

W. H. GARDNER.
SASH BALANCE AND FASTENER.
APPLICATION FILED AUG. 4, 1904.

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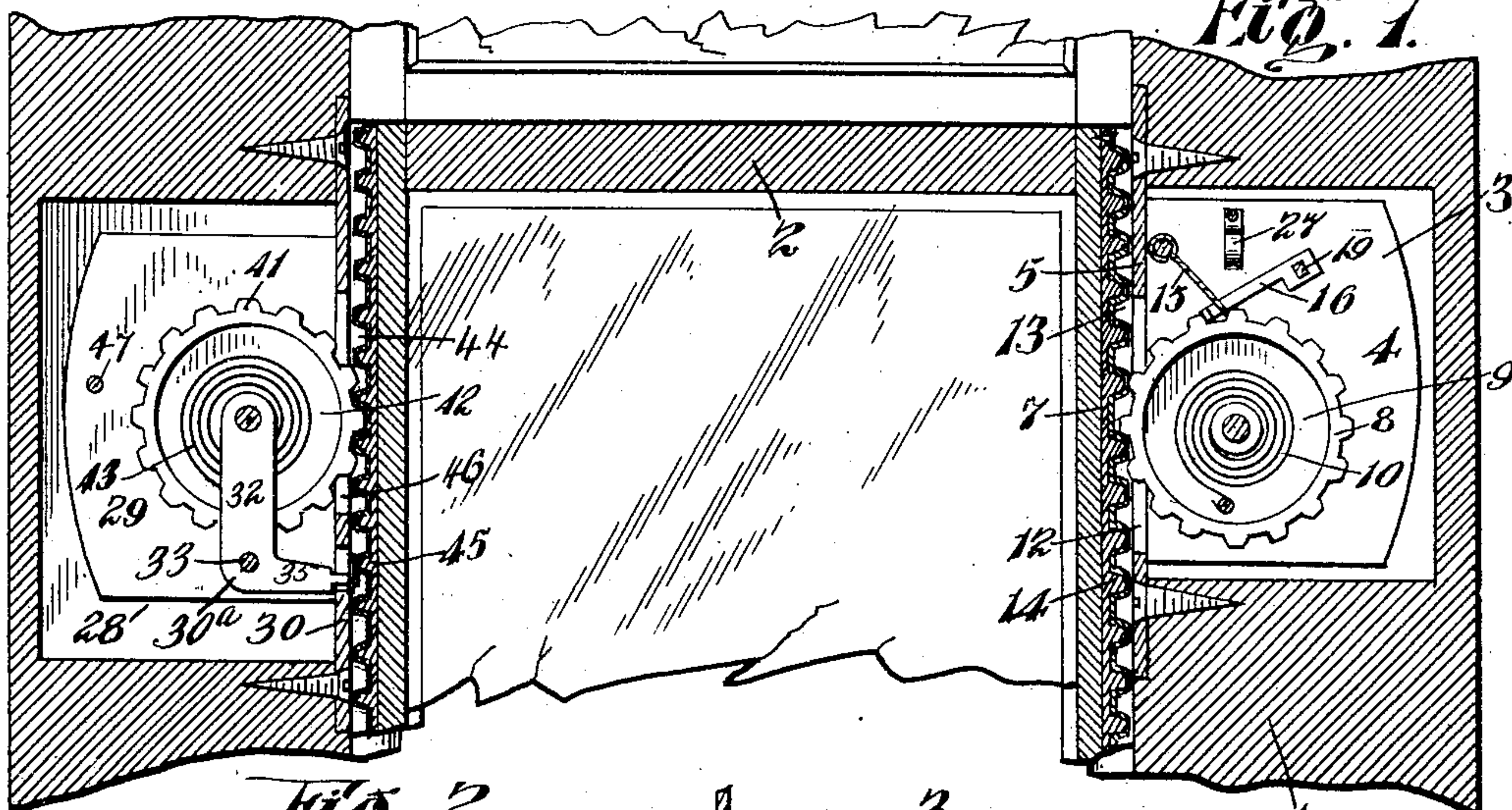


Fig. 2.

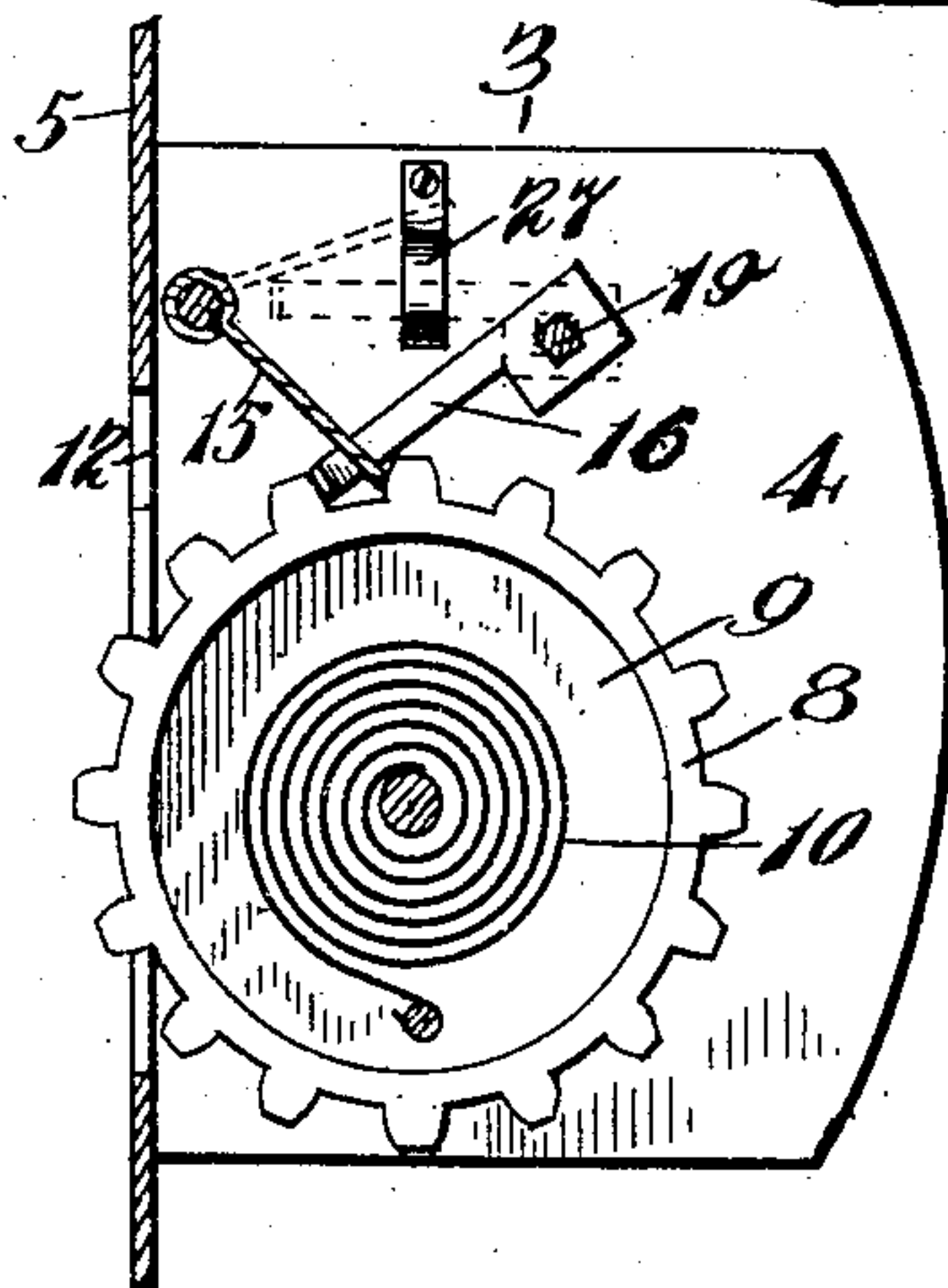


Fig. 3.

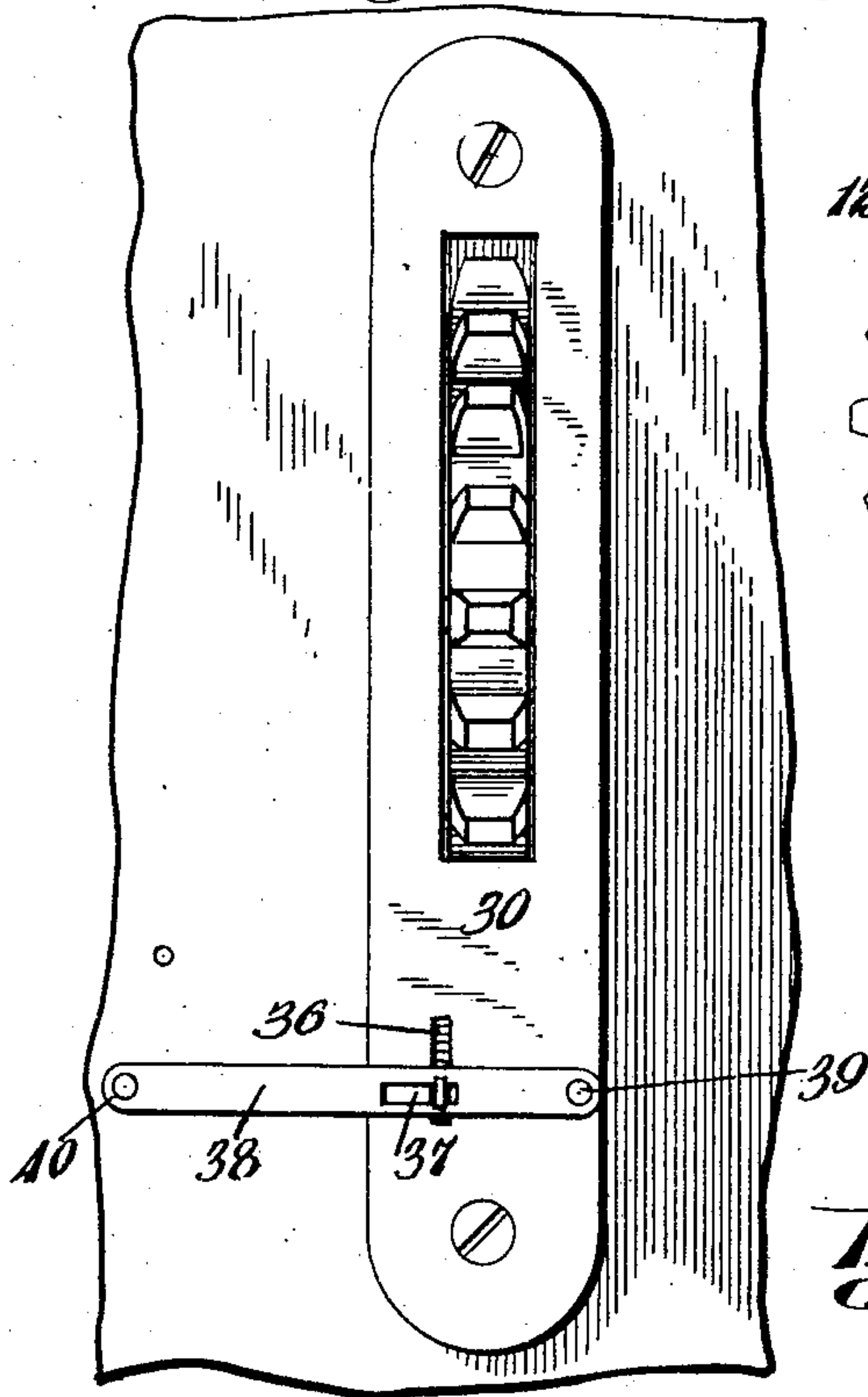
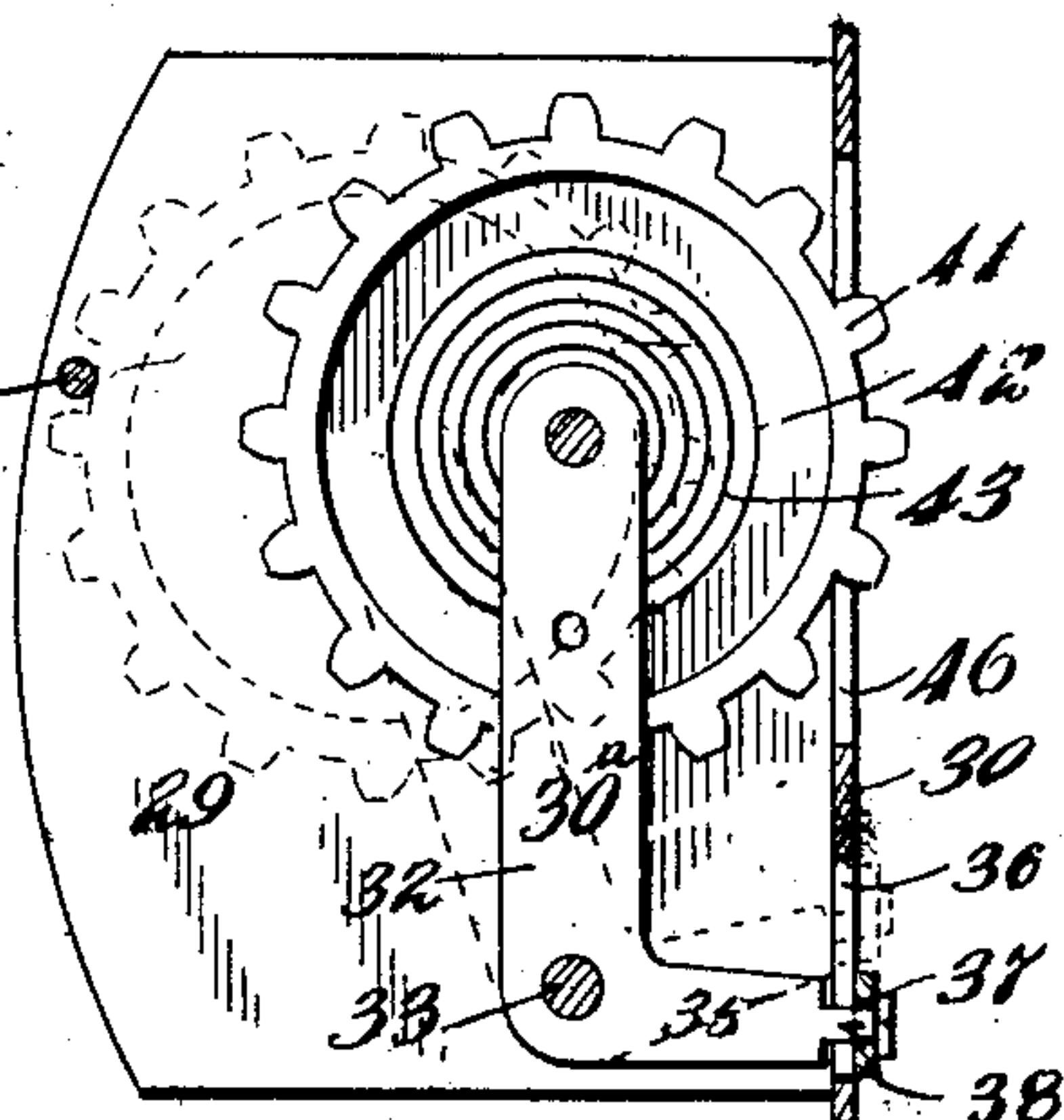


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

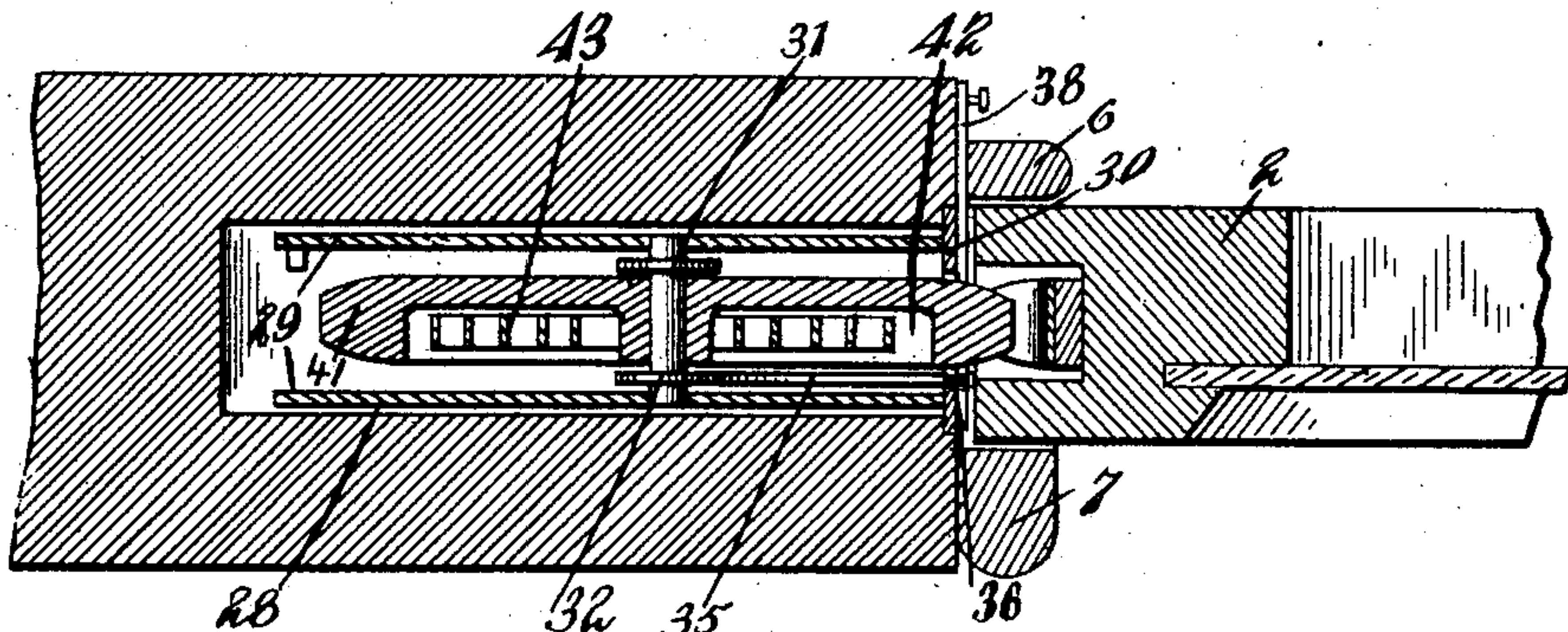


Fig. 6.

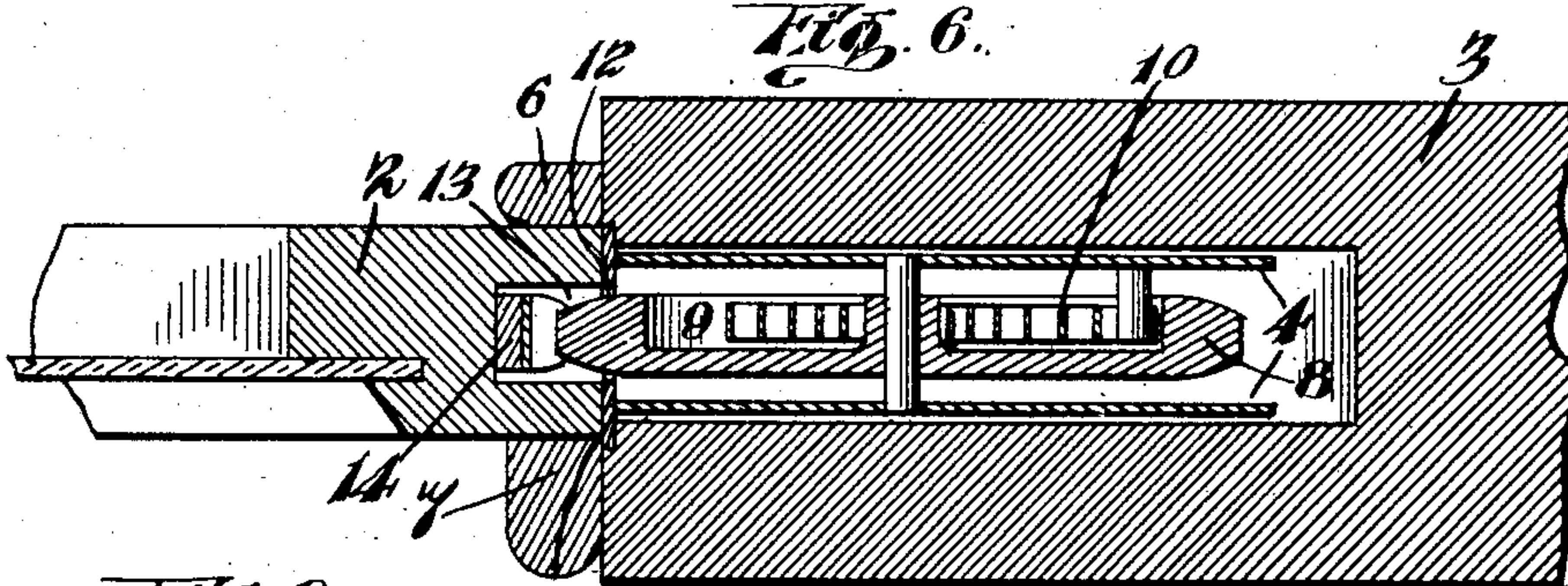


Fig. 9.

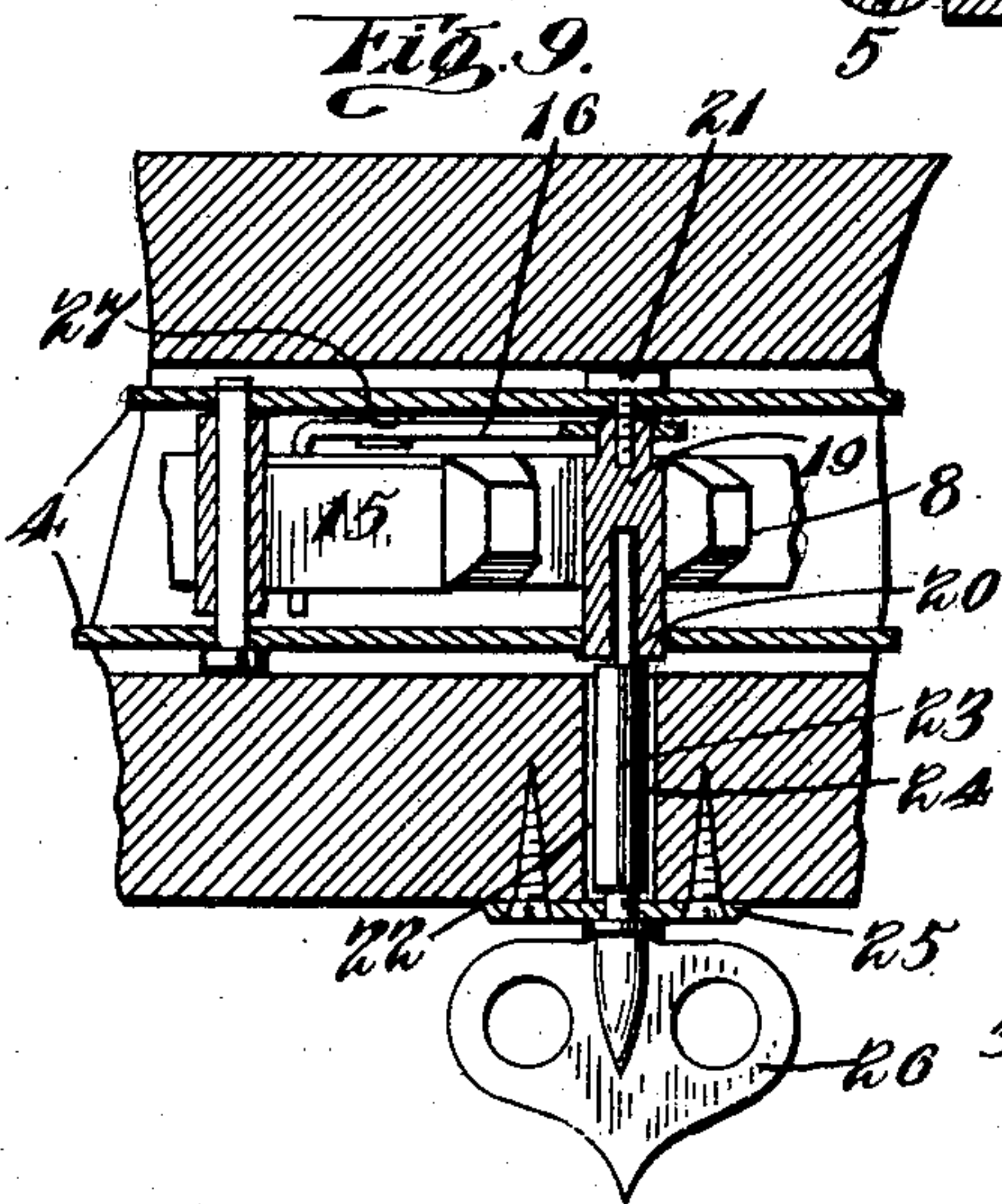


Fig. 7.

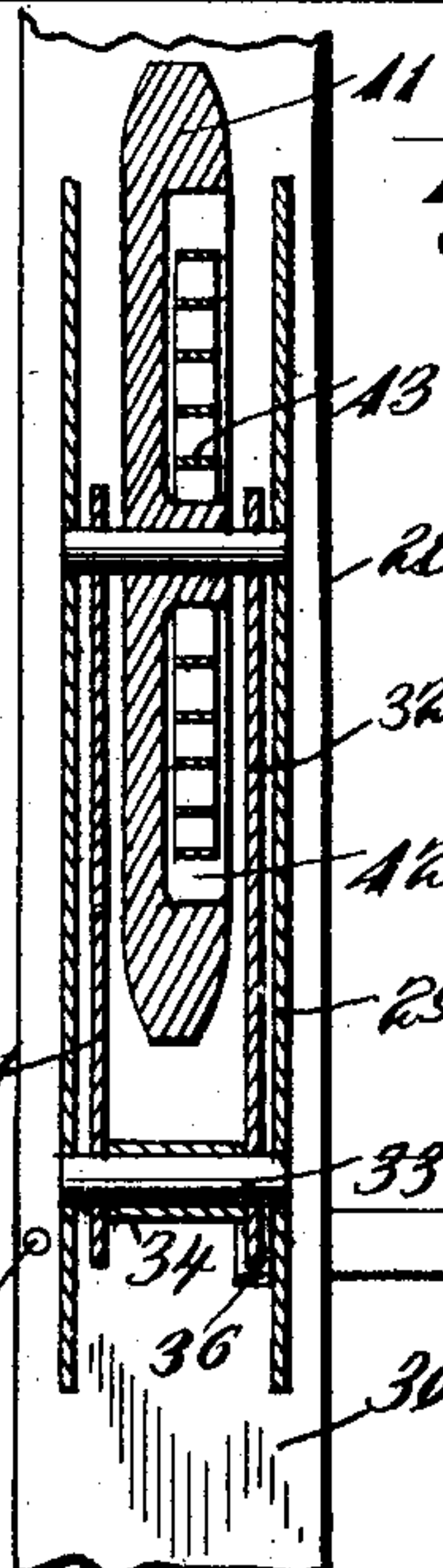
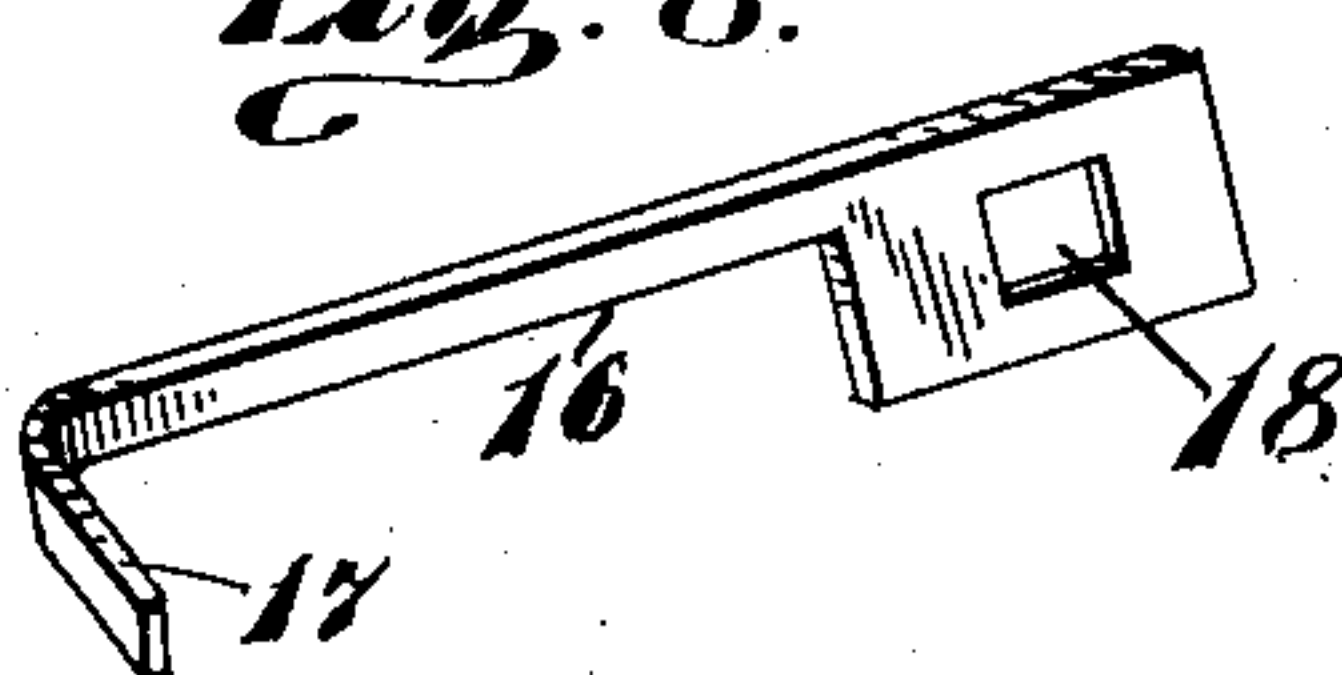


Fig. 8.



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UNITED STATES PATENT OFFICE.

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SASH BALANCE AND FASTENER.

SPECIFICATION forming part of Letters Patent No. 786,434, dated April 4, 1905.

Application filed August 4, 1904. Serial No. 219,500.

To all whom it may concern:

Be it known that I, WILLIAM H. GARDNER, a citizen of the United States, residing at Park City, in the county of Summit and State of Utah, have invented certain new and useful Improvements in Sash Balances and Fasteners; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in a combined sash balance and fastener.

The object of the invention is to provide a device of this character, whereby the sash may be held and locked in any desired position.

A further object is to provide means whereby a sash may be readily removed from the window-frame.

With these and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter more fully described, and particularly pointed out in the appended claim.

In the accompanying drawings, Figure 1 is a vertical sectional view through a window frame and sash, showing the arrangement of the device on both sides of the same. Fig. 2 is a view of the inner face of the left-hand side of the window-frame. Fig. 3 is an enlarged detail view of the device used on the right-hand side of a window-frame, one side of the casing of said device being removed. Fig. 4 is a similar view of the device used on the left-hand side of the window-frame. Fig. 5 is a horizontal sectional view through the window, the left-hand side of the window-frame, and the device arranged therein. Fig. 6 is a similar view of the right-hand side of the window-frame. Fig. 7 is a vertical sectional view through the casing of the device used in the left-hand side of the window-frame. Fig. 8 is a detail view of one of the locking-dogs. Fig. 9 is a sectional detail illustrating the lock and key for the lower sash.

Referring more particularly to the drawings, 1 denotes the window-frame, and 2 de-

notes the sash. In the right-hand side of the window-frame, near the upper end of the lower sash, is arranged a casing 3, which consists of two vertically-disposed parallel side plates 4. Said plates are riveted or otherwise secured to a vertically-disposed end plate 5, which is secured to the window-frame between the parting-strip 6 and the sash-stop 7 by screws or other suitable fastening devices. Between the plates 4 of the casing 3 is pivotally mounted a cog-wheel 8. The wheel 8 is provided with an annular concentrically-formed recess or chamber 9, in which is arranged a spiral spring 10, the inner end of which is secured to the hub of the wheel 8, the outer end of the same being secured to one of the side plates 4. The cog-wheel 8 is so mounted between the plates 4 that the teeth on the outer edge of the same project through the slot 12 formed in the end plate 5.

In the edge of the sash adjacent to the plate 5 is formed a vertically-disposed groove or channel 13, in which is arranged a tooth bar or rack 14, which is here shown as being formed of a strip of sheet metal bent to form corrugations which serve as teeth with which the teeth of the cog-wheel 8 are adapted to mesh. The rack 14 is adapted to extend the entire length of the sash, so that when said sash is raised the cog-wheel 8 will be rotated, thereby winding up the spring 10, the tension of the spring when so wound, together with a similar spring on the opposite side of the sash, being sufficient to support said sash at any desired position.

In order that the sash may be locked or fastened down at any desired position, a dog or pawl 15 is employed to engage the teeth of the cog-wheel 8 to prevent the rotation of the same in one direction, a dog or pawl 16 being employed to lock said wheel against rotation in the opposite direction. The locking of said wheel prevents the raising or lowering of the sash, as will be understood.

The pawl or dog 16, preferably constructed as shown in Fig. 8, consists, preferably, of a flat piece of metal, one end of which is bent at right angles, forming a locking-tooth 17, the opposite end being provided with a rec-

tangular opening or hole 18, by which said dog is engaged with a rectangular end of a pivotally-mounted cylindrical key-socket 19, one end of which projects through and is rotatably mounted in a bearing-opening 20, formed in one of the side plates 4, the opposite end of said key-socket being provided with a threaded aperture, into which is screwed the end of a holding-screw 21, which passes through the opposite plate 4 of the casing. In the opposite end of the key-socket 19 is formed a slot 22, in which is adapted to be inserted the inner end of an operating-key 23. The key 23 is adapted to project into a hole 24 formed in the side of the window-frame and is rotatably mounted in a bearing-plate 25, secured to the outer face of said frame, and is provided on its end with a head 26.

Instead of employing a stationary key 23, as has just been described, it is obvious that the key-socket 19 may be so constructed as to receive a movable key, thereby preventing the unlocking of the window except by persons provided with such keys.

To one of the side plates 4 is secured a spring 27, with which the pawl 15 is adapted to be engaged when in a raised or released position, thereby holding the same up and out of engagement with the cog-wheel 8. The pawl or dog 15 is only adapted to lock the cog-wheel against rotation in one direction, and in order to prevent the same from turning in an opposite direction a second pawl or dog 16 is employed, said dog or pawl being pivotally mounted between the plates 4 in a position to engage the teeth of the wheel 8 and also a position to engage and raise the pawl 15 when said pawl 16 is lifted by the key 23. The engaged and disengaged positions of the pawls 15 and 16 are clearly shown in full and dotted lines in Fig 3.

In the left-hand side of the window-frame is arranged a casing 28, which consists of parallel side plates 29, which are riveted or otherwise secured to an end plate 30, which is secured to the inner edge or face of the frame in a similar manner and in the same position as the casing on the opposite side of the window-frame.

Between the plates 29 and near the lower edge of the same is pivoted a yoke 30^a, which consists in parallel upwardly-projecting bars or plates 31 and 32, said plates being mounted at their lower ends on a screw-bolt 33, which passes through and is engaged with the side plates 29. A sleeve 34 is arranged on said bolt between the bars 31 and 32, thereby spacing and holding said bars apart. On the lower end of the plate or bar 32 is formed a laterally-projecting arm or lever 35, the end of which is adapted to project through a slot 36, formed in the end plate 30, and to engage the hole or opening 37 in a lever 38, which is pivoted at one end to a plate

30, as shown at 39. In the opposite end of the lever 38 is formed a hole 40, the purpose of which will hereinafter appear, and between the upper ends of the arms 31 and 32 is pivotally mounted a cog-wheel 41, which has formed in one of its side faces an annular concentrically-disposed channel or recess 42, in which is arranged a coil-spring 43. The inner end of said spring is secured to the hub of the wheel 41, the outer end of the spring being secured to the plate or bar 32, so that when said cog-wheel is rotated said spring will be wound or unwound according to the direction in which said wheel is turned.

To the edge of the sash adjacent to the plate 30 is formed a longitudinally-disposed groove or channel 44, in which is arranged a toothed rack 45, which is preferably formed of a strip of corrugated sheet metal or is similar to the rack shown in the opposite side of the sash. The cog-wheel 41 is arranged so that the teeth of the same will normally project through a slot 46, formed in the plate 30, and will normally engage the rack 45, so that when said sash is raised the cog-wheel 41 will be rotated to wind up the spring 43, the tension of which with that of the spring of the opposite side of the window will support said sash in its raised position.

In order that the sash may be removed from the window-frame, the lever 38 is raised, thereby rocking the frame or lever 35 upwardly and throwing the plates or bars 31 and 32 inwardly, thereby retracting the cog-wheel 41 and disengaging the teeth of the same from the rack 45, and thus permitting the sash to be removed from the frame.

It will be understood that the springs 10 and 43 are so wound and mounted in the cog-wheels 8 and 41 that they will balance the sash 2 at all times irrespective of the position in which the same may be.

On the inner side of one of the plates 29 of the casing 28 is arranged an inwardly-projecting pin or lug 47 with which the teeth of the cog-wheel 41 are adapted to engage when said wheel is in a retracted position, as shown in dotted lines in Fig. 4 of the drawings, thereby preventing a retrograde movement of the wheel and a consequent unwinding of the spring 43, carried by said wheel.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

A combined sash balance and fastener

comprising casings, one of which is adapted to be arranged in each side of the window-frame, a cog-wheel mounted in the side plates of one of said casings, locking-pawls arranged
5 therein to engage said cog-wheel, a yoke pivotally mounted in the side plates of the other of said casings, a cog-wheel journaled in said yoke, rack-bars secured to the edges of the window-sash in position to be engaged by said
10 cog-wheels, a laterally-projecting arm or lever arranged on said yoke, the end of said arm being adapted to project through a slot in said casing, an operating-lever pivotally connected to said casing and adapted to en-
15 gage the arm or lever of said yoke, whereby

the latter may be rocked to retract said wheel out of engagement with the rack in the adjacent edge of the sash, thereby permitting the removal of the same, and means whereby said operating-lever may be secured to hold said
20 yoke and in position to engage the cog-wheel carried thereby with said rack, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing wit-
25 nesses.

WILLIAM H. GARDNER.

Witnesses:

SAMUEL W. PLATT,
C. W. HODGSON.