No. 771,584. PATENTED OCT. 4, 1904.

J. W. STEPHENS.

LOCK.

APPLICATION FILED FEB. 8, 1904.

NO MODEL.

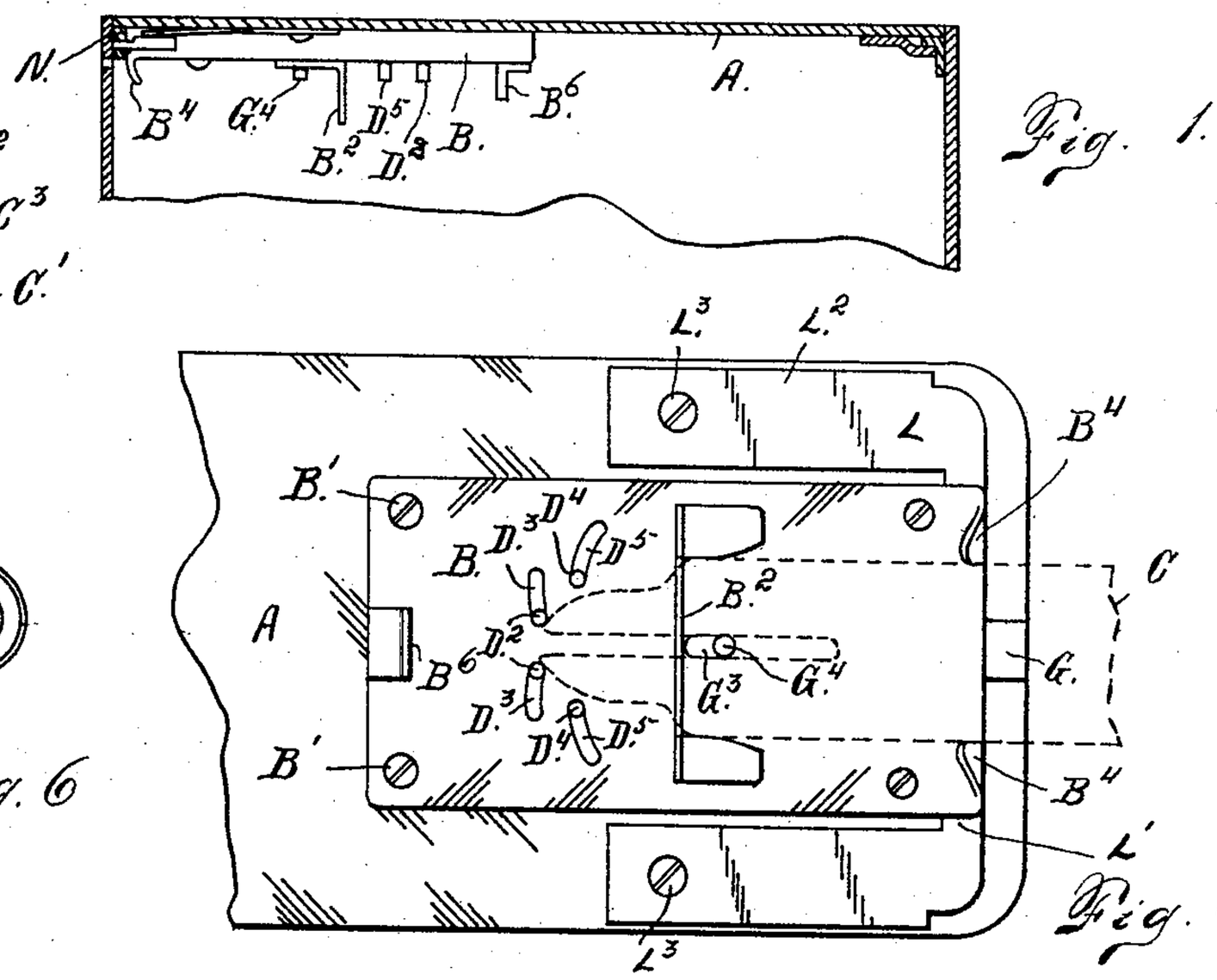
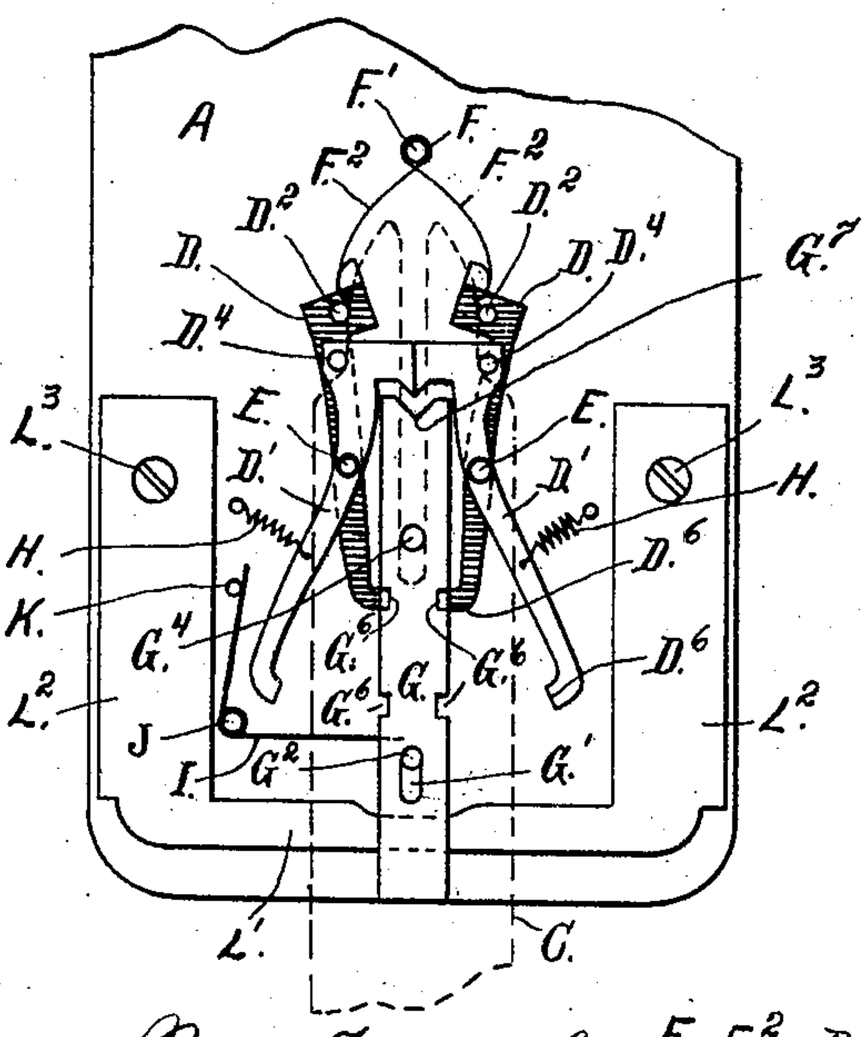


Fig. 1.

Fig. 6

Fig. 2.



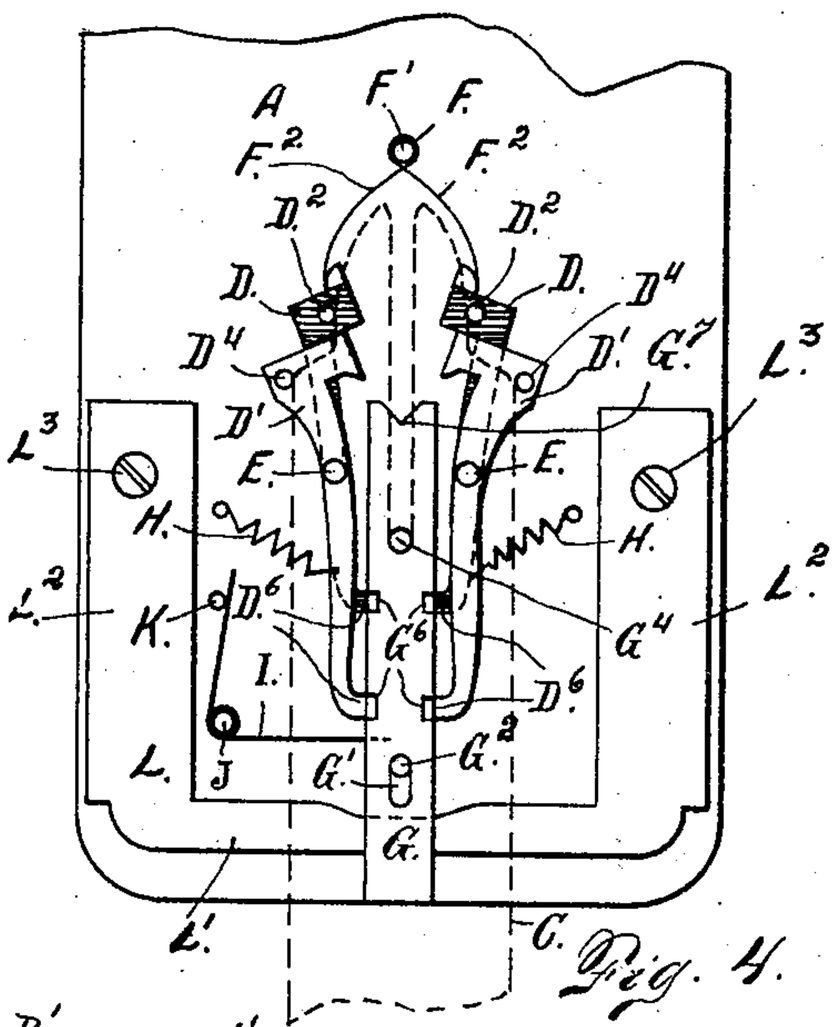


Fig. 3.

Fig. 4.

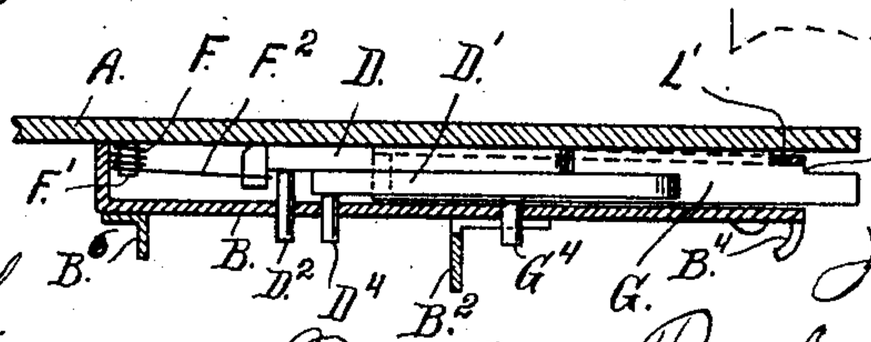


Fig. 5.

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No. 771,584. Patented October 4, 1904.

UNITED STATES PATENT OFFICE.

JOSEPH W. STEPHENS, OF DENVER, COLORADO.

LOCK.

SPECIFICATION forming part of Letters Patent No. 771,584, dated October 4, 1904.

Application filed February 8, 1904. Serial No. 192,652. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. STEPHENS, a citizen of the United States of America, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Locks; and I do 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 the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in locks, and while my improved locking mechanism may be employed in a great variety of relations where a locking function is required it has been devised by me more especially with reference to its use in locking the removable lid of a coin-receptacle adapted for use in connection with savings banks and by the depositors in these banks.

My object has therefore been to provide a lock which shall be sufficiently secure that it cannot be opened except by a person having a proper key, but which at the same time may be quickly opened by a person holding the key. It is important in a lock designed for the aforesaid purpose that the person at the bank who receives the coin-receptacle shall be able to open it almost instantly, since time is of great importance.

My further object has been to provide a device of this character which shall be exceedingly simple in construction, economical in cost, reliable, durable, and efficient in use; and to these ends the invention consists of the features, arrangements, and combinations hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a section taken through the lid and upper portion of a receptacle equipped with my improved locking mechanism. Fig. 2 is a fragmentary underneath view of the same, the parts being shown on a larger scale. Fig. 3 is an underneath view of the lid, showing the locking mechanism with the casing removed and showing one pair of tumblers operated. Fig. 4 is a similar view showing both pairs of tumblers operated. Fig. 5 is a section taken through the lid of the receptacle and the lock-casing, the lock mechanism being shown in elevation. Fig. 6 is a detail view of the key employed in connection with my improved lock.

The same reference characters indicate the same parts in all the views.

Let A designate the lid of the receptacle or other support upon which my improved lock is supported, and B the lock-casing secured to the under surface of the lid by screws B′. This lid is provided with a lip B^6, adapted to form a stop for the key employed, and also with a transversely-located depending plate B^2, slotted, as shown at B^3, adjacent the inner wall of the lid to receive the key C. This case is also provided with a pair of lugs B^4, located at its outer end on opposite sides of the keyway. The lugs B^4 on the plate B^5 guide the key in a direct line. This lock-casing conceals the locking mechanism, which, as shown in the drawings, includes two pairs of tumblers D and D′. Both pairs of tumblers are pivotally connected with the lid A by pins E. The tumblers D are provided with pins D^2, which protrude through slots D^3, formed in the lock-casing, while the tumblers D′ are provided with pins D^4, which protrude through slots D^5, formed in the lock-casing. The two tumblers D are connected with a spring F, coiled around a pin F′ and having two branches F^2, respectively engaging the inner extremities of the tumblers and having a tendency to hold them in the closed position or in such a position that their hook-shaped inner extremities occupy a position directly in front of the locking-bolt G. Two coil-springs H, respectively connected with the tumblers D′, have a tendency to hold the said tumblers in the closed position or that shown in Fig. 3 of the drawings. The bolt G is provided with a slot G′, through which passes a pin G^2, made fast to the lid A and limiting the movement of the bolt in both directions. Also made fast to the bolt on its inner surface and protruding through a slot G^3, formed in the lock-casing, is a pin G^4, located in a line intermediate the pins D^2

and D^4 of the tumblers. The bolt G is normally held in the locked position by a spring I, coiled around a pin J, fast in the lid, one extremity of the spring being connected with the bolt, while the other extremity bears against a stop-pin K, fast in the lid. The bolt is shown in the locked position in all the views. When it is moved to the unlocked position, it is held in said position by a spring L, having a transverse part L′ and two parallel arms L^2. The transverse part extends transversely of the outer extremity of the bolt and is located between the bolt and the inner surface of the lid. The arms L^2 are made fast to the lid at their inner extremities by screws L^3. The transverse part L^2 of this spring normally has a tendency to project downwardly from the inner surface of the lid, and as soon as the bolt is moved inwardly far enough to bring a shoulder G^5, formed thereon, to the inner edge of the transverse part of the said spring, the latter springs downwardly in front of the said shoulder and holds the bolt in the unlocked position until the transverse part of the spring is pressed toward the inner surface of the lid sufficiently to release the bolt.

Assuming that both sets of tumblers are in the closed position or in position of the one set of tumblers in Fig. 3 and also assuming that the bolt is in the locked position—that is to say, with its outer extremity projecting underneath a ledge N on the wall of the receptacle to be closed—if it is desired to throw the bolt to the unlocked position a key of the character shown in Fig. 6 is employed, and this key is inserted between the guides B^4 and through a guide-plate B^2. The key is also provided with a central slot C′, adapted to straddle the pin G^4 of the bolt, the key being in engagement with the outer surface of the lock-casing. The key is also provided with two sets of bevels, C^2 and C^3. The first set of bevels, C^2, is adapted to engage the pins D^2 of the tumblers D, while the second set of bevels, C^3, is adapted to engage the corresponding pins D^4 of the tumblers D′. As the key is moved inwardly the inner extremities of the tumblers D′ are first separated, after which the bevels or shoulders C^3 engage the pins D^4 of the tumblers D′ and separate the inner extremities of the last-named tumblers sufficiently to allow the bolt to move inwardly between the two sets of tumblers. As soon as the inner extremities of the tumblers are open or separated, as aforesaid, the closed extremity of the slot C′ of the key engages the pin G^4 of the bolt, and as the inward movement of the key continues the bolt is moved inwardly to the unlocked position, the spring L immediately springing in front of the shoulder G^5 and holding the bolt in the unlocked position, as aforesaid.

As a safeguard against the unlocking of the lock by the use of a key other than one made to fit the lock I have formed the outer extremities of the tumblers hook-shaped, as shown at D^6, and formed counterpart recesses G^6 in the opposite sides of the bolt, so that if a key too wide is inserted and the inner extremities of the tumblers open or separate too far their outer extremities will be thrown to engagement with the recesses of the bolt and lock the latter against inward movement when the closed extremity of the key-slot engages the pin G^4. I have made further provision against the unlocking of the device by a key not made for this purpose, since I have formed the inner extremity of the bolt with a V-shaped recess G^7 and have formed the adjacent inner extremities of the tumblers D′ with a counterpart V-shaped projection adapted to enter said V-shaped recess. Hence if a key is inserted which engages the pin G^4 before the inner extremities of the tumblers D′ are separated the inner extremity of the bolt will be forced against the V-shaped projection of the tumblers D′ and the bolt will be locked against further inward movement, since the tumblers cannot separate after their V-shaped projection has entered the counterpart recess in the end of the bolt.

Attention is called to the fact that one or more pairs of tumblers may be employed. I have shown two pairs of tumblers in the drawings. It must, however, be understood that the lock will be effective and operative with one pair of tumblers and also that more than two pairs of tumblers may be employed if greater security is required. The thickness of the bolt should be equal to the thickness of all the tumblers on each side of the bolt. It is evident that the tumblers may be very thin.

Having thus described my invention, what I claim is—

1. In lock mechanism, the combination with a suitable support, of a bolt slidably mounted on said support, and spring-held tumblers also mounted on the support and whose inner extremities normally project in front of the inner extremity of the bolt and in such position to prevent the inward or unlocking movement of the bolt until the tumblers have been separated, the inner extremities of the tumblers being provided with pins adapted to engage a suitable key inserted between them whereby they may be separated, substantially as described.

2. In locking mechanism, the combination with a suitable support, of a bolt slidably mounted on said support, a spring normally holding the bolt in the locking position, and a tumbler pivotally mounted on the support and having its inner extremity projecting into the path of the bolt when the latter is moved to the unlocked position, a spring connected with the tumbler to hold it in the normal position, and the tumbler being provided with a pin adapted to engage a key whereby the tumbler is thrown out of the path of the

bolt, the latter being provided with a pin located to form a stop for the key, whereby the bolt may be thrust inwardly after the tumbler has been moved out of the way.

3. In locking mechanism, the combination with a suitable support, of a bolt slidably mounted on the support, a spring normally holding the bolt in the locked position, another spring adapted to hold the bolt in the unlocked position, and spring-held tumblers pivotally mounted on opposite sides of the bolt and having parts normally projecting in the path of the inner extremity of the bolt and in such proximity thereto, that these parts of the tumblers must be separated before the bolt can be moved inwardly to the unlocked position, the tumblers being provided with pins adapted to be engaged by a key passed between them, whereby the parts of the tumblers in the path of the bolt, may be moved out of the way to permit the bolt to move inwardly to the unlocked position.

4. In locking mechanism, the combination with a suitable support, of a bolt movably mounted on said support, springs adapted to hold the bolt in the locked or unlocked position, spring-held tumblers pivotally mounted on the support and having parts normally occupying a position in the path of the bolt, the said tumblers being provided with pins, and a lock-casing having slots through which said pins protrude, whereby the pins occupy positions in the path of a suitable key applied to the lock-casing and moved inwardly, the lock-casing being provided with suitable key-guides, substantially as described.

5. The combination with a suitable support, of a bolt slidably mounted on the support and having recesses formed in its opposite sides, spring-held tumblers pivotally mounted on the support and having parts projecting in front of the bolt and in the path thereof as the latter is moved to the unlocked position, the tumblers being also provided with hook-shaped parts adapted to enter the recesses of the bolt, when the parts of the tumblers in the path of the bolt are separated too far, the parts of the tumblers in the path of the bolt and their hook-shaped parts, being located on opposite sides of their pivots.

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

JOSEPH W. STEPHENS.

Witnesses:

A. J. O'BRIEN,

DENA NELSON.