

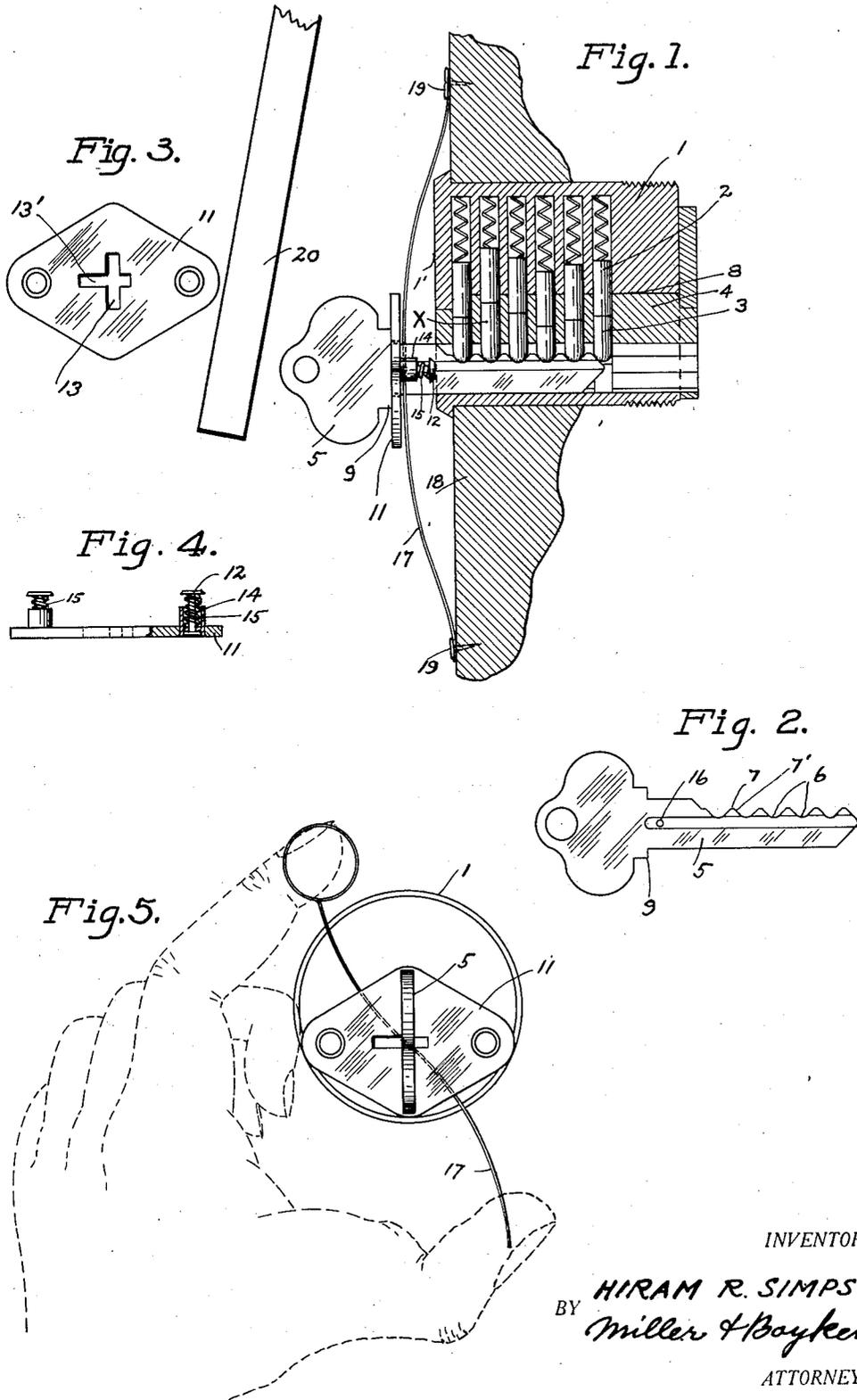
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LOCK DEVICE

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LOCK DEVICE.

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This invention relates to a lock device for use in connection with locks of the pin tumbler type, and the objects of the device are to provide means whereby a locksmith
5 may open such a lock when the keys are lost, and avoid the injury or destruction of the lock as now generally necessary under the circumstance mentioned.

The invention is based on a method of
10 violently throwing the inner or lower set of tumblers against the outer or upper set until the outer tumblers are driven one by one to the point of release, and of so holding them until all are released, and of then
15 turning the revoluble inner plug of the lock so that it may be further turned by hand to unlock or release the same.

One embodiment of the invention is shown in the accompanying drawings, Figure 1 being a vertical cross section through a pin
20 tumbler lock with my invention applied thereto.

Figure 2 is a side elevation of a special tumbler throwing slug for use therein. Figure 3 is a front view of the resilient retracting device, Figure 4 an edge view thereof partly in section, while Figure 5 is a front
25 view of the showing of Figure 1 as held in operative position by the fingers of an operator's hand.

In further detail the drawings show a pin
30 tumbler lock 1 of any of the types in popular use as provided with an outer or upper set of tumblers 2 in the fixed portion of the lock and an inner or lower set of coinciding tumblers 3 in the revoluble plug 4 of the lock.

Locks of this type are made with slight
35 variation of construction by a variety of manufacturers but all embrace the same characteristics in that the unequal length tumblers in the revoluble plug must be raised to unequal heights by a proper key so that the meeting ends of all tumblers align
40 at the parting line 8 between the fixed portion of the lock and the revoluble plug so that the latter may be turned to unlock the lock.

Such locks are made with various numbers
45 of tumblers, and with various shapes or cross sections of keys fitting similarly shaped or warded key slots as well understood.

My apparatus for opening the representative
50 lock shown in the drawing comprises a special slug key 5 of the proper cross section

to fit the slot and provided with a row of notches 6 spaced to match the spacing of the tumblers of the lock in question, the same
55 as the notches of an actual key for the lock with the exception that the notches are preferably all of the same depth as indicated, thus being unlike a key for the same lock.

Another point of distinguishment is the fact that tops of the projections 7 are preferably all of the same height, and the greatest
60 height of any of them must be less than would raise the longest tumbler, (the one marked X in the present showing) above the
70 parting line 8.

Still another feature is that the shank instead of having a shoulder to seat against the outer face of the lock for aligning the
75 tumblers with the notches, has a shoulder 9 set quite a distance outward from the face 1' of the lock.

Such a key slug device as far as described is incapable of opening a lock of this type, but it is rendered operative by means of a
80 plate 11 resiliently supporting the key in notched alignment with the tumblers by means of a pair of spring legs 12 bearing against the face of the lock and the shoulder 9 of the key resting upon the plate.

The plate 11 is slotted at 13 to freely pass
85 the shank of the key and the legs 12 are slidable in bosses 14 secured to the plate and arranged for sliding motion therein limited by the heads on each end but always urged against the lock by small stiff spiral compression
90 springs 15 located within the bosses.

Thus by pressing inward upon the end of the slug key it may be forced inward to substantially bring the apices of the projections
95 7 under the tumblers but no further, and when released will be at once thrown outward by the springs 15 to the original position.

A cross slot 13' is also provided in the plate 11 for use on padlocks so as to provide
100 for getting a bearing for the two legs 12 upon the same.

The shank of the slug key is provided with a small hole 16 at a point just below the
105 plate 11 and through which is passed a very thin spring wire 17. This wire is normally straight, is preferably looped at one end as shown, and is secured at its ends against the door 18 either by small tacks 19 as shown
110 in Figure 1 or pressed thereagainst by the fingers of one hand as indicated in Figure 5.

In any event the inward pressure of this

spring on the key in being arched against the door is less than the outward pressure of the spring legs, and the wire spring 17 is also given a slight twist toward the releasing direction of the lock before securing in place so that it has a slight tendency to rotate the key in the direction of unlocking.

When in this position, and as shown in Figure 1 a few taps upon the end of the slug key by any suitable means, such for instance as the rod 20 will elevate the tumblers to the parting line and slightly revolve the plug 4 so that a further turn will open the lock.

This result is effected by the wedging action of surfaces 7' of the projections throwing the lower or inner tumblers upward or outward as small hammers until one by one the upper or outer tumblers are driven to the parting line and there held by the slight rotative tension of spring 17 on the plug 4 as each tumbler in turn becomes released.

A slug key device as shown in the drawing will release any lock of this type in which it may be inserted and of any number of tumblers of less or up to the number of the projections 7, and thus a few of the slug key devices to suit the warded slots of standard locks will open many thousands of locks of this type.

In considering my invention attention is called to the fact that a new method of opening keyless pin tumbler locks is disclosed, and that the precise arrangement of springs, spring legs etc. may be varied considerably by anyone skilled in the art and yet function in accordance with this method and therefore in my appended claims any such modifications as may come within the spirit of the invention are intended to be covered.

I claim:

1. Apparatus for releasing a pin tumbler lock of the character described which comprises a slug key provided with substantially uniform notches to receive the tumblers and adapted for longitudinal movement into the key slot beyond the seating position of the tumblers in the notches.

2. Apparatus for releasing a pin tumbler lock of the character described which comprises a slug key provided with tumbler raising projections none of which will raise

a tumbler above the releasing line of the revolvable plug, and said slug key being adapted for axial movement into the lock beyond the position of seating the tumblers between said projections.

3. Apparatus for releasing a pin tumbler lock of the character described which comprises a slug key provided with substantially uniform notches and tumbler raising projections none of which will raise a tumbler above the releasing line of the revolvable plug, and said slug key being adapted for axial movement into the lock beyond the position of seating the tumblers between said projections.

4. A structure as specified in claim 1 plus means for resiliently supporting the slug key in the slot of the lock for reciprocatory movement.

5. A structure as specified in claim 1 plus means for resiliently supporting the slug key in the slot of the lock for reciprocatory movement and means for imparting torque to the revolvable plug of the lock.

6. A structure as specified in claim 1 plus means for withdrawing the slug key from a position in the slot beyond the position of seating of the tumblers in said notches.

7. A structure as specified in claim 1 plus means for applying reciprocatory motion to the slug key in the slot.

8. A structure as specified in claim 1 plus means for applying reciprocatory motion to the slug key in the slot and for applying a resilient torque to the revolvable plug of the lock.

9. A structure as specified in claim 1 plus a slotted plate through which the key shank passes, a shoulder on the key seated against said plate, and spring means on the plate forcing the same outward from the face of the lock.

10. A structure as specified in claim 1 plus a slotted plate through which the key shank passes, a shoulder on the key seated against said plate, and spring means on the plate forcing the same outward from the face of the lock and said shank being pierced at a point between said plate and the outer face of the lock.

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