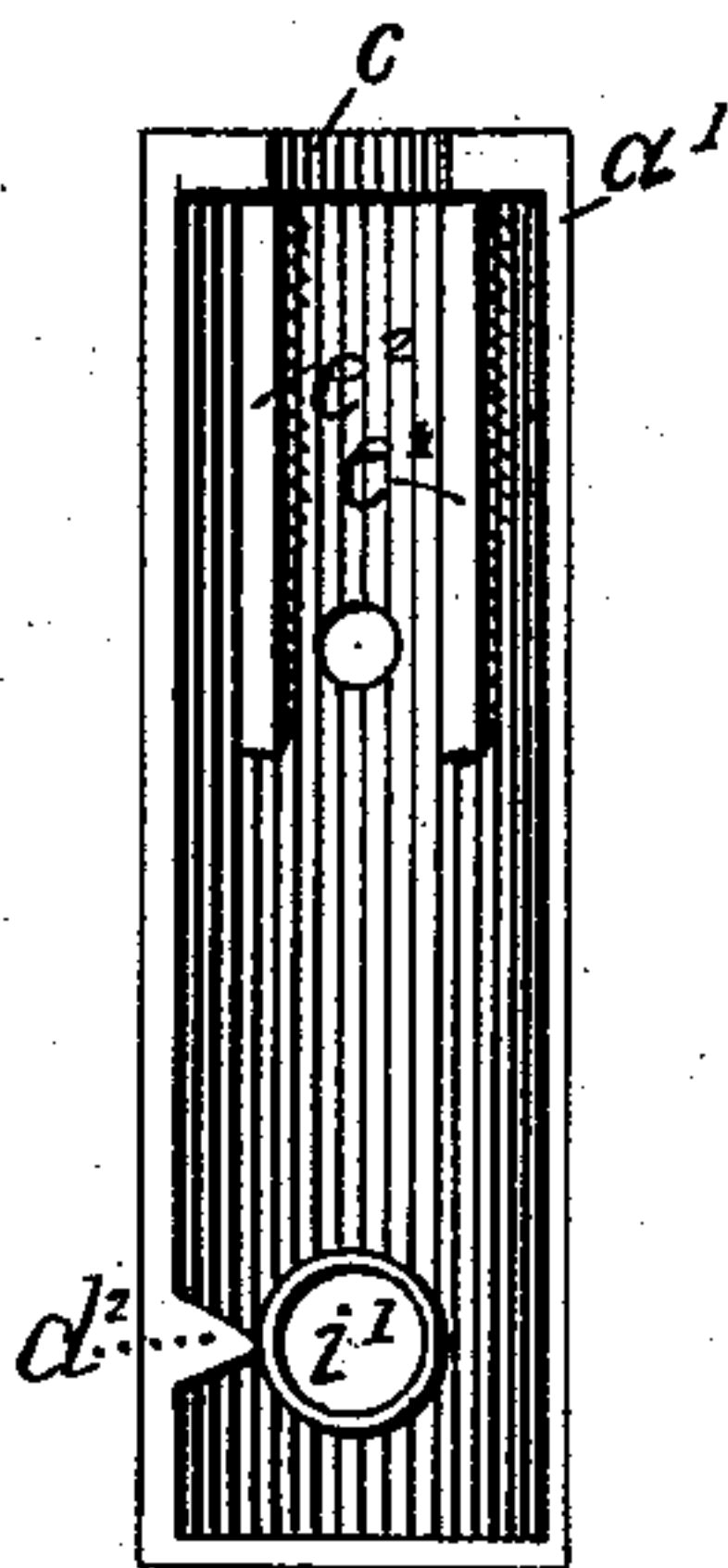


Fig. 7

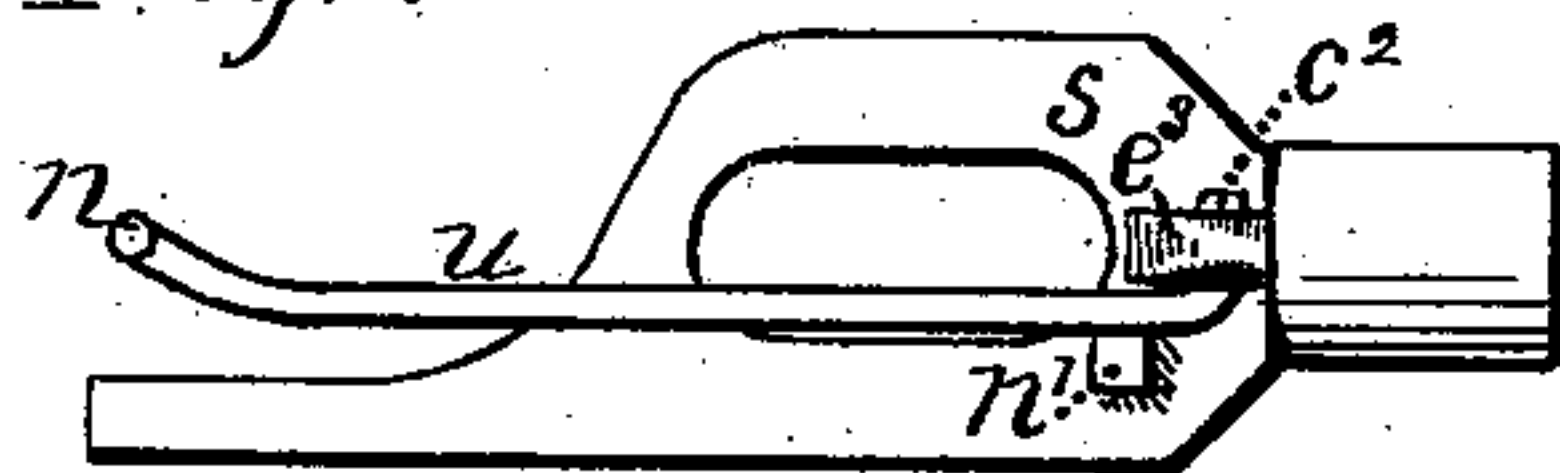


Fig. 8

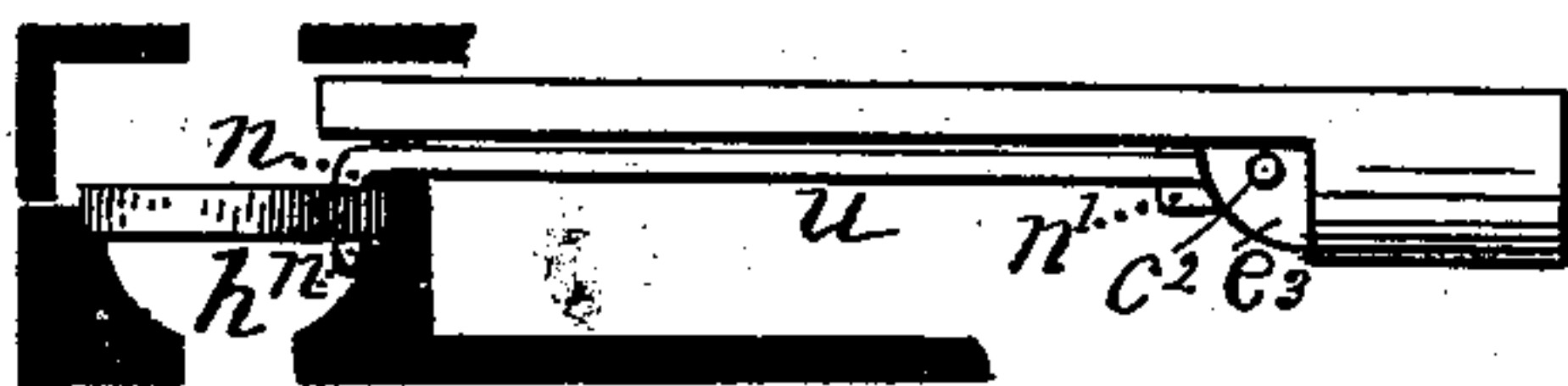
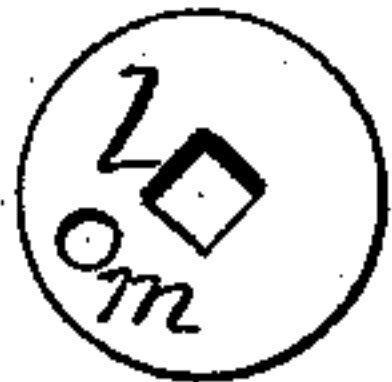


Fig. 9



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HOBART B. IVES, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO H. B. IVES  
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## BOLT.

SPECIFICATION forming part of Letters Patent No. 378,067, dated February 14, 1888.

Application filed December 7, 1887. Serial No. 237,238. (No model.)

*To all whom it may concern:*

Be it known that I, HOBART B. IVES, of the town of New Haven, in the State of Connecticut, have invented certain new and useful  
5 Improvements in Door-Bolts, of which the following is a specification.

My invention relates to a door-bolt, and is an improvement in that class of door-bolts in which the lock-case is inserted in a round hole  
10 bored in the edge of the door, and the sliding bolt is operated by a crank and spring connecting-rod. In such bolts the connecting-rod usually has its end bent over at right angles to the main part and is hooked or journaled  
15 in a hole in a crank-disk which turns in a circular seat or bearing in the case operated by the lock-key.

My improvements consist in providing a circular recess opening into and concentric with  
20 the bottom of the circular seat in which the crank-disk turns and correspondingly extending the hook of the connecting-rod to project through the disk and into the recess, so that it cannot withdraw or spring out of the  
25 disk, and I also provide a stop-shoulder on the face of the wall of the crank, bearing on the side toward the bolt, in position to engage the connecting-rod when it is on its outer  
30 "dead-center," or in alignment with the bolt and crank-center when the bolt is thrown out, and prevent the spring of the rod from carrying it by the dead-center, as hereinafter more fully described and claimed.

In the accompanying drawings, Figure 1 is  
35 a perspective view of my improved door-bolt, and also the bolt striker or socket into which the bolt projects when it is thrust out from the lock-case in the operation of locking. Fig. 2 is a view of the lock with one-half of  
40 the case removed, showing the bolt mechanism in locked position; and Fig. 3 is a similar view with the parts unlocked. Fig. 4 shows the main part of the shell or case with the mechanism removed. Fig. 5 is a cross-section on  
45 the line *x*, Fig. 4; and Fig. 6 is a view of the cover half of the case. Fig. 7 is a side view of the bolt mechanism, viewed from the side opposite that shown in Figs. 2 and 3; and Fig.  
50 8 is a plan view of the same, partly in section. Fig. 9 is a view of the operating disk or crank.

Referring to the drawings, A denotes the case of my improved door-bolt, of cylindrical shape to fit a round hole bored in the edge of a door. The case is split vertically on the line  
55 of its axis, forming two semicircular shells, *a'* *a''*, which are fastened together by a suitable screw, *b*, passing through one shell and screwed into the other. Each shell has a semicircular notch, *c*, in the flange of its outer end, and  
60 when the two halves of the shell are fastened together the notches form a circular aperture for the cylindrical end *d* of the sliding bolt.

At the rear end of the main shell *a''* is a circular bearing, *e*, adapted to receive the operating-crank *f*, which turns on a horizontal  
65 axis and in a plane parallel to the length of the case. An annular shoulder, *g*, projects from the circular wall of the crank-bearing and forms a seat against which the crank rests.  
70 Interior to the annular seat is a circular recess, *h*, extending from the plane of the seat toward the outside of the case and opening from the crank-seat into the circular aperture  
75 *i*, through which the key *k'*, for operating the bolt, is inserted.

The crank has a central rectangular hole, *l*, to receive the square shank *k* of the key, and also has a perforation, *m*, just interior to the  
80 annular seat *g*, to receive the hook *n* of the connecting-rod. This hook is made by bending the end of the rod over at right angles to its main part, and the bent-over part is made longer than the thickness of the disk and is  
85 extended through the disk into the adjacent recess *h*. By thus projecting from the disk the hook part of the rod is prevented from withdrawing or springing out from its journal in the disk, which would occur if the end of the  
90 rod was flush with the back of the disk, as the disk is struck out from sheet metal and made thin. It is therefore important that the rod shall project considerably through the disk, and that the circular recess shall be provided  
95 for it to swing in. With this construction the crank may be made from light sheet metal, and the size of the lock may be correspondingly reduced, for it will be seen that any increase in the length of the disk increases the size of  
100 the lock-case.

On the face of the wall of the circular bearing *e*, on the side toward the outer end of the



case, is a projection or shoulder,  $g'$ , in position to intercept the connecting-rod just as it passes its outer dead-center, and thus hold the rod in that position, with the crank-centers and the rod all in alignment with the movement of the bolt. The bolt cannot then be pushed back into the case except by the normal action of the crank. The rod is held pressed down against the stop-shoulder  $g'$  by the elasticity of the rod, which tends to spring the crank end downward, the tension of the rod being adjusted when made to insure this result.

It will be seen that the stop-shoulder effectually holds the rod as it reaches its outer dead-center and prevents it from turning too far in that direction.

The face of the circular seat which holds the crank-disk is nearly in alignment with the edge of the shell  $a^2$ , and the connecting-rod  $u$  therefore lies within the cover  $a'$  when the parts are put together. The body  $s$  of the bolt is made flat and offset from the center line of the case to fit between the connecting-rod and the cover  $a'$ , which is formed with two flat seats,  $e^2$ , against which the bolt bears, and is thereby prevented from turning in the case. The bolt is provided with a horizontal rib,  $e^3$ , at the angle where the flat and cylindrical parts join, and the rib is perforated vertically to receive the hook of the connecting-rod. This hook is similar to the one at the opposite end of the rod, except that it stands vertical instead of horizontal, and a projection,  $n^1$ , is cast on the flat part of the bolt just the width of the rod off from the rib  $e^3$ , so that when the hook of the rod is inserted in the rib and the rod is then turned down against the body of the bolt, where it lies normally, the projection holds the rod in place.

The hook of the rod at the end which is fastened to the bolt, being vertical, does not oscillate in the rib, but is rigidly fixed thereto, and the rod springs out of a straight line as the crank turns. This elasticity holds the rod down against the stop-shoulder  $g'$ , or on the opposite dead-center, where the rod is stopped by the

shank of the key  $k$ , as shown in Fig. 3, so that the bolt will always remain either in locked or unlocked position wherever it is left.

The cover  $a'$  of the case is provided with a projection,  $d^2$ , which is adapted to bear on the face of the crank-disk  $f$  and hold it in its seat when the two half-shells are fastened together. It also has a hole,  $i^2$ , for the reception of the key  $k$ , which thus bears in the two sides of the case and also in an escutcheon,  $h^4$ , which is fastened upon the door. The striker  $L'$  is fastened to the door-casing in the usual manner, and has the ordinary oblong slot,  $L^2$ , to receive the lock-bolt when it is locked.

What I claim, and desire to secure by Letters Patent, is—

1. The combination, with the sliding bolt and the operating crank-disk, of the spring connecting-rod fastened to the bolt at one end and having its opposite end bent over at right angles to its main part and journaled in the crank-disk with its end projecting through the disk, and the inclosing case having a circular seat or bearing in which the crank turns, and a circular recess joining the seat of less diameter than the circle in which the crank end of the connecting-rod swings and adapted to receive the projecting end of the rod and permit its free rotation, for the purpose specified.

2. The combination, with the sliding bolt and its operating crank or disk, of the spring connecting-rod fastened to the bolt at one end and having its opposite end hooked or journaled in the crank, and the case having a circular cavity or bearing in which the crank turns, and a stop shoulder projecting from the wall of the bearing on the side toward the bolt in position to engage the connecting-rod on its outer dead center to hold the bolt in its locked position, substantially in the manner as specified.

HOBART B. IVES.

Witnesses:

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