

No. 897,660.

PATENTED SEPT. 1, 1908.

B. REVOIR.
DOOR LOCK AND LATCH MECHANISM.

APPLICATION FILED MAY 28, 1906.

3 SHEETS—SHEET 1.

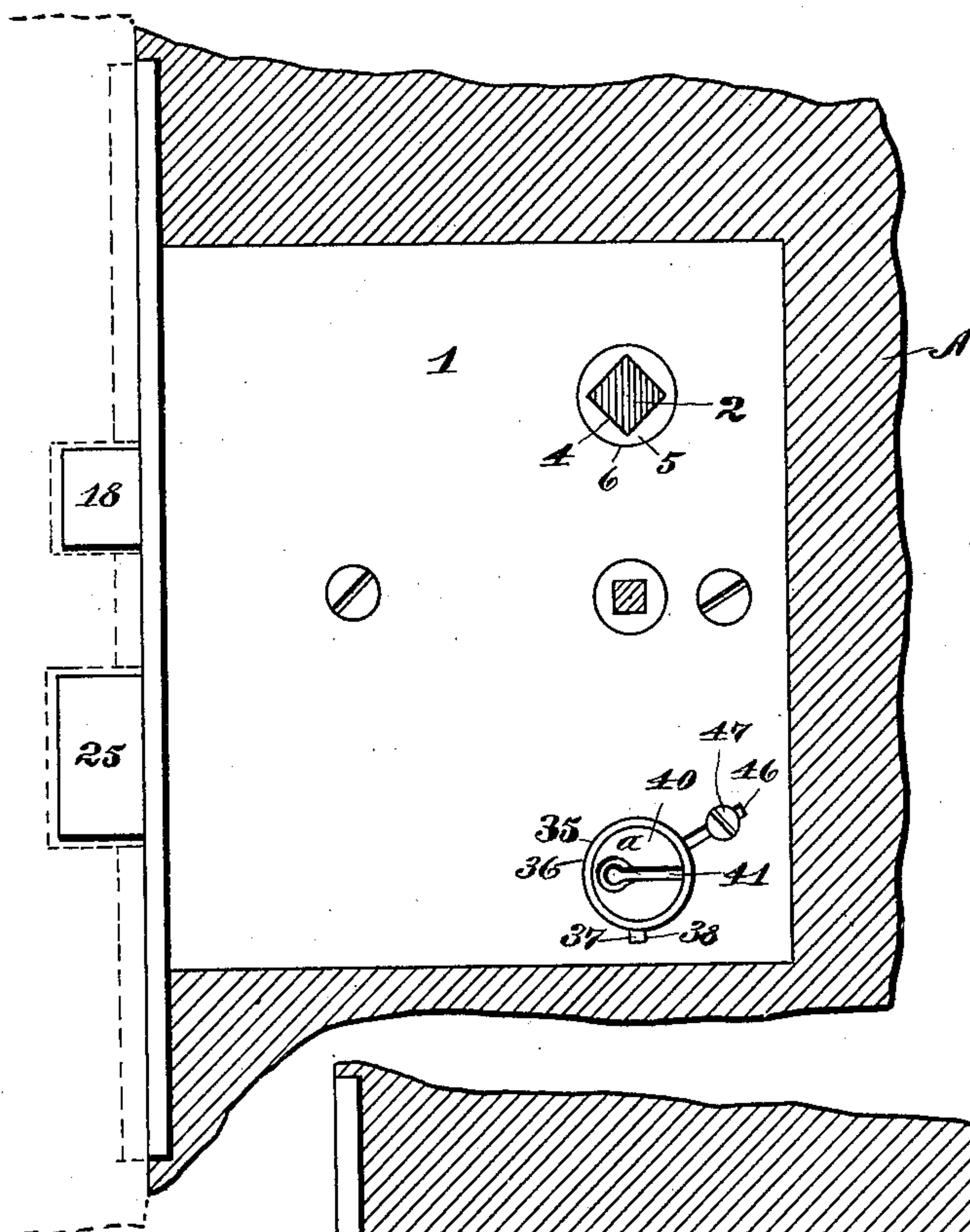
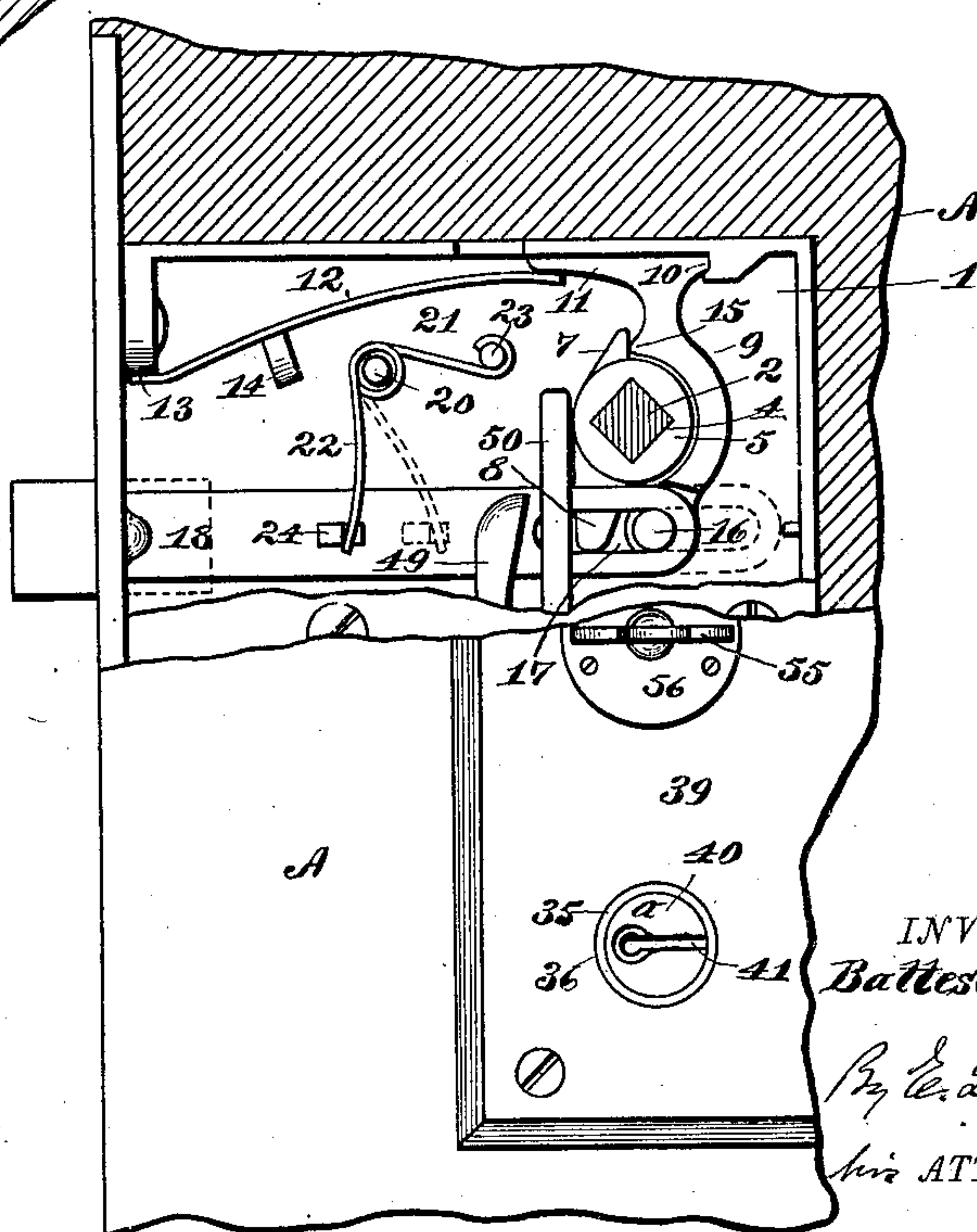


Fig. 1

Fig. 2



WITNESSES:

G. H. Fulmer.
J. J. Laass.

INVENTOR
Battese Revoir
By E. Laass
his ATTORNEY.

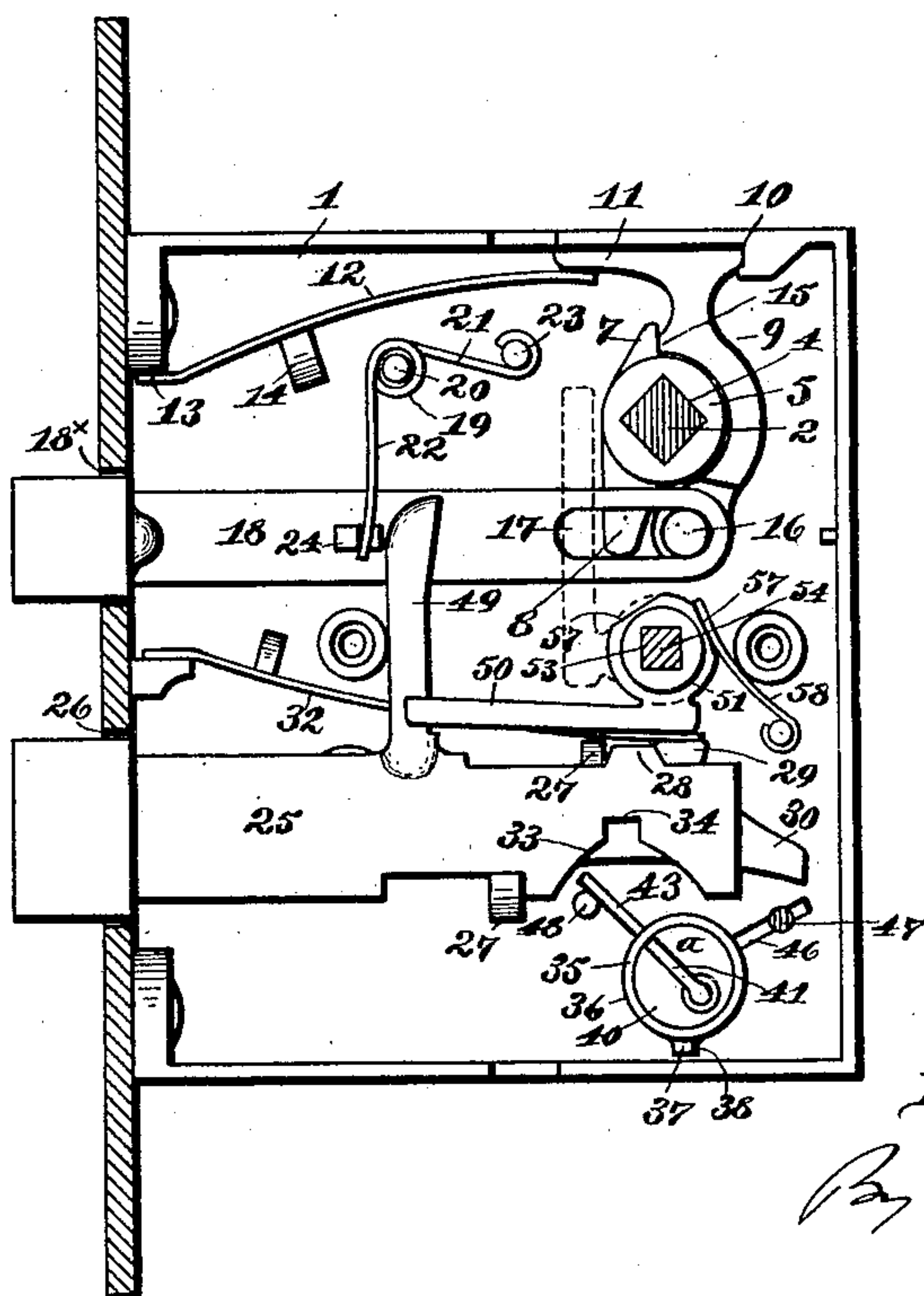
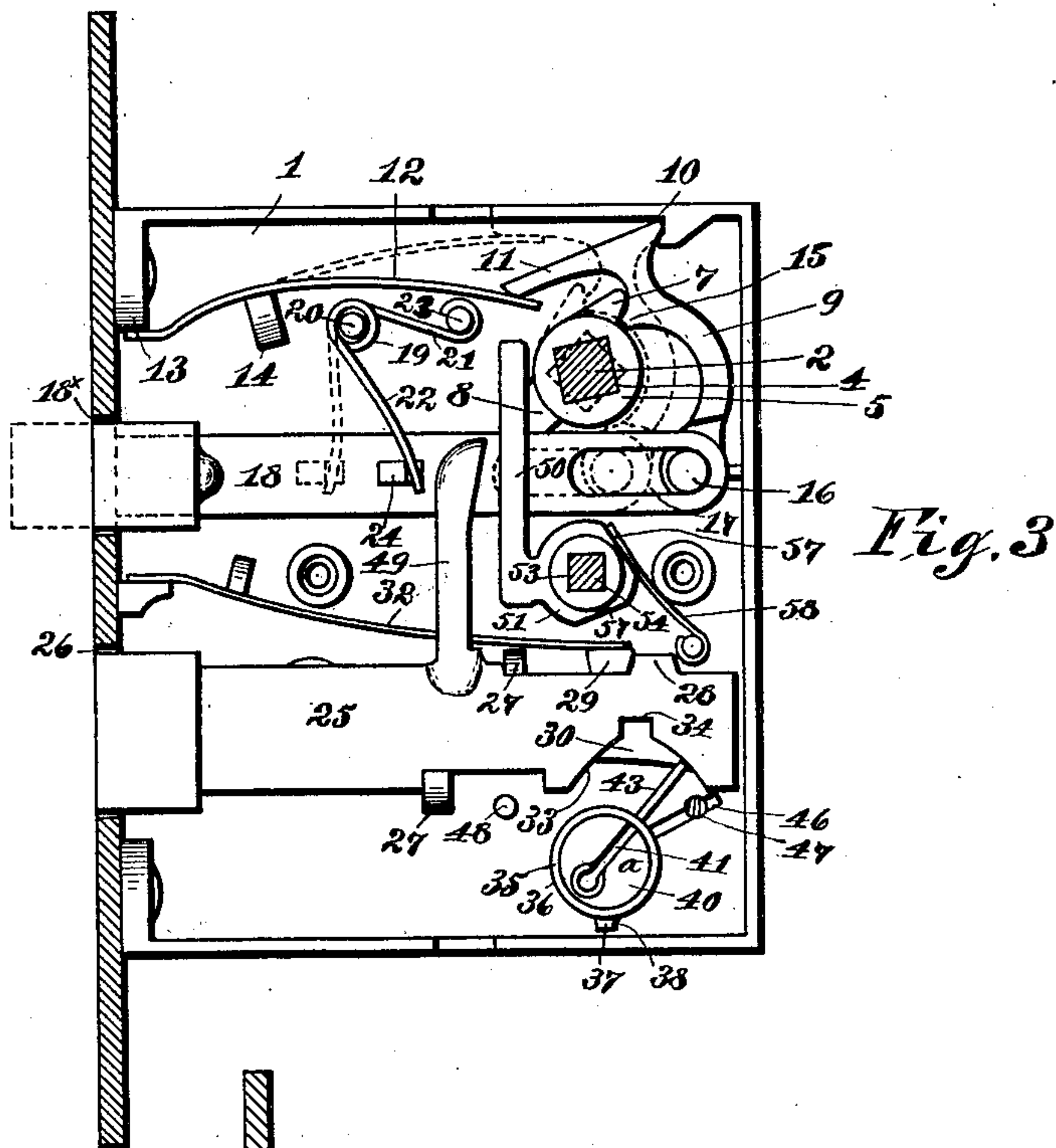
No. 897,660.

PATENTED SEPT. 1, 1908.

B. REVOIR.
DOOR LOCK AND LATCH MECHANISM.

APPLICATION FILED MAY 28, 1906.

3 SHEETS—SHEET 2.



WITNESSES:

L. H. Fulmer.
J. J. Laas.

INVENTOR

Battese Revoir

By E. Laas
his ATTORNEY.

No. 897,660.

PATENTED SEPT. 1, 1908.

B. REVOIR.
DOOR LOCK AND LATCH MECHANISM.

APPLICATION FILED MAY 28, 1906.

3 SHEETS—SHEET 3.

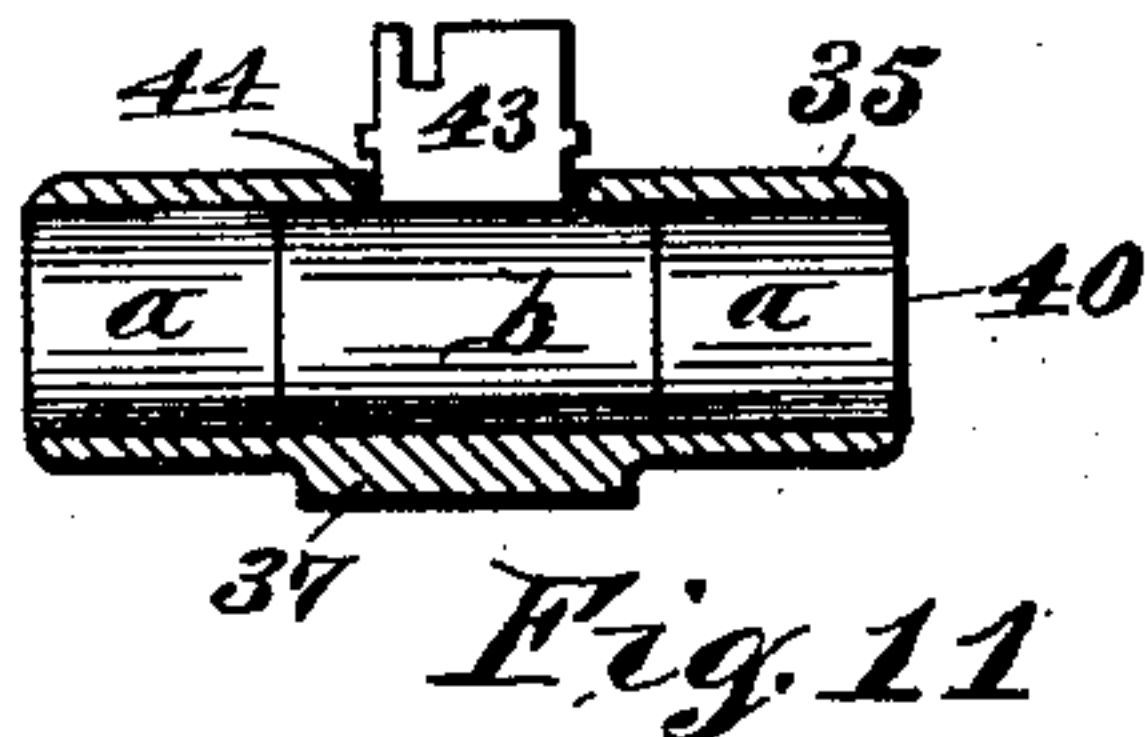


Fig. 11

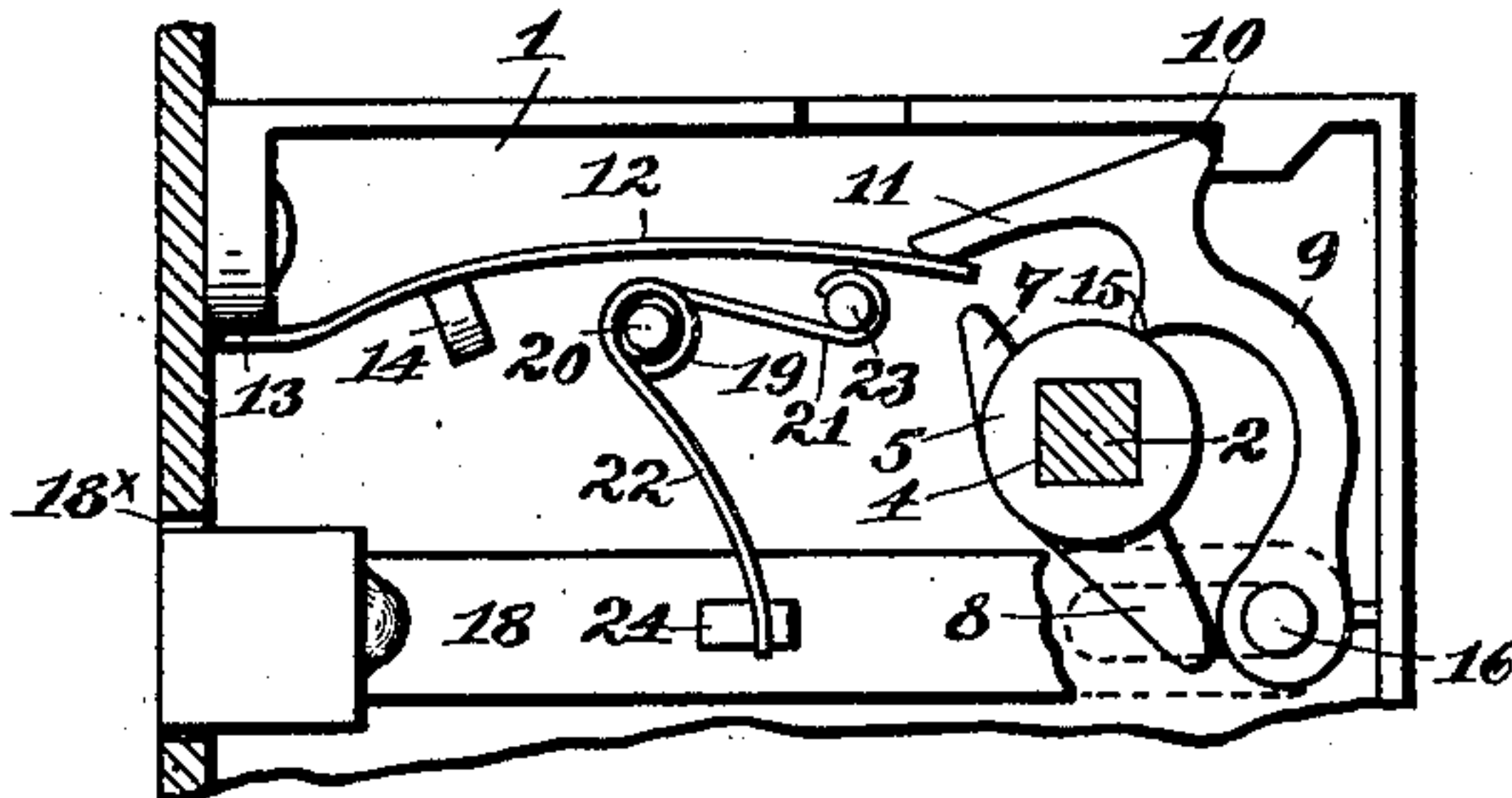


Fig. 6

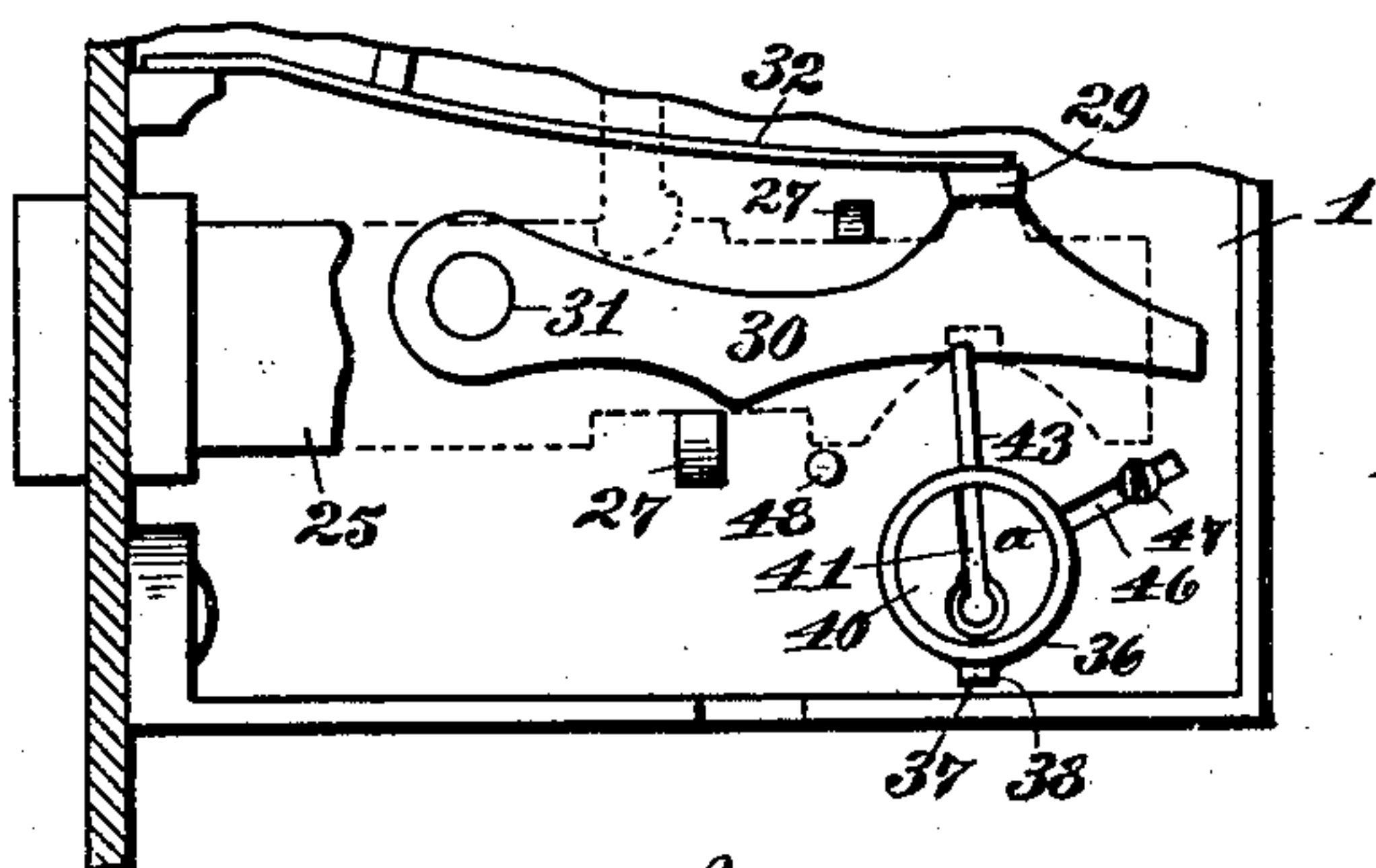


Fig. 7

Fig. 9

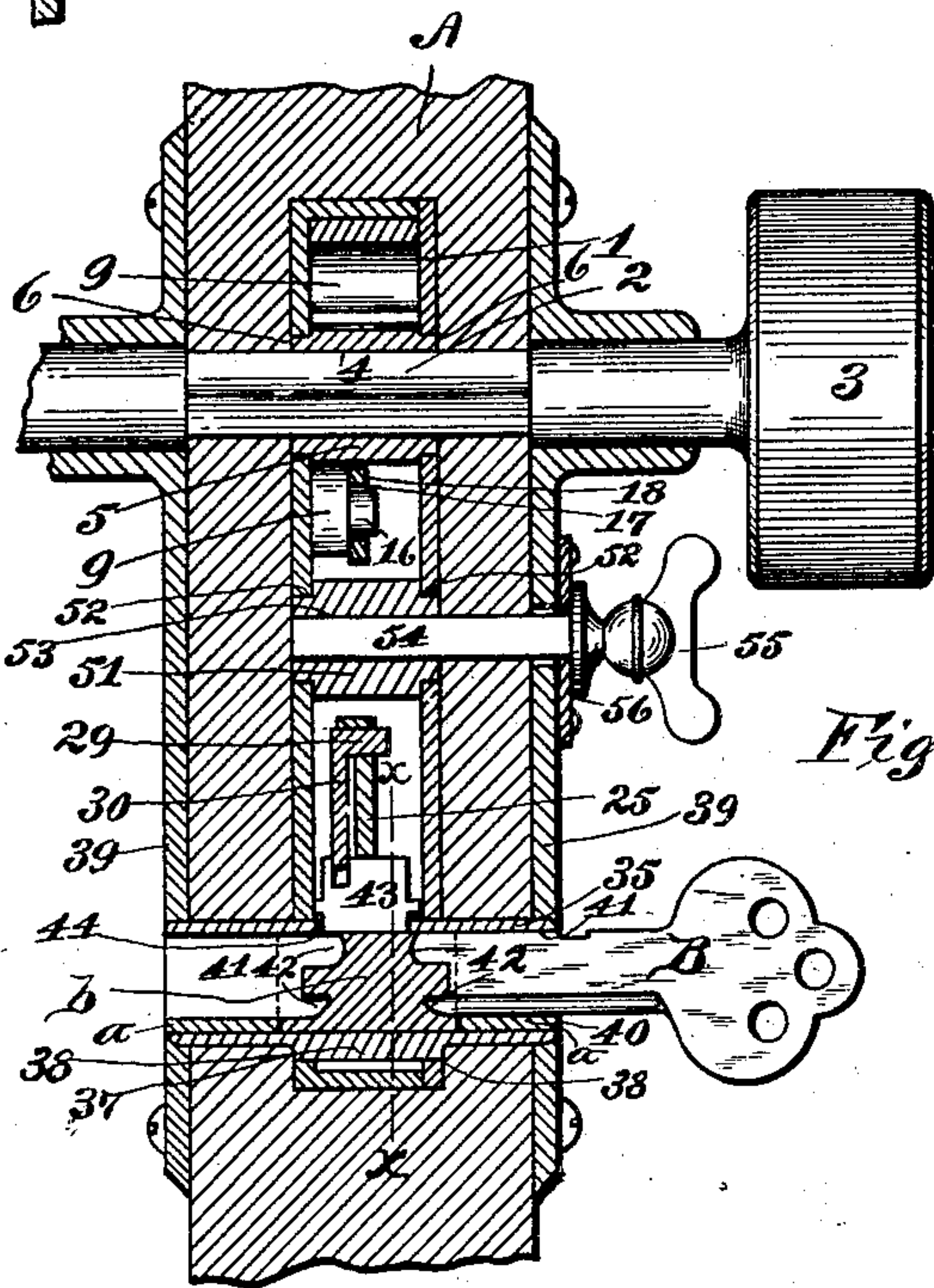
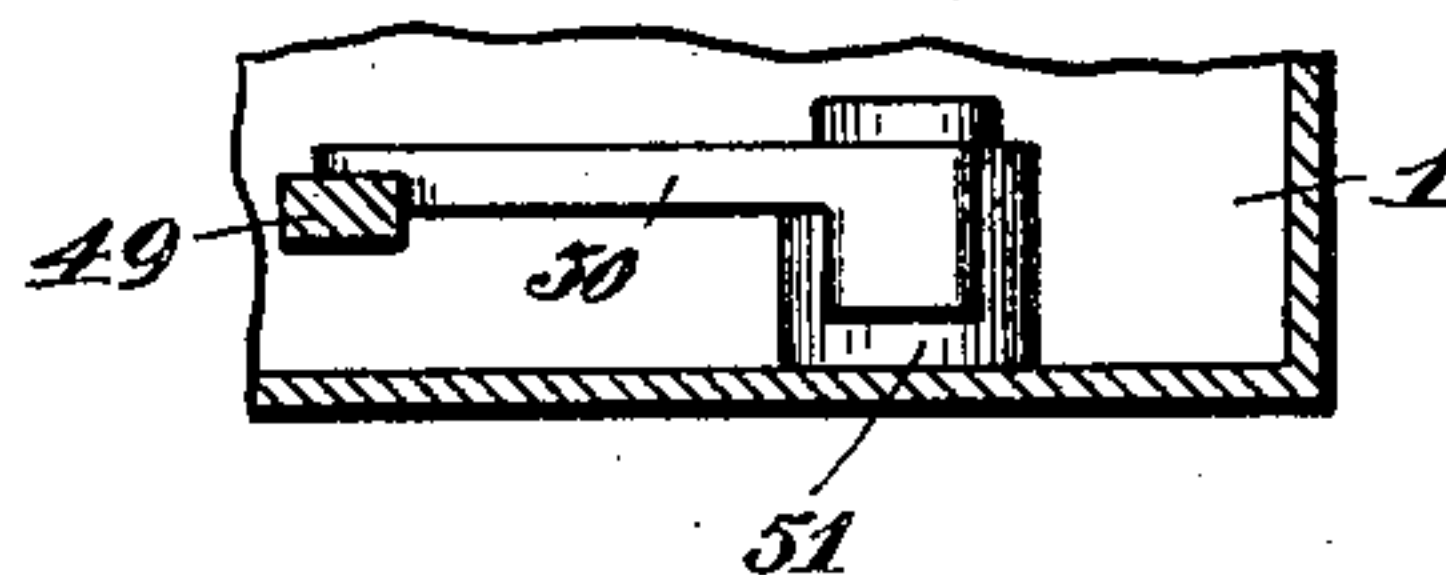


Fig. 5

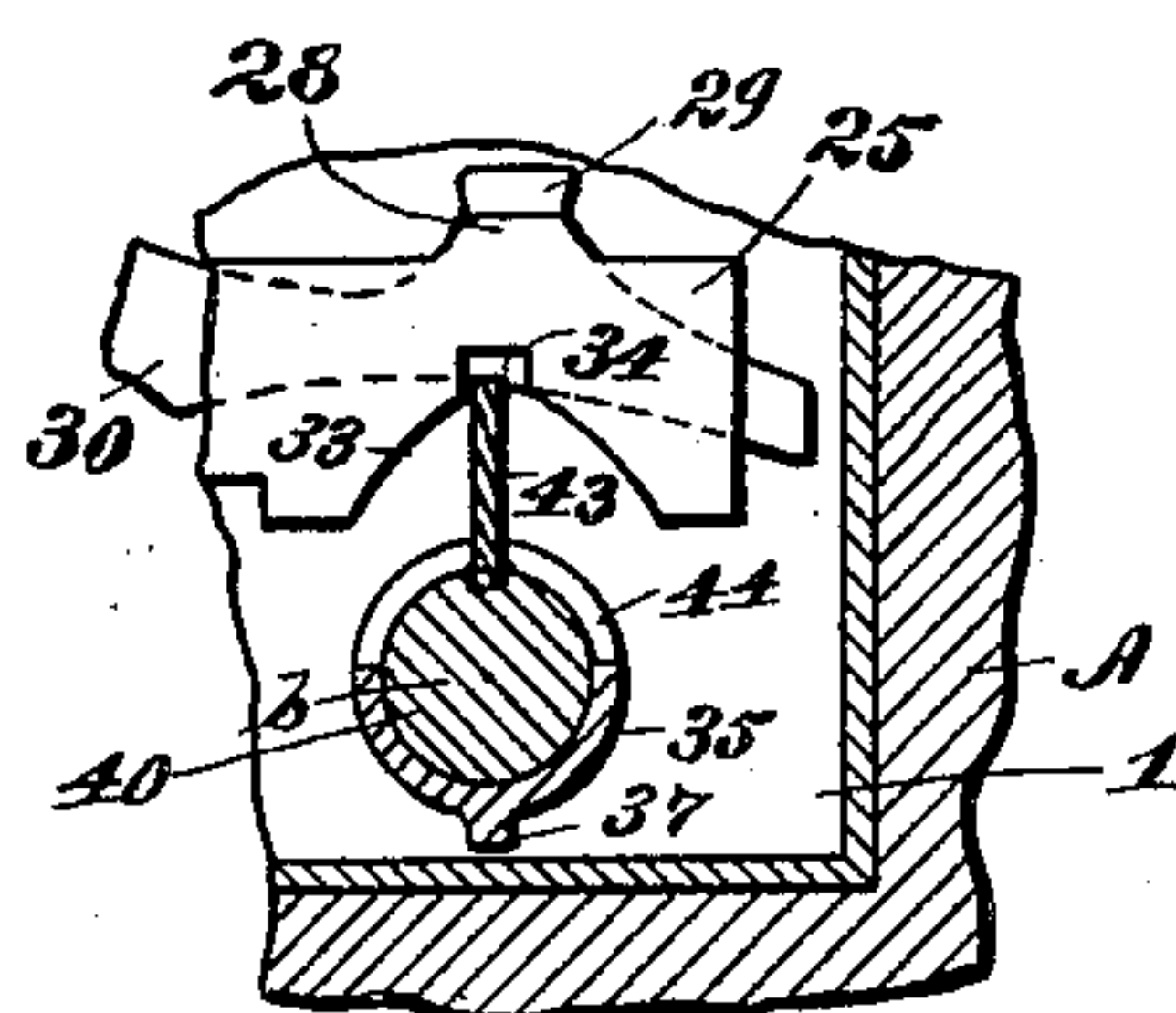
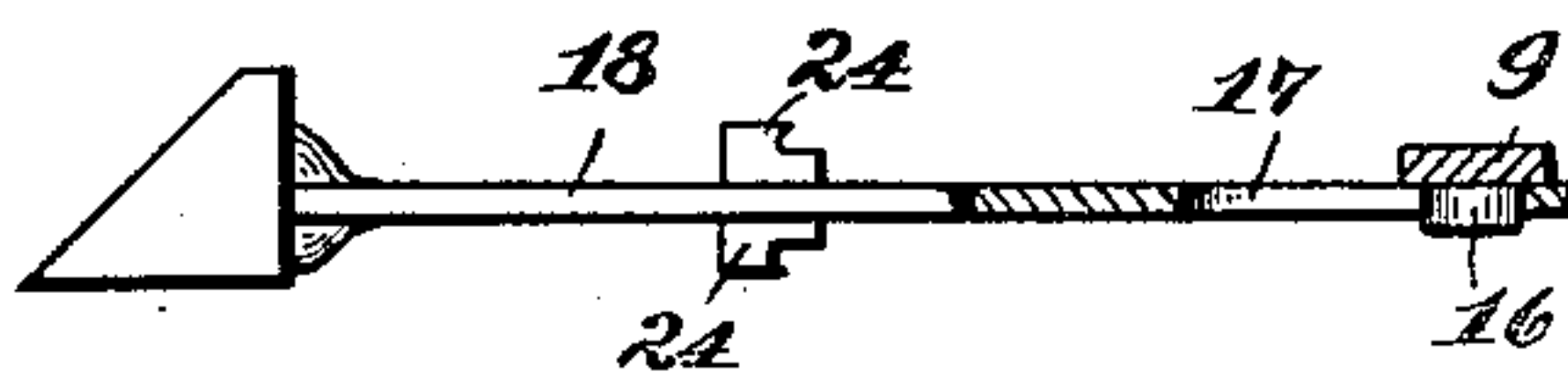


Fig. 8

Fig. 10



WITNESSES:

H. H. Pulmer.
J. J. Laess

INVENTOR

Battese Revoir

By C. Laess
his ATTORNEY.

UNITED STATES PATENT OFFICE.

BATTESE REVOIR, OF SYRACUSE, NEW YORK, ASSIGNOR OF ONE-THIRD TO RAY B. SMITH AND ONE-THIRD TO E. GILBERT LATHROP, OF SYRACUSE, NEW YORK.

DOOR LOCK AND LATCH MECHANISM.

No. 897,660.

Specification of Letters Patent.

Patented Sept. 1, 1908.

Application filed May 28, 1906. Serial No. 319,079.

To all whom it may concern:

Be it known that I, BATTESE REVOIR, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Door Lock and Latch Mechanism, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of door-latch and lock mechanisms wherein a latch-bolt and locking-bolt are supported in a case fastened to the door and are adapted to engage a catch-plate fastened to the door-casing, said latch-bolt being retracted from the catch-plate by means of the usual rotatable knob-spindle in the operation of opening the door, and having a beveled outer end portion whereby it is forced back by contact with the catch-plate when the door is swung to its closed position, and provided with a spring for pressing the same forward so as to cause the said bolt to enter the catch-plate; and the said locking-bolt being moved into engagement with the catch-plate and retracted therefrom by means of suitable key-operated devices, which devices also actuate one or more tumblers arranged to engage the said locking-bolt in both protracted and retracted positions.

Referring to the said drawings, Figure 1 is a fragmentary view of a door, in longitudinal section, and provided with my improved lock and latch-mechanism, and showing the two bolts in protracted position; Fig. 2 is also a fragmentary view, partly in section and showing the usual removable plate of the lock-case broken away, the locking-bolt in this instance being retracted; Fig. 3 is an interior side view of the case, and shows the two bolts in retracted position, and illustrating by dotted lines the movements of the parts which retract the latch-bolt; Fig. 4 is also an interior view of the case, showing the bolts in protracted or locking positions; Fig. 5 is a vertical section of the case applied to a door, and taken on a line through axes of the knob-spindle, detent-operating spindle and key-receiving cylinder; Fig. 6 is an interior view of the upper portion of the case and showing in detail the collar and lever which retract the latch-bolt, said collar being represented in the position it assumes when the knob-spindle is rotated forward; Fig. 7 is a detail view showing more clearly the tumbler

which engages the locking-bolt, the tumbler being lifted by the key-operated device; Fig. 8 is a detail vertical section taken on the line —X—X— in Fig. 5; Fig. 9 is a detail view showing the detent or catch which engages both bolts when they are in locking position; Fig. 10 is a detail plan view of the latch-bolt having its rear end portion broken away to show its slot and stud-connection with the actuating lever; and, Fig. 11 is a detail longitudinal sectional view of the key-receiving cylinder showing the three-part rotatable barrel.

Like numerals of reference indicate like parts.

—1— denotes the lock-case which is of the usual form and is secured in a mortise in the edge of the door —A— in the well known manner.

—2— denotes the usual spindle extending through the case and provided with the knobs —3—. Said spindle is square in cross-section and passes through a correspondingly shaped aperture —4— provided in a collar 8. This collar is journaled at its opposite ends in the side-walls of the case as indicated at —6—, and is formed with an upwardly projecting lug —7— and a similar downwardly projecting lug —8—, which lugs serve to actuate a lever —9— fulcrumed on a projection —10— on the top of the case. This lever —9— is formed with a segmental portion conforming to the collar and partly embraces said roll-back when the lever is in its normal position as clearly shown in Figs. 2 and 4 of the drawings. The said lever is disposed back of the collar and has its lower end extending below the same, and the upper end of the lever is formed with a forward extension —11— adapted to bear against the top of the case when the lever is in its normal position. On the underside of this extension bears the rear end of the main spring —12— having its forward end bearing on the case as indicated at —13, the intermediate portion of which spring bears upon a lug —14— projecting from one of the side-walls of the case. This spring —12— acts in opposition to the rotation of the knob-spindle and thus moves the lever, collar and spindle to their normal positions when the knob is released by the operator.

The lever —9— is formed with a shoulder —15— adapted to be engaged by the aforesaid lug —7— on the collar, and the lower

end of said lever is adapted to be engaged by the other lug —8— thereon as more clearly shown in Figs. 3 and 6 of the drawings. On the lower end of the lever is formed a stud —16— which enters a longitudinal slot —17— in the rear end portion of the latch-bolt —18— and normally engages the rear end of said slot, the forward end of which bolt is beveled as usual to engage an ordinary catch-plate secured to the door-casing, as indicated by dotted lines in Fig. 1 of the drawings. Said latch-bolt extends through the usual aperture —18^x— in the case and is held normally in extended position by means of a spiral-spring —19— surrounding a post or pin —20— formed on or fastened to the case. The end portions of said spring are straightened to form arms —21—22—, the arm —21— being fastened to a stud or pin —23— on the case, and the other arm bearing on the back of a lug —24— projecting from the side of the latch-bolt. I prefer to provide each side of the said latch-bolt with one of these lugs, as shown in Fig. 10 of the drawings, whereby the said bolt may be reversed so as to adapt the lock to either side of a door.

When the aforesaid knob-spindle —2— is rotated rearwardly, the lug —7— of the collar bears on the shoulder —15— of the lever, whereby the said lever is actuated and its stud —16— caused to retract the latch-bolt as shown in Fig. 3 of the drawings. When the operator releases the knob, the spindle —2—, collar and lever are moved to their normal positions by the aforesaid spring —12—, whereby the spiral-spring —19— is allowed to move the latch-bolt to its protracted or normal position as represented by dotted lines in Fig. 3 of the drawings. The rotation of the said spindle from its normal position forwardly causes the lug —8— of the roll-back to bear against the lower end of the lever —9—, whereby the lever is caused to retract the latch-bolt in the manner aforesaid.

It will be seen that by the described slot and stud-connection between the lever and latch-bolt, the latter is permitted to be moved to its retracted position entirely independent of its actuating parts, and thus when the said bolt is brought into contact with the catch-plate on the door-casing, it is free from the tension of the stiff-spring —12—. Therefore, it is obvious that very little resistance is offered to said bolt when the same is crowded back by the catch-plate, inasmuch as a very light spring —19— may be employed for moving it to its protracted position for engaging the said catch-plate. This is one of the most important features of my invention.

—25— denotes the locking-bolt which extends through the usual aperture —26— in the case —1—, and slides between suitable guides —27—27— on one of the side-walls of

the case, which guides consist preferably of lugs cast on the case as shown in Figs. 3 and 4 of the drawings. It is obvious that the forward end of said locking-bolt may engage the aforesaid catch-plate on the door-casing, or a special plate may be provided. The said locking-bolt is formed on its upper edge, near its rear end, with a lug —28— adapted to engage a lug —29— projecting from a tumbler —30—. This tumbler consists preferably of an elongated plate disposed horizontally and parallel with the locking-bolt and pivoted at its forward end to the case as indicated at —31—. The lug —29— on said tumbler normally rests on the top of the locking-bolt and is pressed thereon by a spring —32—. When the locking-bolt is in retracted position, the lug —29— engages the front of the lug —28— as shown in Fig. 3 of the drawings, and when the said bolt is in protracted position, the lug —29— engages the back of the lug —28— as shown in Fig. 4 of the drawings. The lug —29— being in the path of the lug —28— obviously prevents the locking-bolt from being retracted, excepting through the actuation of specially constructed and arranged key-operated devices required for moving the tumbler, which devices will be hereinafter described.

The lower edge of the locking-bolt is cut out as shown at —33— and provided at said cut-out portion with a notch —34—, and the lower edge of the tumbler —30— is curved slightly upward and extends across the cut-out portion of the locking-bolt as shown in Figs. 3, 4, 7 and 8 of the drawings, for the purpose shortly explained.

The key-operated devices consist preferably of a cylinder —35— extending through openings —36—36— in the side-walls of the case and provided with a longitudinal rib —37— engaging notches —38—38 in the edges of the openings to prevent the cylinder from turning. Said cylinder is of sufficient length to extend through both sides of the door and may be held against endwise movement by the usual escutcheon-plates —39—39—, or in any other suitable and convenient manner. In the said cylinder is disposed a barrel —40— composed of three independently rotatable sections —a— a— b— which may be sustained longitudinally therein by any suitable means. The end-sections —a— a— of the said barrel are each provided with a longitudinal slot —41— for the reception of a flat key —B— intended to be of special form, and the central section —b— is provided with recesses —42—42— adapted to receive correspondingly shaped projections on the end of the key as shown in Fig. 5 of the drawings. This central section —b— is also provided with a rigid tongue —43— projecting radially therefrom and adapted to be swung back and forth in a transverse slot —44— in the cylinder —35—. In order to

allow the said cylinder, containing the barrel, to be inserted through either side of the case, I provide the side-walls with slots —46—46— extending radially from the
 5 openings —36—36— to allow the aforesaid tongue —43— to enter the case. After the cylinder has been placed in position, I insert a removable pin or screw —47— in the slots —46—46— as shown in Figs. 3, 4 and 7 of
 10 the drawings. This pin or screw serves as a guard to prevent the tongue from engaging either slot when the said tongue is swung rearward in the operation of retracting the locking-bolt as will be shortly described.
 15 The said pin or screw —47— and a pin —48— form stops to limit the movements of the tongue.

When the locking-bolt —25— is in retracted position, the tongue —43— is adjacent to or in contact with the stop —47— and also bears against the lower edge of the tumbler —30— as shown in Fig. 3 of the drawings.

By inserting the key —B— into the slot of
 25 either end-section —a— of the barrel —40— and turning said section either forward or rearward, the projections on the key are allowed to engage the correspondingly shaped recesses —42—42— in the end of the central
 30 barrel-section —b—. The operator then turns the key forward, whereby the tongue is swung in corresponding direction and lifts the free end of the tumbler —30— to carry its lug —29— out of the path of the lug
 35 —28— on the locking-bolt —25—. This action of the tongue is permitted by reason of the locking-bolt being cut out as shown at —33—. By a continued movement of the key, the said tongue is caused to engage the
 40 aforesaid notch —34— in the lower edge of said locking-bolt, whereby the said bolt is moved forward to engage the usual catch-plate on the door-casing. The said tongue is designed to disengage the notch —34—
 45 when the bolt has reached its protracted position, whereupon the tumbler is allowed to drop to cause its lug —29— to engage the back of the lug —28— on the locking-bolt as shown in Fig. 4 of the drawings. This engagement of the two lugs positively holds the
 50 bolt in its extended position.

It will be seen that a key may be inserted into one end of the barrel while another key is in the other end of the same, and thus the
 55 operation of either key permitted. It is obvious, that by now turning a key rearward, the tongue —43— will lift the tumbler to move the lug —29— out of engagement with the lug —28— to permit said tongue to retract the locking-bolt. The said locking-bolt is provided with a rigid upwardly extending bar —49— constituting a catch which is adapted to engage the back of the
 60 aforesaid lug —24— on the latch-bolt —18— when the two bolts are in protracted

position as shown in Fig. 4 of the drawings. By this engagement of the bar and lug, it will be seen that the latch-bolt is firmly locked to the locking-bolt, thereby producing a duplex lock for the door.

—50— denotes a keeper consisting of an arm which is formed with a hub —51— which is journaled in openings —52—52— in the side-walls of the case and is provided with a square longitudinal bore —53— receiving a rotatable spindle —54— formed correspondingly in cross-section. This spindle projects only at the inner face of the door and is provided with a suitable thumb-piece —55— for turning the same, and it is retained in its position by a loose-collar —56— adapted to be fastened to the escutcheon-plate —39— as shown in Fig. 5 of the drawings. The aforesaid keeper —50— is normally in upright position as shown in Figs. 2 and 3 of the drawings. When the two bolts —18— and —25— are in protracted position, the spindle may be turned forward to throw the free end of the keeper —50— into the position shown by full lines in Fig. 4 of the drawings, in which position it is adapted to engage the aforesaid bar —49—, and thus prevents the locking-bolt from being retracted by the use of a key. This keeper serves as a "night-catch" and being concealed and operative only from the inner side of the door, it guards against malicious tampering with the locking-bolt at the outer side of the door. The said hub —51— of the keeper is provided with two flat faces —57—57— against which a spring —58— is adapted to bear when the keeper is in its respective positions as shown in Figs. 3 and 4 of the drawings.

What I claim is:—

1. In a door-lock and latch-mechanism, the combination with a locking-bolt and its actuating means, of a latch-bolt, a spring for protracting the latch-bolt, a rotatable knob-spindle, means actuated by the knob-spindle for retracting the latch-bolt, a spring for moving the knob-spindle and retracting means to their normal positions, a bar carried on the locking-bolt and serving as a catch for locking the latch-bolt in protracted position, a pivotally supported keeper operative for engaging the said bar, and means disposed on the inner face of the door for actuating said keeper as set forth.

2. In a door-lock and latch-mechanism, the combination of a latch-bolt, means for retracting the said bolt, and a spring for forcing the same to protracted position, a locking-bolt, means for actuating said locking-bolt, a vertical bar carried on the latter bolt and serving as a catch adapted to engage the latch-bolt when both bolts are in protracted position, a pivotally supported keeper consisting of an arm normally disposed parallel with the said bar and adapted

to be swung to horizontal position to engage the bar when the latter is in engagement with the latch-bolt, and means operative from only the inner face of the door for actuating said keeper as set forth.

3. In a door-lock and latch mechanism, the combination of a case, a latch-bolt, a spring holding said latch-bolt normally in protracted position, and a knob-spindle for retracting the same, a locking-bolt, a tumbler pivoted at one end of the case, a spring pressing the free end of said tumbler normally into engagement with the inner end portion of the locking-bolt, key-operated means engaging the free end of the tumbler to move the same out of engagement with the locking-bolt to permit the said key-operated means to actuate the locking-bolt, a vertical bar carried rigidly on the locking-bolt and adapted to engage the latch-bolt when both bolts are in protracted position, and thereby lock the latch-bolt with the locking-bolt, a second rotatable spindle extending through one side of the case and provided with a thumb-piece for turning the same, and a keeper provided with a hub supported revolubly and independently of the latter spindle and operated thereby, said keeper being adapted to engage the aforesaid bar when the bolts are in protracted positions as and for the purpose set forth.

4. In a door-lock, the combination of a case, a locking-bolt provided on its upper edge with a lug and in its lower edge with a notch, a tumbler consisting of a plate disposed parallel with the locking-bolt and pivoted at one end to the case and provided at its free end with a lug normally resting on the top of the locking-bolt and in the path of the

lug of the locking-bolt, a spring pressing upon the free end of said tumbler, a stationary cylinder supported below the locking-bolt and tumbler and provided with a transverse slot, a sectional barrel journaled in said cylinder and provided in its opposite ends with key-slots, and a tongue projecting radially from the barrel and movable in the transverse slot, said tongue being adapted to bear against the lower edge of the tumbler to lift its lug out of the path of the lug on the locking-bolt and also adapted to engage the notch in said locking-bolt to actuate the bolt as set forth.

5. In a door-lock, the combination of a case, a locking-bolt, a tumbler pivoted at one end to the case and having its free end portion normally engaging said locking-bolt, a cylinder held stationary in the case and provided in its central portion with a transverse slot, a barrel supported in said cylinder and composed of three independently rotatable sections, the end barrel-sections each being provided with a longitudinal key-slot, and the ends of the central section provided with recesses for the reception of the end of a key, and a tongue secured rigidly to said central barrel-section and projecting through the transverse slot of the cylinder, said tongue being adapted to primarily engage the free end of the tumbler to lift the latter out of engagement with the locking-bolt, and secondarily engage the locking-bolt to move the same to protracted and retracted positions as set forth and shown.

BATTESE REVOIR. [L. S.]

Witnesses:

L. H. FULMER,
J. J. LAASS.