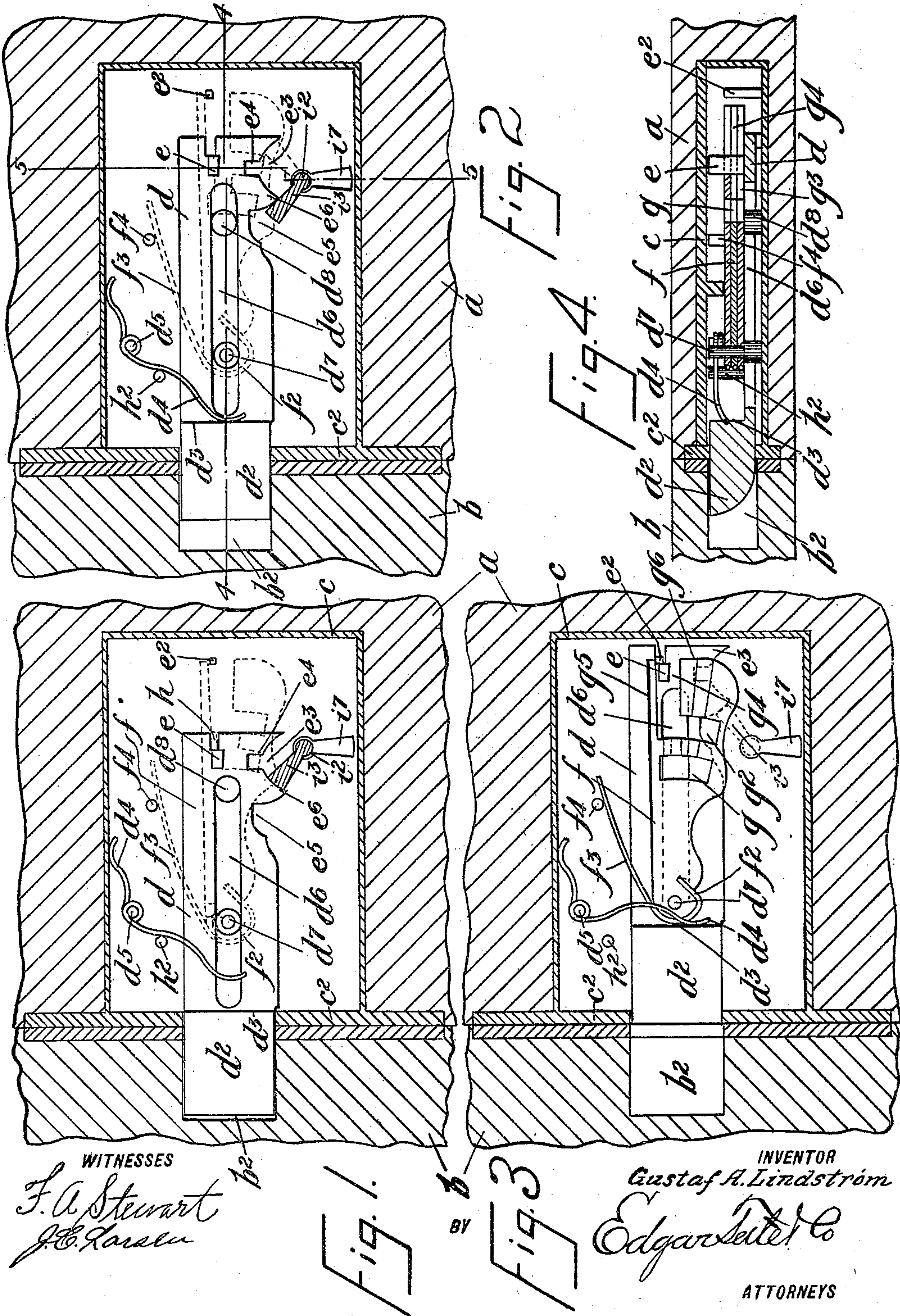


No. 820,056.

PATENTED MAY 8, 1906.

G. A. LINDSTRÖM.
DOOR LATCH AND LOCK.
APPLICATION FILED APR. 6, 1905.

2 SHEETS—SHEET 1.

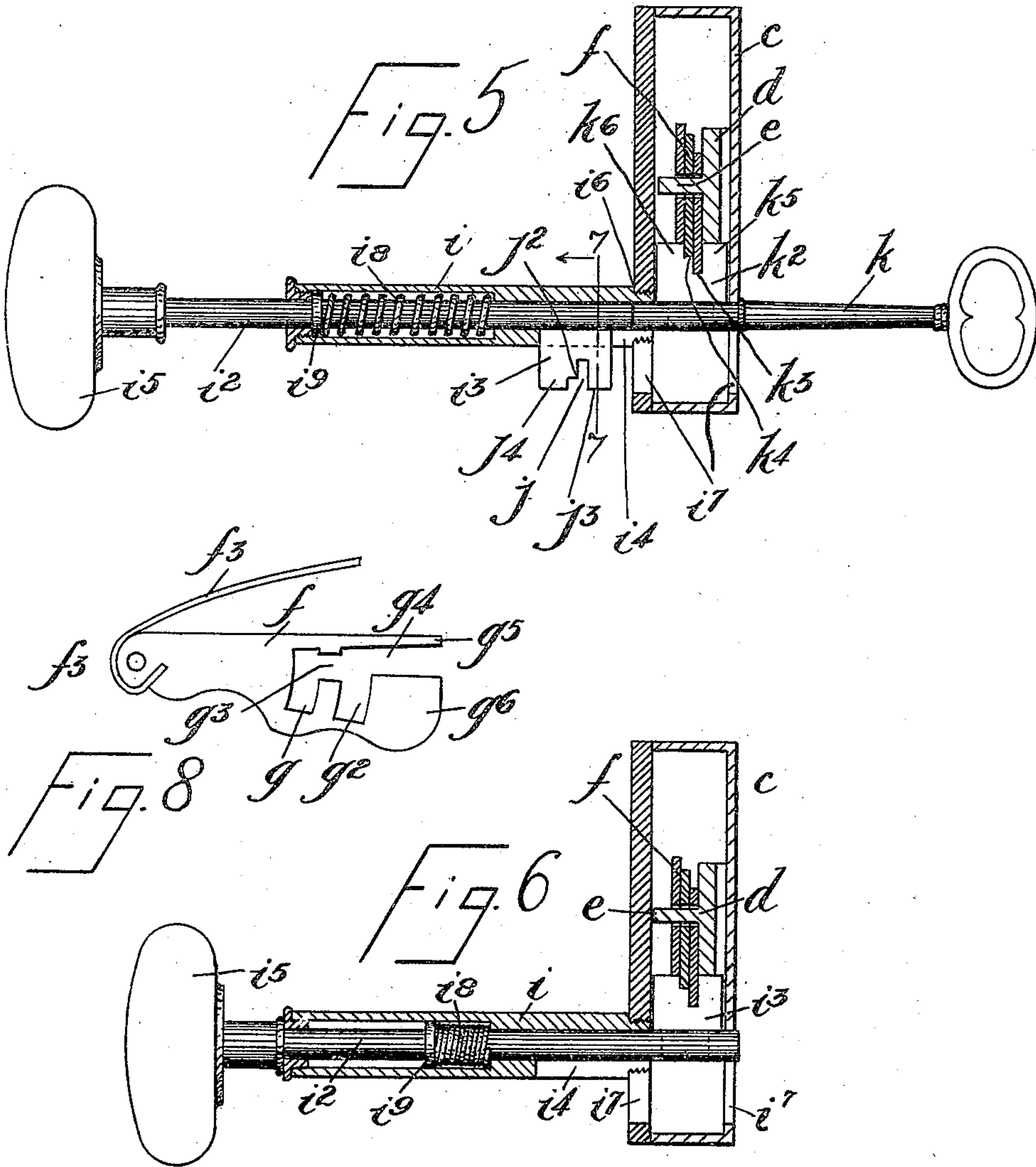


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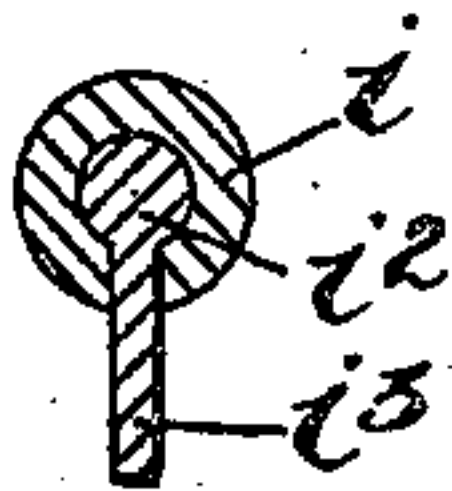
2 SHEETS—SHEET 2.



WITNESSES

J. A. Stewart
J. E. Larsen

Fig. 7



BY

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UNITED STATES PATENT OFFICE.

GUSTAF A. LINDSTRÖM, OF STAMFORD, CONNECTICUT.

DOOR LATCH AND LOCK.

No. 820,056.

Specification of Letters Patent.

Patented May 8, 1906.

Application filed April 6, 1905. Serial No. 254,071.

To all whom it may concern:

Be it known that I, GUSTAF A. LINDSTRÖM, a subject of the King of Sweden and Norway, residing at Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Door Latches and Locks, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to latches and locks for doors; and the object thereof is to provide an improved device of this class which is designed for use either as a latch or a lock when desired; a further object being to provide an improved device of the class specified which is operated by a permanent key from the inner side of the door and which may be operated by a detached key from the outer side of the door, the permanent key on the inner side of the door being also adapted to serve as means for preventing the unlocking of the door from the outer side thereof when desired, a further object being to provide a device of the class described having a single bolt which operates both as a lock and as a latch bolt; and with these and other objects in view the invention consists in a combined latch and lock of the class specified constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which—

Figure 1 is an inside sectional view of my improved combined latch and lock and showing the same mounted in a door, together with a portion of the door-frame, and showing the latch and lock bolt in position for locking the door, the tumblers being indicated in dotted lines; Fig. 2, a view similar to Fig. 1, but showing the latch and lock bolt in the position it occupies when serving as a latch; Fig. 3, a similar view showing the latch and lock bolt withdrawn for the purpose of opening the door and showing the tumblers in the position they occupy at such time and in full lines; Fig. 4, a section on the line 4 4 of Fig. 2 and showing the tumblers in full lines; Fig. 5, a section on the line 5 5 of Fig. 2 and showing the method of operating the detached key from the outer side of the door; Fig. 6, a view similar to Fig. 5, but showing the method of operating the permanent key from

the inside of the door; Fig. 7, a section on the line 7 7 of Fig. 5, and Fig. 8 a side view of a tumbler which I employ.

In the drawings forming part of this specification, reference being made to Figs. 1 to 4, inclusive, I have shown at *a* a part of a door and at *b* a part of a door-frame, and in the practice of my invention I provide a lock-casing *c*, which is adapted to be secured in the door in the usual manner and in which is mounted a bolt *d*, which is preferably flat and rectangular in cross-section and provided with the usual head *d*², adapted to be projected through the face-plate *c*² of the lock-casing in the usual manner and to enter the usual socket or recess *b*² in the frame of the door. One side of the casing *c*, the inner side, is removable, and the head *d*² is thicker than the main portion of the bolt *d*, and this construction forms a transverse shoulder *d*³, against which bears a spring *d*⁴, which is connected with a post *d*⁵, secured to the permanent side of the casing *c*, and the main part of the bolt *d* is provided with a longitudinal slot or opening *d*⁶, through which passes a pin *d*⁷, secured in the casing, and which forms a guide for the bolt *d*, and another pin *d*⁸ is also secured to one side of the casing *c*, which also passes through the slot *d*⁶, and the pins *d*⁷ and *d*⁸, which are arranged in a horizontal line, compel the bolt *d* to move in a straight horizontal line in the operation thereof. The inner end portion of the bolt *d* is also provided with a horizontal post *e*, and secured in the inner end portion of the casing *c* is a post *e*², and the bolt *d* is provided in the bottom thereof and near the inner end with a segmental recess *e*³, having an angular extension *e*⁴, and adjacent to the recess *e*³ and between the same and the head *d*² of said bolt is another recess *e*⁵ in the bottom of said bolt, and the recesses *e*³ and *e*⁵ form a downwardly-directed projection *e*⁶, which is concave on its inner side and convex on its outer side. Lying flat on the inner side of the bolt *d* and turnably mounted on the pin *d*⁷ are tumblers *f*, three of which are employed in the form of construction shown, and said tumblers are flat and oblong in form, and secured in the bottom of each of said tumblers is a spring *f*², and the springs *f*² are carried around the heads of the tumblers *f* and formed into spring-arms *f*³, which are connected with or placed against a post *f*⁴, secured to the back or permanent side of the casing *c*.

A side view of one of the tumblers *f* is

given in Fig. 8, and said tumblers are wider at their free ends than at their pivoted ends, and all of said tumblers are of the same form and construction, except as hereinafter described. Each of said tumblers is provided near the middle thereof with a transverse opening g , between which and the free end of the tumbler is another transverse opening g^2 , and these openings are placed in communication by a horizontal opening g^3 , and a longitudinal slot or opening g^4 extends from the upper end of the transverse opening g^2 to the free end of the tumbler, and this forms a top finger g^5 and a bottom jaw g^6 , and the only difference in the tumblers is in the fact that the jaw g^6 of the middle tumbler is wider than the jaw g^6 of the outer tumbler and the jaw g^6 of the inner tumbler is wider than the jaw g^6 of the middle tumbler.

In the operation of the latch and lock-bolt d the fingers g^5 of the tumblers g bear on the post e^2 , which is secured in the casing, and the post e , which is on the inner end of the latch and lock bolt d , operates in the longitudinal slots or openings g^4 in the tumblers f and in the openings g , g^2 , and g^3 , and said tumblers remain stationary, or, in other words, they have no longitudinal movement, but do have a vertical movement, and the inner end of the latch and lock bolt d is provided with a recess h , which the post enters when the latch and lock bolt d is at the limit of its inward movement.

When the latch and lock bolt d is at the limit of its outward movement when serving as a lock-bolt, as shown in Fig. 1, the spring d^4 bears on a post h^2 in the lock-casing, and when said latch and lock bolt is in its inward position the said spring bears on the transverse shoulder d^3 at the inner end of the head of said bolt.

In Fig. 5 I have shown the permanent key by which the lock is operated from the inner side of the door, and also the detached key by which it may be operated from the outer side of the door, and the permanent key consists of a tubular casing i , in which is mounted a longitudinally-movable key-stem i^2 , provided at its inner end with a key-bit i^3 , which passes through a longitudinal slot i^4 in the bottom of the tubular casing i . The outer end of the key-stem i^2 is provided with a knob i^5 , preferably similar to an ordinary door-knob, and in practice the tubular casing i is passed through the inner side portion of the door and is secured in a hole i^6 in the inner or detachable side of the lock-casing, and the hole i^6 is provided with a downwardly-directed extension i^7 , and said holes i^6 and i^7 form in connection an ordinary keyhole. Mounted in the tubular casing i is a spiral spring i^8 , through which the key-stem i^2 passes, and said stem is provided with a collar i^9 , against which the spring i^8 bears, and

said spring normally serves to hold the key-stem i^2 in the position shown in Fig. 5, in which the key-bit i^3 is withdrawn from the lock-casing c . The bit i^3 of the key-stem i^2 is provided with a radial recess j , in which is a shoulder j^2 , the shoulder j^2 being on the side of the recess j adjacent to the knob or handle i^5 of the key-stem, and the recess j forms two projecting portions j^3 and j^4 . The detached key consists of a stem k , having a bit k^2 , and the bit k^2 is provided with a radial recess k^3 , on the outer side of which is a shoulder k^4 , and the recess k^3 forms two projecting portions k^5 and k^6 , and it will be seen that the bits of the separate keys are exactly the same except that the parts of said bits are reversed.

The normal position of the latch and lock bolt is that shown in Fig. 2, in which said bolt serves as a latch, and with the parts in this position if it is desired to lock the door from the inside the stem i^2 of the permanent key is forced inwardly and turned to the left. In this operation the part j^3 of the bit i^3 strikes the downwardly-directed projection e^6 on the latch and lock bolt d and forces it outwardly, and at the same time the tumblers f are raised, the bottom of the inner tumbler striking the bottom of the recess j , while the bottom of the middle tumbler strikes the shoulder j^2 , and the bottom of the outer tumbler strikes the projection j^4 of the key-bit i^3 , and in this operation the post e is drawn outwardly through the horizontal openings g^3 into the transverse openings g , and said tumblers are forced downwardly by the spring-arms f^3 into the position shown in dotted lines in Fig. 1, and the post e is in the top portion of the transverse openings g in said tumblers and the latch and lock bolt is locked in its projected position. When it is desired to unlock the door, the bit i^3 of the key-stem i^2 is inserted in the same manner and turned to the right, and the operation is exactly the reverse of that above described, the tumblers being raised and the latch and lock bolt being forced inwardly to the limit of its inward movement, in which position the tumblers drop down and the post e is in the top portion of the transverse openings g^2 in said tumblers.

It will be understood from Fig. 5 that in unlocking the door from the outer side the operation is the same as that hereinabove described except that the detached key is used. In this operation the stem i^2 of the permanent key is fully withdrawn from the lock-casing and the detached key is inserted and operated in the usual manner.

When the permanent key or the stem and bit thereof are in the lock-casing, as shown in Fig. 6, it will be apparent that the detached key cannot be used from the outer side of the door, and all that is necessary to prevent the door from being unlocked from the outside

thereof is to leave the permanent key, or the stem and bit thereof, in the lock-casing, and in order to do this it is only necessary to turn the bit i^3 at right angles to the keyhole or holes i^7 .

My invention is not limited to any particular number of the tumblers f , and any desired number of said tumblers may be employed, all that is necessary in this connection being to employ a key or keys the bit or bits of which are formed to correspond with the number of the tumblers employed, and it will be apparent that my improvement may be employed in a lock or latch and lock having but one tumbler of the form herein shown and described, if desired.

By this construction I provide a combined latch and lock having a single bolt which serves both as latch-bolt and a lock-bolt when necessary, and when the parts are in the position shown in Fig. 2 the device will operate as an ordinary latch and the door will close without operating either key; but in order to open the door a key must be employed, and in practice the knob i^5 of the permanent key, which is on the inner side of the door, takes the place of an ordinary door-knob, and the door may be opened and closed thereby. It will also be seen that my improved combined latch and lock does not employ the usual spindle and knobs, and the construction and operation is therefore much simplified and less expensive. It will also be seen that when the bolt d is in position to serve as a latch-bolt, as in Figs. 1 and 2, it is not projected as far as when it is used as a lock-bolt, as shown in Fig. 1, and in the latter position the spring d^4 is not in use, and the projection of the bolt beyond the position shown in Fig. 2 results from the construction of the inner end of the bolt and of the tumblers, as hereinbefore described, and from the form of the keys employed or the bits of said keys.

Although I have described the key which is permanently connected with one side of the casing c as consisting of the tubular casing i , the stem i^2 , provided with the bit i^3 , and the knob i^5 , it will be apparent that the tubular casing i serves as a means only for connecting the permanent key with the casing, and said permanent key consists of the stem i^2 , having the bit i^3 and the knob i^5 , and this key is normally projected so that the bit i^3 is outside of the casing c by means of the spring i^8 .

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A door latch and lock, comprising a casing, a spring-projected bolt mounted therein and adapted to serve as a latch-bolt, tumblers operating in connection with said bolt, a key-knob connected with one side of the casing and movable toward and from the cas-

ing, a key connected with said knob and adapted to operate in connection with said bolt and said tumblers and the turning of which in one direction will withdraw the bolt when serving as a latch-bolt and the turning of which in the opposite direction will project said bolt to serve as a lock-bolt.

2. A door latch and lock, comprising a casing, a spring-projected bolt mounted therein and adapted to serve as a latch-bolt, spring-operated tumblers operating in connection with said bolt, a knob connected with one side of said casing and movable toward and from said casing, a key-stem connected with said knob and provided with a bit adapted to be inserted into the casing, and the turning of which in one direction will withdraw the bolt when serving as a latch-bolt, said bolt and said tumblers being also provided with means whereby the turning of said knob and the key-bit connected therewith in one direction will project said bolt and lock it in its projected position, and in the opposite direction will withdraw said bolt.

3. A combined latch and lock, comprising a casing provided with a bolt adapted to serve both as a latch and lock bolt, a spring for projecting said bolt to serve as a latch-bolt, pivoted spring-operated tumblers at one side of said bolt, and means whereby the tumblers may be operated and the bolt projected and locked in the projected position by different keys inserted from the opposite sides of the casing, one of said keys being permanently connected with said casing and being provided with a knob-handle.

4. A door latch and lock, comprising a casing, a bolt mounted therein and adapted to serve both as a latch and lock bolt, a spring for projecting said bolt to serve as a latch-bolt, tumblers operating in connection with said bolt, a knob connected with one side of the casing and movable toward and from the casing and provided with a key stem and bit adapted to be inserted into said casing, said bit being adapted to operate said tumblers and said bolt so as to project said bolt and lock it in its projected position, and to withdraw said bolt, said key stem and bit being also adapted to prevent the insertion of a key from the opposite side of the door.

5. A door latch and lock, comprising a casing, a bolt mounted therein, a spring for projecting said bolt to serve as a latch-bolt, tumblers in operative connection with said bolt, a knob connected with one side of said casing and movable toward and from said casing, means for moving said knob from said casing, and a key stem and bit connected with said knob and operating in connection with said tumblers and said bolt to withdraw said bolt when serving as a latch-bolt, and to project said bolt beyond its latch-bolt position to serve as a lock-bolt, said bolt and said tumblers being also adapted to be operated by an

independent key inserted from the opposite side of the casing, substantially as shown and described.

6. A combined latch and lock for doors, comprising a casing, a bolt mounted therein and adapted to serve both as a latch and lock bolt, a spring for projecting said bolt to serve as a latch-bolt, pivoted and spring-depressed tumblers operating in connection with said bolt, a permanent key connected with one side of said casing and movable toward and from said casing and provided with a bit adapted to be inserted into said casing and to operate in connection with said tumblers and said bolt, said bit and said tumblers and said bolt being provided with means whereby the turning of said key in one direction will withdraw the bolt when serving as a latch-bolt, and in the opposite direction will project said bolt into its lock-bolt position and lock it in said position and the turning of which again in the opposite direction will withdraw said bolt from its lock-bolt position and leave it free to serve as a latch-bolt.

7. A combined latch and lock for doors, comprising a casing, a bolt mounted therein and adapted to serve both as a latch and lock bolt, means for normally projecting said bolt to serve as a latch-bolt, a pivoted spring-held tumbler mounted in connection with said bolt, a permanent key connected with one side of said casing and movable toward and from the same and provided with a bit adapted to be inserted in said casing and to operate in connection with said bolt and said tumbler, said bolt and said tumbler being provided with means whereby the turning of said key in one direction will withdraw said bolt from its latch-bolt position and in the opposite direction will project said bolt into its lock-bolt position and lock it in such position, and the turning of which again in the opposite direction will unlock and withdraw said bolt, substantially as shown and described.

8. A combined latch and lock for doors, comprising a casing, a bolt mounted therein and adapted to serve both as a latch and lock bolt, a spring for projecting said bolt to serve as a latch-bolt, a key permanently connected with one side of said casing and movable toward and from said casing and adapted to be inserted therein, and means whereby the turning of said key in one direction will withdraw the bolt from its latch-bolt position and in the opposite direction will project said bolt into its lock-bolt position and lock it in such position, and the turning of which again in the opposite direction will unlock said bolt and withdraw it from its lock-bolt position, substantially as shown and described.

9. A combined latch and lock for doors, comprising a casing, a bolt mounted therein and adapted to serve both as a latch and lock bolt, a spring for projecting said bolt to serve as a latch-bolt, a key permanently connected with one side of said casing and movable toward and from said casing and adapted to be inserted therein, and means whereby the turning of said key in one direction will withdraw the bolt from its latch-bolt position and in the opposite direction will project said bolt into its lock-bolt position and lock it in such position, and the turning of which again in the opposite direction will unlock said bolt and withdraw it from its lock-bolt position, said bolt being also adapted to be operated by an independent key inserted from the opposite side of the casing, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 5th day of April, 1905.

GUSTAF A. LINDSTRÖM.

Witnesses:

F. A. STEWART,
C. E. MULREANY.