H. G. VOIGHT.

LOCK CONSTRUCTION.

APPLICATION FILED APR. 17, 1913.

1,093,809.

Patented Apr. 21, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

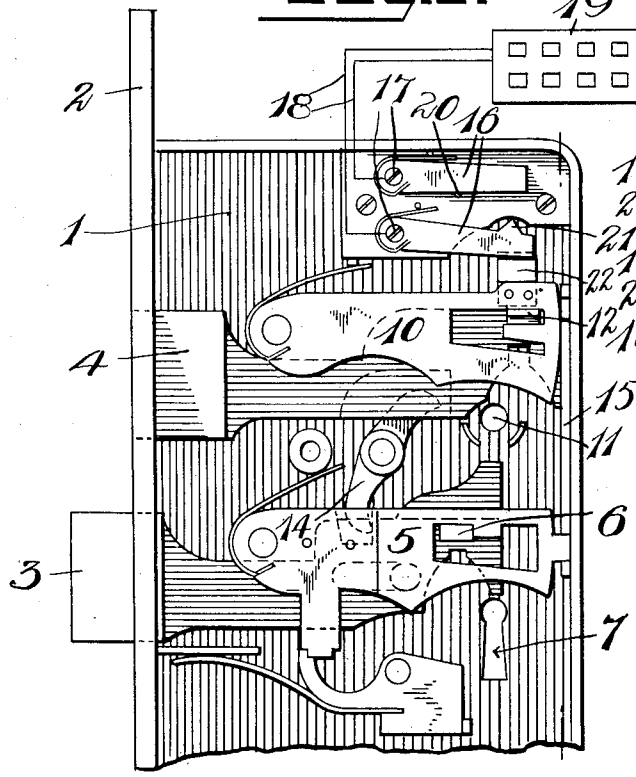


Fig. 2.

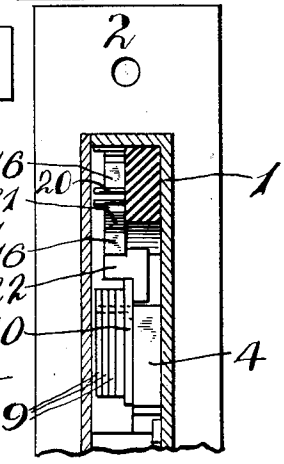
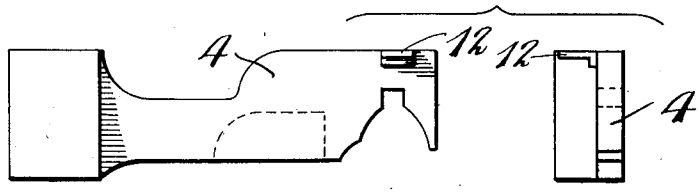


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 3.

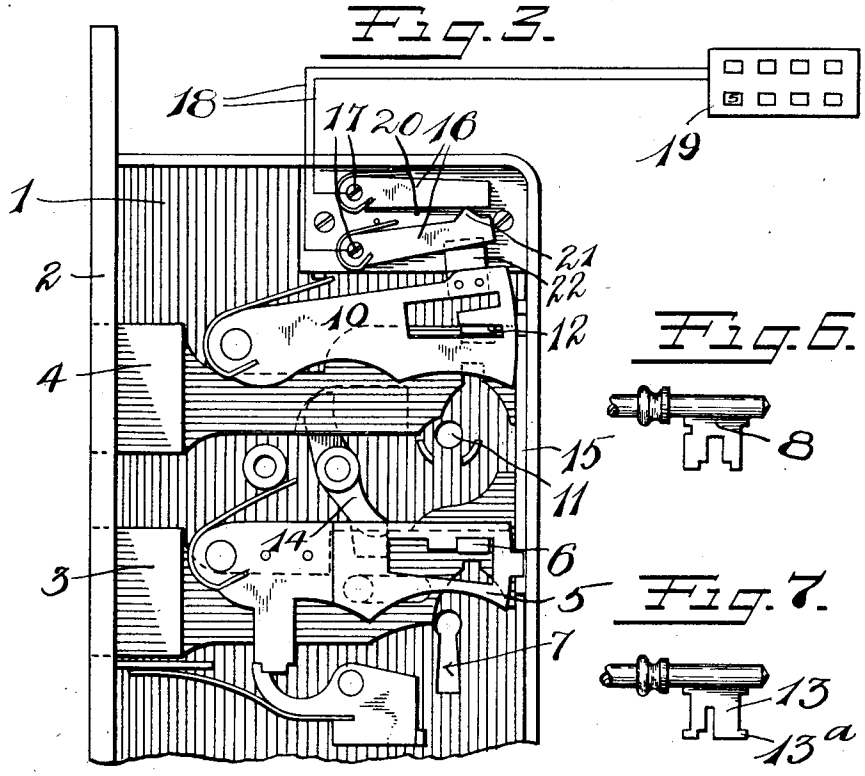
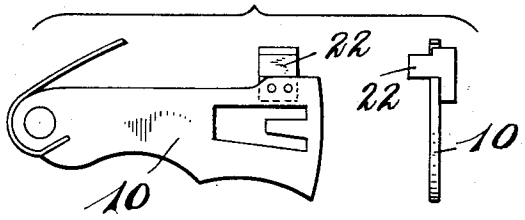


Fig. 6.

Fig. 7.

Fig. 5.



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LOCK CONSTRUCTION.

1,093,809. Specification of Letters Patent. Patented Apr. 21, 1914.

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To all whom it may concern:

Be it known that I, HENRY G. VOIGHT, a citizen of the United States, residing at New Britain, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Lock Construction, of which the following is a full, clear, and exact description.

This invention relates to lock construction, and is designed to afford a lock structure embodying an electrical circuit making and breaking device operable by a certain key on projecting or retracting a bolt, this making and breaking device serving to operate a suitable electric signaling or annunciating device, and indicating the time when the bolt has been projected or retracted.

The present invention involves a structure especially adapted for use in connection with locks of the "bitted key" type. In my copending application, Serial No. 762213 I have shown a construction especially adapted to locks of the cylinder type, and in which the broad principle of structure and operation herein disclosed is set forth and claimed.

A practical application of my invention may be seen in the case of the corridor door locks of hotels. It may be desirable, for instance, to keep a record of the time spent by employees, such as the maids, in attending to their duties in connection with the different rooms, and by the present invention means are provided wherein, in a lock of the bitted key type, one particular key, as the maid's key, operates a circuit making and breaking device coincidently with the projection or retraction of the bolt. This making and breaking of the electric circuit serves to operate a signal, as for instance, an annunciator drop, whereby the person in charge may know that the maid having charge of that particular room has retracted the bolt and has entered the room, and later has left the room and projected the bolt, the time elapsing between operation of a signal by the making and breaking of the circuit indicating the length of time spent in that particular room.

A preferable embodiment of the signal controlling means is illustrated in the accompanying drawings forming part of the following detailed specification, and illustrating a preferable embodiment of the invention in connection with a hotel corridor door lock of a standard "bitted key" type.

In these drawings: Figure 1 is a view in elevation of a corridor lock of standard type embodying the subject matter of the present invention, the circuit making and breaking device carried thereby being shown with the parts in circuit broken position, and the electric connections thereto being shown diagrammatically. Fig. 2 is a fragmentary vertical sectional view of the lock case shown in Fig. 1. Fig. 3 is a view in elevation of the interior of a lock case showing the bolt retracted by the maid's key and the circuit making and breaking device with its parts in circuit closed position. Fig. 4 is a view in side and end elevation of the dead bolt of the lock mechanism in conjunction with which the circuit making and breaking device is operated. Fig. 5 is a view in side and end elevation of a special tumbler coöperating with said dead bolt and arranged to operate the circuit making and breaking device. Fig. 6 is a view in elevation of the bitted end of one of a plurality of keys which may be used to operate the dead bolt, this key being a "short" key. Fig. 7 is a view in elevation of the bitted end of a "long" key which may be used to operate the special tumbler and through it the circuit making and breaking device.

The standard type of bitted key lock in connection with which the present invention is shown, comprises a lock case 1 with its face plate 2, and with its dead bolts 3 and 4. The dead bolt 3 is suitably guided in the lock case and is provided with the tumbler mechanism 5 gated as usual and coöperating with fence 6 of its dead bolt in the usual manner. This dead bolt is designed to be operated from the interior of the door, the interior key hole being indicated at 7.

The upper dead bolt 4 is designed to be operated from the exterior of the door, as by a plurality of keys such as a guest key 8 bitted to operate a series of pivoted tumblers 9 coöperating with and controlling the dead bolt in the usual manner, but not bitted to extend far enough in to operate a special or emergency controlling member 10 pivotally mounted in the lock case and cooperating with the dead bolt and located

in the rear of and in alinement with the series of tumblers 9. The recess in the lock case for the stump of these keys is shown at 11. All of these tumblers 9 are gated to cooperate with the fence 12 of their dead bolt 4, as usual. This special controlling member 10, however, is operable by a particular key, such as a maid's key 13, shown in Fig. 7, which key is given a longer bitting or has one end of its bitted edge longitudinally extended relative to the bitted edges of the other keys as at 13^a, this extension being removed from the longitudinal axis of the key and being positioned to engage the lower edge of this special member 10, and to lift said member with the projection and retraction of said dead bolt 4. When the dead bolt is retracted by the key 13, the member 10 will be raised as shown in Fig. 3, and will be held by the fence of said bolt in raised position until the dead bolt is again projected through the key 13. The upper and lower dead bolts 4 and 3 respectively, are loosely connected, as usual, by the pivoted link 14, and their tumblers are also connected by the usual sliding plate 15. The lower dead bolt 3 may be projected independently of the upper dead bolt from the interior, but may be retracted from the exterior by means of a certain key which will operate the connecting plate 15. The specific features of construction of this lock mechanism *per se*, form no part of the present invention, and need not be further described in detail as it merely forms a lock construction of the bitted key type which is well known to those skilled in the art. I have only attempted to so far describe its operation as to make clear the operation of the circuit making and breaking device designed to operate in conjunction therewith.

I have heretofore described the operation of the special controlling member 10 through the extension bitting 13^a of the long or maid's key 13. The operation of this special member controls the circuit controlling connections as follows: At the upper portion of the lock case above the dead bolt 4 and above the member 10, two spring pressed contact fingers 16 are provided, these fingers being pivoted to the lock case and being provided with binding screws 17 to which the ends of wires 18 are connected and from which these wires lead to an appropriate electric signaling or annunciating device 19, connection between the door and said device being preferably through a door hinge or door hinges, as described in my copending application hereinbefore referred to. A stop pin 20 is employed to position the upper contact finger 16, so that it remains substantially stationary relative to the lower finger 16, which lower finger is provided with a contact button 21. The spring of this lower contact finger normally tends to throw it away from the upper contact finger, so that the construction provides means normally tending to maintain the circuit broken. The member 10 has secured to its upper edge a lifting arm 22 positioned beneath the lower contact finger 16, and against which arm said finger is held by its spring. Both spring fingers 16 are, of course, insulated from the lock case and other parts of the lock mechanism, including the lifting arm 22.

Assuming that the corridor door upon which such a lock is mounted has been closed and locked from the exterior by the guest; when the maid retracts the bolt to enter the room, her key 13 through its extension bitting 13^a, will lift the usual controlling tumblers 9 and the special controlling member 10 for the circuit make and break device, and will retract the dead bolt 4, the lifting movement of the member 10 moving the lower contact finger 16 to bring its contact button 21 from the position shown in Fig. 1, to the circuit making position shown in Fig. 3. The retraction of the bolt will bring its fence 12 beneath the gate of the member 10 and will hold said member raised and in circuit making position until the dead bolt is again projected through the maid's key, whereupon said member will drop down to the position shown in Fig. 1, the spring of the lower finger 16 throwing it downwardly to retract its contact button 21 from engagement with the upper contact finger 16 thereby breaking the circuit. The making and breaking of the circuit through the means described will indicate to the person in charge of the maids through the electric signaling device or annunciator the times at which the maid has entered and left the room, the elapsed time indicating the time spent by the maid in attending to the particular room designated, for instance, by a specific annunciator drop.

While I have herein described and shown a particular arrangement of key controlling circuit making and breaking device, I desire it understood that the same is susceptible of structural variation and relative arrangement of parts within the spirit of the invention and the scope of the appended claims. It will also be obvious that the invention is not limited to the use of any specific form of lock mechanism although especially adapted to locks of the bitted key type.

What I claim, therefore, and desire to secure by Letters Patent is:—

1. In a lock, a locking mechanism in combination with an electric signaling mechanism, said signaling mechanism including a circuit making and breaking device associated with the lock, said locking mechanism including a bolt and a plurality of locking tumblers therefor, said bolt and tumblers be-

ing arranged to be operated by a plurality of keys having differently bitted edges offset from the longitudinal axis of the key, said keys including a certain key having one end longitudinally extended relative to the rest and offset from the longitudinal axis of the key, and movable controlling means in operative relation to said making and breaking device and positioned for engagement and actuation by the extended end of said certain key upon bolt-actuating movement thereof.

2. In a lock, a locking mechanism in combination with an electric signaling mechanism, said signaling mechanism including a circuit making and breaking device associated with the lock, said locking mechanism including a bolt and a plurality of locking tumblers therefor, said bolt and tumblers being arranged to be operated by a plurality of keys having differently bitted edges offset from the longitudinal axis of the key, said keys including a certain key having one end longitudinally extended relative to the rest and offset from the longitudinal axis of the key, and movable controlling means in operative relation to said making and breaking device and positioned adjacent to said tumblers and bolt and adapted for engagement and actuation by the extended end of said certain key upon bolt actuating movement thereof.

3. In a lock, a locking mechanism in combination with an electric signaling mechanism, said signaling mechanism including a circuit making and breaking device associated with the lock, said locking mechanism including a bolt and a plurality of locking tumblers therefor, said bolt and tumblers being arranged to be operated by a plurality of keys having differently bitted edges offset from the longitudinal axis of the key, said keys including a certain key having one end longitudinally extended relative to the rest and offset from the longitudinal axis of the key, movable controlling means in operative relation to said make and break device and having at least two circuit controlling positions relative thereto, said means being positioned for engagement and actuation by the extended end of said certain key upon bolt actuating movement thereof, and means associated with the locking mechanism and cooperating with said controller to hold the same in said two circuit controlling positions when actuated to said positions through said certain key.

4. In a lock, a locking mechanism in combination with an electric signaling mechanism, said signaling mechanism including a circuit making and breaking device associated with the lock, said locking mechanism including a bolt and a plurality of locking tumblers therefor, said bolt and tumblers being arranged to be operated by a plurality of keys having differently bitted edges offset from the longitudinal axis of the key, said keys including a certain key having one end longitudinally extended relative to the rest and offset from the longitudinal axis of the key, movable controlling means in operative relation to said make and break device and having at least two circuit controlling positions relative thereto, said means being positioned for engagement and actuation by the extended end of said certain key upon bolt actuating movement thereof, and means associated with said bolt and coöperating with said controller to hold the latter in one circuit controlling position upon movement of said controller and of said bolt through the coöperative actuation of said certain key in one direction.

5. In a lock, a locking mechanism in combination with an electric signaling mechanism, said signaling mechanism including a circuit making and breaking device associated with the lock, said locking mechanism including a bolt and a plurality of locking tumblers therefor, said bolt and tumblers being arranged to be operated by a plurality of keys having differently bitted edges offset from the longitudinal axis of the key, said keys including a certain key having one end longitudinally extended relative to the rest and offset from the longitudinal axis of the key, and a movable controlling member for said make and break device having at least two circuit controlling positions relative thereto, said controlling member being positioned for operation through the extended end of said certain key upon the operation of said key to actuate said bolt, and means associated with said lock and operable upon actuation of said bolt in one direction by said certain key to hold said controlling means in one circuit controlling position until said bolt is actuated in the reverse direction by said certain key.

6. In a lock, a locking mechanism in combination with an electric signaling mechanism, said signaling mechanism including a circuit making and breaking device associated with the lock, said locking mechanism including a bolt and a plurality of locking tumblers therefor, said bolt and tumblers being arranged to be operated by a plurality of keys having differently bitted edges offset from the longitudinal axis of the key, said keys including a certain key having one end longitudinally extended relative to the rest and offset from the longitudinal axis of the key, and a movable controlling member for said make and break device having at least two circuit controlling positions relative thereto, said controlling member being positioned adjacent said bolt and tumblers and coöperating with said bolt and with the extended end of said certain key whereby when said bolt is retracted

through said certain key, said member is moved to and held in one circuit controlling position until said bolt is projected through said key, whereby said member is moved to another circuit controlling position.

7. In a lock, a locking mechanism in combination with an electric signaling mechanism, said signaling mechanism including a circuit making and breaking device associated with the lock, said locking mechanism including a dead bolt and a plurality of pivoted locking tumblers therefor, said bolt and tumblers being arranged to be operated by a plurality of keys having differently bitted edges offset from the longitudinal axis of the key, said keys including a certain key having one end longitudinally extended relative to the rest and offset from the longitudinal axis of the key, a pivoted controlling member for said make and break device having at least two circuit controlling positions relative thereto, said member being positioned adjacent said bolt and tumblers and coöperating with the longitudinally extended end of said certain key, said bolt being provided with a fence and said controlling member being gated to coöperate therewith upon the actuation of said bolt in one direction by said certain key whereby said controlling member is maintained in one circuit controlling position until said bolt is actuated in the reverse direction by said certain key.

8. In a lock, a locking mechanism in combination with an electric signaling mechanism, said signaling mechanism including a circuit making and breaking device associated with the lock, said locking mechanism including a bolt having a locking tumbler arranged to be operated through a plurality of keys having differently bitted edges offset from the longitudinal axis of the key, one of said keys having one end longitudinally extended relative to the rest and offset from its longitudinal axis, a controlling member movably mounted adjacent said tumbler and arranged to be operated through said key having the longitudinal end extension, said controlling member having at least two circuit controlling positions, means of operative connection between the controlling member and said circuit making and breaking device, with means associated with the lock for holding the controlling member in a position to control the circuit in one way when the bolt of the lock has been retracted by the key having the longitudinal end extension.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."