

(Model.)

W. E. SPARKS.

LOCK.

No. 390,915.

Patented Oct. 9, 1888.

Fig. 1

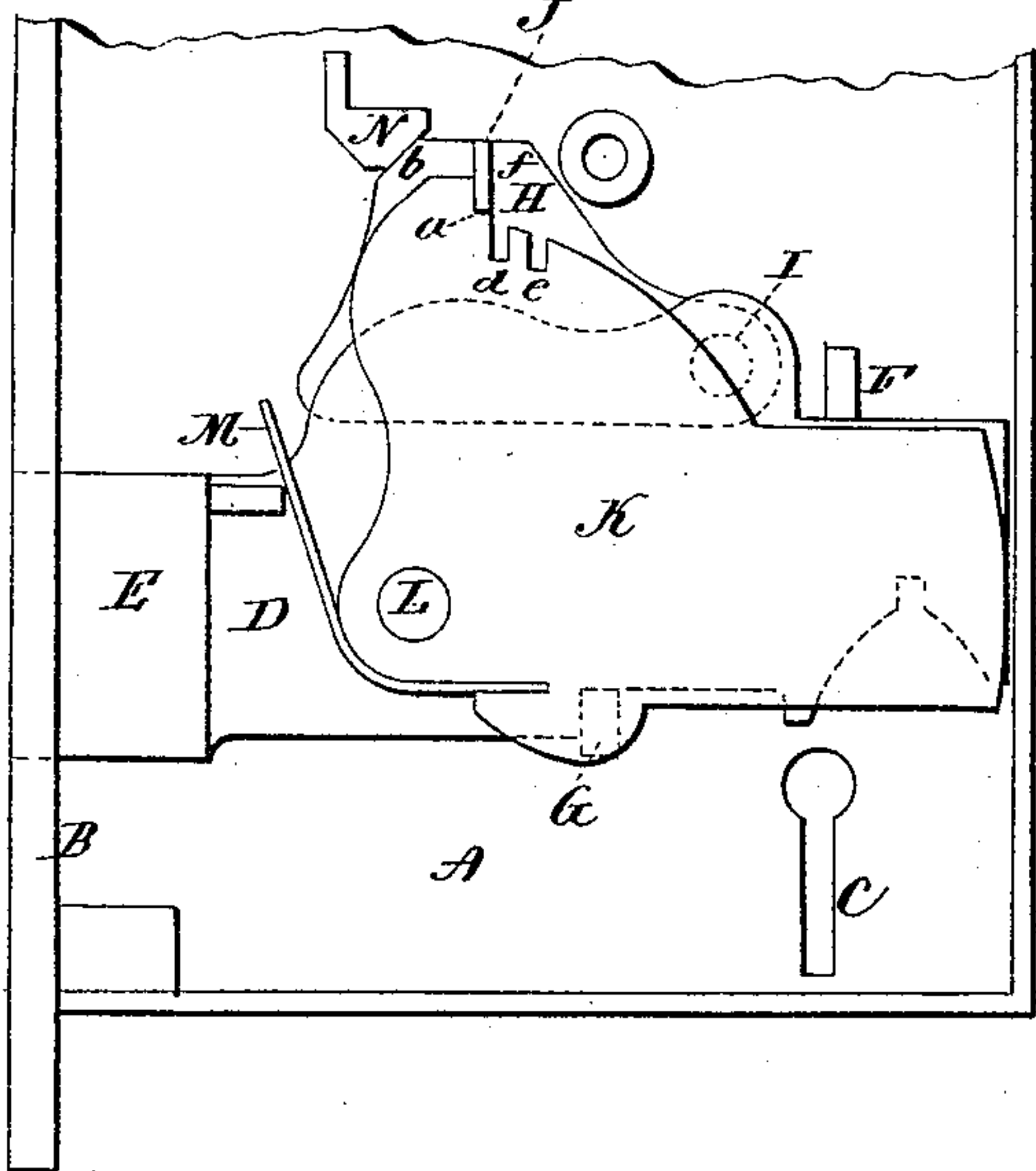


Fig. 2

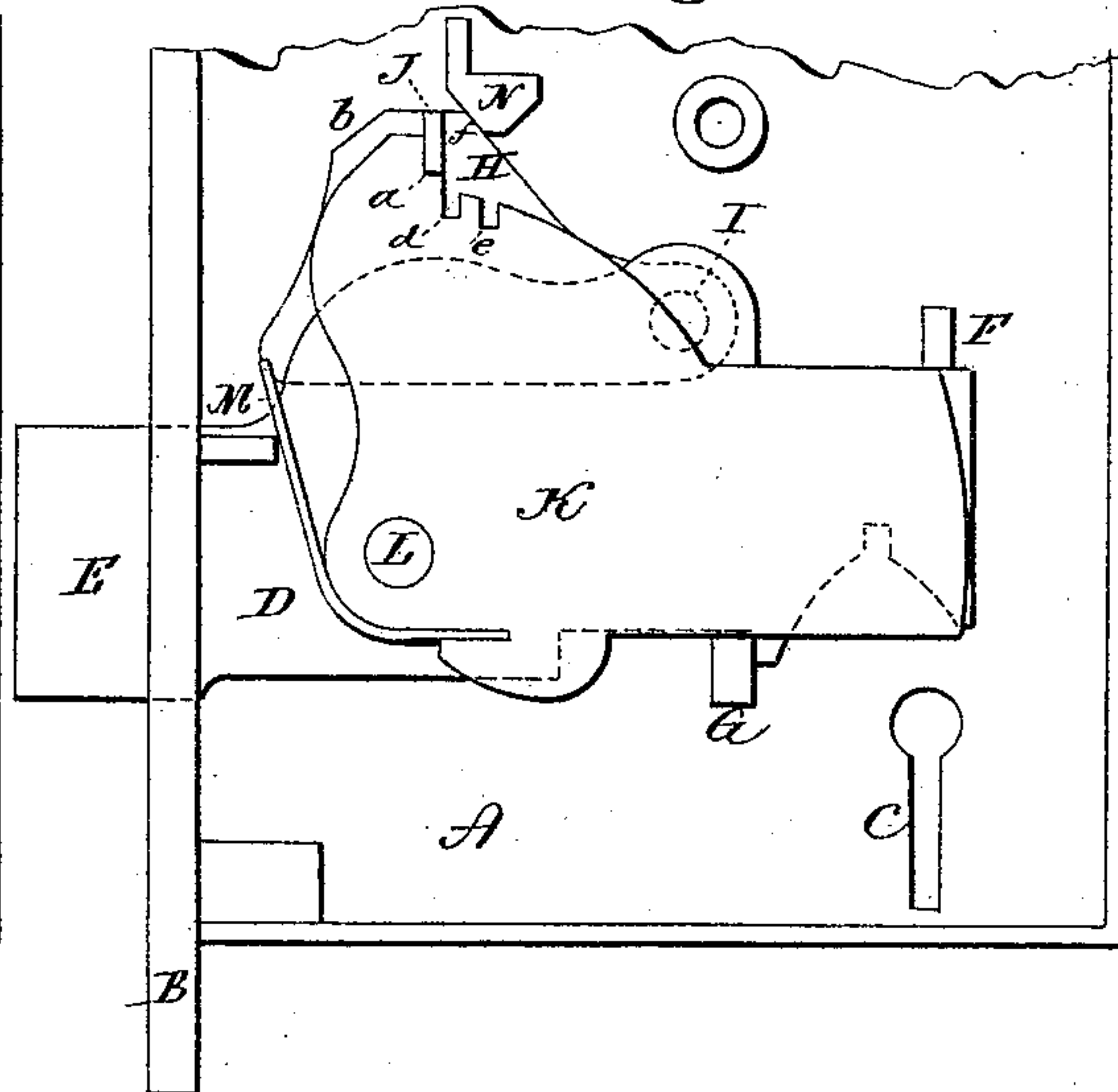


Fig. 3

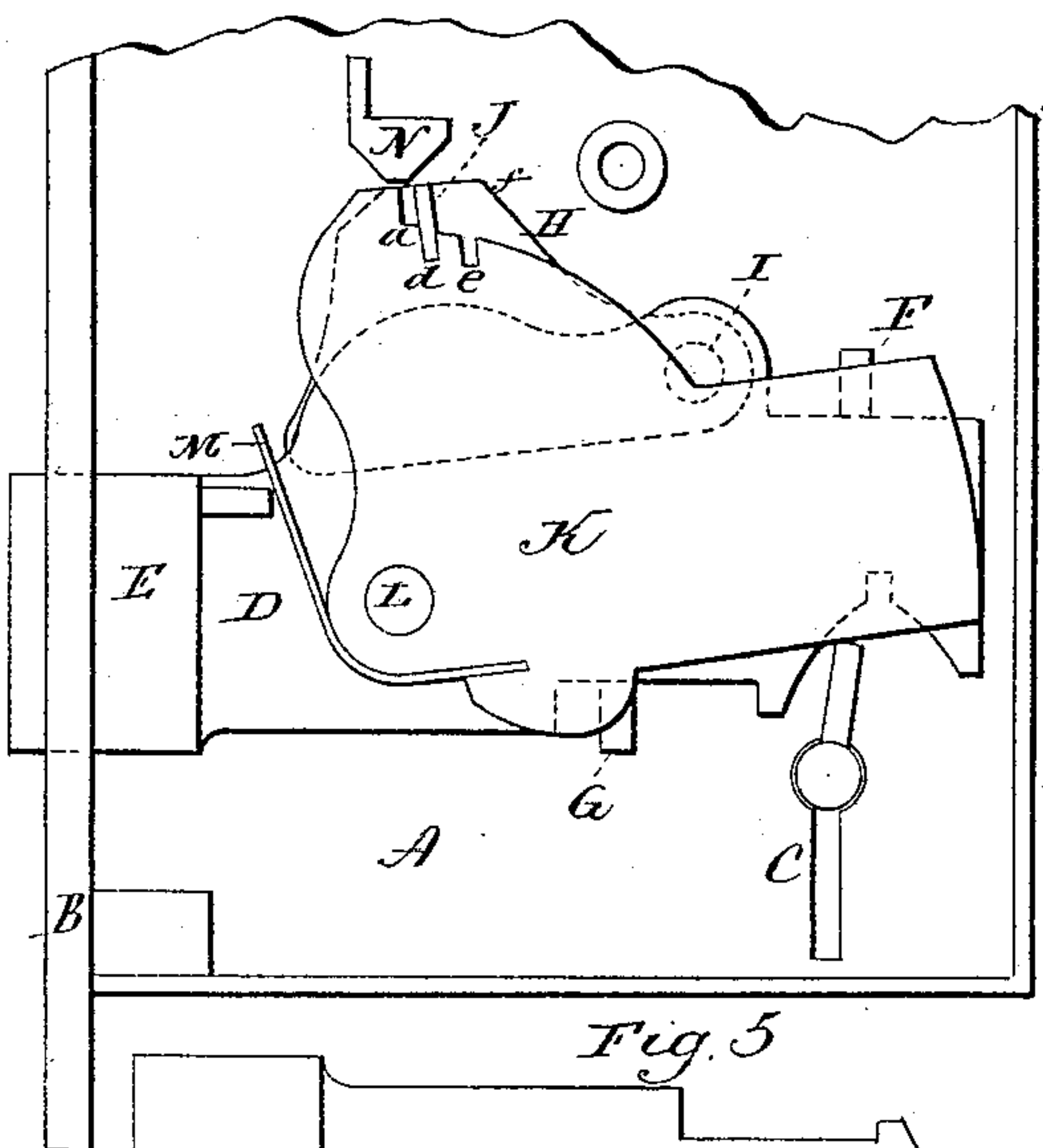


Fig. 4

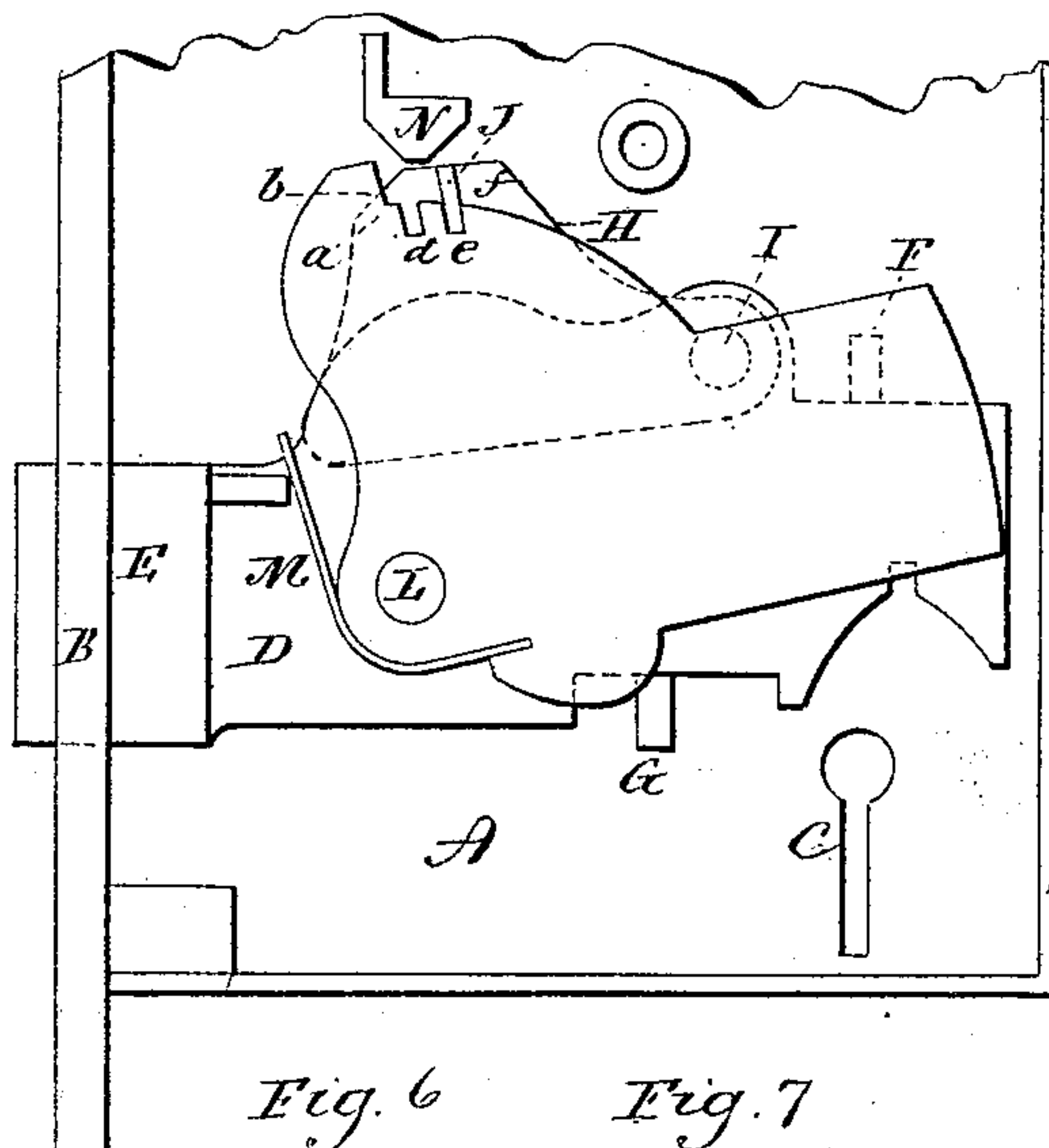


Fig. 5

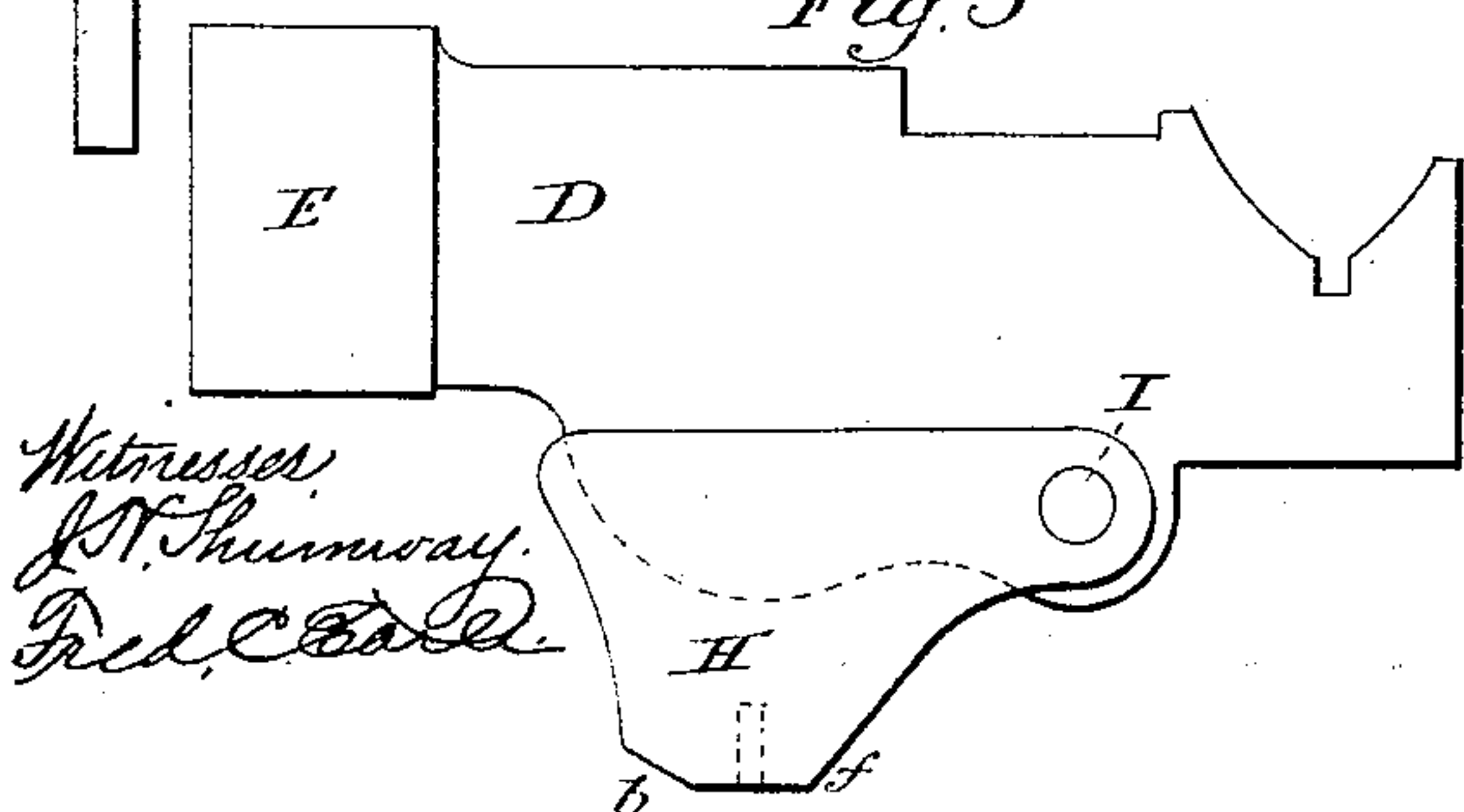
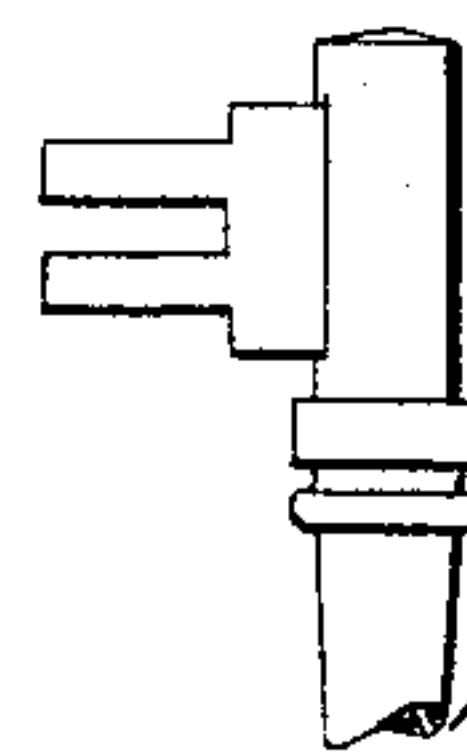
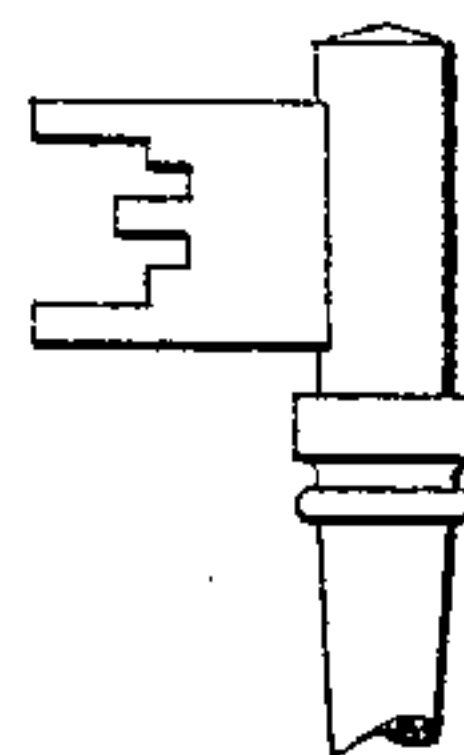


Fig. 6

Fig. 7



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By atty. Shumway.

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# UNITED STATES PATENT OFFICE.

WILLIAM E. SPARKS, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO SARGENT & COMPANY, OF SAME PLACE.

## LOCK.

SPECIFICATION forming part of Letters Patent No. 390,915, dated October 9, 1888.

Application filed April 16, 1888. Serial No. 270,819. (Model.)

*To all whom it may concern:*

Be it known that I, WILLIAM E. SPARKS, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Door-Locks; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view of the lock, the covering-plate removed to show the mechanism, the parts being in the drawn or normal position; Fig. 2, the same as Fig. 1, but the parts in the position with the bolt thrown; Fig. 3, the same view showing the operation of the tumbler and stump-plate under the operation of the key; Fig. 4, the same view representing the operation of a different key upon the same tumbler; Fig. 5, the reverse side view of the bolt, showing the stump-plate hung thereon; Fig. 6, the principal key; Fig. 7, the master-key.

This invention relates to an improvement in that class of locks which are provided with one or more tumblers combined with a stump adapted to coact with corresponding notch or notches in the said tumblers under the action of the key, the invention being specially adapted for doors of hotels and other purposes, and in which each lock has a principal key peculiar to itself and not adapted to either of the other locks of the series, but in which a different key, called the "master-key," may be applied to operate either of the locks of the series.

The object of the invention is the construction of the lock so that both the master and principal keys may be introduced through a single or common key-hole, and so that the principal key will operate upon the tumblers of its bolt and the master-key upon the tumblers of all the locks, but so that in either the locked or unlocked condition the tumblers are always brought to the same normal position irrespective of the key which operated them, and so that the bolt is retained in either the locked or unlocked position of the said tumblers, and so that either one of the said two keys can

throw the bolt, thereby avoiding a difficulty in many master-key locks, in which the bolt may be thrown by keys or instruments differing materially from the master or principal key, the safety arrangement in such construction of locks being only adapted to be applied to the bolt after it is thrown; and the invention consists in the construction, as hereinafter described, and particularly recited in the claim.

In this class of locks a latch-bolt is usually applied, but is not essential thereto. In illustrating the invention, therefore, I show only the lock mechanism to which, if desired, many of the well-known latch mechanisms may be applied.

A represents the case, B its face-plate, the case constructed with a single key-hole, C.

D represents the bolt arranged within the case, its nose E adapted to work through the face-plate in the usual manner, and the bolt is constructed with the usual talons, upon which the key operates in throwing or drawing the bolt. The bolt is supported in the case between suitable guides, F G, as common in this class of locks, the guide or support G serving as a stop against which corresponding shoulders on the bolt will strike—one as the bolt is drawn and in its normal condition, as represented in Fig. 1, and the other as the bolt is thrown, as represented in Fig. 2.

H represents the stump-plate, which is hung to the bolt upon a pivot, I, and so as to swing in a vertical plane. The stump-plate is arranged upon one side of the bolt, as seen in Fig. 5, and being hung to the bolt this plate partakes of the movement of the bolt, but yet is free for an up-and-down swinging movement independent of the bolt. The plate H carries the stump J, which projects over and to the other side of the bolt. The stump J is arranged on the plate at a point considerably above the pivot I, upon which the stump-plate is hung. On the said other side of the bolt the tumblers K are hung directly to the bolt upon a pivot, L. These tumblers may be of any desirable number, according to the complication required for the lock. I illustrate, however, but a single tumbler, that being sufficient for the clear understanding of



the invention. The tumblers, being hung to the bolt, move with it, but yet are free to swing up and down in a plane parallel with the plane of the bolt, and also parallel with the plane of the stump plate H. The tumblers extend rearward over the talon portion of the bolt, so that the bit of the key may engage the tumblers at that point and raise them to a greater or less extent, according to the shape of the bit of the key. The tumblers also extend above the latch-bolt, where a shoulder, *a*, is formed, which is adapted to engage the stump J and hold the tumbler-plate in the up position, as represented in Fig. 1. Each tumbler is provided with a spring, M, which takes a bearing on the bolt, the tendency of which is to yieldingly hold the tumblers downward over the talons of the bolt. When the stump rests upon the shoulder *a*, as represented in Fig. 1, the bolt then being in the drawn position, the stump-plate is held in its up position, and so that while the tumblers are in that position the fall or descent of the stump is impossible.

Above and forward of the stump-plate a stationary stop, N, is formed in the case, and so that the forward edge, *b*, of the nose of the stump-plate rests against the rear surface of the said stop N, when the bolt is in the drawn position, as seen in Fig. 1. This cam and stump-plate therefore form a stop, which prevents the possible throwing of the bolt so long as that condition of the stump-plate and tumblers remain.

Each tumbler is constructed with one or more notches, *d e*, in rear of the shoulder *a*, the said notches in width corresponding to the thickness of the stump J, and the depth of the notches corresponds to the distance to which the nose of the stump-plate extends above the bottom of the stop N, and so that when the tumbler is raised, so as to bring a notch—say *d*—into line with the stump J, the stump-plate is then free to fall and take the stump into the said notch, as represented in Fig. 3, and below the stop N. The tumbler is brought to this position by a corresponding shoulder on the bit of the key, and when that position of the tumbler is reached the bit of the key engages the talon of the bolt, so as to impart to the bolt an outward throw, and under such movement the nose *b* of the stump-plate works against the corresponding surface of the stop N, which forces the stump-plate downward, (should it not fall by its own gravity,) as seen in Fig. 3, to take the stump into the notch *d* of the tumbler. The continued turning of the key throws the bolt to its extreme outward position and takes the rear side, *f*, of the nose outside the stop N, as seen in Fig. 2, so that in that position the stump will be free to rise. As the bolt reaches its extreme thrown position, as seen in Fig. 2, the key leaves the tumbler, so that it is free to fall. The tumbler-spring then acts upon the tumbler to force it to its normal position, and as the notch of the tumbler is above the pivot of the tumbler it

bears against the forward side of the stump with a tendency to force the stump rearward; and, owing to the fact that the stump J is above the pivot I of the stump-plate, this rearward tendency of the stump, under the action of the tumbler, causes the stump with its plate to rise, so that the tumbler thus acting upon the stump will cause the stump to rise and escape from its notch, so as to rest upon the shoulder *a*, as indicated in Fig. 2. Then, when the key is applied to withdraw the bolt, its first operation is to raise the rear end of the tumbler and bring—say the notch *d*—into line with the stump. Then the forward face of the stop N will act upon the rear nose, *f*, of the stump-plate and cause the stump and its plate to descend (if it does not fall by its own gravity) and bring the stump into the notch *d*, so that the stump-plate may pass beneath the stop N, as represented in Fig. 3, on the return of the plate, and so soon as the bolt is brought to its extreme position the tumbler is free from the key, and under the action of its spring returns and forces the stump-plate upward, so as to take the stump from the notch and permit the tumbler to return to its normal position, as seen in Fig. 1. When the bolt is in the thrown position, as seen in Fig. 2, the rear nose or surface, *f*, of the stump-plate bears against the forward surface of the stop N, and therefore holds the bolt in the thrown position, in the same manner that the bolt was held in the drawn position, as seen in Fig. 1, and before described. In neither the thrown nor drawn position can the bolt be moved until the stump-plate is permitted to drop.

The one notch, *d*, of the tumbler is for one key, and the other notch, *e*, for the other key. The one key therefore must first turn the tumbler to bring the notch *d* into line with the stump, as seen in Fig. 3, and the other key will turn the tumbler, so as to bring the other notch, *e*, into line with the stump, as seen in Fig. 4.

The several tumblers have their respective notches arranged in different relation to each other, so that a different extent of movement is required for each tumbler. This is a device in tumbler-locks too well known to require particular illustration. The one tumbler fully illustrates the invention, it being understood that the principal key is constructed to bring one series of notches on the tumblers into line with the stump, while the master-key is constructed to bring the other series of tumbler-notches into line with the stump, and the master key notches are alike in the whole series of locks, while the principal key-notches differ throughout the series.

Under this construction it will be observed that the bolt is held in either its thrown or drawn position in the same manner, so that the same manipulation of the tumblers is necessary to either throw or draw the bolt.

While this construction of locks is specially adapted to master-key locks, it is to be understood that the construction is adapted to locks



which are not provided with a master-key—that is to say, in which the tumblers are constructed with only one notch each—say as the notch *d*—the other notch being omitted when a master-key is not desirable.

I have represented the stop for the stump as presenting inclined surfaces to the stump-plate, and this is desirable, that the stop may act as a cam to positively throw the stump-plate downward should gravity fail to do so.

I claim—

In a lock, the combination of a bolt guided within the case and free for longitudinal movement in throwing and drawing under the action of the key, a stump-plate, *H*, hung upon a pivot on said bolt, so as to move with the bolt, but yet free to swing vertically, the stump-plate constructed with a stump, *J*, at a

point above the pivot and projecting therefrom, one or more tumblers hung upon a pivot on the bolt at a point below the stump and so as to swing in a plane parallel with the plane of the stump-plate, the tumblers adapted to be engaged by the bit of the key and extending upward from the pivot, the tumblers constructed with a shoulder, *a*, to receive and support the stump in either the thrown or drawn position, and also constructed with one or more notches, into which notches the stump is adapted to drop, and a stop, *N*, in the case, substantially as described.

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Witnesses:

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