

LOCK.

APPLICATION FILED APR. 12, 1910.

973,920.

Patented Oct. 25, 1910.

2 SHEETS—SHEET 1.

Fig. 1

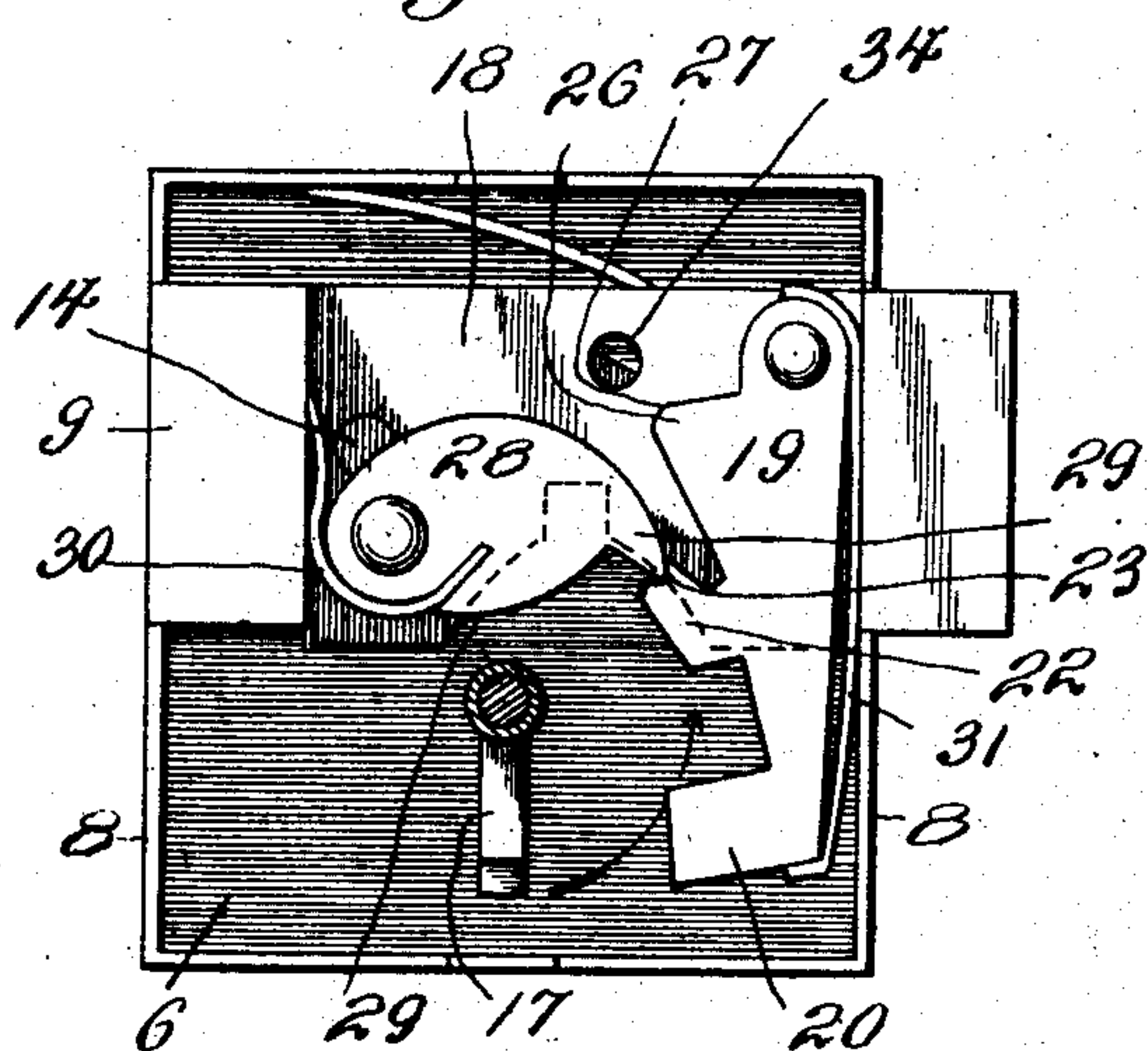


Fig. 2.

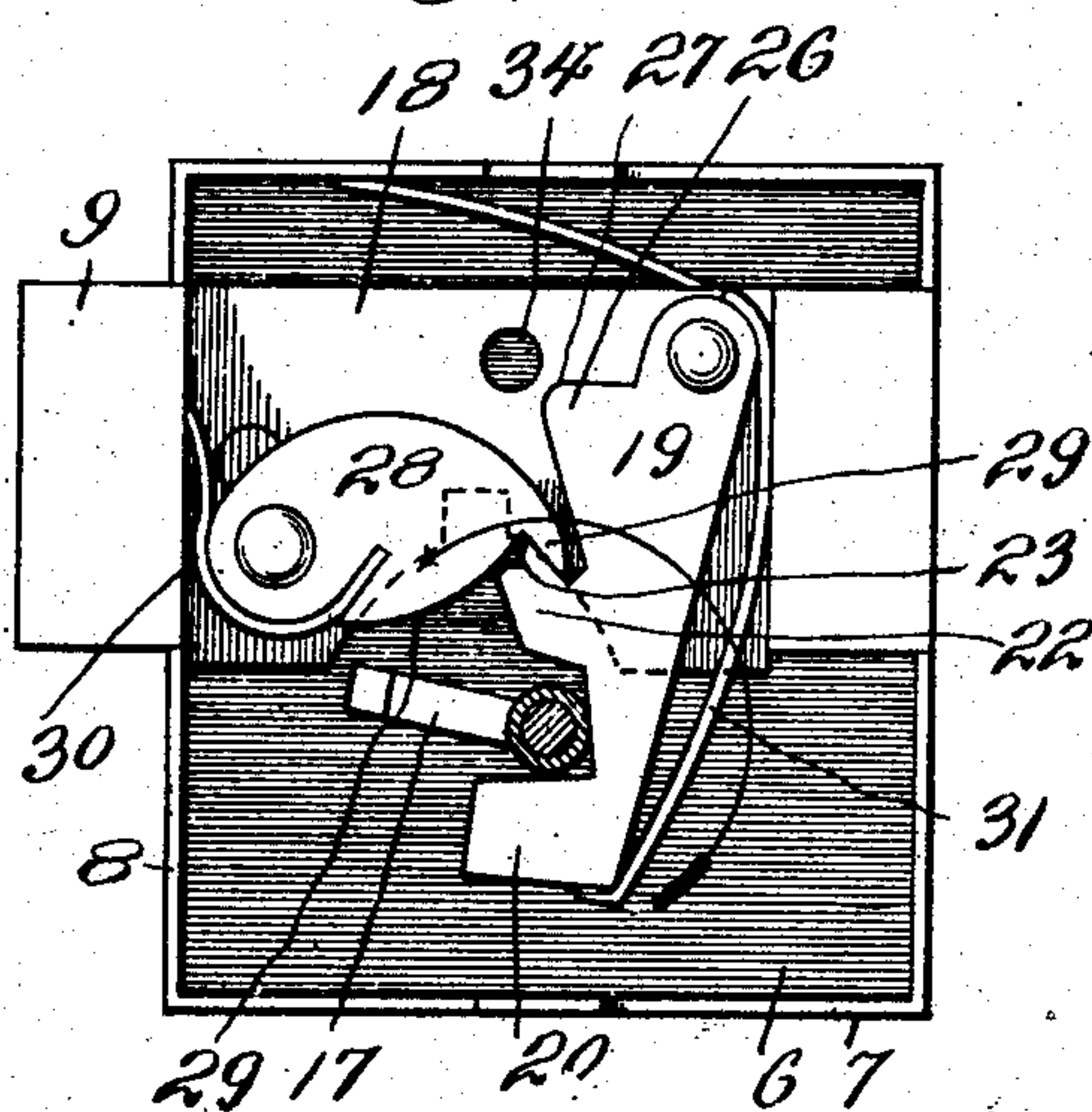


Fig. 3

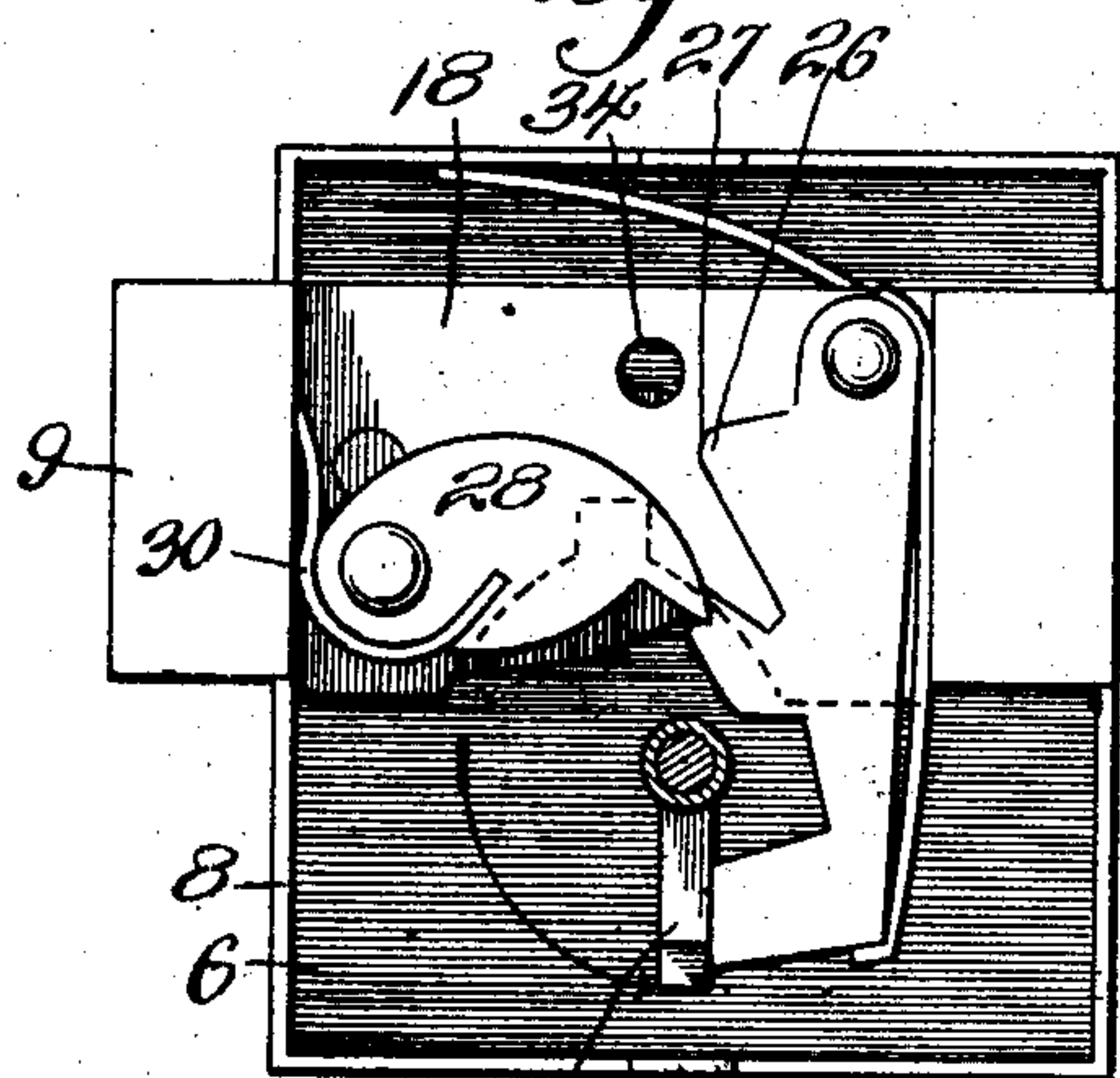


Fig. 4.

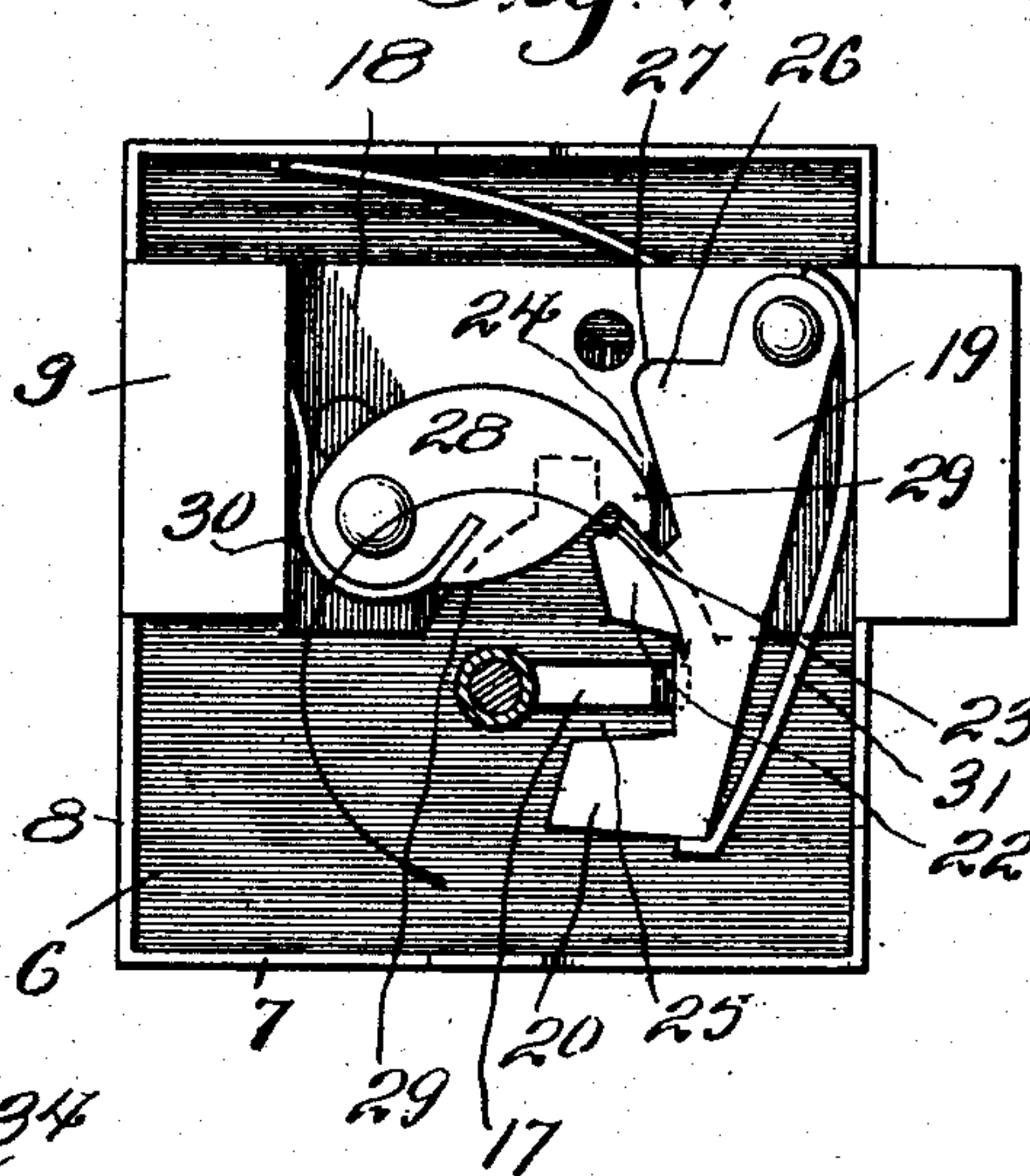
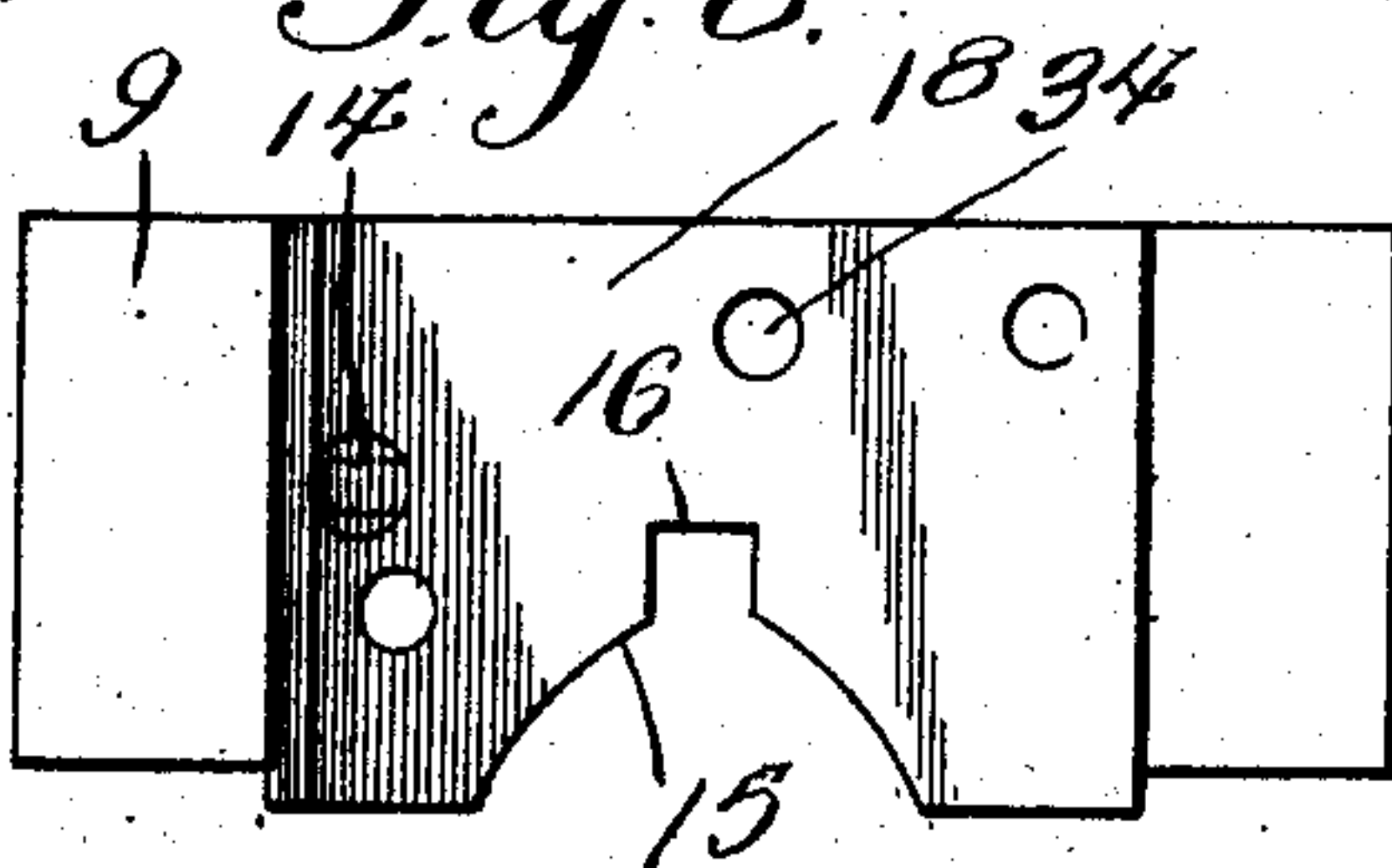


Fig. 8.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 5.

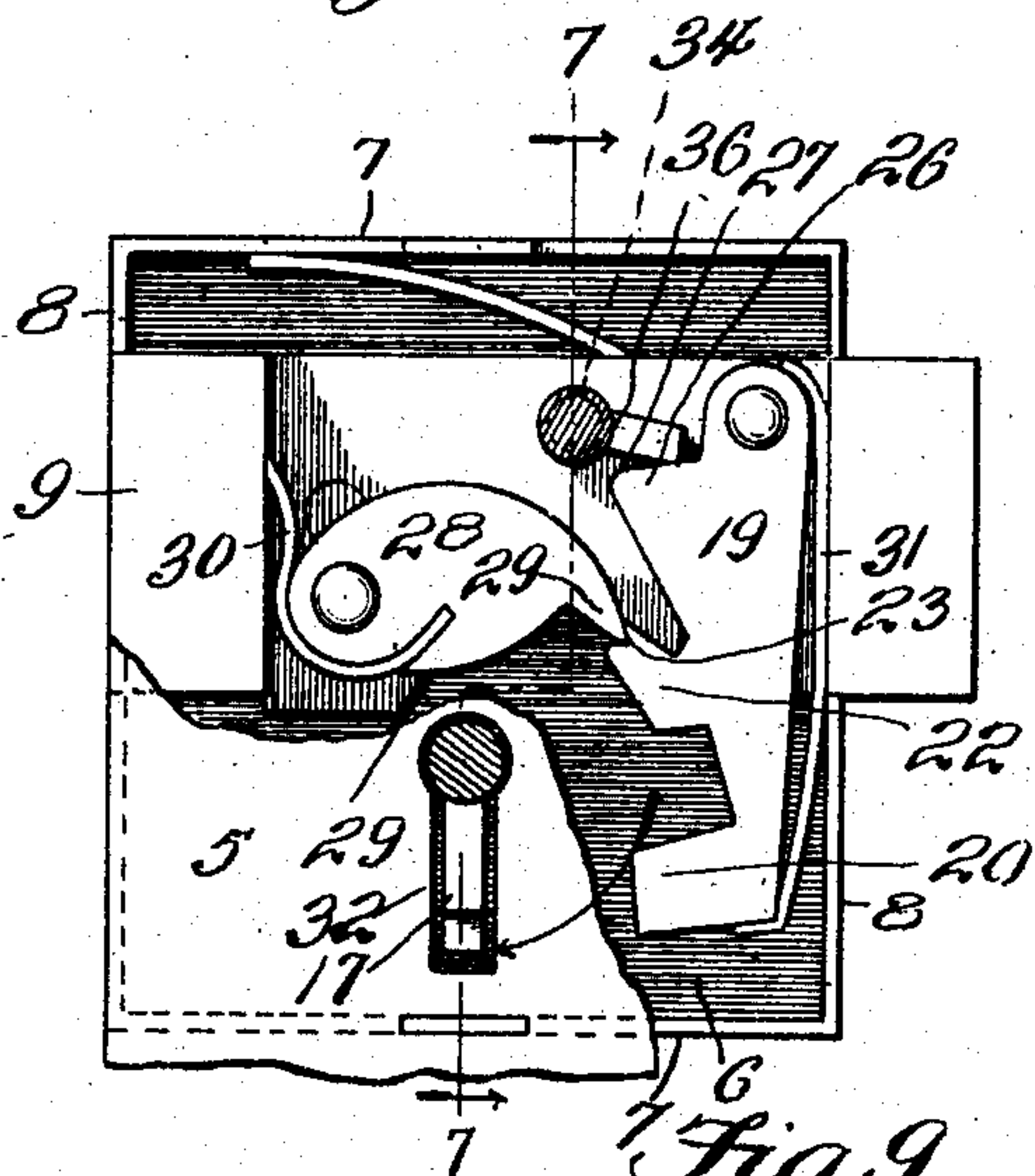


Fig. 6.

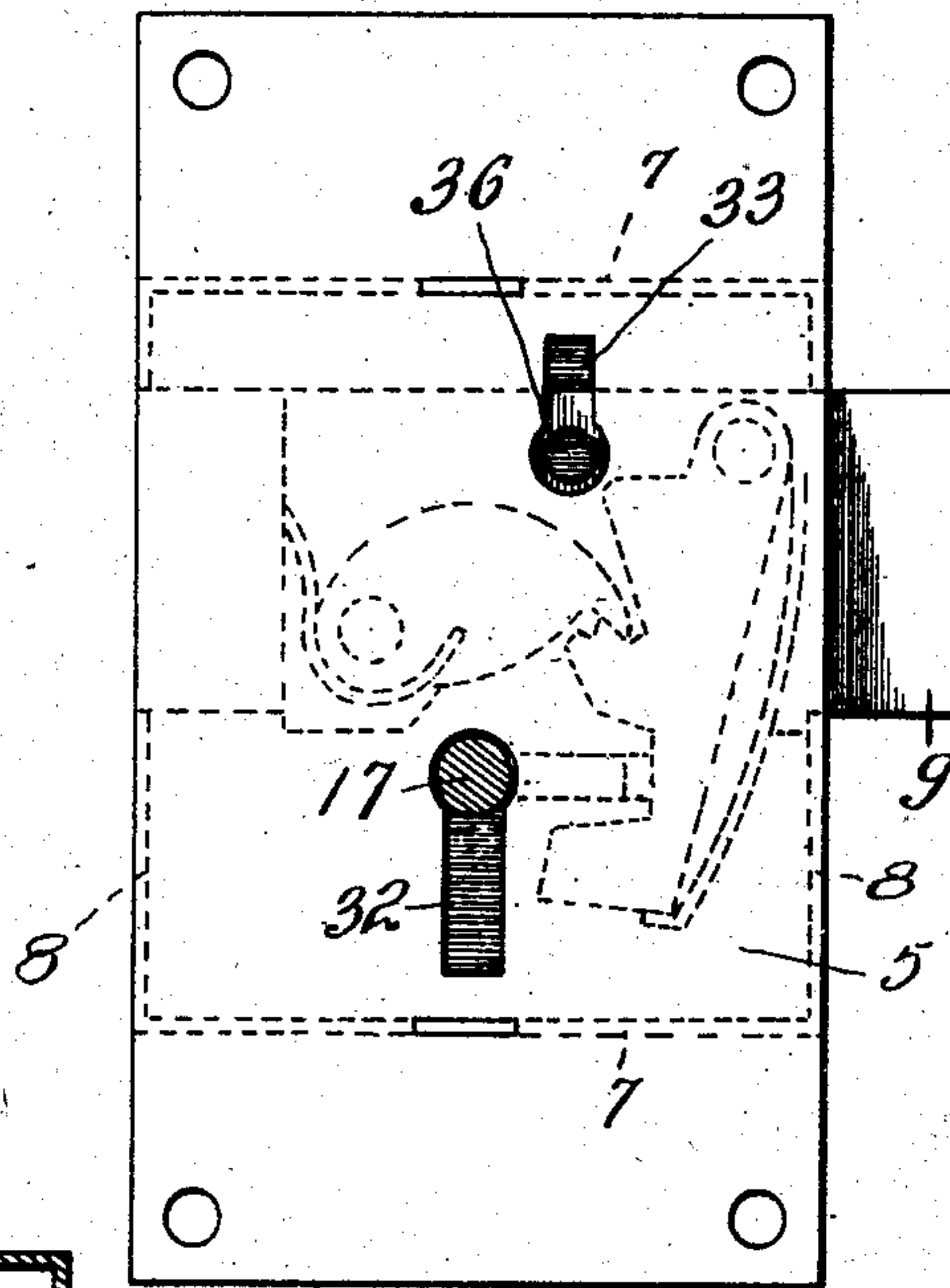


Fig. 7.

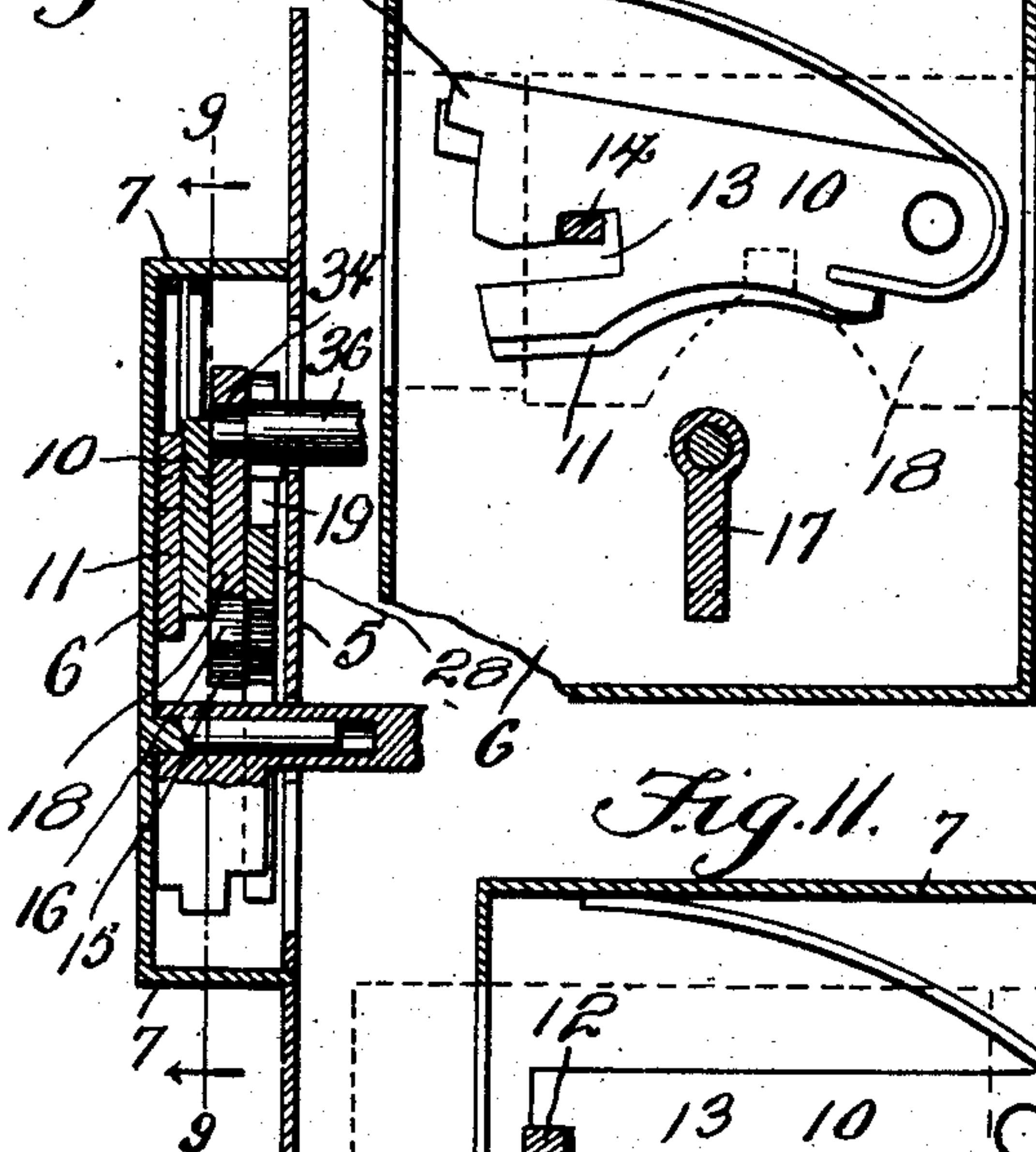


Fig. 9.

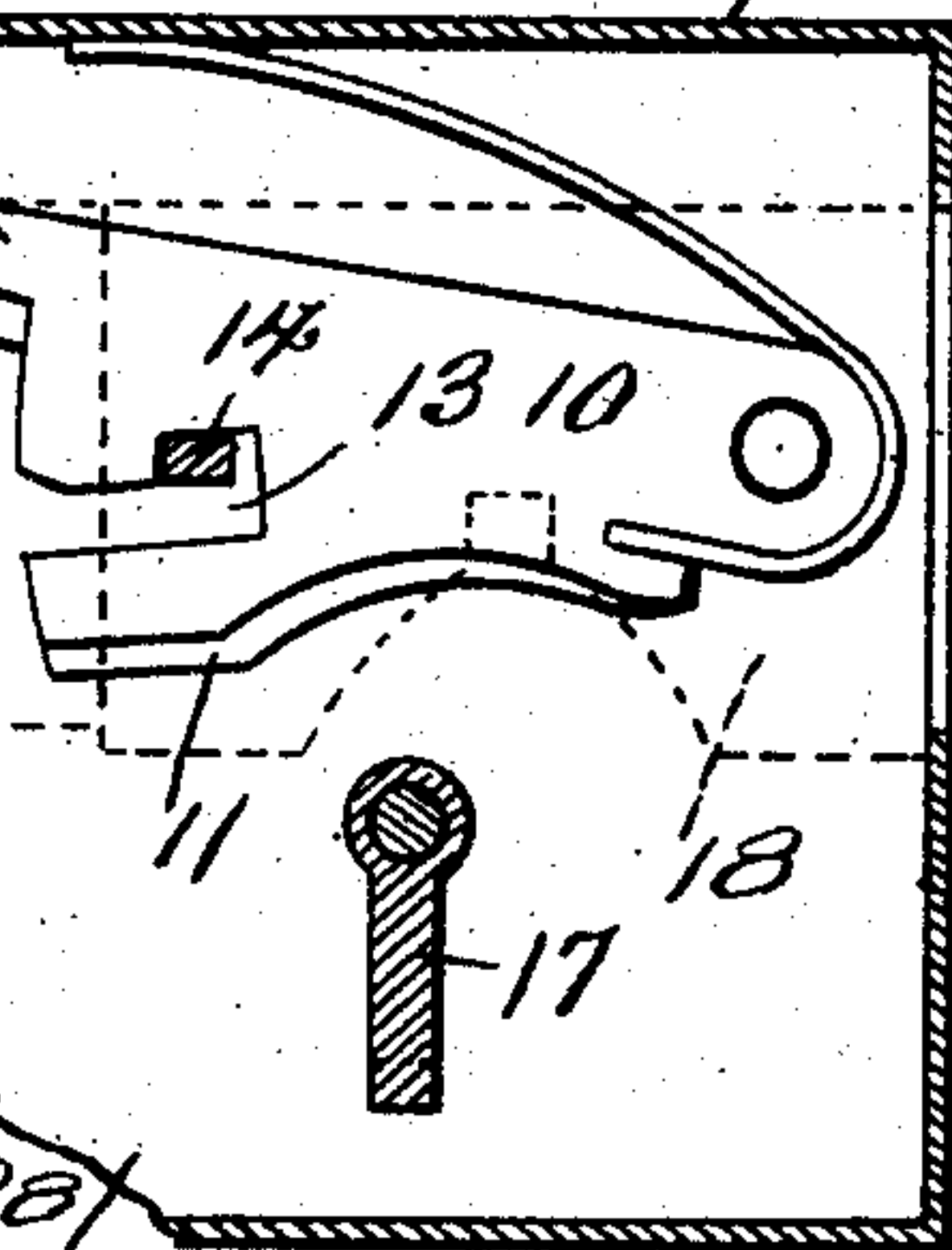


Fig. 10.

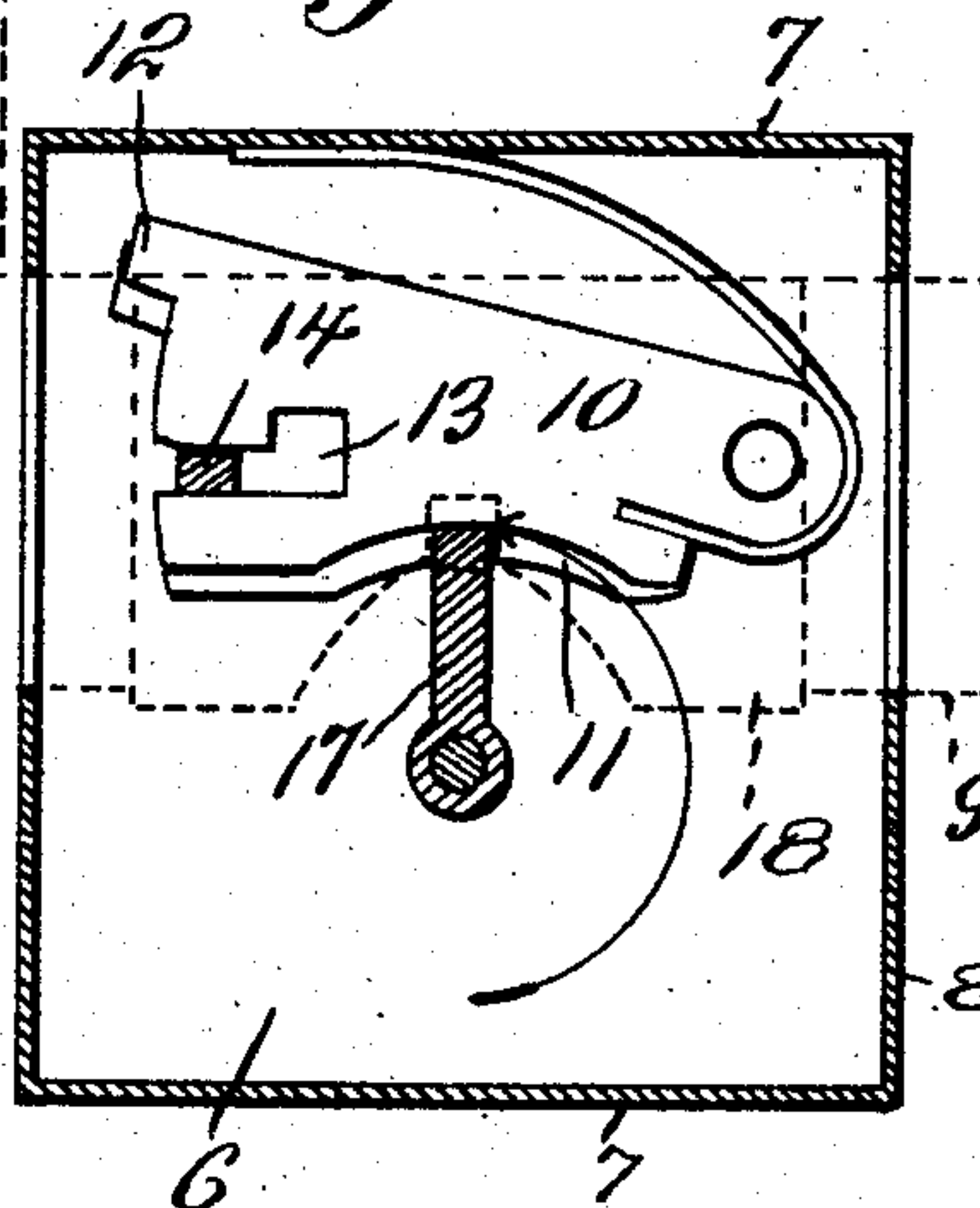
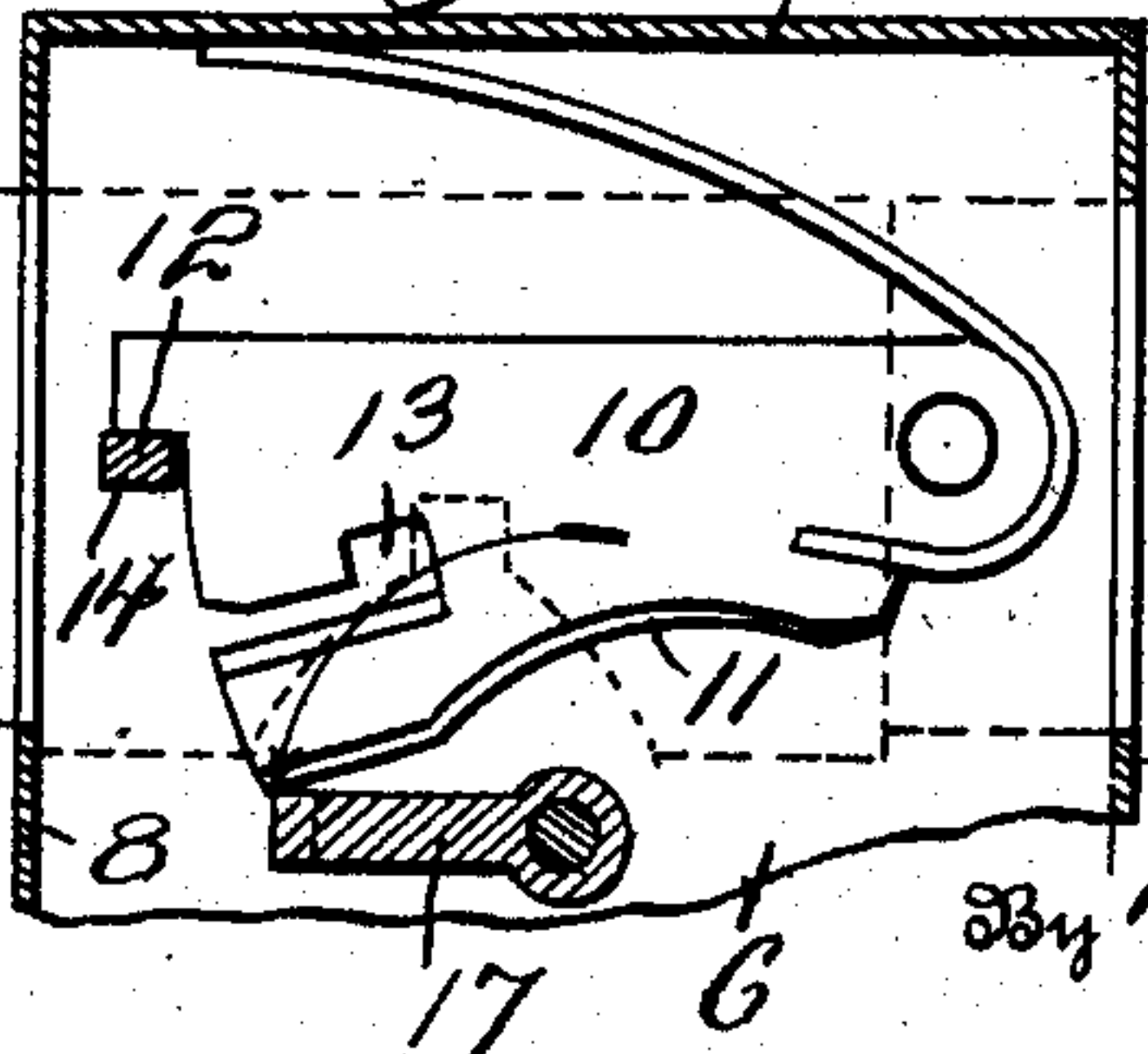


Fig. 11.



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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRED G. DIEHL, a citizen of the United States, residing at Selden, in the county of Sheridan and State of Kansas, have invented new and useful Improvements in Locks, of which the following is a specification.

This invention relates to improvements in locks and more particularly to the type employed with coat racks and analogous devices wherein a coat or other garment is locked in the rack and the key held by the owner of the coat.

One object of the invention is the provision of a lock constructed to permit a person to lock the device to which the lock is affixed and then withdraw the key, but upon the opening of the lock to firmly lock and prevent the key from being withdrawn therefrom by the operator, thus making it impossible for the operator to accidentally carry off the key after the lock has been opened.

With these and other objects in view, which will more fully hereinafter appear, the present invention consists in certain novel details of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings and more particularly pointed out in the appended claims; it being understood that various changes in the form, proportion, size, and minor details of the device may be made, within the scope of the appended claims, without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, forming a part of the specification;—Figure 1 is a front elevation of the device with one plate of the lock casing removed and showing the parts in unlocked position. Fig. 2 is a view similar to Fig. 1 but showing the position of the parts after the lock bolt has been moved to locked position. Fig. 3 is a similar view showing the position of the parts prior to withdrawing the key from the lock. Fig. 4 is a similar view showing the key in locked position. Fig. 5 is a front elevation partly in section showing the position of the parts after the key fastener has been moved by the master key from engagement with the bit of the operating key. Fig. 6 is a front elevation of the device showing the lock bolt in unlocked position and also showing in dotted lines the operating key engaged by the key fastener. Fig. 7 is a sec-

tional end view on the line 7—7 of Fig. 5 and looking in the direction of the arrows. Fig. 8 is a front elevation of the lock bolt. Fig. 9 is a sectional front elevation on the line 9—9 of Fig. 7 and looking in the direction of the arrows. Fig. 10 is a view similar to Fig. 9 but showing the position of the tumblers when the lock bolt is moving to locked position. Fig. 11 is a sectional upper end view showing the position of the parts when the full movement of the lock bolt to locked position has been completed.

Similar numerals of reference are employed to designate corresponding parts throughout.

The lock includes in its construction a casing comprising a front wall 5, and a rear wall 6, the said rear wall being somewhat less in length than the front wall and connected to the latter by opposite side and end walls designated by the numerals 7 and 8. The side walls 8 are provided adjacent to their upper ends with oblong openings in which are slidably fitted the opposite ends of the lock bolt 9. The lock bolt is spaced from the front and rear walls 5 and 6 and pivoted between one face of the lock bolt and rear wall 6 are a pair of superimposed tumblers designated by the numerals 10 and 11. These tumblers may be of any well-known construction and at their free ends are provided with forwardly extending lugs 12 and further provided at a point below the lugs with right angular shaped recesses 13, the said lugs and recesses cooperating with a stud 14 projecting laterally from the face of the lock bolt, to hold the said lock bolt against yielding movement both in open and closed positions. The lock bolt is provided on its lower side and at its medial portion with an arcuate-shaped recess 15, the highest point in said recess being a trifle above the lower sides of the tumblers 10 and 11, the medial portion of said recess being provided with a socket 16 to receive the bit 17 of a key when the latter is moving the lock bolt to open and closed positions. The lock bolt 9 is provided on that surface adjacent to the front wall 5 with a transverse recess 18 extending for the greater portion of the length of the lock bolt.

What will subsequently be termed a key fastener is shown to include an elongated shank portion 19 of greater length than the width of the lock bolt and having one end pivoted adjacent to one of the upper cor-

ners of the recess 18, as clearly shown in the drawings. The lower end of the shank 19 terminates in a lateral extension 20 extending toward the remote side of the casing. Formed on the shank 19 and directly above and spaced from the lug 20 is an upwardly inclined angular-shaped tooth 22, the extremity of which is provided with a detent 23, the upper side of the said tooth 22 being in alinement with one side of the arcuate-shaped recess 15 in the lock bolt 9, while the detent 23 is in alinement with the extremity of the lug 20, or substantially so. That portion of the side of the shank 19 located above the tooth 22 is provided with a converging recess 24, the inner end of which is in alinement with the recess 25 formed by the spacing of the lug 20 and tooth 22. The upper side of the recess 24 inclines upwardly and outwardly to a point substantially in a plane with the pivot point of the key fastener, whereby an arm 26 is provided one side of which is formed by the outwardly inclined side of the recess 24, and the upper side of which is at right angles to the longitudinal line of the shank, the juncture of said sides being rounded, as shown at 27.

The locking dog is designated by the numeral 28, and has one end pivoted adjacent to that end of the recess 18 remote from the end in which the key fastener is pivoted. The dog is of less length than the length of the recess and its free end terminates in a tooth 29, adapted to engage with the detent 23 when the key fastener depends vertically downward, as shown in Figs. 1, 3 and 5. The lower side of the dog 28 is rounded as shown at 29 and extends below the side of the arcuate-shaped recess 15. The dog 28 is actuated by a leaf spring 30, one terminal of which is anchored in the dog and the opposite terminal bearing on the adjacent end of the recess 18, the said spring operating to force the toothed end of the dog downwardly.

Located between the key fastener and adjacent end of the recess 18 is a bow-spring 31, which bears on the end of the recess and has its opposite end secured to the upper and lower ends of the shank 19 of the key fastener, the said spring operating to move the key fastener toward the dog 28.

The front plate 5 of the casing is provided with the usual key-hole slot 32, which is positioned below the lock bolt 9 and located on the medial line of said front plate. The said front plate is further provided with a key-hole slot 33 located at a point considerably above the key-hole slot 32 and in alinement with the upper side portion of the lock bolt 9, and adjacent to that end of the latter on which the key fastener is pivoted, as clearly shown in the drawings.

The lock bolt 8 is provided with a circular opening 34 to aline with the key-hole slot

33 when the lock bolt is in unlocked position.

By reference to the drawings it will be seen that the lateral extension 20 at the lower end of the key fastener is in alinement with the lower end portion of the key-hole slot 32, and it will be evident, assuming that the parts are in position, as shown in Fig. 1, *i. e.*, with the lock bolt in unlocked position that a key provided with a properly shaped bit such as shown at 35 inserted through the key-hole slot 32, will, when turned in the direction of the arrow shown in Fig. 1, move upwardly and engage with the lower curved side of the dog 28 and also with the curved lower sides of the tumblers 10 and 11. As the bit continues to rotate the dog will be lifted from engagement with the detent in the tooth 22 thus permitting the key fastener to move toward the dog and the tooth 29 on the latter to enter the recess 24, as shown in Fig. 2. At the same time the lower end of the key fastener will move over the key-hole slot 32 and the end of the bit 35 of the key enter the socket 16 in the lock bolt. Further turning movement of the bit will result in the key bolt moving to locked position and the stud 14 on the latter moving out of the recesses 13, as shown in Fig. 10, and thence to the positions shown in Figs. 2 and 11. As the bit is further turned it engages with the end of the extension 20 overlying the key-hole slot 32, thus moving the key fastener to its original position in engagement with the dog, as shown in Fig. 3, whereby the key may be withdrawn and the lock bolt remain in locked position.

When moving the lock bolt to open position the key is inserted in the key-hole slot 32 in the manner before described but turned in a direction opposite as shown by the arrow in Figs. 4 and 5. It will be evident when the bit 17 moves a short distance it will engage with the lower curved side of the dog 28, whereby the latter will be moved from engagement with the key fastener and at the same time the bit will enter the recess 16 in the lock bolt and move the latter to unlocked position and the stud 14 to the position shown in Fig. 9. As the bit 17 moves from engagement with the recess 16 it moves the key fastener toward the adjacent side of the casing against the action of the spring 31 and thence descends into the notch or recess 25 between the lateral extension 20 and arm 22. It will be seen when the bit enters the recess 25 the extension 20 will have moved toward the key-hole slot 32, and engage with the bit 17, as shown in Figs. 4 and 6, whereby further movement of the bit in either direction will be positively prevented. It will be evident now that the key is fastened within the lock and its extraction impossible until the key fas-

tener is moved from engagement with the bit 17.

In order to move the key fastener from engagement with the key 17 a master key 36 is employed. This member is insertible through the key-hole slot 33 and thence through the circular opening 34 which aligns with the said key-hole slot when the lock bolt is in unlocked position. Owing to the position of the projection 26 at the upper end portion of the key fastener, it will be evident when the master key is turned and the bit thereof engages with the projection 36 that by turning the master key will result in the key fastener moving toward the adjacent side of the casing, and the tooth 29 entering the detent 23, thus locking the key fastener in position and permitting the first-named key to be turned and extracted from the key-hole slot 32.

From the foregoing, it is evident that I have provided a device which is comparatively simple in structure and inexpensive in manufacture, embodying few parts and these so arranged that the danger of derangement will be reduced to a minimum.

I claim:—

1. In a lock the combination with a casing and lock bolt; of a key fastener pivoted to the lock bolt and adapted to yield under the action of the key bit during the operation of moving the lock bolt to locked position and to positively engage the key bit when the lock bolt moves to unlocked position.

2. In a lock the combination with a casing and lock bolt; of a spring-actuated key fastener pivoted to the lock bolt and provided with means to engage with the bit of a key and yield under the action of said bit during the operation of the lock bolt moving to locked position, the said means positively engaging the key bit when the lock bolt moves to unlocked position.

3. In a lock the combination with a casing and lock bolt; of a spring-actuated key

fastener pivoted to the lock bolt and provided with means to engage with the bit of a key and yield under the action of said bit during the operation of the lock bolt moving to locked position, the said means positively engaging the key bit when the lock bolt moves to unlocked position, and means for holding the key fastener inoperative when the lock bolt is in locked position.

4. In a lock the combination with a casing and lock bolt; of a spring-actuated key fastener pivoted to the lock bolt and provided with means to engage with the bit of a key and yield under the action of said bit during the operation of the lock bolt moving to locked position, the said means positively engaging the key bit when the lock bolt moves to unlocked position, and a pivoted spring-actuated dog adapted to engage with the key fastener and hold the same inoperative when the lock bolt is in locked position.

5. In a lock the combination with a casing and lock bolt; of a fastener pivoted to the lock bolt, and a member pivoted to the lock bolt and adjacent the key fastener and operable by the bit of a key to release the key fastener to engage with the bit of a key when the lock bolt has been moved to unlocked position.

6. In a lock the combination with a casing and a lock bolt; of a spring-actuated key fastener pivoted to the lock bolt, and a spring actuated dog pivoted to the lock and adapted to engage with the key fastener, said dog being operable by the bit of the key to release the key fastener to move into engagement with the bit of the key when the lock bolt moves to unlocked position.

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

FRED G. DIEHL.

Witnesses:

JOHN GOODWIN,
CHARLES C. MALCOLM.