

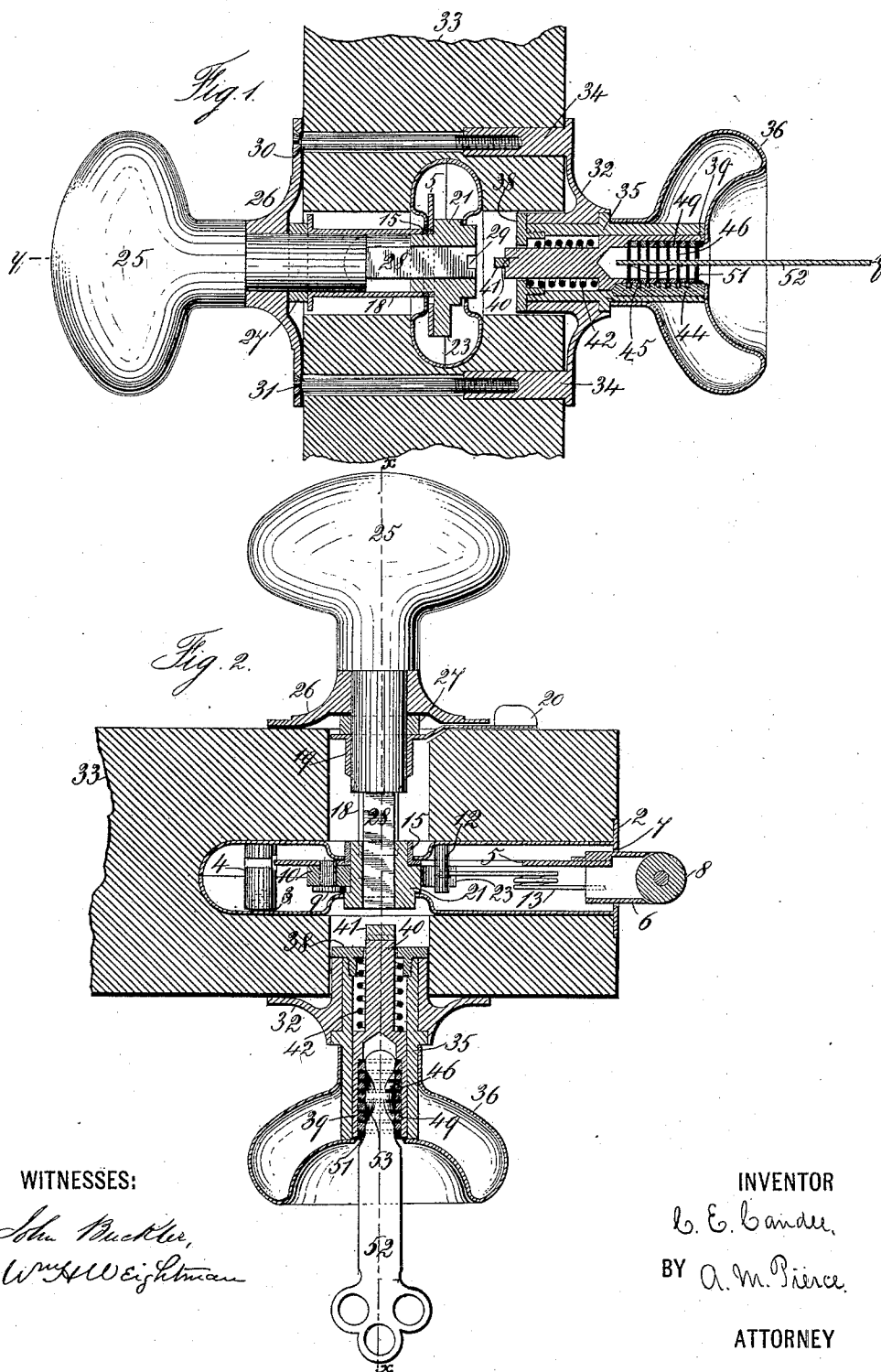
(No Model.)

3 Sheets—Sheet 1.

C. E. CANDÉE.
LOCK.

No. 474,519.

Patented May 10, 1892.



WITNESSES:

John Buckler,
Wm W Weightman

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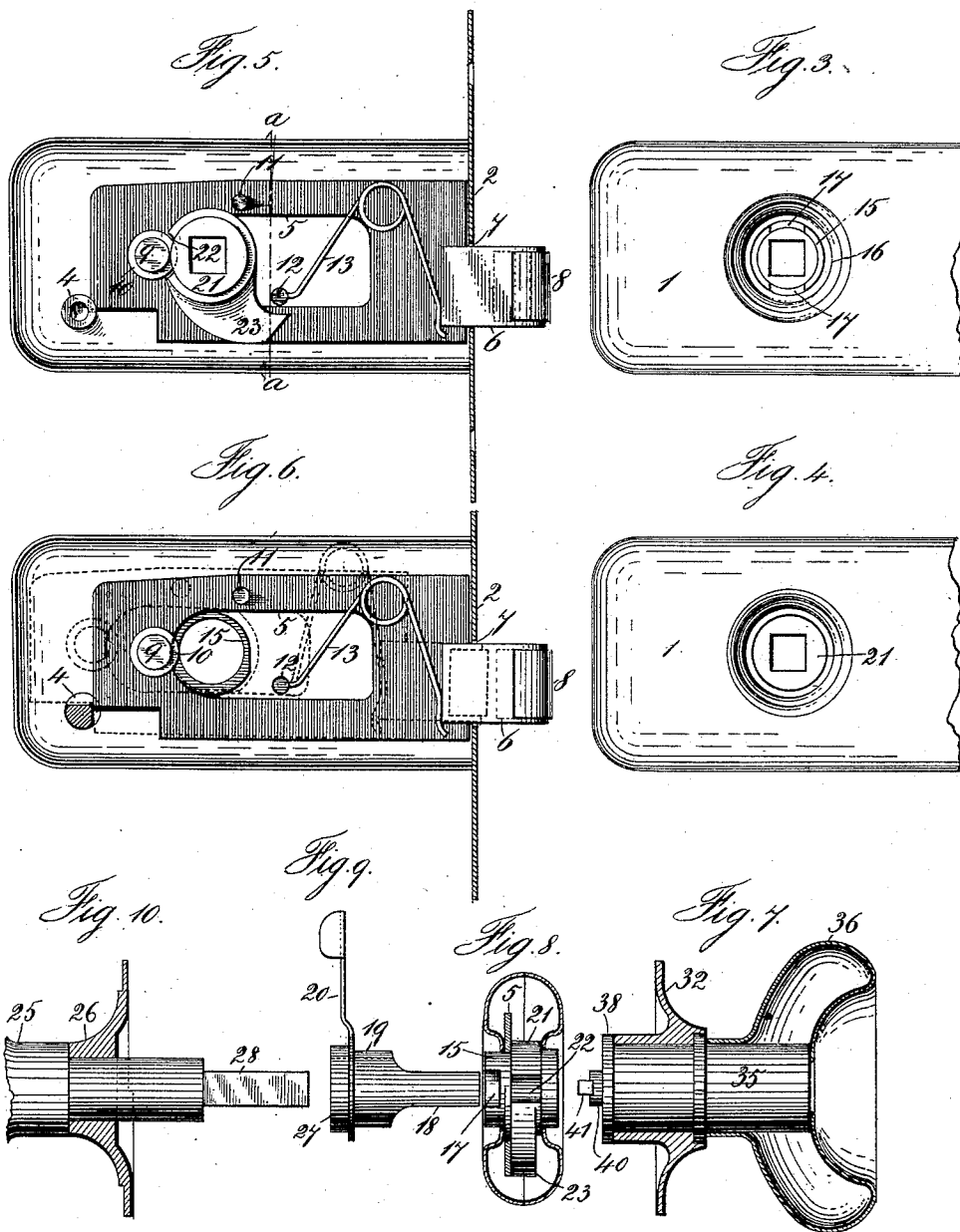
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C. E. CANDEE.
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(No Model.)

3 Sheets—Sheet 3.

C. E. CANDEE.
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Fig. 11.

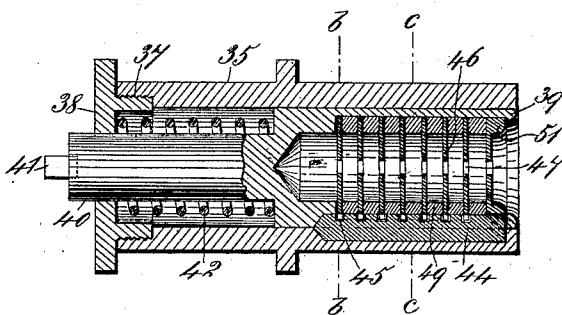


Fig. 13.

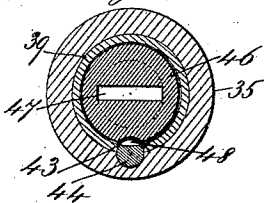


Fig. 12.

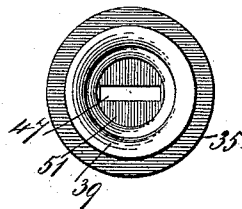


Fig. 15.

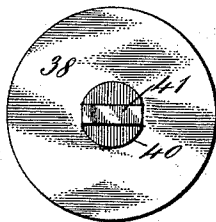
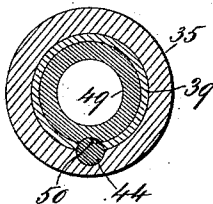


Fig. 14.



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UNITED STATES PATENT OFFICE.

CHARLES E. CANDEE, OF BROOKLYN, NEW YORK.

LOCK.

SPECIFICATION forming part of Letters Patent No. 474,519, dated May 10, 1892.

Application filed January 9, 1892. Serial No. 418,120. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. CANDEE, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Locks, of which the following is a specification.

My invention relates especially to that class of locks used upon outside doors, and has for its object the provision of a cheap, simple, and effective lock, wherein the amount of material used and the number of parts employed may be reduced to a minimum and the lock easily and readily applied to a door.

To attain the desired end, my invention consists, essentially, in a shell for the bolt and actuating parts struck up of suitable sheet metal, a bolt of peculiar construction, a divided spindle, one portion whereof is secured to the inside knob, the other portion extending from the outside knob and having connection with a series of tumblers and washers in said knob and arranged to be moved inwardly with the outer portion of the spindle when a suitable key is inserted within the knob and pressed inward, thus coupling the two portions of the knob-spindle together.

My invention also involves certain other novel and useful combinations or arrangements of parts and peculiarities of construction and operation, all of which will be hereinafter first fully described, and then pointed out in the claims.

In the drawings, Figure 1 is a vertical cross-sectional view through the bolt-shell and lock, shown in place in a door, at line *xx* of Fig. 2. Fig. 2 is a longitudinal horizontal sectional view at line *yy* of Fig. 1. Fig. 3 is a side elevation of a portion of the bolt-shell with the knob and spindle removed, and Fig. 4 is a like view of the opposite side of the said shell. Fig. 5 is an internal view of the shell, the spindle being removed, showing the location and arrangement of the bolt-plate, the bolt, and actuating parts. Fig. 6 is a like view, the dotted lines showing the position of the parts when the bolt is thrown back, the hub located upon the knob-spindle being removed. Fig. 7 is a longitudinal sectional view of the outside knob and rose and the shell of the locking mechanism located within said knob. Fig.

8 is a cross-sectional view of the bolt-shell at line *aa* of Fig. 5. Fig. 9 is a side view of the regulating mechanism controlling the working of the bolt, shown as detached. Fig. 10 is a sectional view through the inside rose, the spindle being shown in elevation. Fig. 11 is an enlarged axial sectional view through the shell and lock mechanism located within the outside knob and the shank thereof. Fig. 12 is a view in elevation, looking from the right of Fig. 11. Fig. 13 is a cross-sectional view at line *bb* of Fig. 11, and Fig. 14 is a like view at line *cc* of the same figure. Fig. 15 is an end elevation of Fig. 11, looking from the left.

Similar numerals of reference wherever they occur indicate corresponding parts in all the figures.

1 is the shell, made of sheet metal, preferably steel, struck up in such a manner as to form the entire shell in two portions. One of these portions is secured to a face-plate 2 and the other arranged to be secured in place by a screw 3, passing into a stud 4. This stud 4 is slotted at two sides, as shown in Figs. 2 and 6, acting as a guide and stop for the bolt-plate.

5 is a bolt-plate fitting within the shell 1 and bearing a nose 6 therein projecting through a perforation 7 in the face-plate 2. This nose terminates in a roller 8, pivoted in the top and bottom of the nose, designed to strike the nose-plate in the door-frame when the door is closed and receive the blow, readily turning and pressing the bolt inward, preventing undue straining of the parts and friction thereon and reducing the noise made to a minimum. The plate 5 is cut out at its center, as particularly illustrated in Figs. 5 and 6. The bolt-plate bears a stud 9 near its inner end, whereon is placed a friction-roller 10. The lower rear corner of the bolt-plate 5 is cut away in such a manner that the stud or stop 4 shall limit the inward movement of the said plate. 11 is a stop-pin fixed in the bolt-plate 5.

12 is a stud secured to the shell 1, and 13 is a spring fixed to said stud, the free end bearing against the nose-piece and normally throwing the same outward.

15 is an eccentric-ring mounted in a perforation in the shell 1. Upon its outer face this

ring 15 is provided with notches 17, into which fit arms 18, projecting inwardly from a ring 19, said ring bearing a manipulating-arm 20, arranged to project from beneath the rose upon the inside of the door, as particularly illustrated in Fig. 2 of the drawings. When the eccentric 15 is in the position indicated in Fig. 6, the bolt-plate is thrown downward in such a manner that the lower rear corner comes in contact with the stud 4, and the bolt cannot be thrown back until the eccentric is turned. If now the eccentric be turned a quarter of a revolution toward the left, the bolt-plate may be thrown out of contact with the stud 4 by the turning of the knob-spindle, as hereinafter described.

21 is a hub provided with a square perforation in its center for the passage of the knob-spindle. At one side the periphery of the hub is cut away at 22, as particularly shown in Figs. 5 and 8, in such a manner as to form a cavity into which the friction-wheel 10 and stud 9 project when the bolt-plate is pushed forward, preventing the raising of the bolt-plate unless the hub is turned. Projecting from the hub 21 is a finger 23, arranged to force the bolt-plate backward by bearing against the friction-wheel when the hub is rotated by means of the knob-spindle.

The operation of throwing back the bolt is as follows: When the hub first begins to turn, the pressure is brought upon the under side of the friction-wheel 10, raising the plate out of engagement with the stud 4. Then the finger 23 comes in contact with said friction-wheel, forcing the bolt-plate backward until the finger strikes against the stop-pin 11. As the hub revolves and the bolt returns to its normal position, the friction-wheel and stud again enter depression 22, the end of the bolt-plate dropping back into place in front of the stud 4.

25 is the inner knob of the lock, passing through a rose 26 and held in place by a collar 27, fixed upon the spindle 28. The inner extremity of the spindle is notched, as at 29, and extends into the perforation in the hub 21, wherewith said spindle engages. The rose 26 is perforated at 30 for the passage of the holding-screws 31.

32 is a rose arranged to be placed upon the exterior of the door 33. This rose is provided with lugs 34, having screw-threaded perforations therein, wherewith the screws 31 engage.

35 is a shell passing through the perforations in the rose 32 and to which the knob 36 is secured. This shell is provided with a screw-thread 37 upon its interior at the inner end, with which engages a perforated nut 38, holding the shell 35 into the rose 32. Within this shell 35 is located a tube 39, bearing at the inner end a knob-spindle 40, having a coupling-tongue 41 upon its inner extremity. The spindle 40 and the tube 39 are normally thrown outward by a spring 42. One side of

the tube 39 is slotted at 43, and a feather 44, provided with notches 45 cut therein, enters the slot 43, said feather being secured in or formed with the outer shell 35.

Within the tube 39 are placed a series of tumblers 46, each having a central slot or perforation 47 and a notch 48 in the edge or periphery. Between the tumblers 46 are placed rings or washers 49, each having a notch 50 in its periphery.

51 is a loose washer through which the key-hole passes from the exterior of the lock mechanism.

52 is the key, having curves or waves 53 at both edges, said key being arranged to pass into the slots in the tumblers without turning. The position of the notches in the periphery of each tumbler in relation to the feather 44 corresponds to the position into which each tumbler is forced when the key is fully inserted. The exterior knob 36 is free to revolve in the rose in either direction when the parts are in the position shown in Figs. 1 and 2; but when the key is inserted and pressed inward, the notches in all of the tumblers being brought in line upon the feather, the tube 39 is free to slide inward, carrying the spindle 40, until the tongue 41 enters the slot 29 in the inner portion of the spindle, coupling the two parts together, and while in this position the turning of the exterior knob will cause the bolt to be withdrawn, permitting the opening of the door, if the eccentric 15 be located in the proper position to permit the raising of the rear end of the bolt-plate. As the key is drawn outward, it will carry the tumblers back into engagement with the notches in the feather and the parts will resume the position shown in Figs. 1 and 2, the divided spindle being uncoupled.

By changing the number of tumblers and the curves in the key and varying the thickness of the separating-washers the number of different locks which may be constructed upon this principle may be infinitely varied. It will thus be seen that my improved lock, while simple in construction and operation, is very effective and secure, and in putting it into position in a door a very little work is required. Two holes are bored in the edge of the door and the space between cut out with a chisel. A hole is bored through the door at right angles thereto for the reception of the spindle and two small holes for the passage of the holding-screws and the lugs 34, employed for holding the said parts in place. The thickness of the door may vary without requiring any change in the construction.

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

1. In a lock of the character herein specified, a bolt-plate mounted within a shell and provided with a projecting nose having a roller vertically pivoted therein, said plate extending at a right angle to the face-plate when the

bolt is locked and turning slightly divergent from a right angle when free to move longitudinally, in combination with a stop fixed within the lock-shell, said stop being slotted upon two of its sides for the reception of the bolt-plate, a spring for normally throwing the bolt outward, and mechanism for raising the heel of the bolt-plate out of engagement with the above-mentioned stop, whereby the bolt-plate is freed for longitudinal movement, substantially as shown and described.

2. In a lock of the character herein specified, the combination, with the inclosing shell and bolt-plate, of a stop fixed in the shell, and an eccentric-ring mounted in the knob-spindle perforation, entering a longitudinal slot in the bolt-plate and being provided with means for turning the eccentric, substantially as and for the uses and purpose shown and described.

3. In a lock of the character herein specified, the combination, with the bolt-plate, a stop in the inclosing shell, and a stud upon the bolt-plate, of a hub for the reception of the knob-spindle, having one edge cut away to receive the stud upon the bolt-plate, whereby retraction of the bolt is prevented until the bolt-plate is raised, substantially as shown and described.

4. In a lock of the character herein specified, a stop in the inclosing shell, a stud upon the bolt-plate, and the bolt-plate, in combination with a hub for the reception of the knob-spindle, having one edge cut away to receive the stud upon the bolt-plate, said hub also bearing a finger for throwing the bolt-plate, substantially as shown and described.

5. In a lock of the character herein specified, a bolt-plate having a stud thereon, bearing a friction-roller, in combination with the inclosing shell, a stop fixed within said inclosing shell, and a hub for the reception of the knob-spindle, provided with a finger and having one edge cut away for the reception of the stud and friction-roller upon the bolt-plate, substantially as shown and described.

6. In a lock of the character herein specified, a divided spindle, one portion of which is fixed in engagement with a knob and with the mechanism for moving a bolt, the inner end of said spindle being slotted, the other portion of the divided spindle having a tongue upon its inner end, the outer extremity being fixed to or formed with a tube, wherein are located a series of tumblers and washers, said tumblers being adapted and arranged to engage with a notched feather fixed longitudinally in the outer knob, the outer portion of the spindle being free to revolve with the knob or adapted to move longitudinally and couple with the inner portion of the spindle, all combined and arranged substantially as shown and described.

7. In a lock of the character herein speci-

fied, a divided spindle, the inner portion of which is fixed in engagement with the knob and connected to the mechanism for moving the bolt, the outer portion of the spindle being adapted and arranged to be coupled with the inner portion and carrying a locking device located within the outer knob, said locking device consisting of a longitudinally-movable tube forming the outer portion of the spindle, which is normally thrown outward by a spring, a series of rotatable tumblers having notches in their peripheries, being mounted within the said tube and separated from each other by notched washers, and a notched feather projecting from the interior of the knob into a slot in the tube, the tube, spindle, tumblers, and washers being arranged to move bodily and together in a longitudinal direction when the key is passed into slots in the centers of the tumblers, the whole combined and arranged substantially as shown and described.

8. In a lock of the character herein specified, the combination, with the knob rotatably mounted in a rose, of a longitudinally-movable spindle, the outer portion of said spindle containing a series of tumblers having notches in their peripheries and key holes or slots in their centers, said tumblers being adapted and arranged to engage with a slotted feather at the side of the inclosing case or shell or be released therefrom and moved with the spindle bodily in a longitudinal direction and without rotation, substantially as shown and described.

9. In a lock of the character herein specified, the combination, with the outer knob and its shank having an opening there-through into which projects a notched feather, of a longitudinally-movable tube located in said opening and having a slot in its periphery into which said feather extends, a series of tumblers mounted in said tube, a series of washers separating said tumblers, and a spindle connected to the longitudinally-movable tube, the whole arranged to operate substantially as shown and described.

10. In a lock of the character herein specified, the combination, with a longitudinally-movable knob-spindle wherein are located a series of tumblers having central key-slots and notches at their peripheries placed at different angles to the key-slots, and with a notched feather fixed in the knob surrounding said tumblers, of a flat key having waves or curves in both of its faces, whereby the notches in the tumblers may be brought in line and the tumblers caused to move upon the feather without rotation, substantially as shown and described.

CHARLES E. CANDEE.

Witnesses:

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FRANK L. NICHOLS.