(No Model.)

J. W. TOOPS.

GRAVITY LATCH.

No. 485,724. Patented Nov. 8, 1892.

Fig. 1.

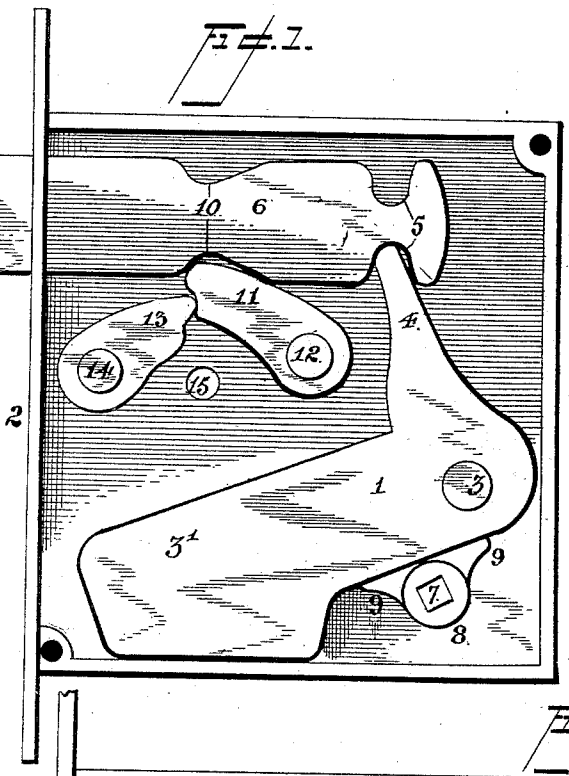


Fig. 3.

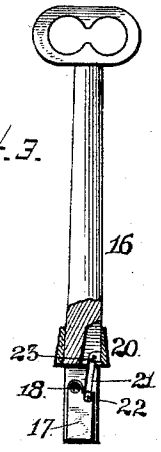


Fig. 4.

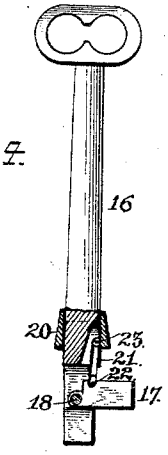


Fig. 5.

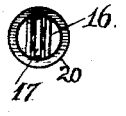
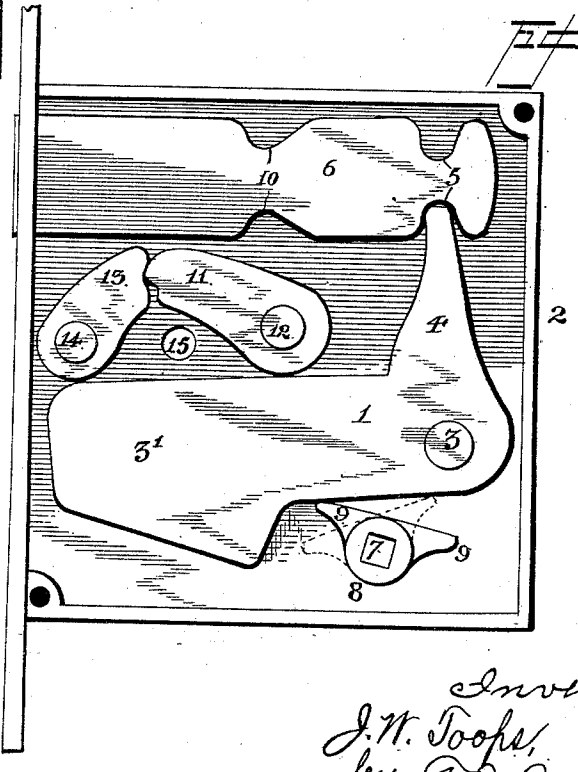


Fig. 2.



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UNITED STATES PATENT OFFICE.

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GRAVITY-LATCH.

SPECIFICATION forming part of Letters Patent No. 485,724, dated November 8, 1892.

Application filed February 17, 1892. Serial No. 421,810. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. TOOPS, a citizen of the United States, residing at Kiousville, in the county of Madison and State of Ohio, have invented certain new and useful Improvements in Gravity-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 figures of reference marked thereon, which form a part of this specification.

Figure 1 is a side elevation of the interior of a lock embodying my invention, showing the bolt locked. Fig. 2 is a similar view with bolt unlocked. Fig. 3 is a side elevation of the key in position to be inserted in the lock. Fig. 4 is a side elevation of the key when pushed into the lock. Fig. 5 is an end view of the key.

My invention relates to locks.

The object of my invention is to do away with all springs in the construction of my improved lock.

For these purposes my invention consists in the following construction and combination of the parts, which will be first fully set forth and described, and the features of novelty then set forth in the claim.

The invention consists entirely of a gravity-lock, no springs being used in its construction.

1 represents the latch-operating lever or tumbler pivoted in the lock-casing 2 by a pivot 3. The arm 3′ of this lever is weighted, as shown, and its downward movement is limited by the lock-casing or by any suitable stop. The arm 4 of the tumbler 1 projects upwardly, its extremity resting within a notch or recess 5 in the sliding bolt or latch 6.

7 is the knob-spindle, and 8 is a rock-bar carried thereon within the lock-casing 2. This rock-bar has oppositely-projecting ears 9, the operation of which will be hereinafter described.

6 represents the locking bolt or latch or both combined.

5 are the opposite notches or recesses within which the tumbler 1 operates.

10 are the oppositely-disposed notches in the bolt 6, within which the bolt-locking tumbler rests.

11 is the bolt-locking tumbler pivoted to the casing at 12, and 13 is the pivoted tumbler which engages the bolt-locking tumbler 11 when the latter is thrown into the notch 10 on the main bolt 6.

14 is the pivot of the tumbler 13.

15 is the keyhole of the lock, which may be of any desired configuration, in accordance with the kind of key employed.

16 represents the key, which is of novel construction. This key is slotted at its outer end to receive a tumbler-operating arm pivoted therein, so as to lie within the stem of the key when inserted in the keyhole, and caused to swing outwardly after being inserted.

17 is the tumbler-operating arm pivoted at 18 in the slotted extensions of the key.

20 is a ring or band sliding upon the stem of the key, and 21 a short link pivoted at 22 to the tumbler-operating arm 17, and at 23 to the sliding ring 20.

The tumbler-operating arm 17 may be notched or fashioned in any suitable way to adapt itself to the style or configuration of the lock-operating tumblers of the lock which it is made to operate. This key is not only adapted to the present lock which I have herewith shown, but also to a great variety of other styles and types of locks, as will be clearly apparent. In like manner the tumblers 11 and 13 of the lock may be variously formed along their key-operating edges to adapt them to particular styles of keys.

It should be clearly understood that all three of the tumblers 1, 11, and 13 operate solely by gravity, there being no springs employed.

In operation the rotation of the knob-spindle in either direction causes one or the other of the ears 9 on the rock-bar 8 to engage the tumbler 1, causing it to withdraw the bolt or latch 6. When the knob-spindle is released, the weighted tumbler 1 causes the bolt 6 to be shot outward into engagement. When it is desired to lock the bolt or latch in the last-named position, the key is inserted in the hole 13 and pushed inward until the ring 20 thereon strikes the keyhole-guard or side of the lock. This ring slides backward, carry-

ing with it the link 21, and swinging the key-operating arm 17 at right angles, when it is in position to engage the tumbler 11 and raise it into the notch 10, the tumbler 13 falling at the same time into locking engagement with the tumbler 11, and the latter held firmly within the notch 10.

In unlocking the bolt 6 the key is inserted in a similar manner and turned in the opposite direction. It impinges first the tumbler 13, throwing it out of locking engagement with the tumbler 11 and allowing the latter to fall against it, so that the bolt is free to vibrate. In both the locking and unlocking movements the tumblers 11 and 13 act as a mutual support and stop in limiting each other's movements.

I have illustrated my invention in connection with a mortise-lock; but it is obvious that it may be applied to outside or any other style of lock for which my improvements may be found applicable.

I claim—

The combination, in a lock, of a casing, a sliding bolt or catch, a bolt or latch operating gravity-tumbler, a knob-spindle having means for operating said tumbler, a pivoted gravity-locking tumbler adapted to engage the bolt or catch, and a pivoted locking-tumbler adapted to engage and support the last-named tumbler in both its locked and unlocked positions, substantially as set forth.

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

J. W. TOOPS.

Witnesses:
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