

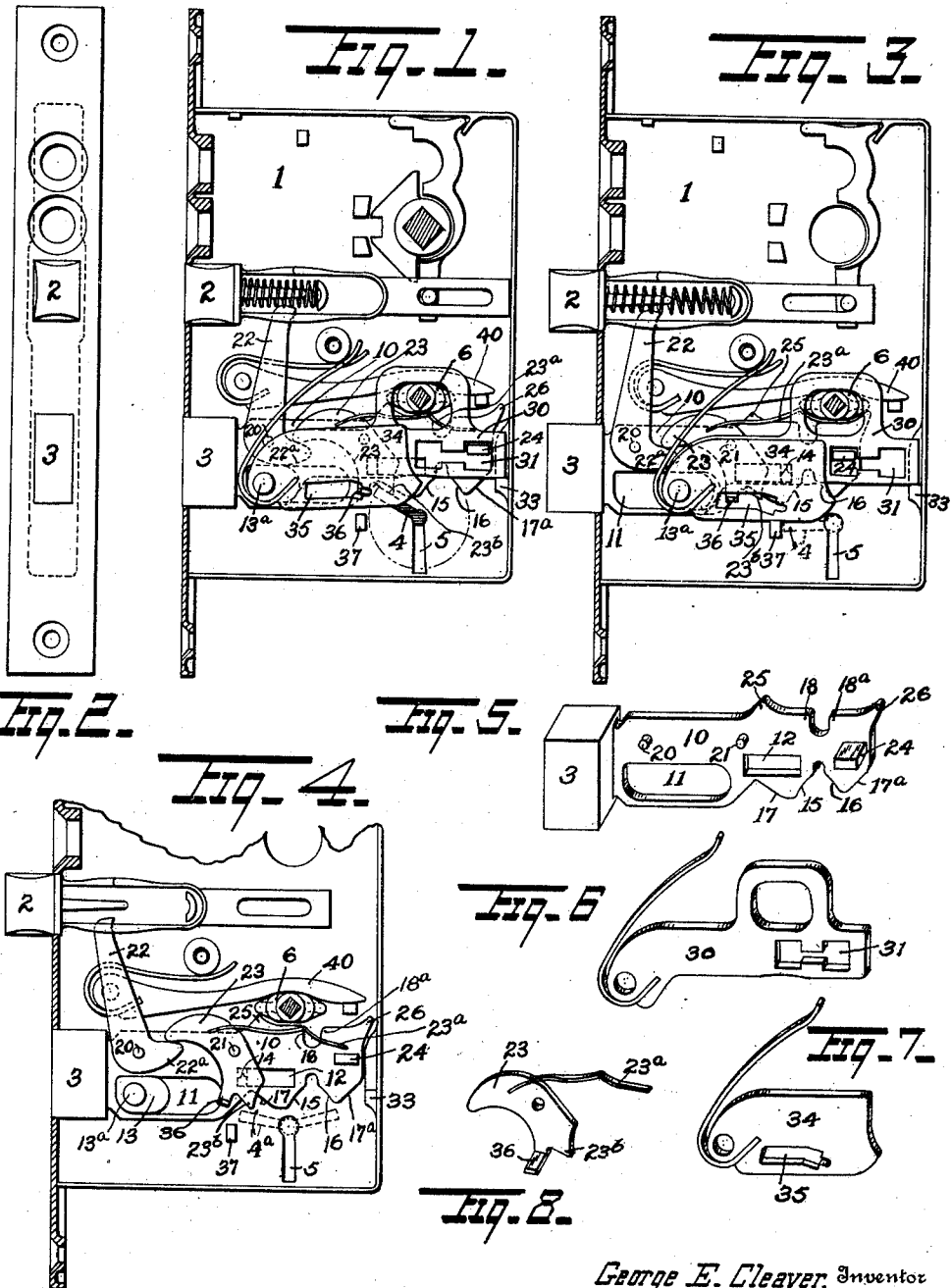
G. E. CLEAVER.

LOCK.

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1,043,067.

Patented Nov. 5, 1912.



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LOCK.

1,043,067.

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To all whom it may concern:

Be it known that I, GEORGE E. CLEAVER, a citizen of the United States, and a resident of the city of Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Locks, of which the following is a specification.

My invention relates particularly to that class of locks in which both a dead bolt and a latch bolt are arranged to be operated by a single key; and it consists mainly in the novel construction and arrangement of the dead bolt, the latch-operating lever mechanism, and the tumbler mechanism, relative to each other, and, specifically, to a turn hub device for independently operating said bolt; with the main objects in view, first of providing a simple and conveniently assembled construction; second of freeing the movement of both the dead bolt and the lever mechanism from any pressure of the tumbler mechanism; and third of insuring the satisfactory operation of both bolts by the key in connection with the independent operation of the dead bolt by the turn hub.

The characteristic features of my improved construction consist in the mounting of the latch-operating lever mechanism upon the movable dead bolt, and in employing separate tumblers for the dead bolt and said lever mechanism both mounted upon and supported by the casing independently of the bolt and lever mechanism; the lever mechanism being conveniently located between the dead bolt and the superposed tumblers, and the swing of the lever mechanism upon the dead bolt which carries it being automatically controlled relative to the turn hub operating means when such is employed.

The invention is fully described in connection with the accompanying drawings illustrating a complete embodiment of the same in preferred form; and the several novel features are more particularly pointed out in the claims.

Figure 1 is an elevation, with cap plate removed, of a lock embodying my invention, both bolts being shown in retracted position; and Fig. 2 is a front edge view thereof. Fig. 3 is a similar view to Fig. 1, but showing both bolts in projected position.

Fig. 4 is a similar view to Fig. 1, but with tumbler plates removed, and with the dead

bolt only in retracted position. Figs. 5 to 8 are detail views.

The lock case 1, as shown, is provided with the usual spring-projected latch bolt 2 having ordinary knob-operated means for retracting the same. Also with a dead bolt 3 adapted to be actuated by a key 4 insertible in the key hole 5; a latch connected lever mechanism adapted to be actuated by the same key; and a tumbler mechanism for locking said dead bolt and lever mechanism; the novel construction and arrangement of which parts as employed in my invention will be fully described, as well as their relation to the turn hub device 6 which is preferably provided for the purpose of independently operating the dead bolt.

The shank 10 of the sliding dead bolt 3 is provided, as shown, with slots 11 and 12, into which extend guide projections 13 and 14 on the lock case; with main key-contacting shoulders 15, 16, and supplementary ones 17 and 17^a, and turn hub contacting shoulders 18 and 18^a, for projecting and retracting the bolt by means of the key 4 and turn hub 6 respectively; with pivot pins 20, 21, for the latch-connected lever 22 and the key-engaging lever 23 respectively; and with a fence or stub 24 to enter the gating in the tumbler. Stop projections 25—26 are also indicated for engaging the turn hub 6 at opposite extremes of the bolt movement as hereafter referred to.

The separately pivoted cooperating levers 22—23 are placed upon the dead bolt 3 in assembling, and are both pivotally carried by said bolt in its to-and-fro sliding movement. A dead bolt tumbler 30, which is pivoted upon a stud 13^a of the guide projection 13 on the lock case and is provided with a gating 31 to receive the fence 24 of the dead bolt, is spring-pressed to a seat 33 provided for it on the lock case; and a separate latch-bolt tumbler 34 likewise pivoted upon said stud 13^a, is provided with a gating 35 to receive the fence 36 of the key-engaging lever 23, and is spring-pressed to a seat 37 provided for it on the lock case. The superposed tumblers are thus jointly pivoted to the common pivot post or stud 13^a on the lock case, and are supported at their free ends by said seats 33 and 37 on the latter, so as to leave the dead bolt, and the lever mechanism which is pivotally carried thereon between the bolt and the tum-

blers, free to move without any tumbler friction.

The lever 23 is provided with a spring extension 23^a which is adapted to bear against the turn hub 6, as best shown in Fig. 1, so that before the lever is carried forward with the dead bolt by operating the turn-hub, the latter is adapted to act on said spring extension so as to first swing forward the key-engaging shoulder 23^b out of the path of the operating key; such preliminary forward swing of the lever being practically important in preventing possible interference with the key movement in case of accidental or improper movement of the turn-hub 6 and a possible slight projection of the bolt. Such an accidental projection of the bolt, in my improved construction, would leave the key free to act in fully retracting it inasmuch as the lever 23 would have been moved out of the key path.

The turn hub 6 has a spring-pressed bar 40 bearing upon it which acts to return it to normal horizontal position; but the cam-like stops 25 26 serve to positively effect this result at each extreme of the bolt movement, and also to positively prevent any turning of the hub beyond such position whereby the tumbler is liable to be raised and the bolt released.

The latch-engaging bell-crank lever 22 has its short arm 22^a arranged to contact with the raised projection 13 on the casing, so as to positively maintain its long arm in latch-engaging position when the whole lever mechanism is carried forward with the dead bolt upon which it is pivoted; such bolt movement being apt otherwise to permit undue swinging of the lever 22.

In assembling the parts, the levers 22 and 23 are conveniently placed upon the pivot pins 20 and 21 of the dead bolt after the latter has been placed in the casing. The separate spring-pressed tumblers 30 and 34 are then jointly mounted upon the common pivot-post 13^a of the casing, one on top of the other, and each is carried at its outer end by the casing supports, 33 and 37 respectively; so that there is no frictional contact with either the dead bolt or the lever mechanism carried by the latter, to interfere with the perfectly free movement of these parts by the key or the turn hub, excepting as their movement is positively locked as desired by engagement of the fence 24 of the dead bolt and 36 of the lever 23 with the stops in the respective gatings 31 and 35 of the tumblers.

In Fig. 3, which shows both bolts projected, the key as indicated in dotted lines, is ready to lift the dead bolt tumbler 30 when it is turned in the direction of the arrow, and to thereafter retract the dead bolt (to Fig. 4 position) by contact with the key engaging shoulder 16. In Fig. 1 the key is

shown as completing a second turning movement for withdrawing the latch bolt; the lever tumbler 34 having been raised and the lever 23 having been engaged by the key to fully swing the latch-operating levers. In Fig. 4 the tumblers are removed to more clearly show the retracted dead bolt and the lever mechanism carried thereby; and the dotted key position 4^a shows it about to retract the latch bolt. In this connection it may be readily explained that if the dead bolt should happen to be partially projected accidentally (though this has been specially guarded against by the positive control of the turn hub position already described) the lever 23 will have been carried forward by the dead bolt so that the key may be used to either fully retract the bolt by engaging the supplemental key-engaging shoulder 17, or to fully project the same by engaging the supplemental key-engaging shoulder 17^a, thus quickly restoring the parts to proper position for normal operation.

The preferred construction specifically described may be readily modified without departing from the spirit of the invention as clearly defined in the claims.

What I claim is:—

1. In a lock, the combination with a casing, a latch bolt, and a key-actuated dead bolt, of a key actuated latch-bolt lever mechanism pivotally carried by said dead bolt, and separate tumblers for said dead bolt and lever mechanism both of which are pivoted to said casing.
2. In a lock, the combination with a casing, a latch bolt, and a key-actuated dead bolt, of a key actuated latch-bolt lever mechanism pivotally carried by said dead bolt and superposed tumblers for said dead bolt and lever mechanism respectively, said tumblers being pivoted to said casing with a common pivotal axis.
3. In a lock, the combination with a casing, a latch bolt, and a key-actuated dead bolt, of a key-actuated latch-bolt lever mechanism pivotally carried by said dead bolt, and separate tumblers for said dead bolt and lever mechanism both of which are pivoted to said casing and supported at their free ends thereby independently of the dead bolt.
4. In a lock the combination with a latch bolt, a key-operated dead bolt, and a key-operated latch lever carried by said dead bolt, of means for throwing said lever out of the path of the key without moving said dead bolt.
5. In a lock, the combination with a casing, a latch bolt, and a key-actuated dead bolt, of superposed latch bolt and dead bolt tumblers pivoted to said casing, and a latch-bolt lever mechanism interposed between said tumblers and the dead bolt and pivotally carried by the latter.
6. In a lock, the combination with a cas-

ing, a latch bolt, and a key-actuated dead bolt, of superposed latch bolt and dead bolt tumblers pivoted to said casing with a common pivotal axis, and a latch-bolt lever mechanism interposed between said tumblers and the dead bolt and pivotally carried by the latter.

7. In a lock, the combination with a casing, a latch bolt, and a key-actuated dead bolt, of cooperating latch bolt levers separately pivoted to said dead bolt, and superposed tumblers pivoted to said casing with a common pivotal axis and supported at their free ends by said casing independently of the dead bolt.

8. In a lock the combination with a latch bolt, a key-operated dead bolt, and a key-operated latch lever carried by said dead bolt and provided with a spring-extension, of separate means for operating said dead bolt adapted to first contact with said spring extension and thereby throw said lever out of the path of the key without moving the dead bolt.

9. In a lock the combination with a latch bolt, a key-actuated dead bolt, and a turn-hub adapted to independently actuate said dead bolt, of a key-actuated latch-bolt lever pivoted to said dead bolt and provided with a hub-engaging spring substantially as set forth.

10. In a lock the combination with a latch bolt, a key-operated dead bolt, and a key-operated latch lever carried by said dead bolt, of separate means for operating said dead bolt adapted also to independently throw said lever out of the path of the key; said dead bolt being provided with a supplemental key-engaging shoulder adapted to lie in the path of the key when said bolt is partially projected.

11. In a lock the combination with a latch bolt and a key-actuated dead bolt, of a key-actuated latch-operating lever pivotally carried by said dead bolt, and a fixed support on the casing upon which one arm of said lever is adapted to ride when said dead bolt is projected.

12. In a lock the combination with a latch bolt, a key-actuated dead bolt, and a casing provided with a tumbler post, of key-actuated latch-operating levers pivotally carried by said dead bolt, and a tumbler mounted upon said post to lock said levers; the base of said post forming a support for one of said levers when said dead bolt is projected.

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

GEORGE E. CLEAVER.

Witnesses:

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W. G. STEWART.