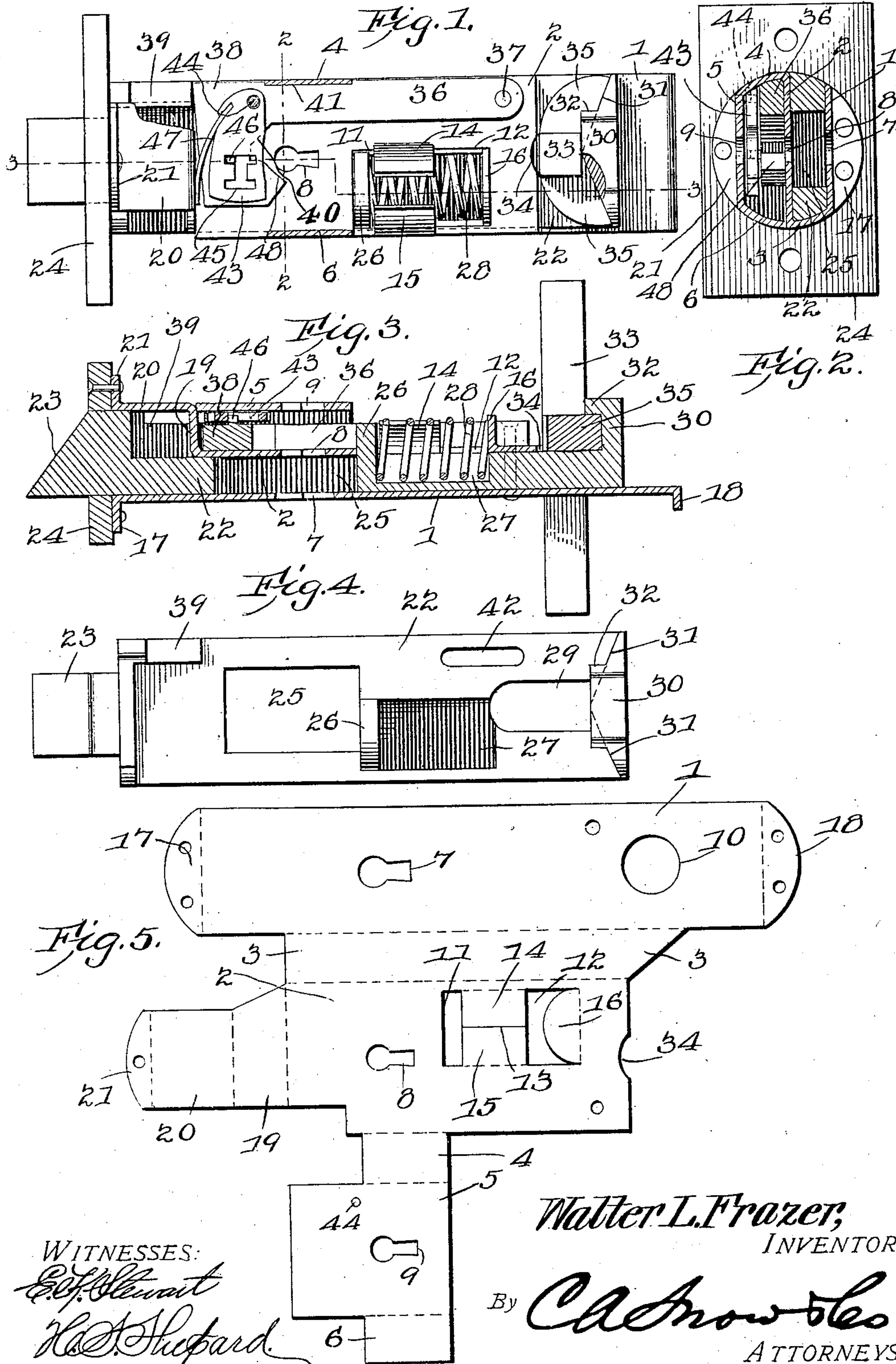


No. 856,046.

PATENTED JUNE 4, 1907.

W. L. FRAZER.  
COMBINED LOCK AND LATCH.  
APPLICATION FILED FEB. 28, 1906.

2 SHEETS—SHEET 1.



WITNESSES:  
*E. J. Stewart*  
*W. A. Shepard*

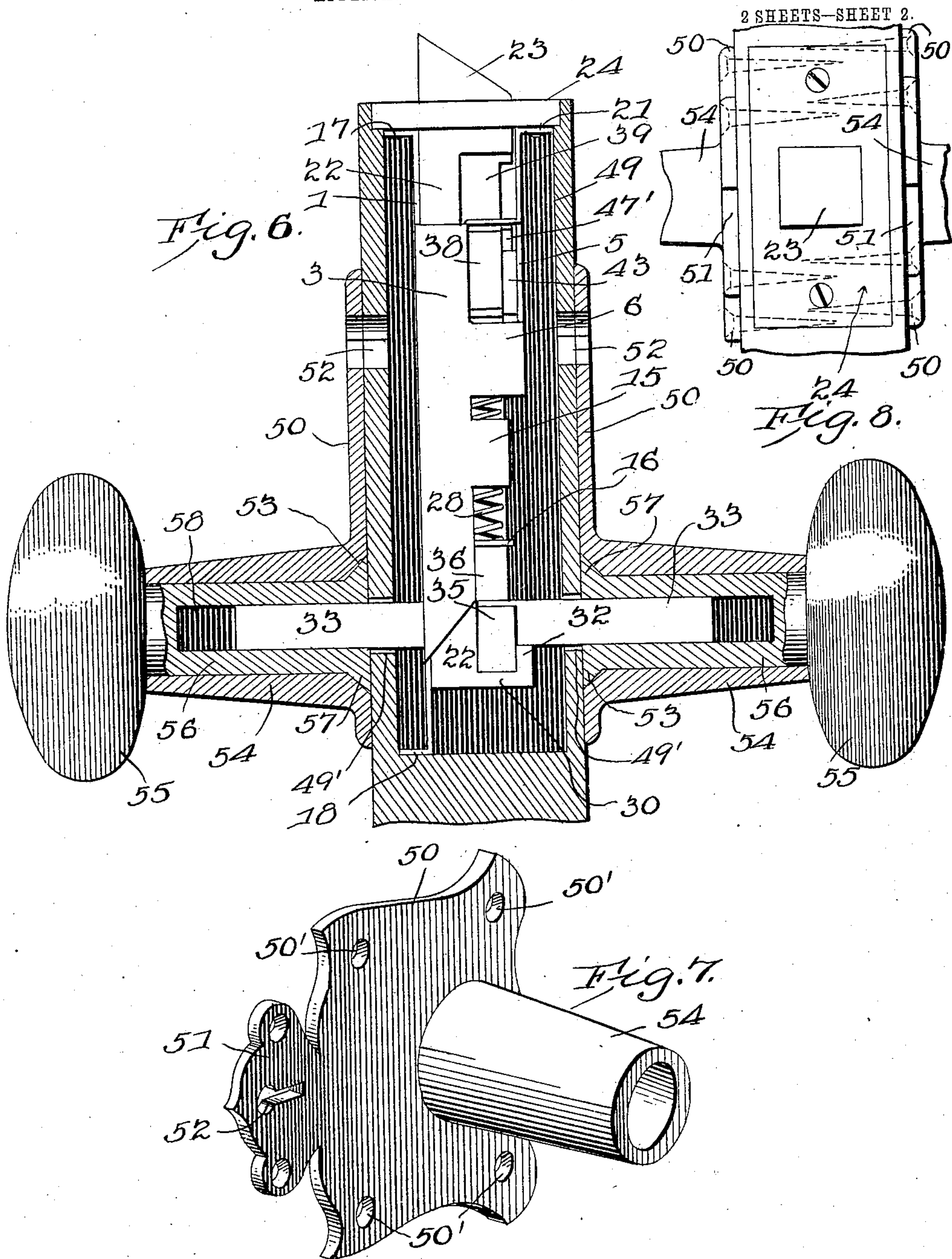
Walter L. Frazer,  
INVENTOR.

By *C. A. Snow & Co.*  
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# UNITED STATES PATENT OFFICE.

WALTER L. FRAZER, OF NATIONAL CITY, CALIFORNIA.

## COMBINED LOCK AND LATCH.

No. 856,046.

Specification of Letters Patent.

Patented June 4, 1907.

Application filed February 28, 1906. Serial No. 303,483.

*To all whom it may concern:*

Be it known that I, WALTER L. FRAZER, a citizen of the United States, residing at National City, in the county of San Diego and State of California, have invented a new and useful Combined Lock and Latch, of which the following is a specification.

This invention relates to locks and latches, and has for its object to provide certain new and useful improvements in devices of this character whereby a lock and a latch are combined in a single device, one bolt serving the double capacity of a latch and a locking bolt.

It is proposed to assemble the several parts of the lock in compact form in order that they may take up comparatively little space and be assembled around a central axis to enable the mounting of the device in a single opening bored or otherwise cut through the free edge of a door.

With these and other objects in view, the present invention consists in the combination and arrangement of parts as will be hereinafter more fully described, shown in the accompanying drawing and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size and minor details may be made, within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing: Figure 1 is a side elevation of a combined lock and latch embodying the features of the present invention. Fig. 2 is a cross sectional view on the line 2—2 of Fig. 1. Fig. 3 is a longitudinal sectional view on the line 3—3 of Fig. 1. Fig. 4 is a detail view of the bolt. Fig. 5 is a plan view of the blank from which the lock case is bent. Fig. 6 is a sectional view taken through a door showing the present lock mounted therein and a pair of knobs assembled therewith. Fig. 7 is a detail perspective view of one of the escutcheon plates employed for mounting the knobs. Fig. 8 is a fragmentary edge elevation of a door equipped with the lock of the present invention to illustrate the peculiar disposition of the escutcheon plates, whereby the fastenings of one plate are out of alinement with the fastenings of the opposite plate so as to avoid interference when the lock is applied to a relatively thin door.

Similar numerals of reference designate

corresponding parts in all of the figures of the drawing.

The case for housing the operating parts of the present invention is designed to be formed from a single blank of plate metal which is in the form shown in Fig. 5 prior to being folded, and includes a substantially oblong side plate section 1, and another side plate section 2, the two sections being connected by a web 3. Upon the outer face of the side plate section 2 there is a web portion 4 from which projects a guard portion 5 provided upon its outer edge with a web portion 6. The two side plate sections and the guard section are respectively provided with key holes 7, 8 and 9, which are designed to come into alinement when the blank has been bent to form the case. A knob spindle opening 10 is formed in one end portion of the side plate section 1. Openings 11 and 12 are formed in the side plate section 2, and a slit 13 extends between the openings so as to form ears 14 and 15 which are designed to be bent outwardly to form guards as will hereinafter appear. The opening 12 is formed so as to produce an ear 16 which is also bent outwardly at substantially right angles to the part 2. By reference to Fig. 2 of the drawing, it will be noted that the web portion 3 is bent at substantially right angles to the section 1 and then the section 2 is bent over parallel to the section 1, after which the web portion 4 is bent outwardly from the section 2, the guard member 5 then bent across the outer side of the section 2 and the web 6 bent back against the section 2. The opposite extremities of the section 1 are bent outwardly to form attaching wings or flanges 17 and 18 which are provided with suitable openings for the reception of fastenings. The forward end portion of the section 2 is bent outwardly as at 19 to form a shoulder and thence bent forwardly as at 20, so as to be parallel to the section 1, its extremity being then bent outwardly to form an attaching ear 21 lying in the same plane with the ear 17. By this formation, the case is divided into two longitudinal compartments defined by the sections 1, 2 and 5, and in these compartments are mounted the operating parts of the lock.

Within that compartment which lies between the sections 1 and 2, is the combined latch and bolt member 22 which has its forward end beveled as at 23 and working



through a face plate 24 to the back of which the ears 17 and 21 are secured by rivets or other fastenings. The beveled end or head 23 of the bolt is laterally enlarged, as best shown in Fig. 3 of the drawing, the plate member 2 being bent outwardly as at 19, to accommodate the enlarged head and to form a stop for contact by the head to limit the rearward movement of the bolt. At about the middle of the bolt there is an opening 25, and at the rear end of this opening there is a shoulder 26 which works in the opening from which the ears 14 and 15 of the case have been bent, and in rear of the shoulder there is a socket or seat 27. In this socket or seat is a helical spring 28 having its forward end bearing against the shoulder 26 of the bolt and its rear end bearing against the shoulder 16 of the plate section 2 of the case. By this arrangement of spring, the bolt is yieldably held at its forward limit and may be retracted until stopped by contact of its head 23 with the shoulder 19. It will here be noted that the wings 14 and 15, are bent around the spring 28 so as to form guards to prevent lateral displacement of the spring from the socket 27.

In the rear end portion of the bolt there is a longitudinal opening 29, at the rear end of which is a shoulder 30 having its inner face beveled or inclined rearwardly and outwardly from a central point, as shown at 31 in Fig. 4, there being a flange 32 carried by the outer end of the shoulder and overhanging the bolt. A suitable knob spindle 33 is rotatable in the slot 29 and the opening 10 of the face section 1, the rear end of the face section 2 being provided with a segmental notch 34 to accommodate the knob spindle. Cams 35 are carried by opposite sides of the knob spindle 33 and work in frictional engagement with the respective inclined faces 31 of the shoulder 30 on the bolt to withdraw the latter against the tension of the spring 28.

For the purpose of locking the bolt at its forward limit, there is a swinging detent 36 located in the compartment between the face section 2 and the guard 5 and pivotally supported at its rear end as at 37. The forward free end of the detent is provided with a depending head 38 working across the back of the shoulder 19 and designed for engagement with a shoulder 39 upon the bolt so as to lock the latter against rearward movement.

Upon examination of Figs. 2 and 3 of the drawing, it will be noted that the key holes 7, 8 and 9, are in alinement with the opening 25 in the bolt, and the rear edge of the head 38 is accessible to the ward of a key introduced through the key holes, said rear edge being provided with a seat 40 for the reception of the ward, whereby the detent may be swung into engagement with the shoulder 39

to lock the bolt, and also swung out of engagement with the shoulder 39 to permit of the bolt being retracted by the knob spindle 33.

By reference to Fig. 1 of the drawing, it will be noted that the upper edge of the detent 36 is notched or recessed as at 41 for the reception of the web 4 when the detent is in its locked position, whereby the web 4 takes the rearward strains occasioned by an attempt to force the bolt rearwardly and thereby the pivotal support 37 is relieved of such strains. The pivotal support 37 of the detent is received within a longitudinal slot 42 in the bolt, as best shown in Fig. 4 of the drawing, to permit of the necessary endwise play of the bolt.

From the foregoing description, it will be seen that the single bolt serves as a latch and as a lock, the device being a latch when the detent 36 is out of engagement with the shoulder 39 of the bolt, and the device being a lock when the detent 36 is engaged with the shoulder 39 to prevent withdrawal of the bolt. The several parts of the bolt are compactly arranged around a central axis and capable of being introduced as an entirety into an opening bored or otherwise cut through the free edge of the door.

Relative to the formation of the lock case from a single blank, it will be noted that the successive sections through which the key holes are cut form ward guards and thereby obviate the necessity of providing extraneous guard members, thereby materially reducing the cost of the lock.

It is proposed to lock the detent 36 by means of one or a series of tumblers, one of which has been shown at 43, disposed parallel to the head of the detent in the compartment between the walls or partitions 2 and 5. This tumbler is pivoted at one end, as indicated at 44, upon the case portion 5, and has its free end provided with an I-shaped opening 45 in which is received a stud or projection 46 carried by the head of the detent. A spring 47 is carried by the front edge of the tumbler and bears against the shoulder 19 of the case so as to yieldably force the tumbler rearwardly.

With the device locked, as in Fig. 1, to unlock the same, a key is introduced into the lock and turned toward the tumbler so as to have one of its wards engage the tumbler and swing the same forwardly until the vertical portion of the slot 45 comes into alinement with the projection 46, whereupon the ward of the key wipes across the inclined shoulder 48 upon the head of the detent and swings the detent downwardly until the projection 46 comes into the lower transverse branch of the slot 45, whereupon the ward of the key disengages the tumbler and the spring 47 forces the tumbler rearwardly so as to bring the projection 46 into the forward portion of the lower transverse branch of the slot,



whereby the detent will be locked against accidental swinging. It will here be explained that when the device is locked, as in Fig. 1, the projection 46 of the detent occupies the forward end of what will be termed the inner transverse branch of the slot 45, thereby to prevent swinging movements of the detent, and when the latter is unlocked and the detent is swung downwardly away from the shoulder 39, the projection 46 will lie in the forward end of the outer branch of the slot and thereby prevent accidental swinging of the detent. While only one tumbler has been shown, I of course contemplate using a series of tumblers wherever a more complicated lock is desired.

For assembling knobs with the knob spindle 33 of the present lock when the latter is mounted in a door, I provide the arrangement shown in Fig. 6, wherein has been shown a portion of a door 47' with the lock mortised therein and the knob spindle projecting through openings 49' in opposite sides of the door. Duplicate escutcheon plates 50 are applied to opposite sides of the door, one of such escutcheon plates being shown in detail in Fig. 7. This plate is flat and has suitable ornamental configuration and is also provided with countersunk openings 50' for the reception of suitable fastenings to connect the plate to the door. At one edge of the plate there is an extension 51 having a key-hole slot 52 for alinement with the key-hole slots 7, 8 and 9 of the case of the lock. An opening 53 of considerable size is formed through the plate for the reception of the adjacent end portion of the knob spindle, and from the walls of this opening there extends a tubular sleeve 54 which is open at its outer end. The knob 55 has a stem 56 rotatable within the sleeve 54 with its inner end upset, as at 57 in the counter-sunk opening 53, whereby the knob is swiveled upon the sleeve and is held against outward displacement therefrom. The stem 56 is provided with a non-circular bore 58 intersecting its inner end for the reception of the adjacent end of the knob spindle, whereby the latter will rotate with the knob.

The advantage of the present knob arrangement resides in the fact that the pull upon the knob is applied to the door through the escutcheon plate 49 instead of through the knob spindle to the lock and then to the door, whereby the lock is entirely removed of all strain occasioned by the opening and closing of the door. Furthermore, as the stem of the knob is not positively connected to the knob spindle, the knob is adapted for connection with the spindle regardless of the thickness of the door.

By reference to Fig. 8 of the drawings, it will be noted that the sleeve 54 of each escutcheon plate is disposed slightly at one side of the center thereof so that when a pair

of escutcheon plates are applied to a door, the openings 50' of one plate will be out of alinement with the corresponding openings of the other plate, wherefore, in a thin door, the fastenings of one plate will be out of alinement with the fastenings of the other plate and overlap the same without interfering therewith.

Having thus described the invention, what is claimed is:

1. A lock including a case divided into compartments, the walls of the compartments being pierced by key holes and forming ward guards, a bolt working in one of the compartments, and a locking detent working in another compartment in co-operative relation with the bolt to lock the same.

2. A lock including a case divided into compartments, one of the walls having wings struck therefrom and producing an opening therein, a shoulder struck up from one end of the opening, a bolt working in one of the compartments and having a shoulder working in the opening, and a helical spring interposed between and bearing against the shoulders of the bolt and the case, the guards embracing the spring to prevent lateral displacement thereof.

3. A lock including a case, a bolt working therein, and a swinging detent the front end of which engages a projection on the bolt, said detent having a recess, the case being provided with a portion to enter the recess and relieve strain from the pivotal support of the detent when the latter is locking the bolt.

4. A lock including a case formed from a blank which is bent back and forth to form compartments, the wall of one of the compartments being bent transversely across the next compartment to enlarge the first mentioned compartment, and a bolt working in the first mentioned compartment and having a laterally enlarged head working in the enlargement of said compartment, the rear wall of the enlarged portion of the compartment forming a stop for engagement by the head of the bolt to limit rearward movement of the latter.

5. A lock including a case formed of a blank which is bent back and forth to form compartments, a wall of one of the compartments being bent laterally across the adjacent compartment to form an enlargement of the first mentioned compartment, a bolt working in the first mentioned compartment and having a laterally enlarged head working in the enlargement of the compartment, the rear wall of the compartment enlargement forming a stop for engagement by the head of the bolt to limit rearward movement of the latter, the bolt being provided with a shoulder projecting into the compartment having the enlargement, and a detent working in the adjacent compartment in co-operative relation



with the shoulder upon the bolt to lock the latter.

6. A lock including a case formed of a blank which is bent back and forth to form two  
5 compartments, the intermediate wall of the case having offset longitudinal wings and a transverse ear bent therefrom into one of the compartments and producing an opening in the wall, a bolt working in the other com-  
10 partment and having a shoulder working in the opening in said wall, a helical spring interposed between the shoulder and the ear, the wings embracing the spring and forming guards therefor, a swinging detent mounted  
15 in the first mentioned compartment, a shoul-

der upon the bolt in co-operative relation with the detent, the case being pierced by a key hole to give access to the detent, a knob spindle piercing the case and the bolt, the bolt having a slot to accommodate the spin- 20 dle, a cam upon the spindle, and a shoulder upon the bolt in co-operative relation with the same.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature 25 in the presence of two witnesses.

WALTER L. FRAZER.

Witnesses:

D. F. BEERMAKER,  
S. E. EDWARDS.