

No. 705,098.

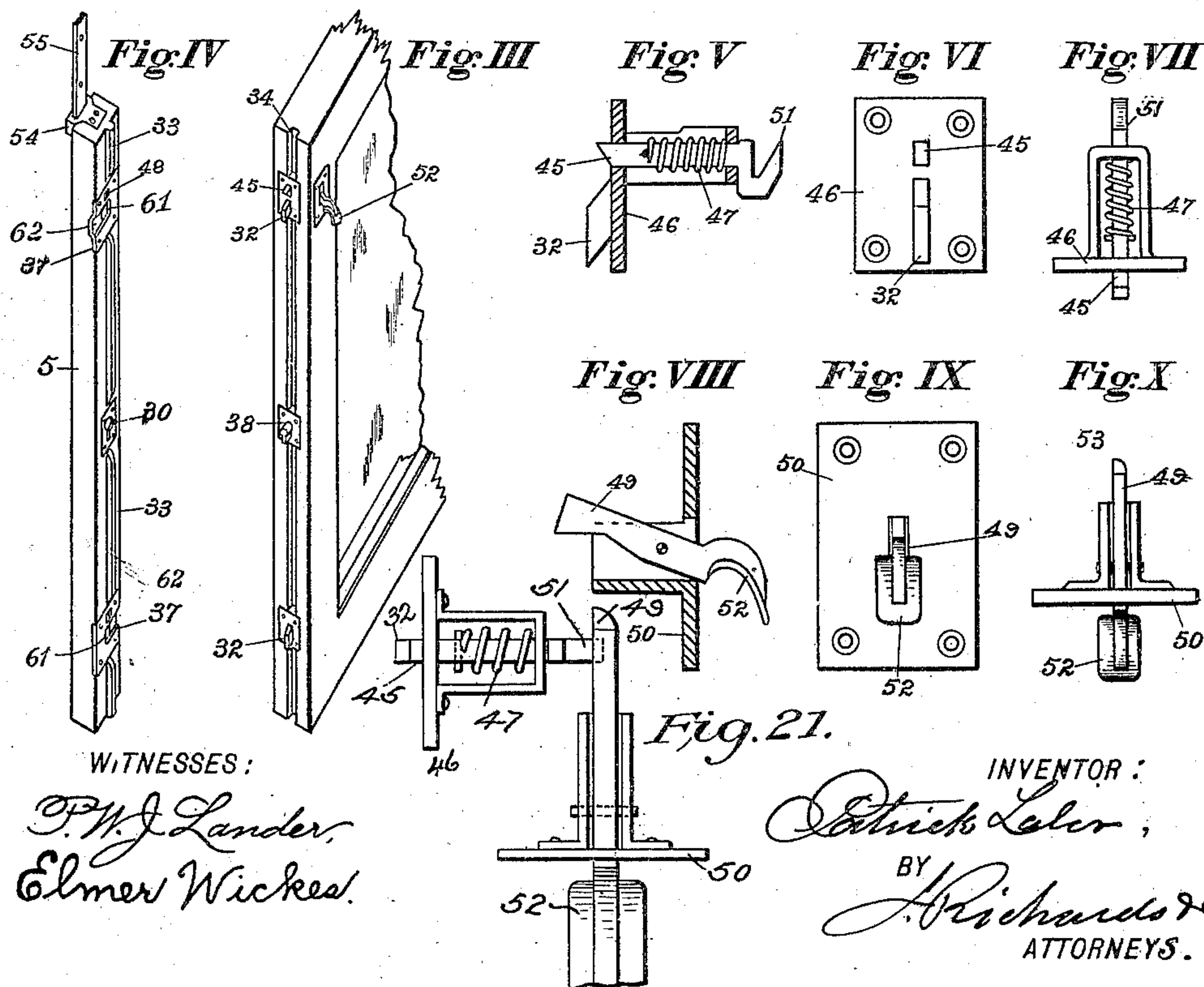
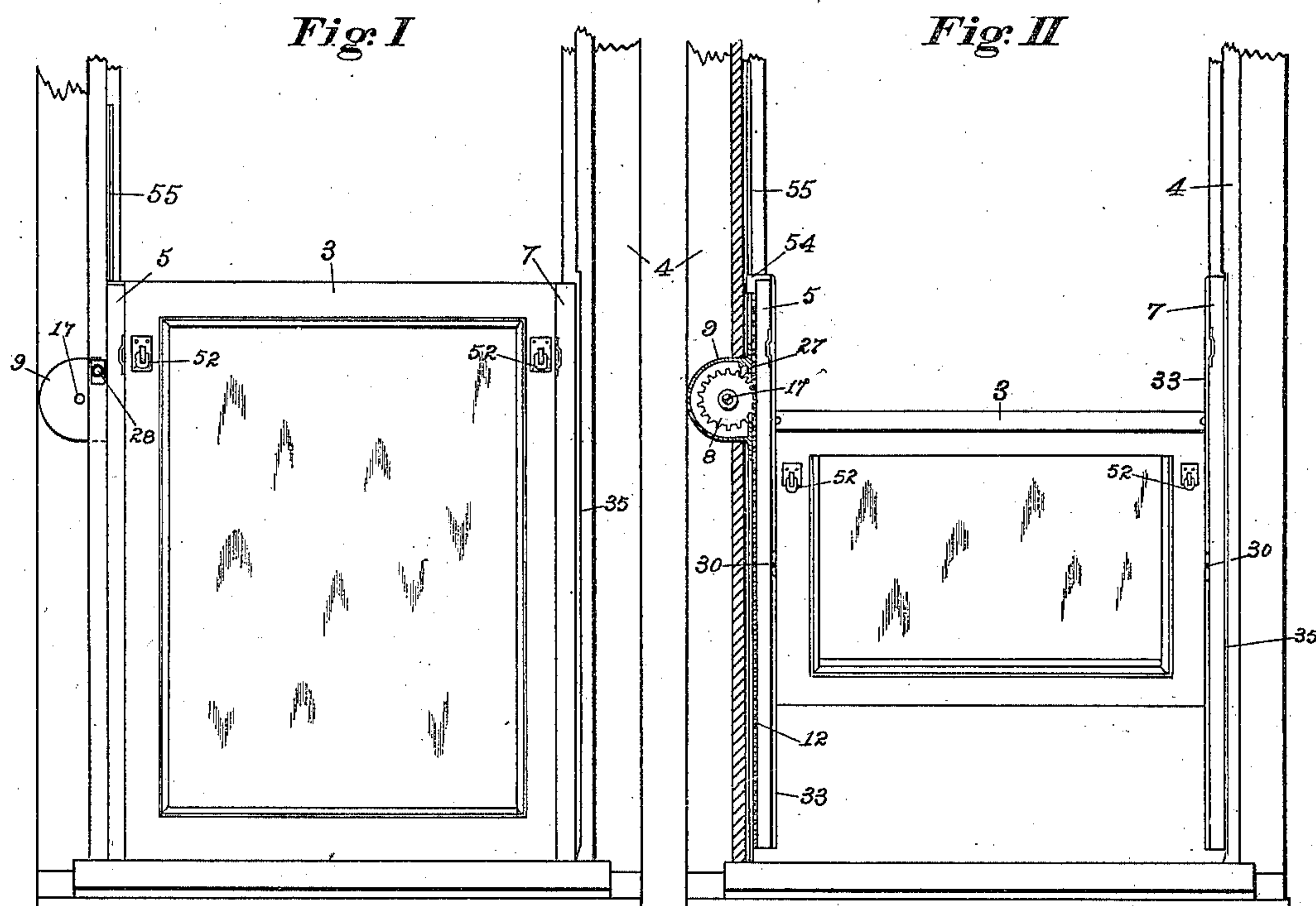
Patented July 22, 1902.

P. LALOR.
WINDOW.

(Application filed June 20, 1901.)

(No Model.)

2 Sheets—Sheet 1.



No. 705,098.

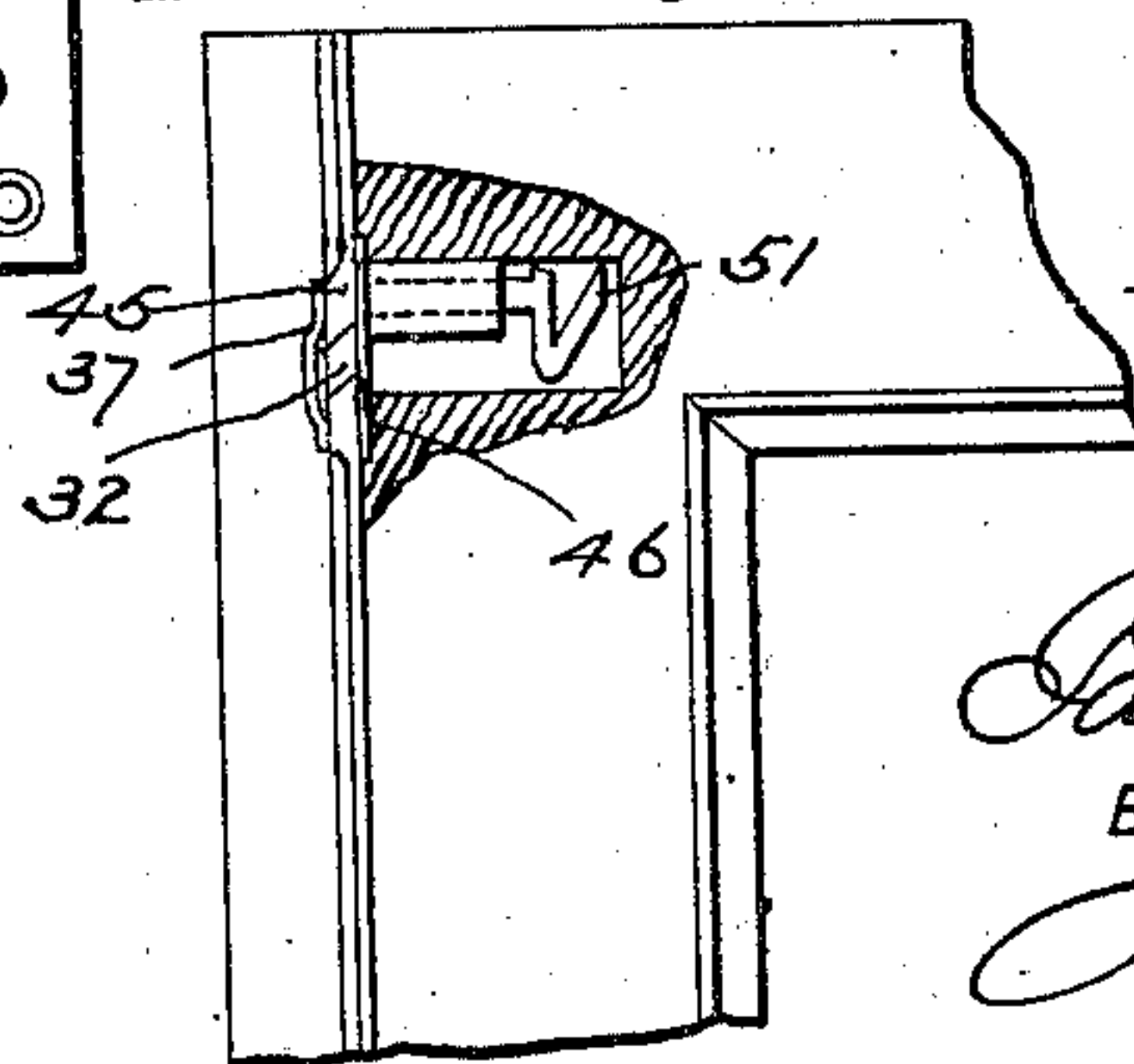
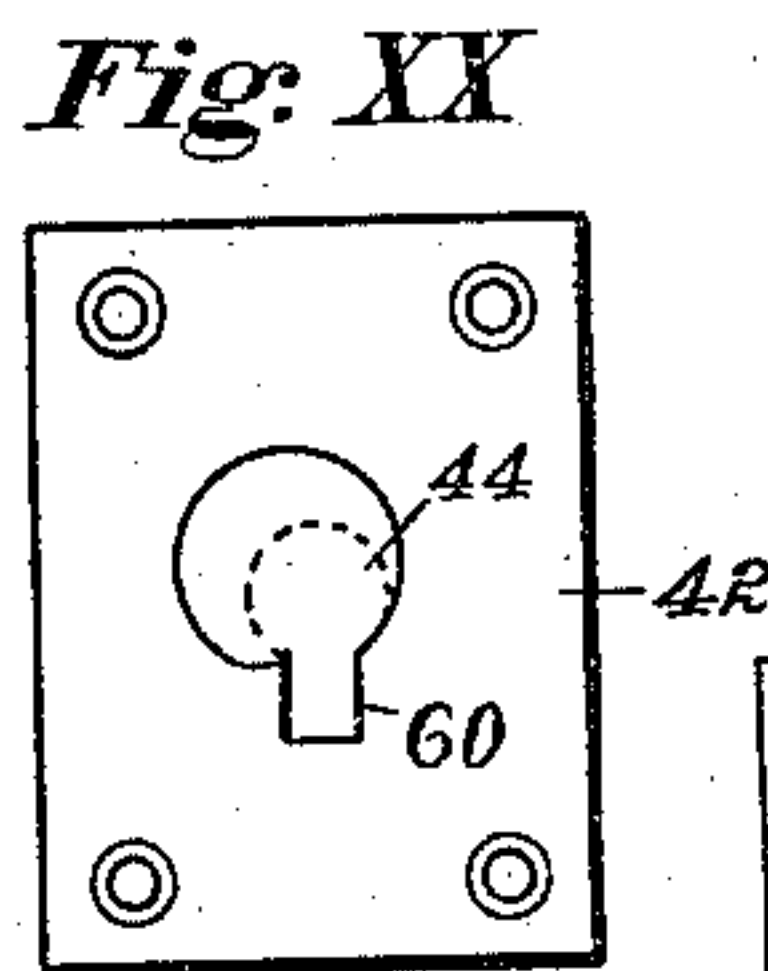
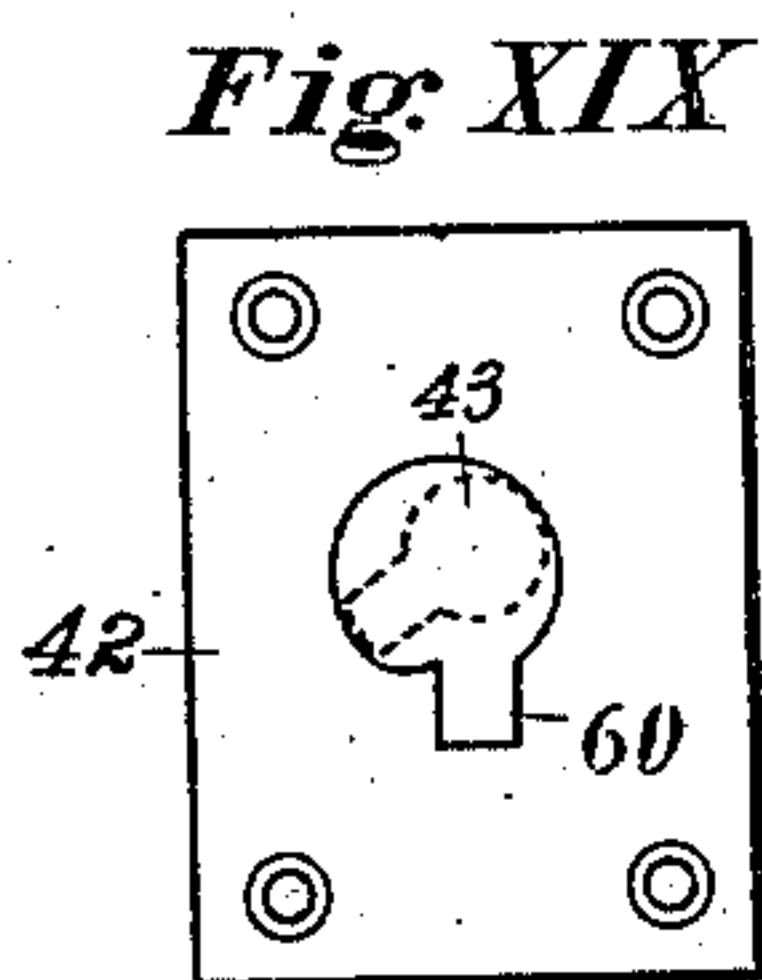
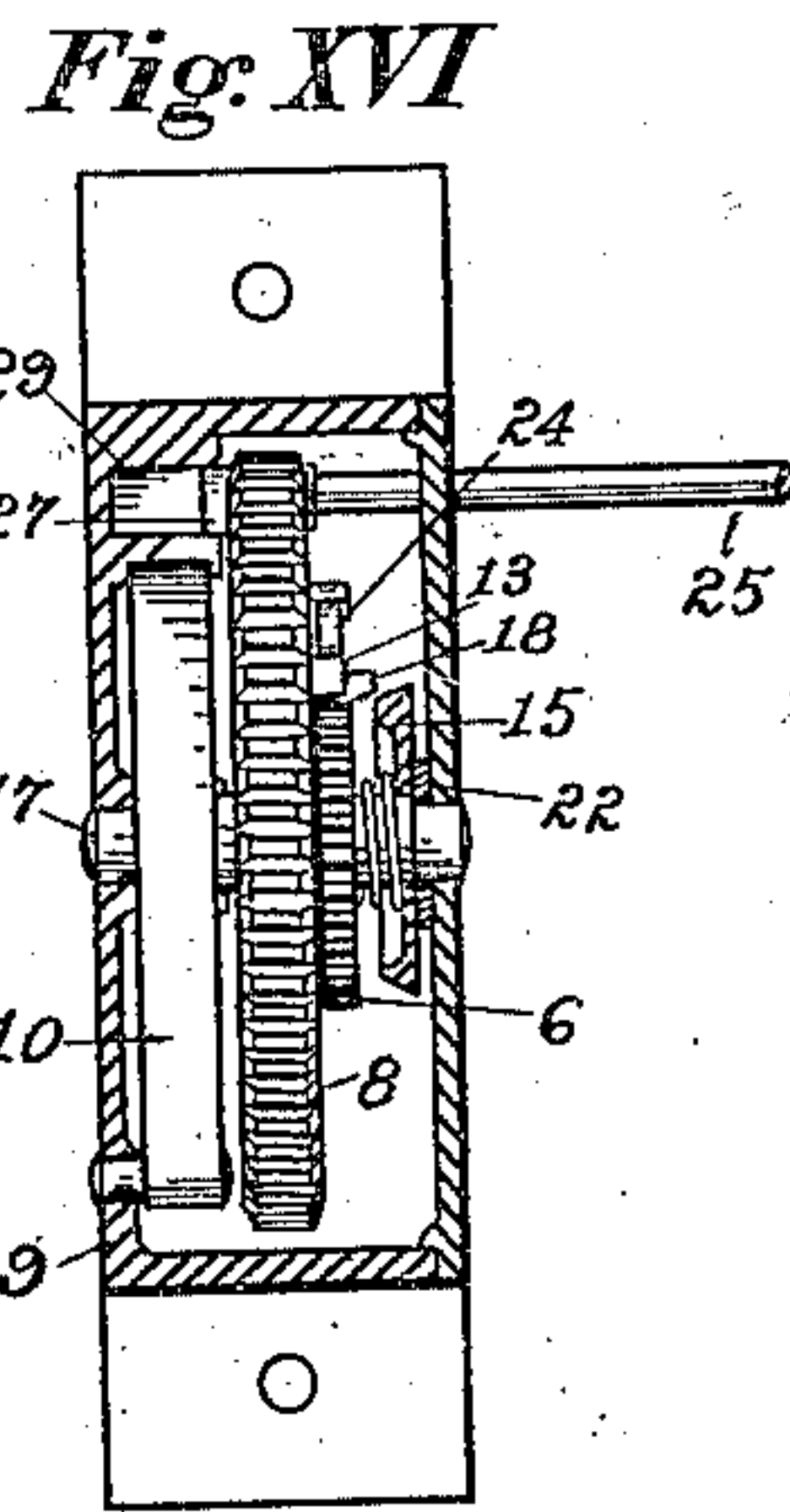
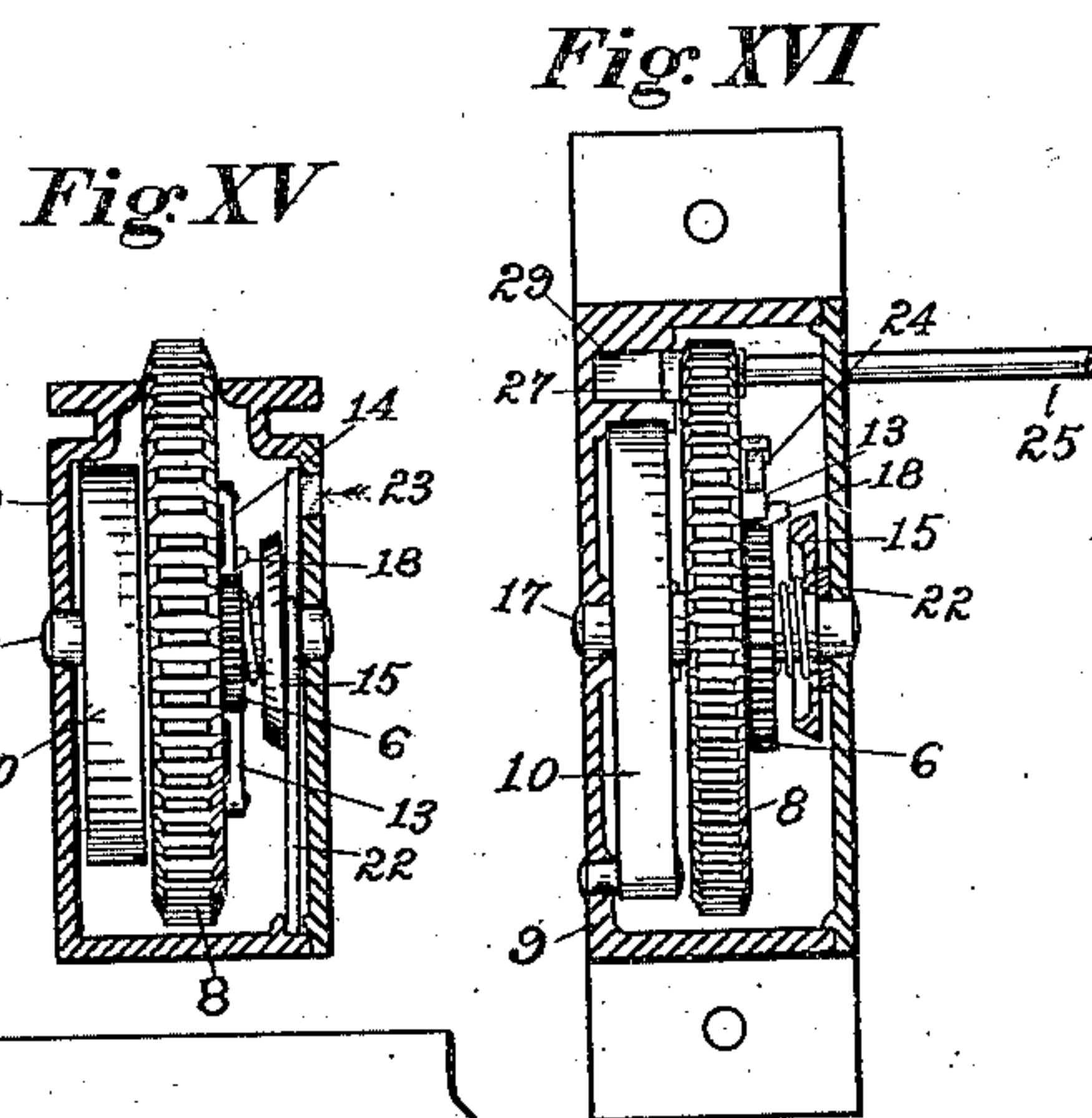
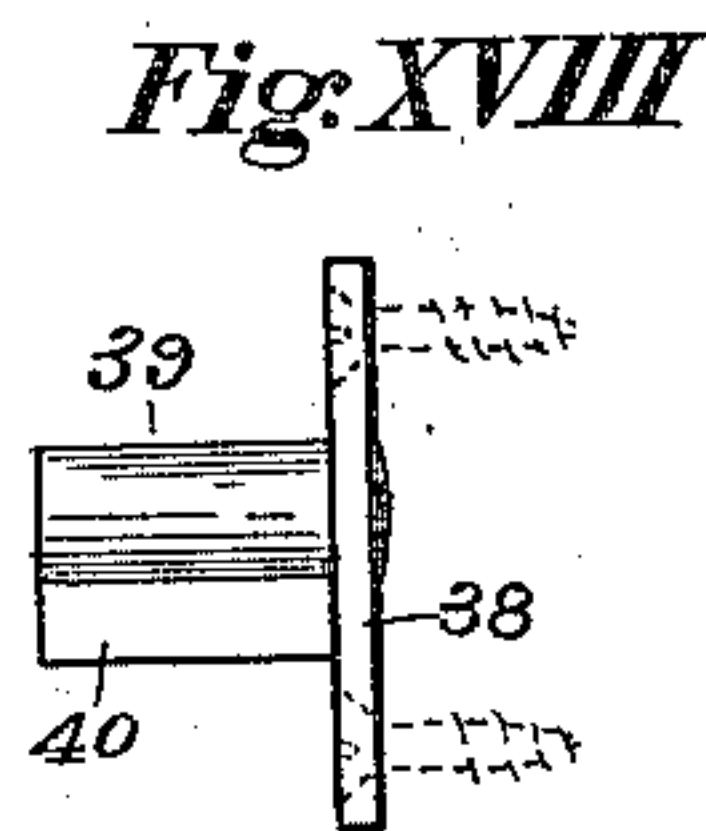
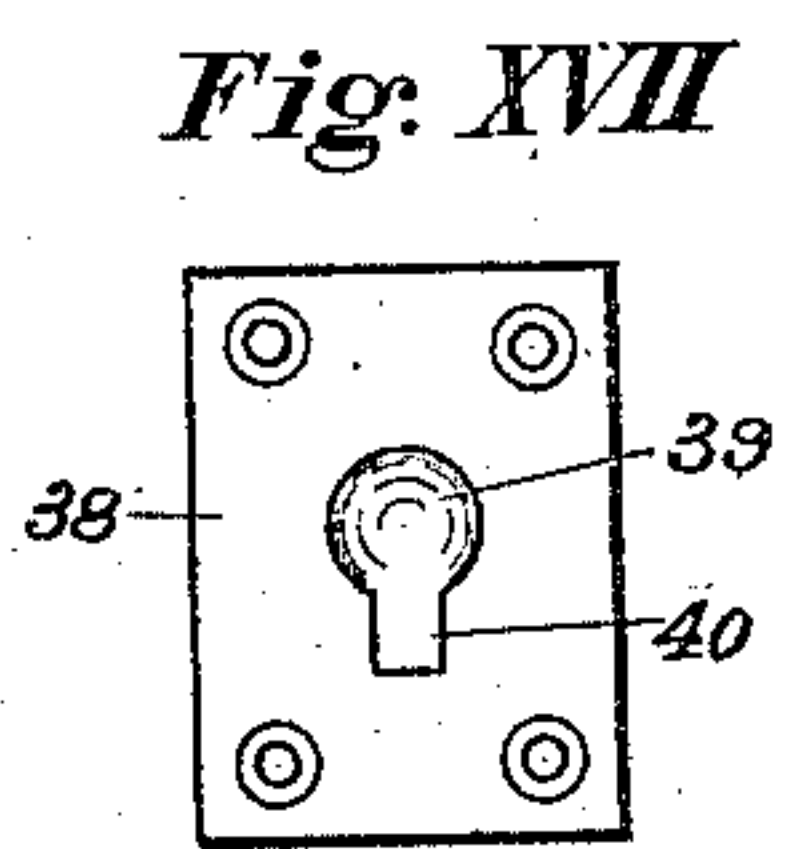
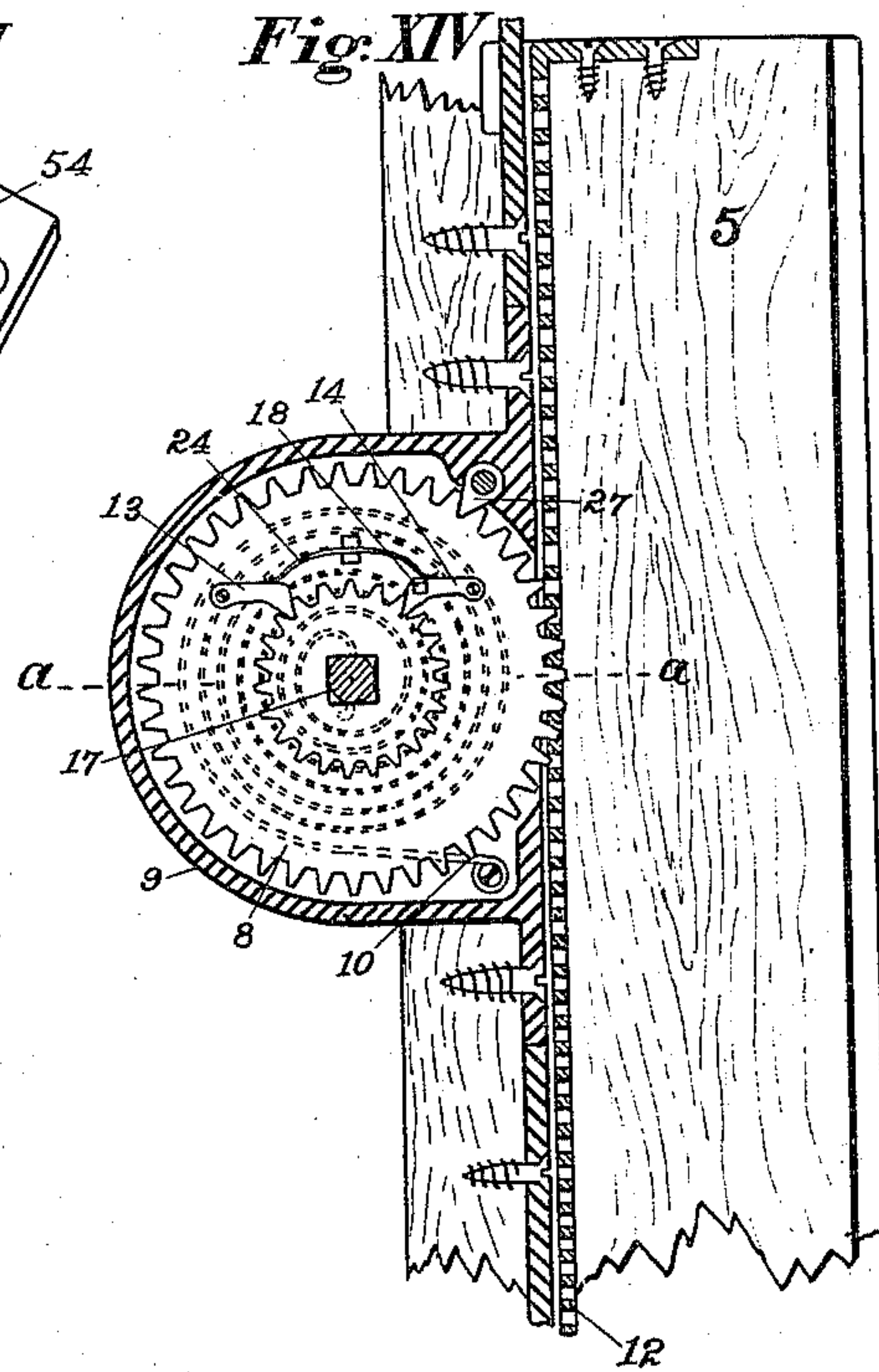
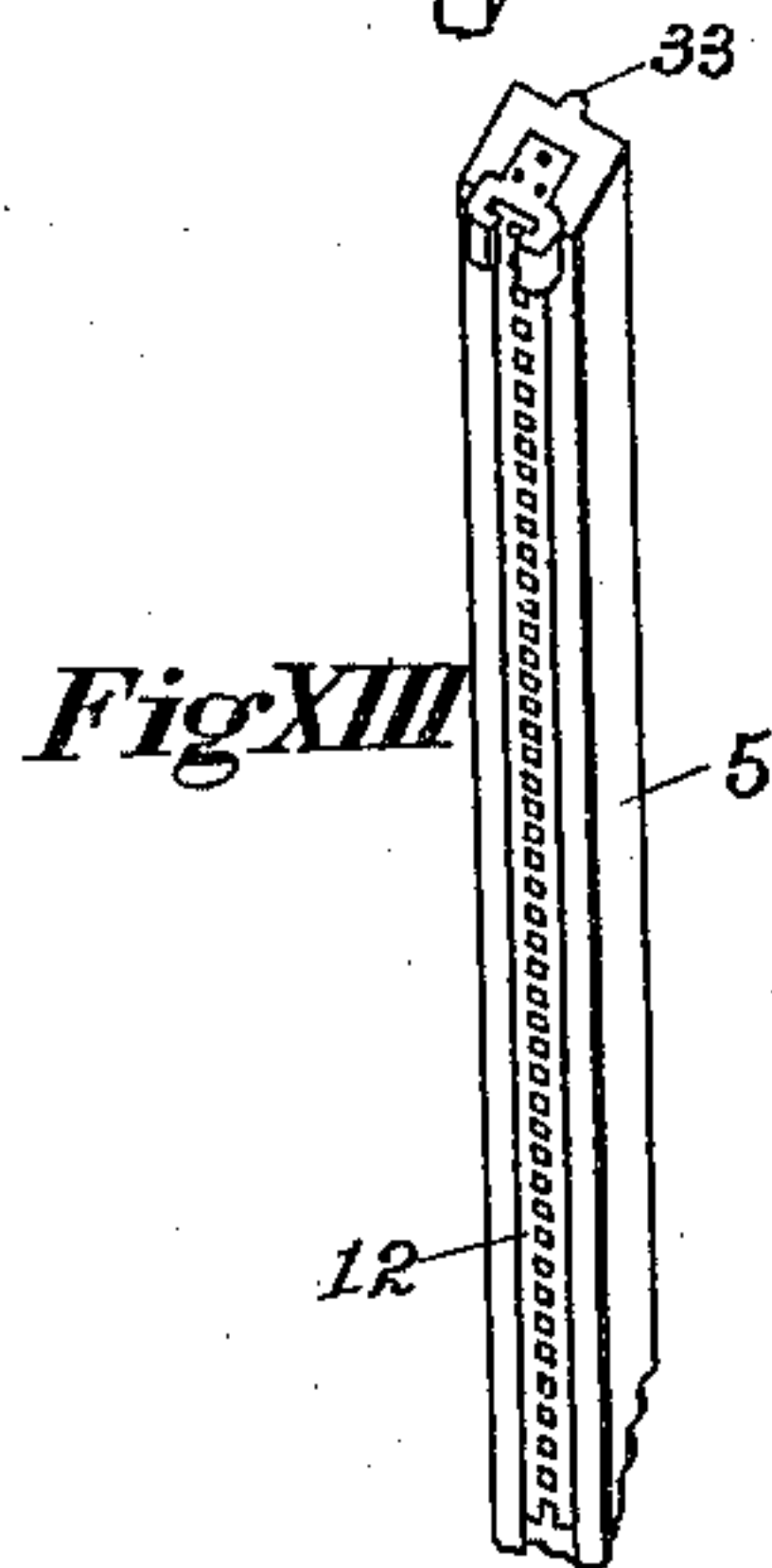
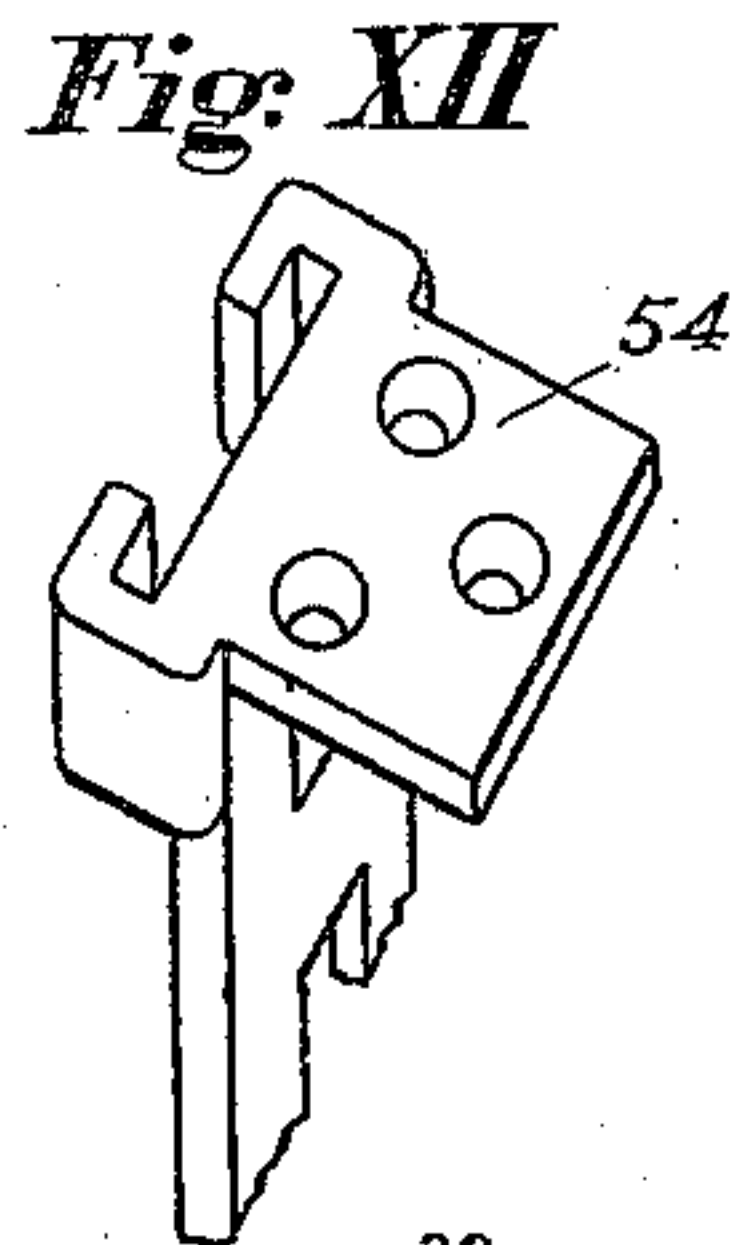
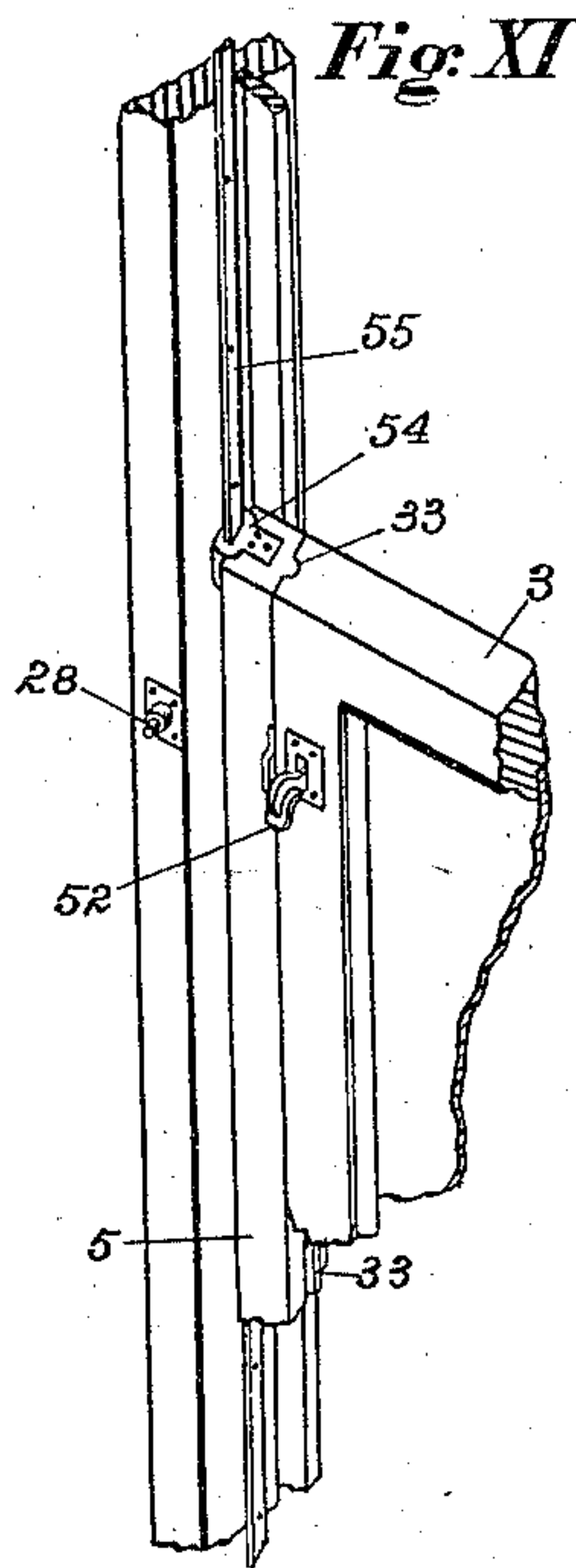
Patented July 22, 1902.

P. LALOR.
WINDOW.

(Application filed June 20, 1901.)

(No Model.)

2 Sheets—Sheet 2.



WITNESSES:

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ATTORNEYS.

UNITED STATES PATENT OFFICE.

PATRICK LALOR, OF DENVER, COLORADO, ASSIGNOR OF ONE-HALF TO
WILLIAM Y. LAWTON, OF SAN FRANCISCO, CALIFORNIA.

WINDOW.

SPECIFICATION forming part of Letters Patent No. 705,098, dated July 22, 1902.

Application filed June 20, 1901. Serial No. 65,280. (No model.)

To all whom it may concern:

Be it known that I, PATRICK LALOR, a citizen of the United States of America, residing at Denver, county of Arapahoe, and State of Colorado, have invented certain new and useful Improvements in Windows; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to windows and certain improvements in the manner of mounting the sashes therein whereby they are pivoted and free to swing, so both sides of the glass and sash are accessible for cleaning.

My improvements consist in peculiar pivots at each side of a sash rigid or locked when the sash is at the bottom or vertical and free to turn when the sash is slightly raised; also consists in devices to balance the sash and means to regulate the lifting force or tension of such devices; in a peculiar catch to lock the sash and prevent it from being raised from the outside and in means to free the sash at its sides when it is to be swung on its pivots, with other features and details that will be more particularly described in the description to follow and illustrated in the drawings herewith forming a part of this specification.

The objects of my invention are to provide means of access to both sides of a window-sash from the interior of a room or wall and to otherwise attain convenience in the operation of windows. To these ends I construct window-sashes in the manner shown in the drawings, the figures having notation as follows:

Figure I is a front elevation of the lower sash and a portion of the frame of a window provided with my improvements. Fig. II is a similar view, partially in section and the sash turned to an oblique position on horizontal pivots. Fig. III is a view in perspective of a portion of the sash, showing the fittings for securing it in its normal position when shut. Fig. IV is a view in perspective of one of the side rails on which the sash is mounted. Fig. V is a view in section of the locking-bolt that secures the sash from

being raised from the outside. Fig. VI is a front view of Fig. V from the left. Fig. VII is a top view of Figs. V and VI. Fig. VIII is a section through a disengaging-latch to withdraw the locking-bolt shown in Figs. V, VI, and VII. Fig. IX is a front view of Fig. VIII from the right. Fig. X is a top view of Figs. VIII and IX. Fig. XI is a view in perspective of a portion of the sash and frame, showing the manner of mounting the former at the side where the balancing devices are applied. Fig. XII is a view in perspective of one of the sliding clips that confines the sash and its side bar to the frame on the side where the balance is applied. Fig. XIII is a broken view in perspective of one of the movable rails at the side of the sash and the toothed rack thereon. Fig. XIV is an enlarged view, partially in section, showing the devices to balance the weight. Fig. XV is an edge view, partially in section, of Fig. XIV. Fig. XVI is a partial transverse section through Fig. XIV on the line *aa*. Fig. XVII is a front view of one of the pivots on which the sash is mounted. Fig. XVIII is an edge view of Fig. XVII. Fig. XIX is a front view of one of the pivot-plates on which the sash is mounted, the pivot-plate being indicated in the position for turning. Fig. XX is a similar view indicating the pivot when locked in its seat. Fig. XXI is a plan view showing the connection between lever 49 and hook extension 51 of bolt 45. Fig. XXII is an elevation, partly in section, showing sliding-bolt 45 in its relation to socket-plate 37.

The same numerals of reference are applied throughout to corresponding parts.

Referring first to Figs. I to X on Sheet 1 of the drawings, 3 is the sash; 4, the window-frame; 5 and 7, movable side rails, to which the sash is connected and pivoted; 8, a tooth-wheel to balance the sash, and 9 a housing in which this wheel and a coil-spring 10 are inclosed. The sash 3 is pivoted at or near its center by the devices shown in Figs. XVII to XX on Sheet 2 of the drawings to the movable rails 5 and 7, that move up and down with the sash, the former being provided with a tooth-rack 12, into which the gear-wheel 8

meshes, as shown in Fig. XIV. This wheel 8 rotates on the transverse shaft 17 and is subjected to a torsional strain sufficient to balance the sash 3 by means of a coil-spring 10, arranged in the usual manner and as indicated by dotted lines in Fig. XIV. This spring 10 is arranged for adjustment as its force may require by means of the pawls 13 and 14, that engage a ratchet-wheel 6, fastened on the shaft 17, the pawl 14 being disengaged by means of a beveled sliding disk 15, that when moved laterally on the shaft 17 engages a pin 18 in the pawl 14 and raises this pawl out of the rack-wheel 6, as indicated in Figs. XV and XVI. To move the disk 15, I employ a movable or spring bar 22, that bears on the outer side of the disk 15 and is operated by a nail or any simple instrument inserted through the aperture 23, as seen in Fig. XV. To wind the spring 10 and increase its tension, the pawl 14 is disengaged in the manner described, the sash 3 is lowered until it is in balance, the wheel 8 turning the shaft 17 by means of the ratchet-wheel 6 and the pawl 13. Then the pawl 14 is released and engages the ratchet-wheel 6 in the other direction, both pawls being held in mesh by the spring 24, as seen in Fig. XIV. In this manner it will be seen that the adjustments described enable the sash 3 to be kept in equilibrium and rendered convenient to move.

To lock the sash at any point of its range upward or downward, I employ a sliding stem 25, provided with a tooth 27, that fits between the teeth of the wheel 8, as shown in Fig. XIV. This stem 25 is operated by a push-button 28, so that when this stem 25 is pressed inward by the push-button 28 the toothed extension 27 of the stem 25 passes into the recess 29 in the casing 9 and the wheel 8 revolves free, permitting the sash 3 to move in either direction.

Referring now to the pivoting mechanism for the sash 3, this involves the side rails 5 and 7, to which the sash is pivoted at 30 and to which it is connected when closed by the hooks 32, as now to be explained. The side rails 5 and 7 have projecting rounded tongues or ledges 33, that fit into corresponding grooves 34 in the edges of the sash 3, and in order to swing the latter the distance between the rails 5 and 7 has to be expanded enough to clear these ledges or tongues 33. This is accomplished by the upper edge of the hooks 32 bearing against the top of the slot in plates 37, acting as an inclined plane, which simultaneously forces the sash away from rail 5 and forces rail 7 into recess 35, thereby allowing the sash to swing clear on its pivots. To move the side rail 7 and to free the sash 3, the latter must be raised a short distance until the hooks 32 are disengaged from the plates 37, and to permit this movement I provide swinging pivots for the sash, as shown in Figs. XVII to XX on Sheet

2 of the drawings. On the plates 38, that are embedded in the sash 3, as shown in Fig. III, are projecting pivots 39, that have a downward-extending ledge or flange 40, adapted to rest in the keyhole-shaped sockets 60 of the plates 42, as shown in Figs. XIX and XX, the dotted lines 43 44 indicating the position of the pivots 39 as they will be in Figs. I and II. When the sash 3 is at the bottom, as in Fig. I, the hooks 32 are engaged and the pivot locked. When the sash is slightly raised, so that the hooks 32 spread the rails 5 and 7, the sash can be pushed outward or inward at top or bottom. It can swing clear around on its pivots. The object of the ledges 33 and grooves 34 is to exclude wind and dust when the sash is closed. To lock the sash and its attendant parts when closed, I employ a spring-bolt 45. (Shown enlarged in Figs. V to X.) This bolt 45 is mounted on a plate 46, also provided with one of the hooks 32, as shown in Figs V and VI. The bolt is thrown by a spring 47 and engages at 48 in the top plate 37. (Shown in Fig. IV.) To withdraw this bolt 45, I employ a lever 49, pivoted in the plate 50 and adapted to pass into the beveled hook extension 51 on the bolt 45 and draw the latter inward when the handle 52 is raised, the lever 49 being beveled on its bottom edge, as shown at 53 in Fig. X.

To operate the sash 3, the handle 52 is raised, which withdraws the bolt 45 and slightly raises the sash, so the hooks 32 force the sash away from the rail 5 and drive the rail 7 into the recess 35 just sufficient to clear the tongue 33, so that the sash can be swung to any desired position on the pivots 39. The hooks 32, combined with plate 37, have a three-fold object. There is a slit 61 in the plate 37, also a depression 62 the length of the slit. When the sash is locked, the under side of hooks 32 grips tightly the plates 37, which are attached to the rails 5 and 7; but when the sash is slightly raised the upper edge of the hooks 32 forces the rails 5 and 7 away from the sash, and, again, when the sash has been swung into its final position the outer edge of the hooks 32, being parallel with the sash 3, enter into the depression in plate 37, which adjusts rails 5 and 7, if by any chance these have changed position, just before hook 32 drops into the slit in plate 37, and the pivot 38 drops into the socket 30, and the sash is locked.

To prevent lateral movement of the side rail 5, which would interfere with the action of the wheel 8 and the rack 12, I employ clips 54, (shown enlarged in Fig. XII,) that embrace and slide upon a guideway 55, that is attached to the side of the main frame 4, as shown in Fig. IV.

Having thus described the nature and objects of my invention and the manner of constructing the same, what I claim as new, and desire to secure by Letters Patent, is—

1. In a window, a frame having a guide-

plate on one side and a longitudinal recess on the other side, side rails sliding on said guide-plate and in said recess respectively, a sash, pivoted in said side rails to turn horizontally, and means for spreading said side rails when the sash is slightly lifted, whereby one of said rails is forced into said recess, and the sash is free to turn on its pivots, substantially as specified.

2. In a window, a frame having a guide-plate on one side and a longitudinal recess on the other side, side rails sliding on said guide-plate and in said recess respectively, a sash, pivoted in said side rails to turn horizontally, a toothed rack on the side rail adjacent to the guide-plate, a balancing device engaging said toothed rack to counteract the weight of the sash and rails, and means for automatically spreading said side rails away from the sash both at top and bottom when the sash is slightly lifted, whereby one of said rails is forced into said recess, and the sash is free to turn on its pivots, substantially as specified.

3. In a window, a frame having a guide-plate on one side and a longitudinal recess on the other side, side rails sliding on said guide-plate and in said recess respectively, a sash, pivoted in said side rails to turn horizontally, a toothed rack on the side rail adjacent to the guide-plate, a balancing device engaging said toothed rack to counteract the weight of the sash and rails, downwardly-inclined hooks 32 on the sash, and slits 61 in the side rails, with which said hooks engage, whereby when the sash is slightly lifted the sash and rails are spread apart so that the sash is free to turn on its pivots, substantially as specified.

4. In a window, a frame having a guide-plate on one side and a longitudinal recess on the other side, side rails sliding on said guide-plate and in said recess respectively, a sash, tongued and grooved in said side rails and pivoted therein to turn horizontally, a toothed rack on the side rail adjacent to the guide-plate, a balancing device engaging said toothed rack to counteract the weight of the sash and rails, downwardly-inclined hooks on the sash, and slits in the side rails with which said hooks engage, whereby when the sash is

slightly lifted the sash and rails are spread apart so that the sash is free to turn on its pivots, substantially as specified.

5. In a window, a pivoted sash and side rails 5 and 7 on which the sash is mounted, the guiding-rail 55 and the clips 54 to connect the side rail 5 to the guide 55 and to the window-frame and cause a true lineal movement thereof.

6. In a window, the combination of the sash 3, side rails 5 and 7, the fastening-hooks 32 to connect the sash and rails, a catch-bolt 45 to lock the sash from upward movement and the withdrawing-lever 49 to release the catch-bolt, operating in the manner described.

7. In a window, a sash pivoted between side rails that slide therewith, inclined hooks 32 to connect the sash and rails, pivots having downwardly-projecting flanges 40, and plates 42 provided with keyhole-shaped sockets 60 with which said pivots engage, whereby the sash is locked in its lower position, and may be turned and sustained in a slightly-raised position, substantially as specified.

8. In a window, a sash supported at the sides thereof by pivots having downwardly-projecting flanges 40, and plates 42 provided with keyhole-shaped sockets 60 with which said pivots engage, whereby the sash is locked in its lower position, and may be turned and sustained in a slightly-raised position, substantially as specified.

9. In a window, a sash pivoted between side rails that slide therewith, slotted plates 37 on said side rails, inclined hooks 32 to connect the sash and rails, said hooks engaging slots in plates 37, locking-bolts 45, having hook extensions 51, levers 49 engaging said hook extensions to withdraw bolt 45, and lifting-handles 52 on said levers, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PATRICK LALOR.

Witnesses:

W. F. MARRS,
PATRICK W. LAWLOR.