

No. 886,882.

H. K. SMITH.
SODA FOUNTAIN.

PATENTED MAY 5, 1908.

APPLICATION FILED SEPT. 19, 1907.

6 SHEETS—SHEET 1.

Fig. 1.

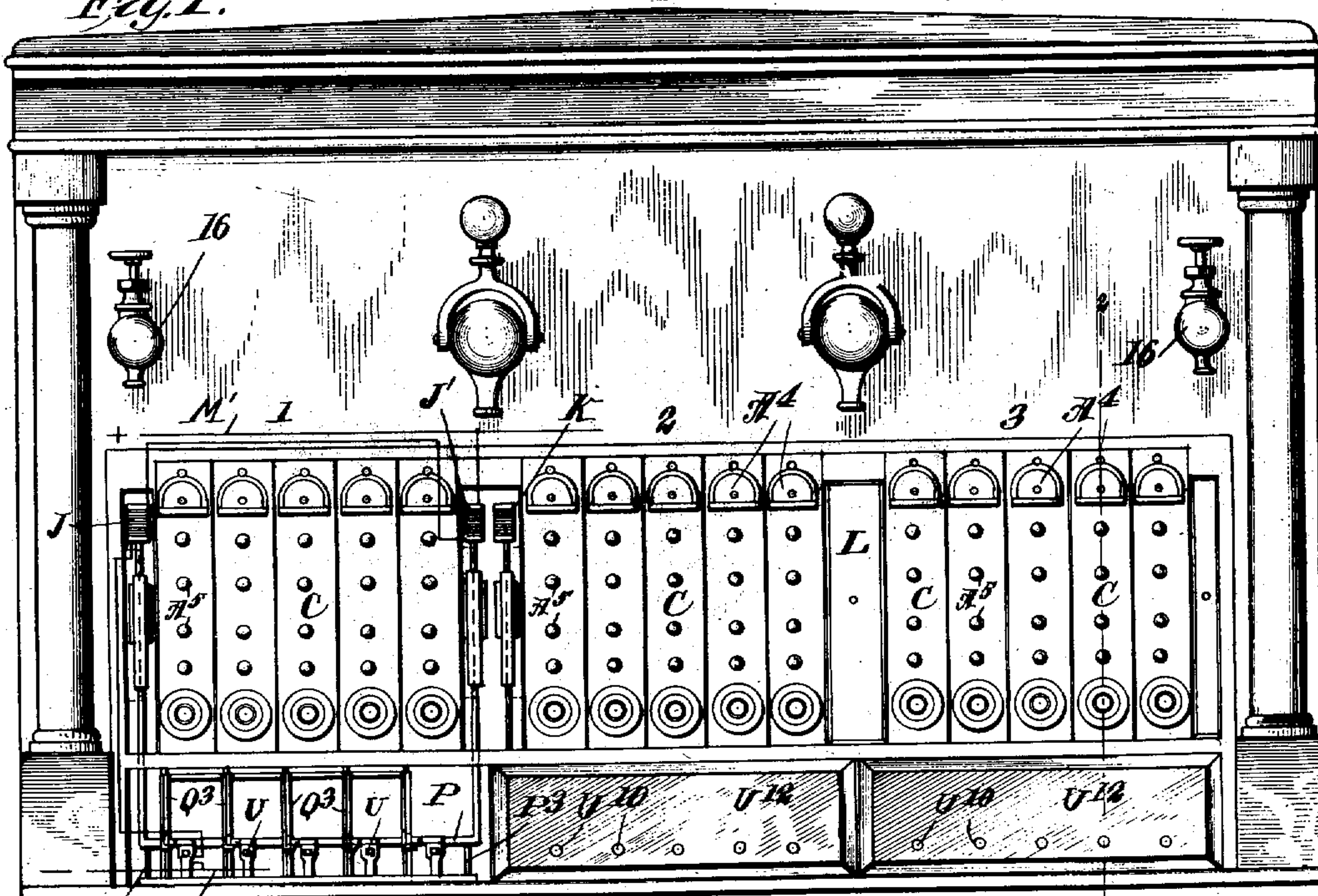
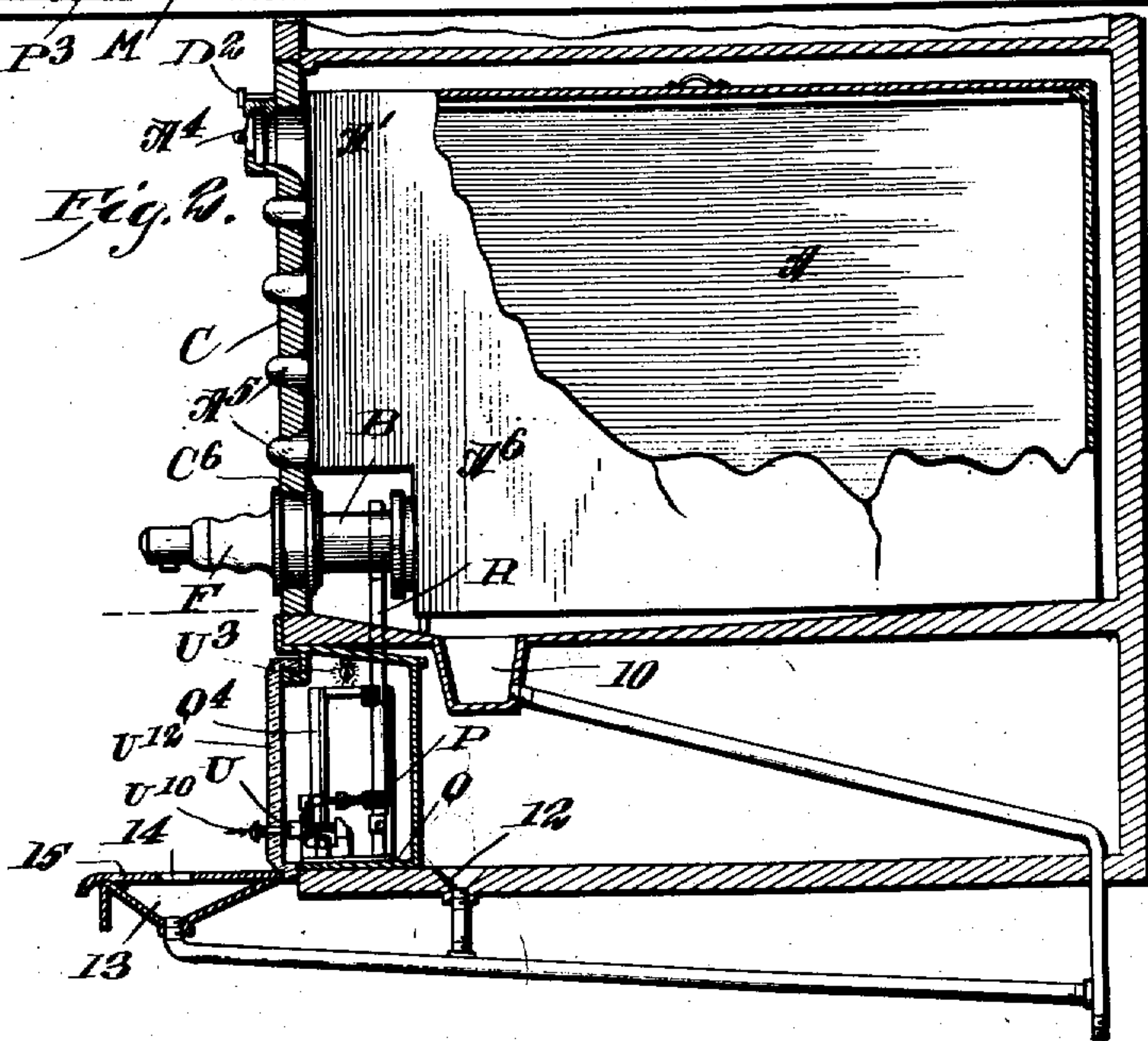


Fig. 2.



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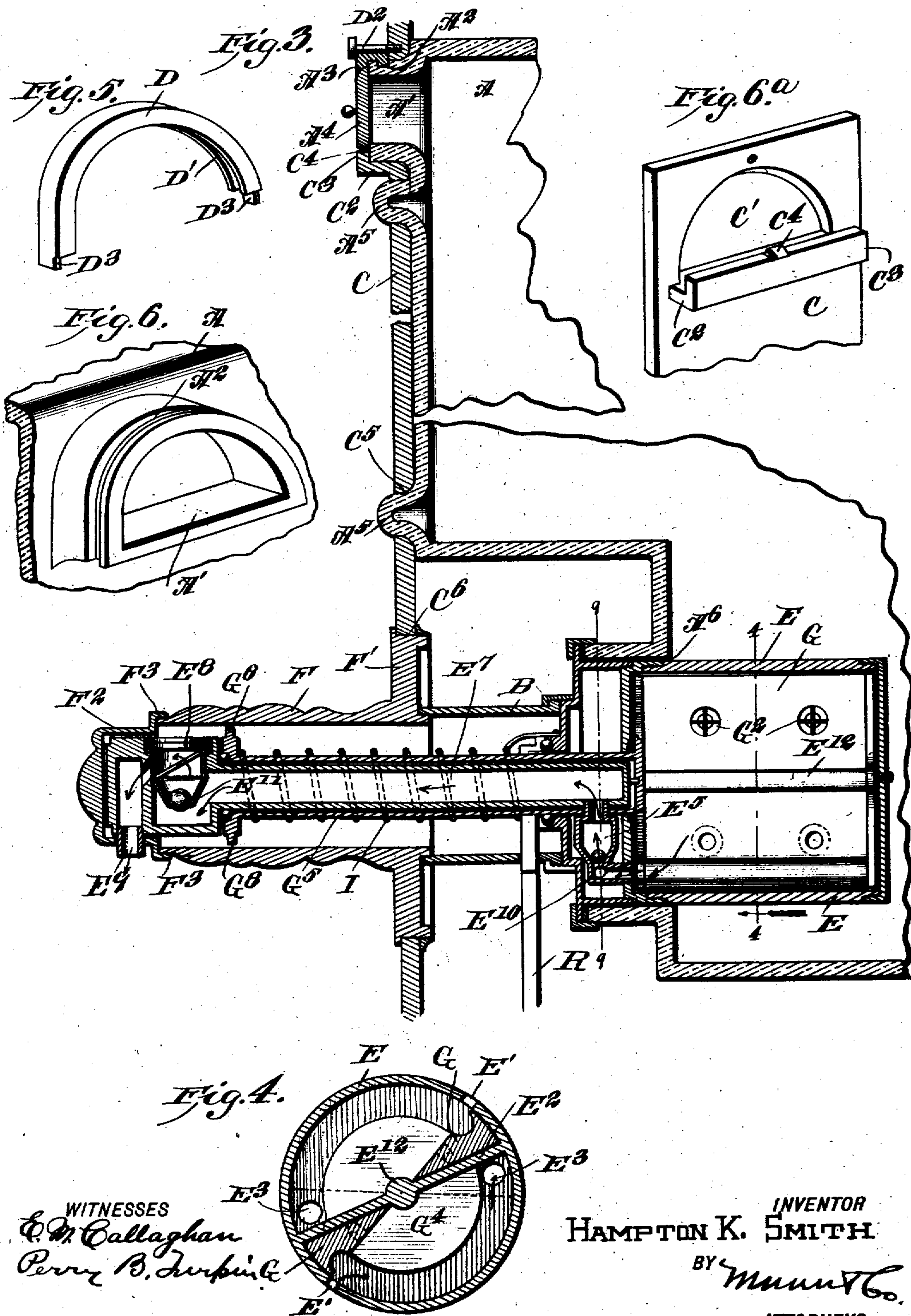
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6 SHEETS—SHEET 2.



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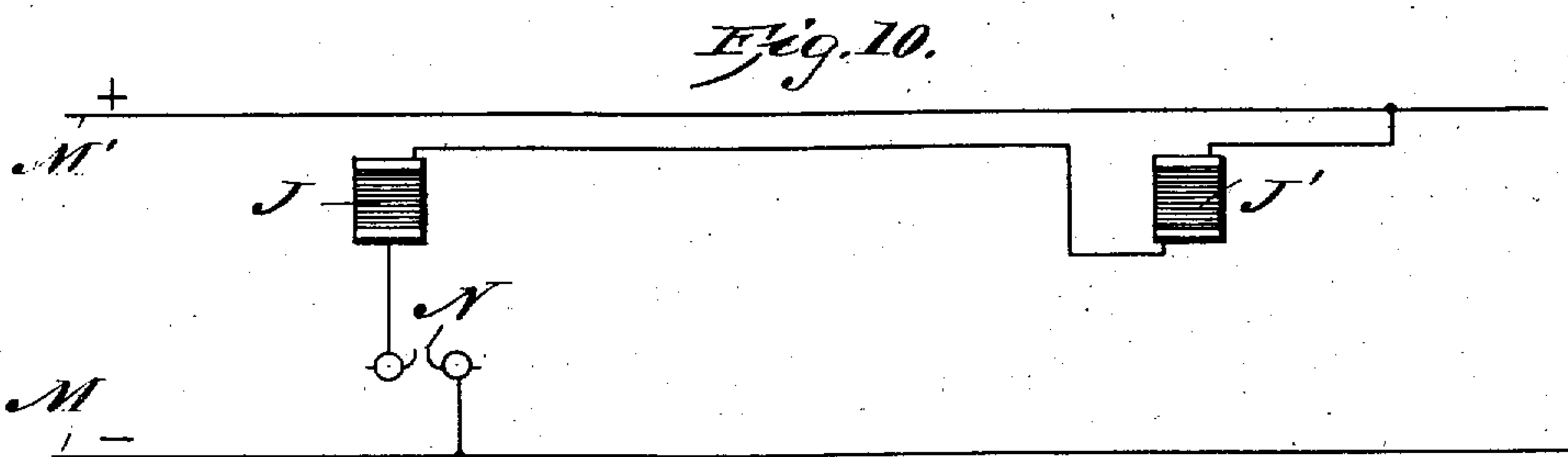
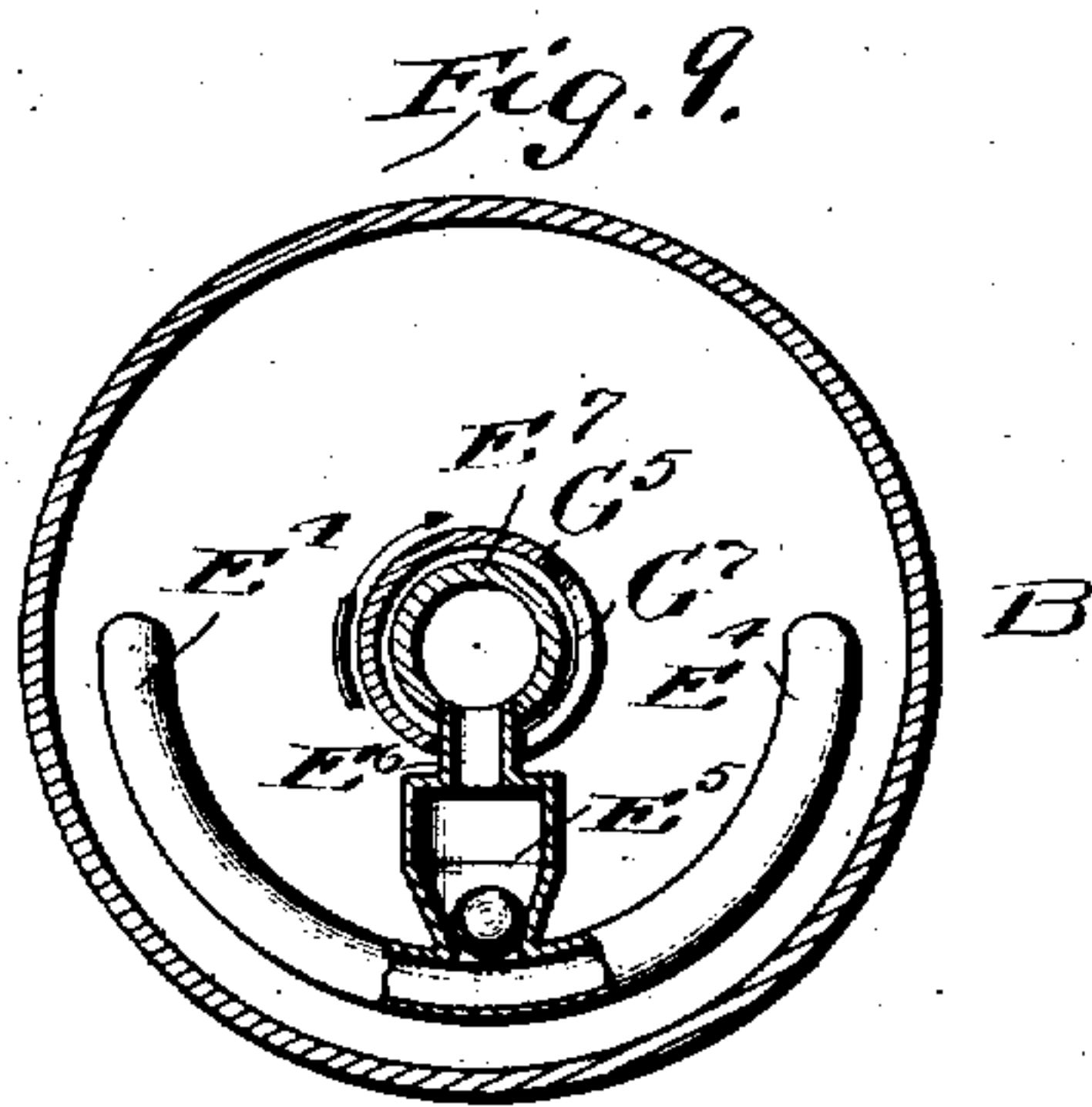
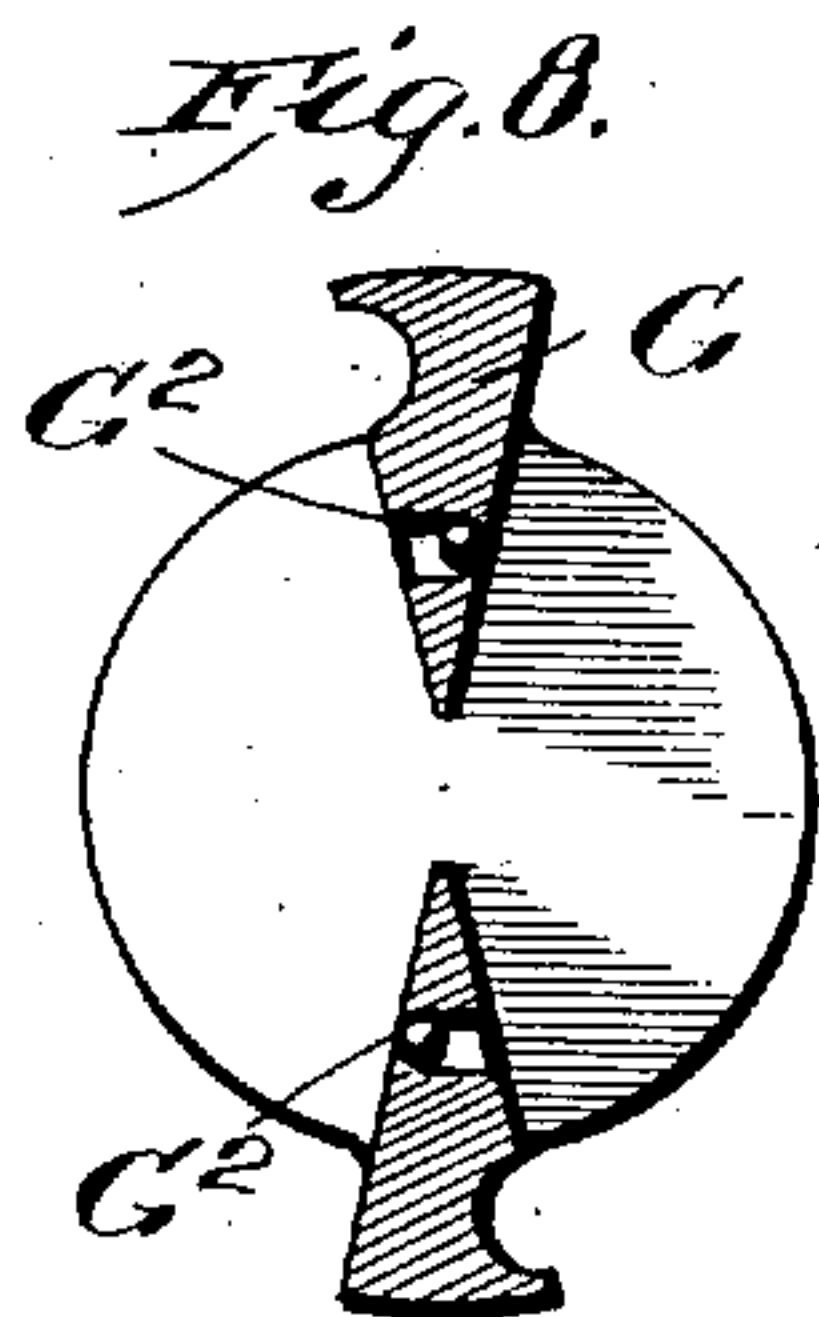
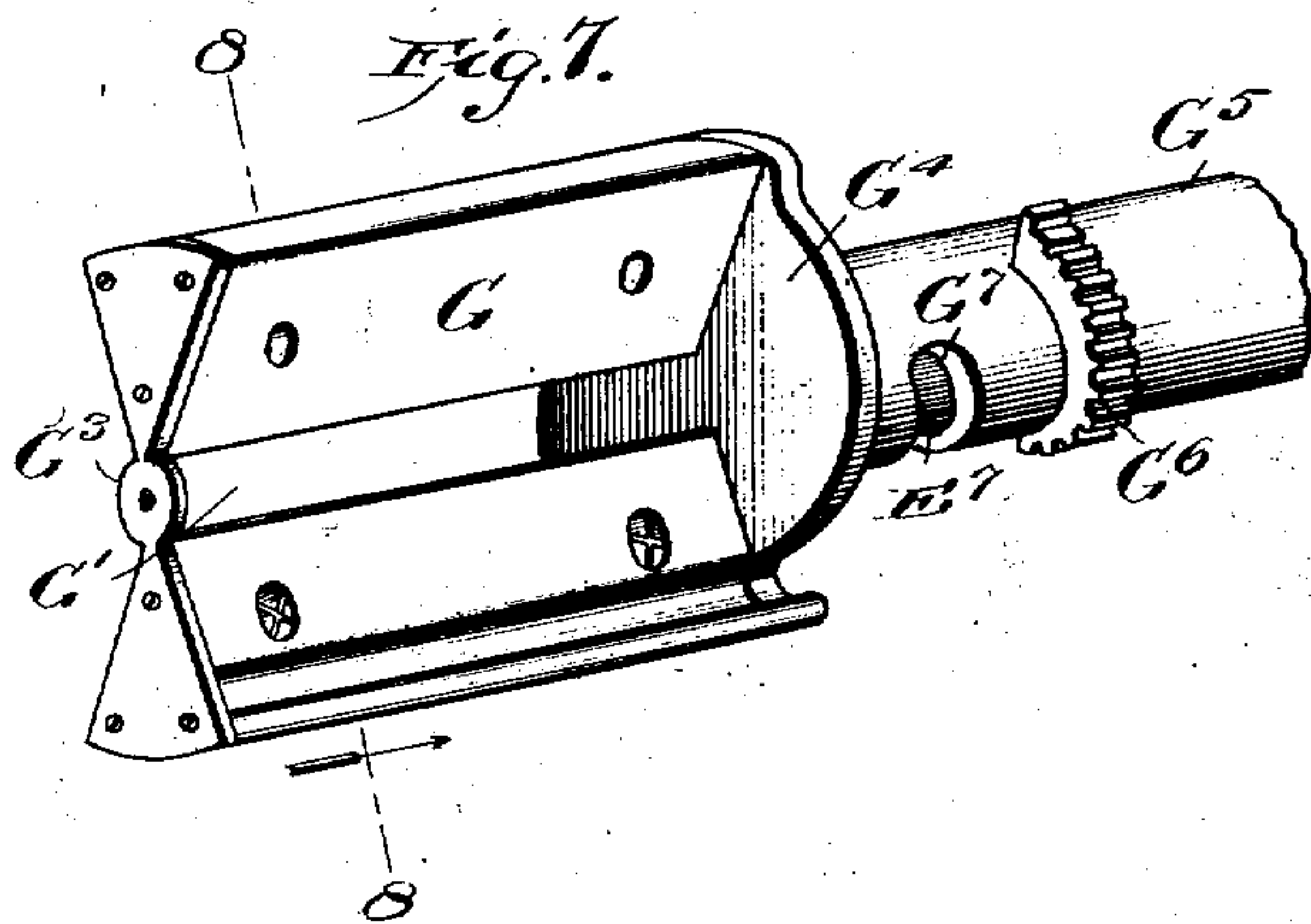
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6 SHEETS—SHEET 3.



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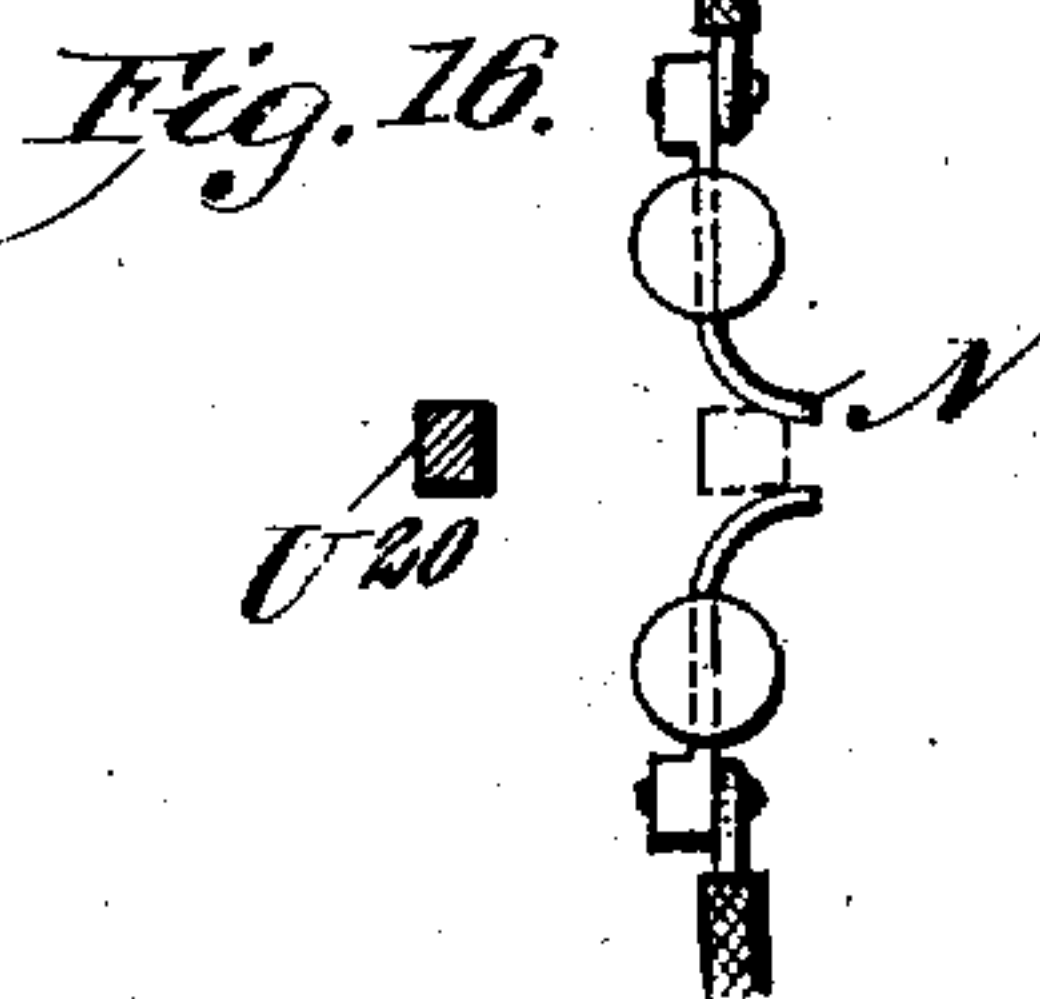
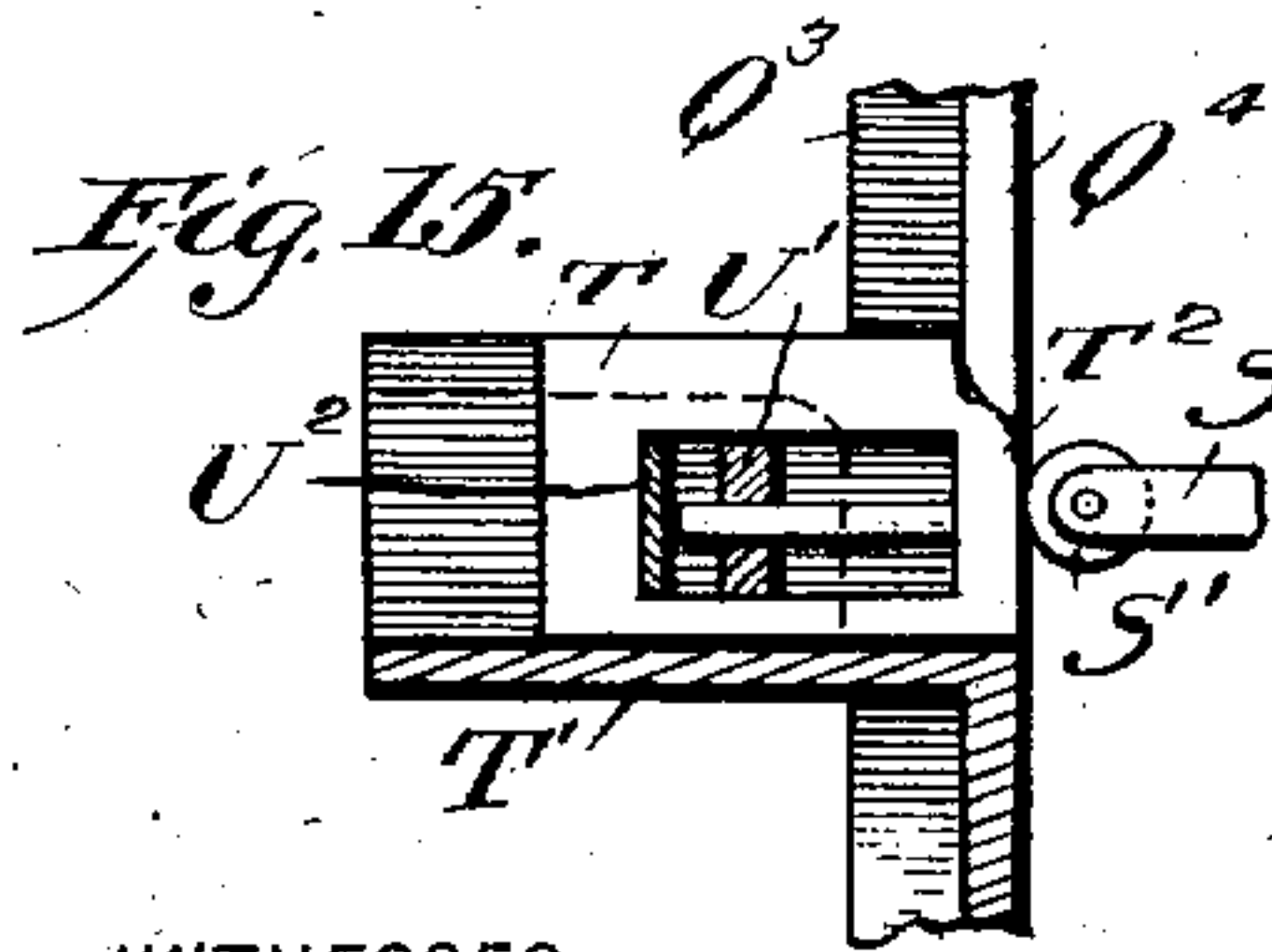
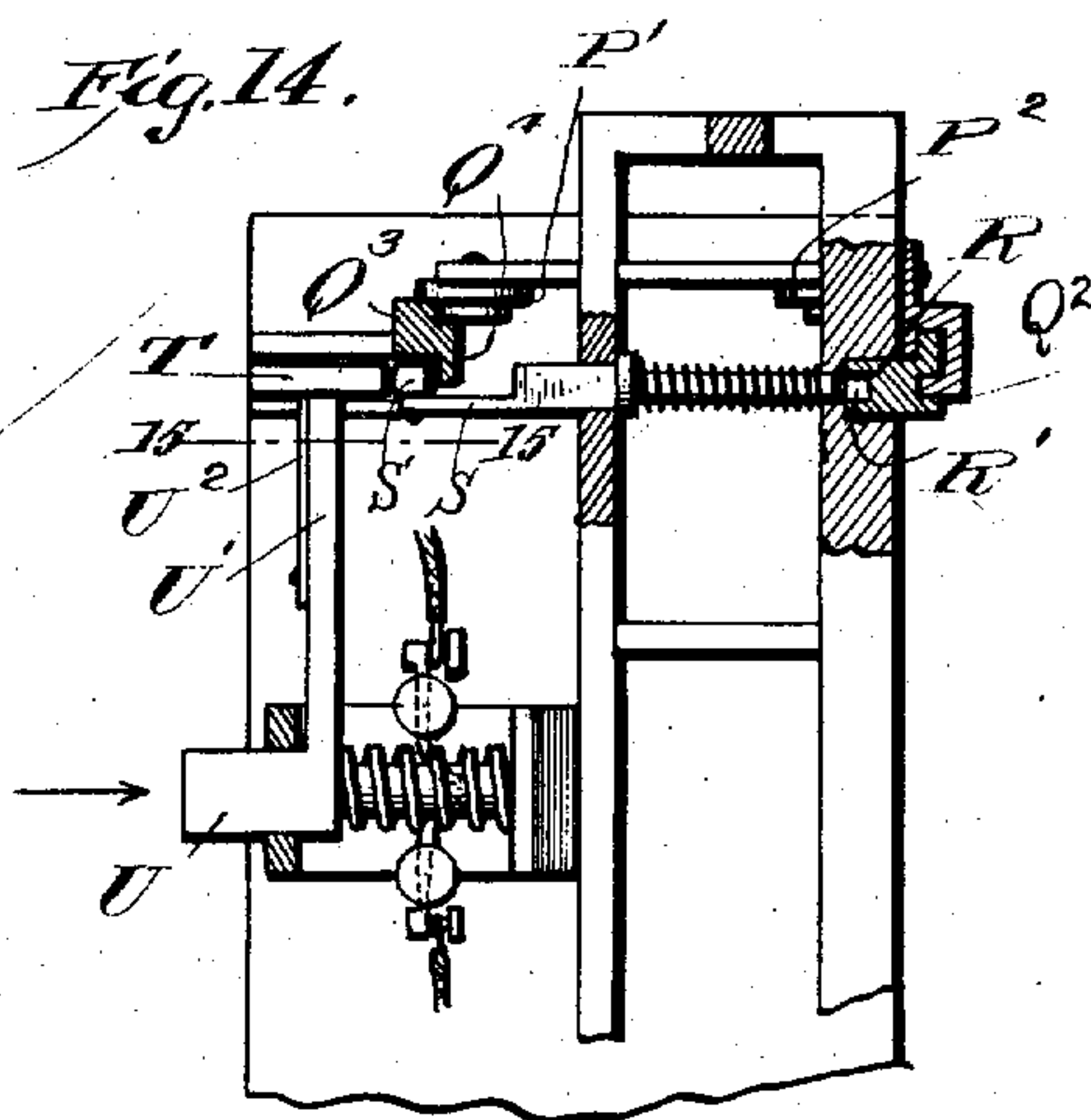
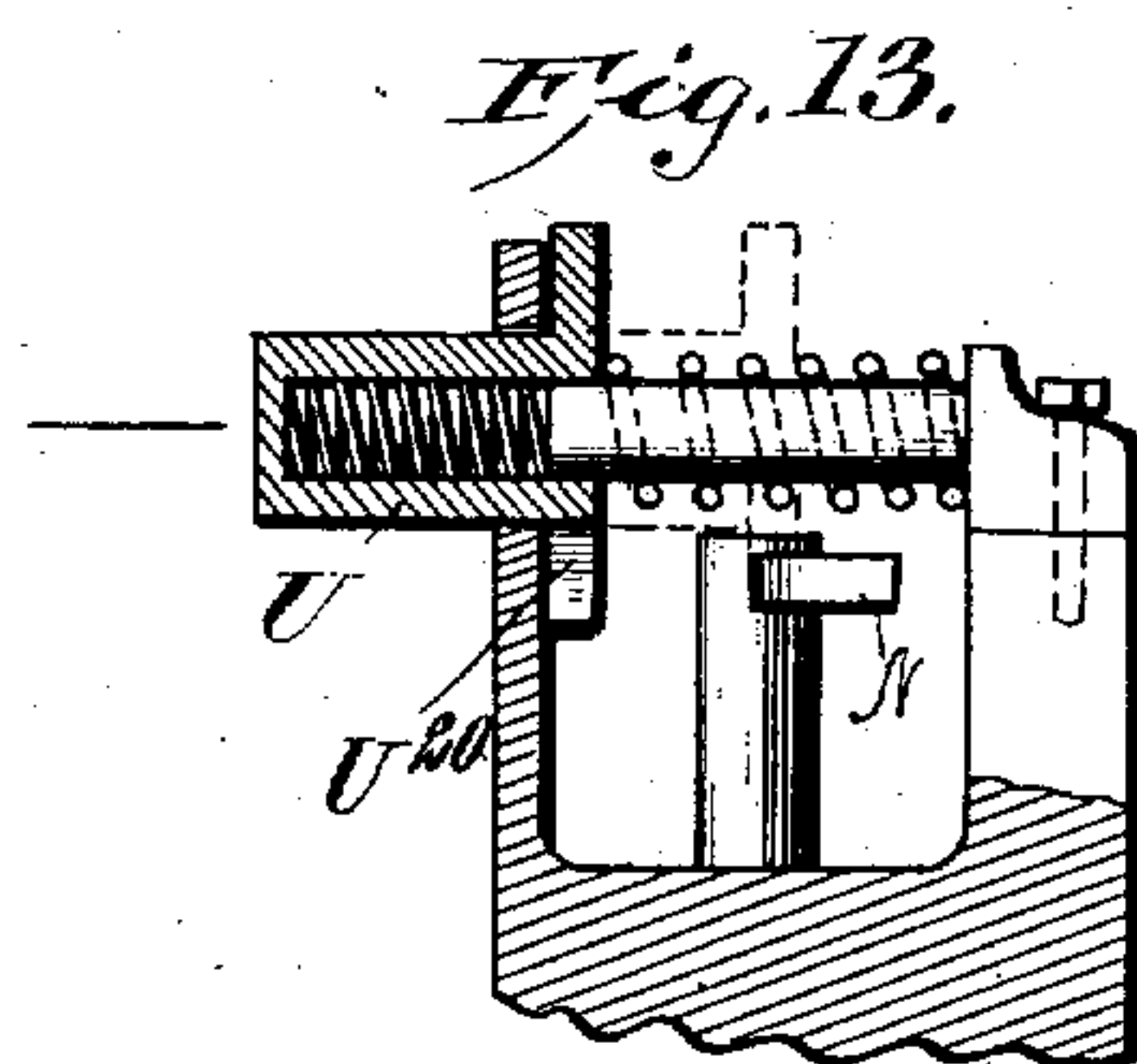
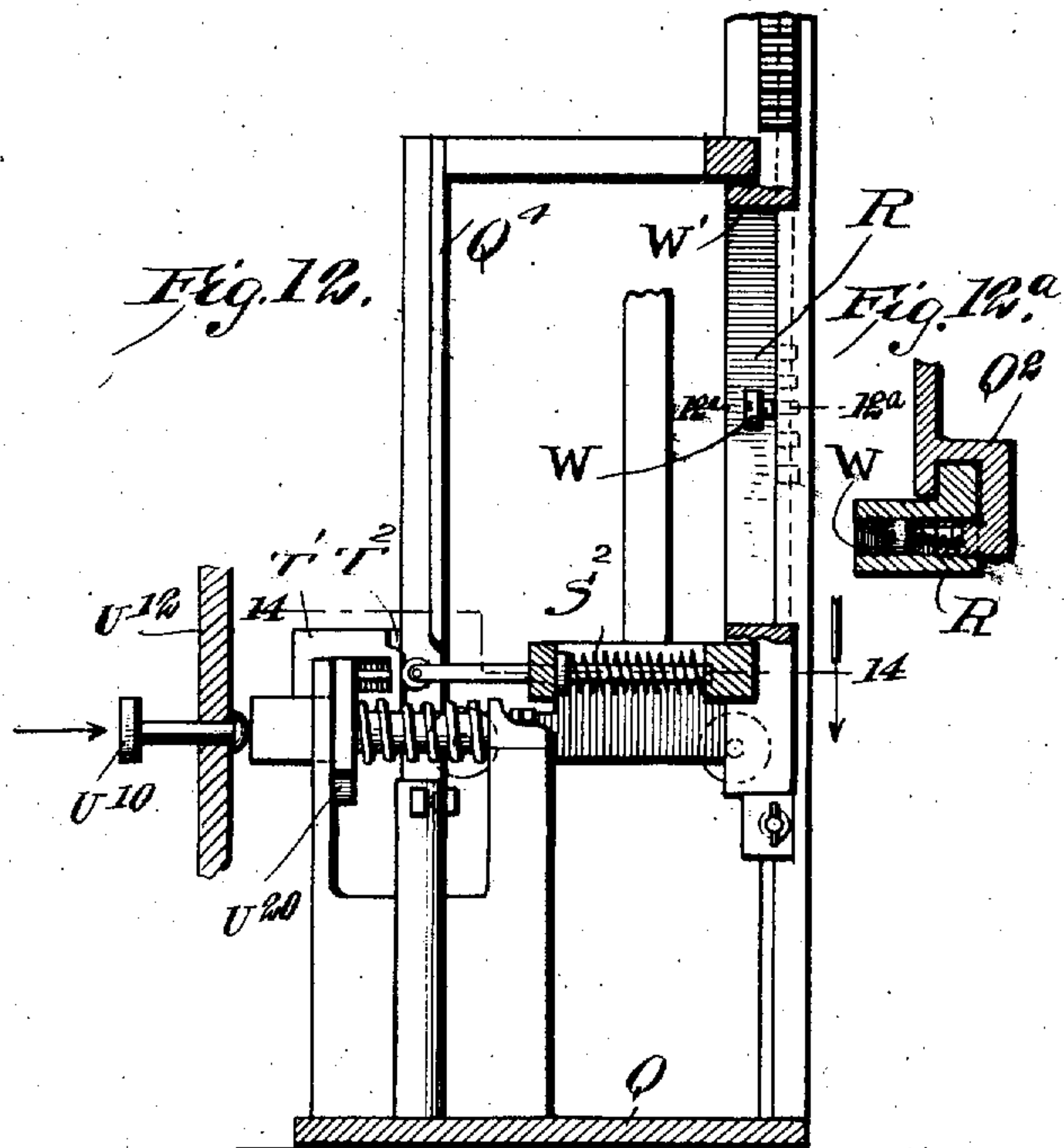
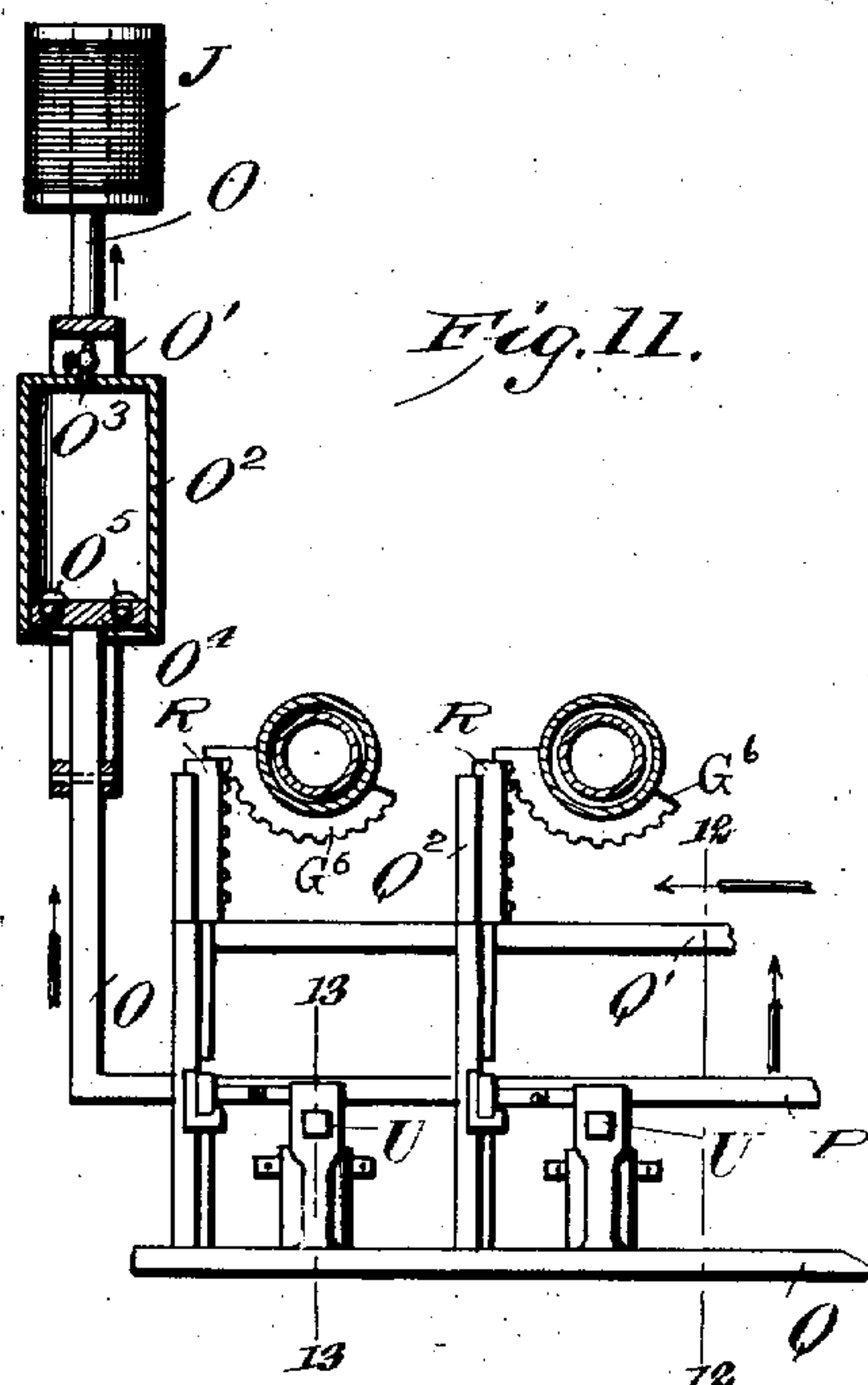
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6 SHEETS—SHEET 4.



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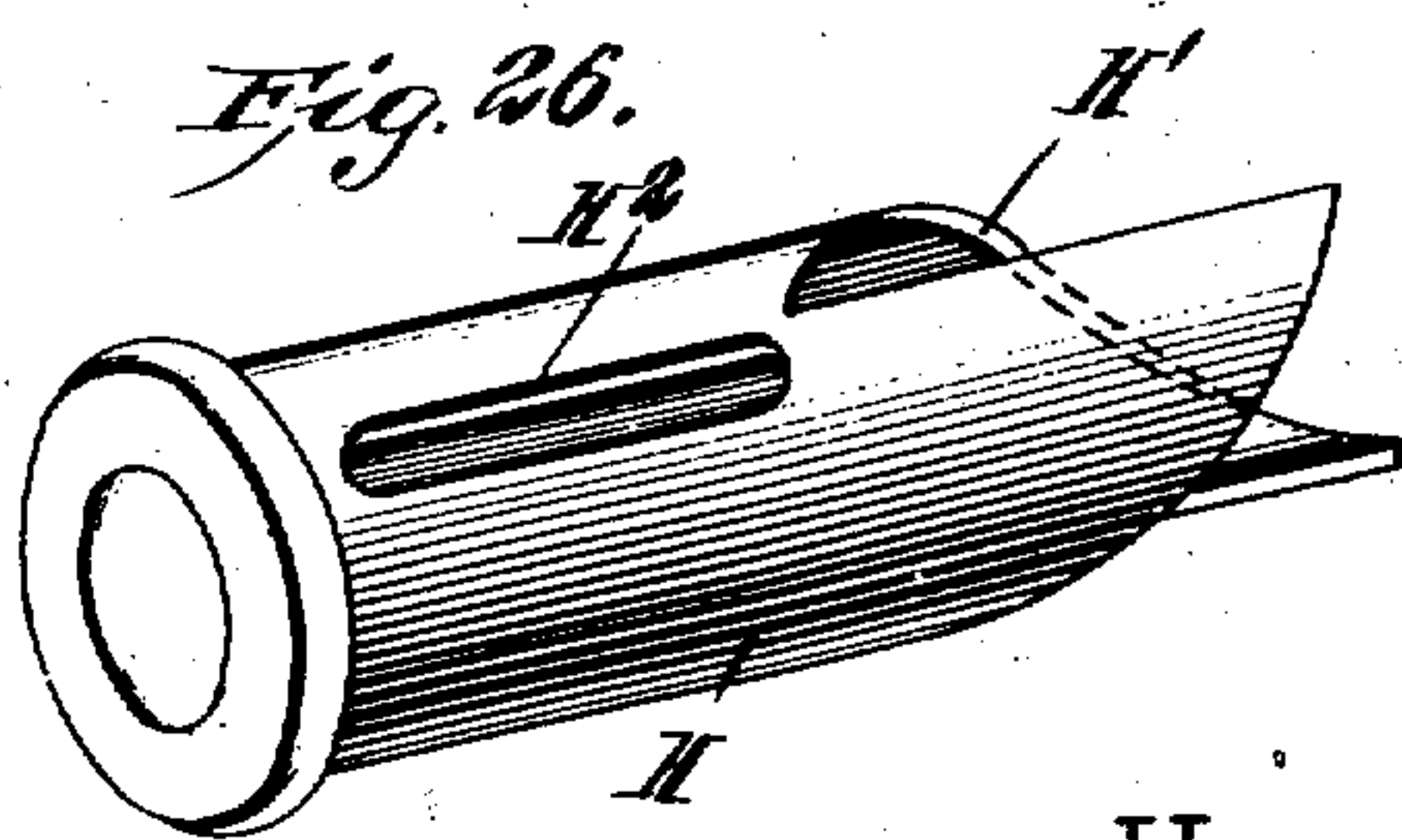
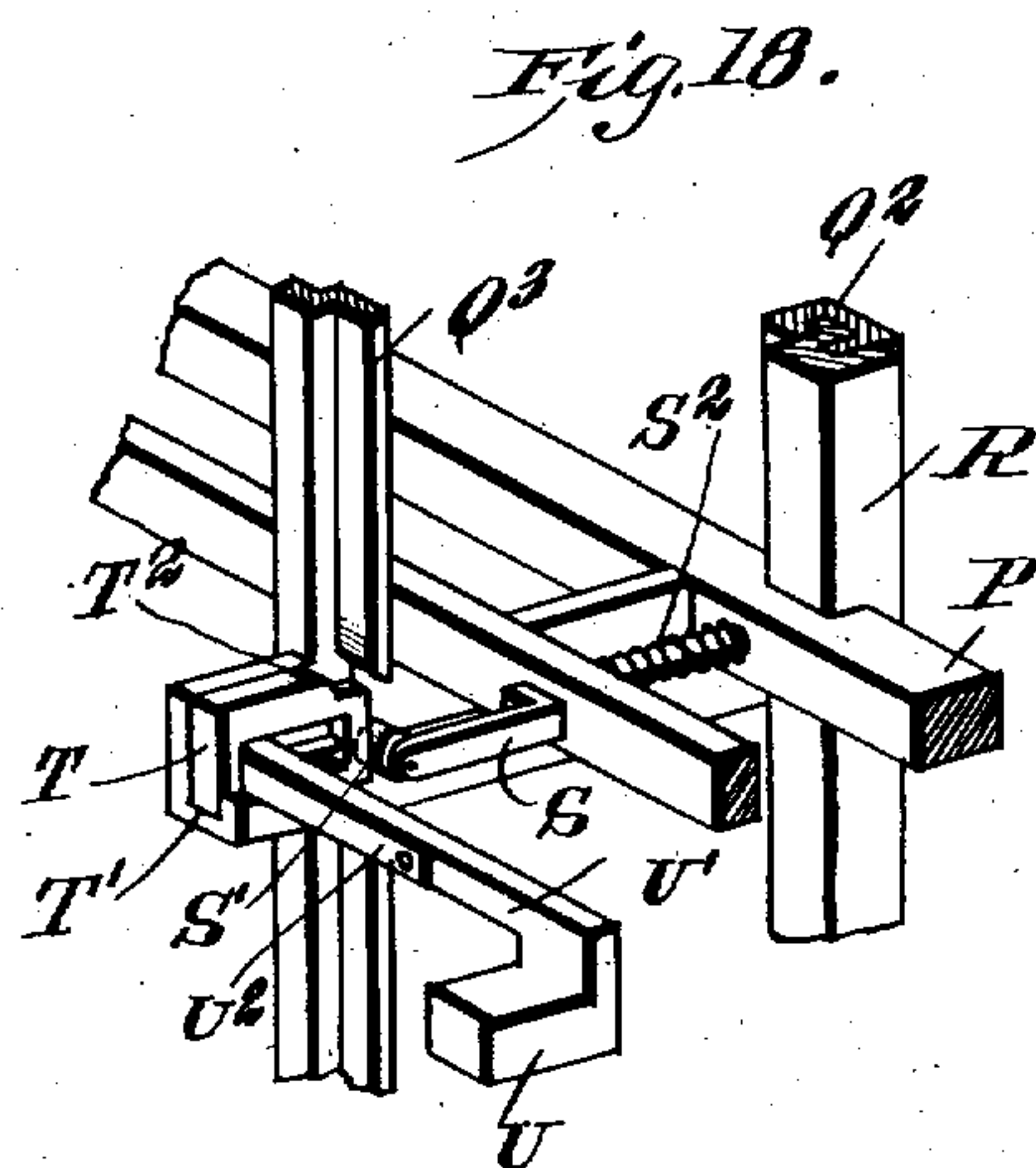
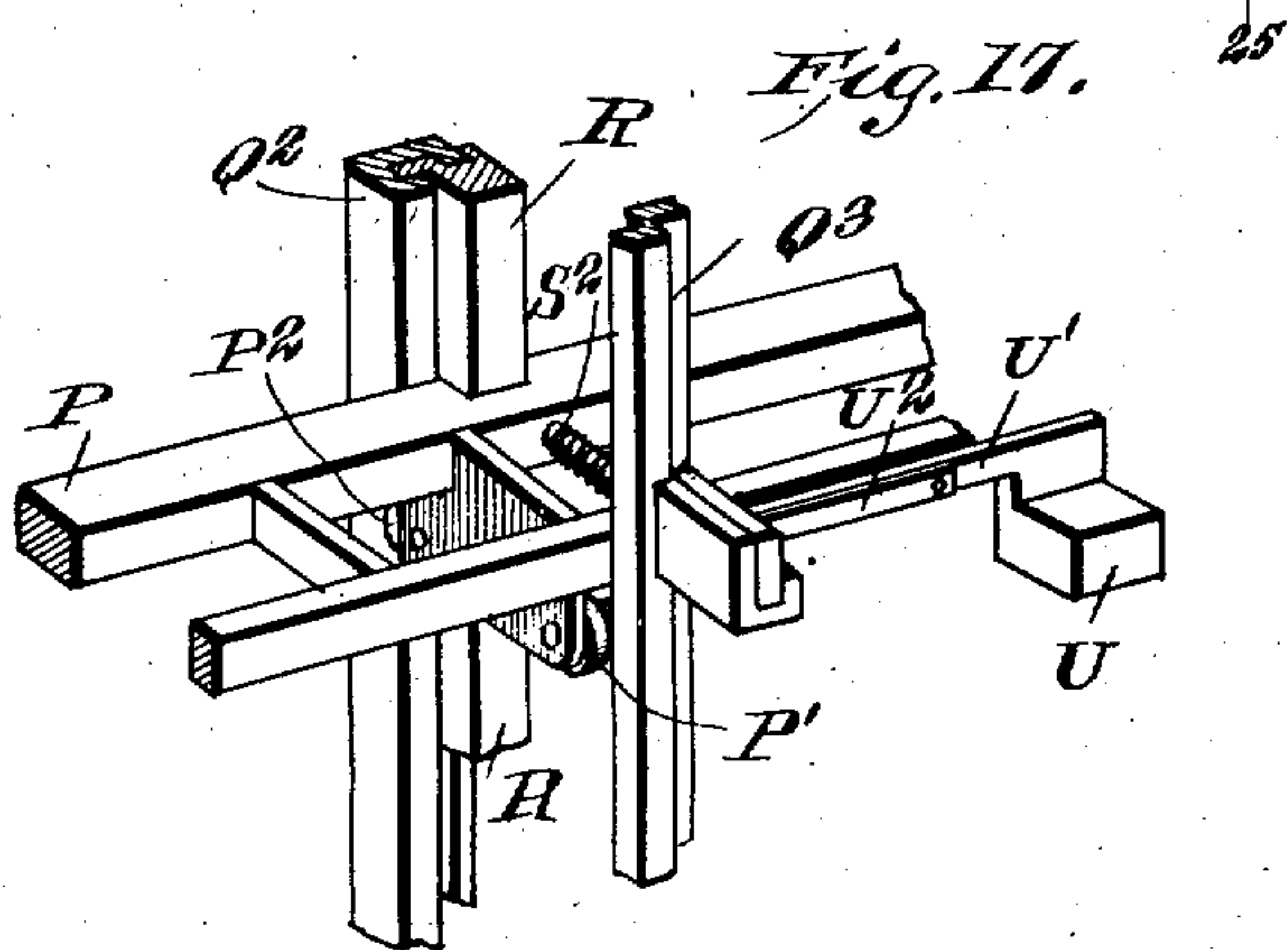
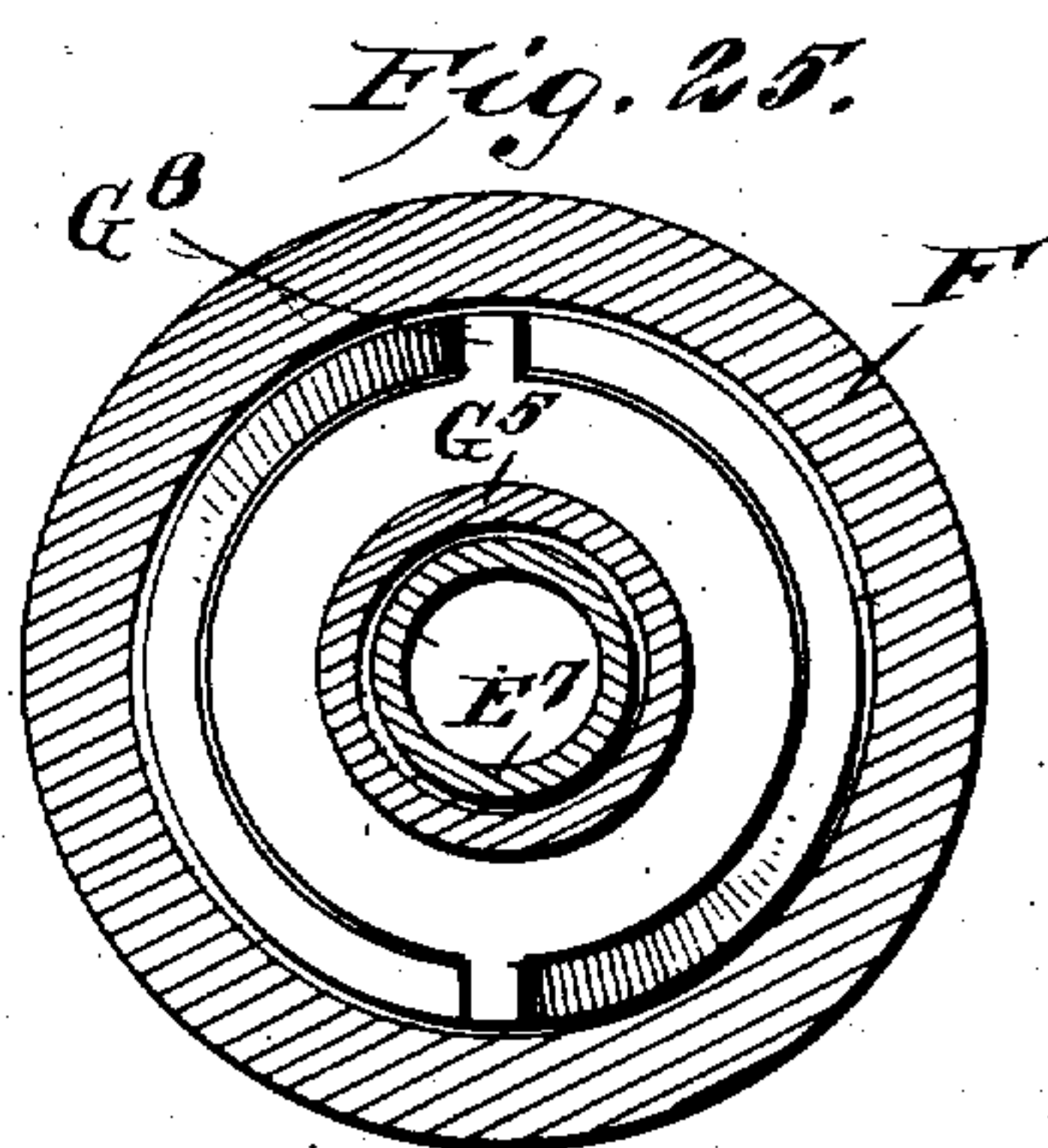
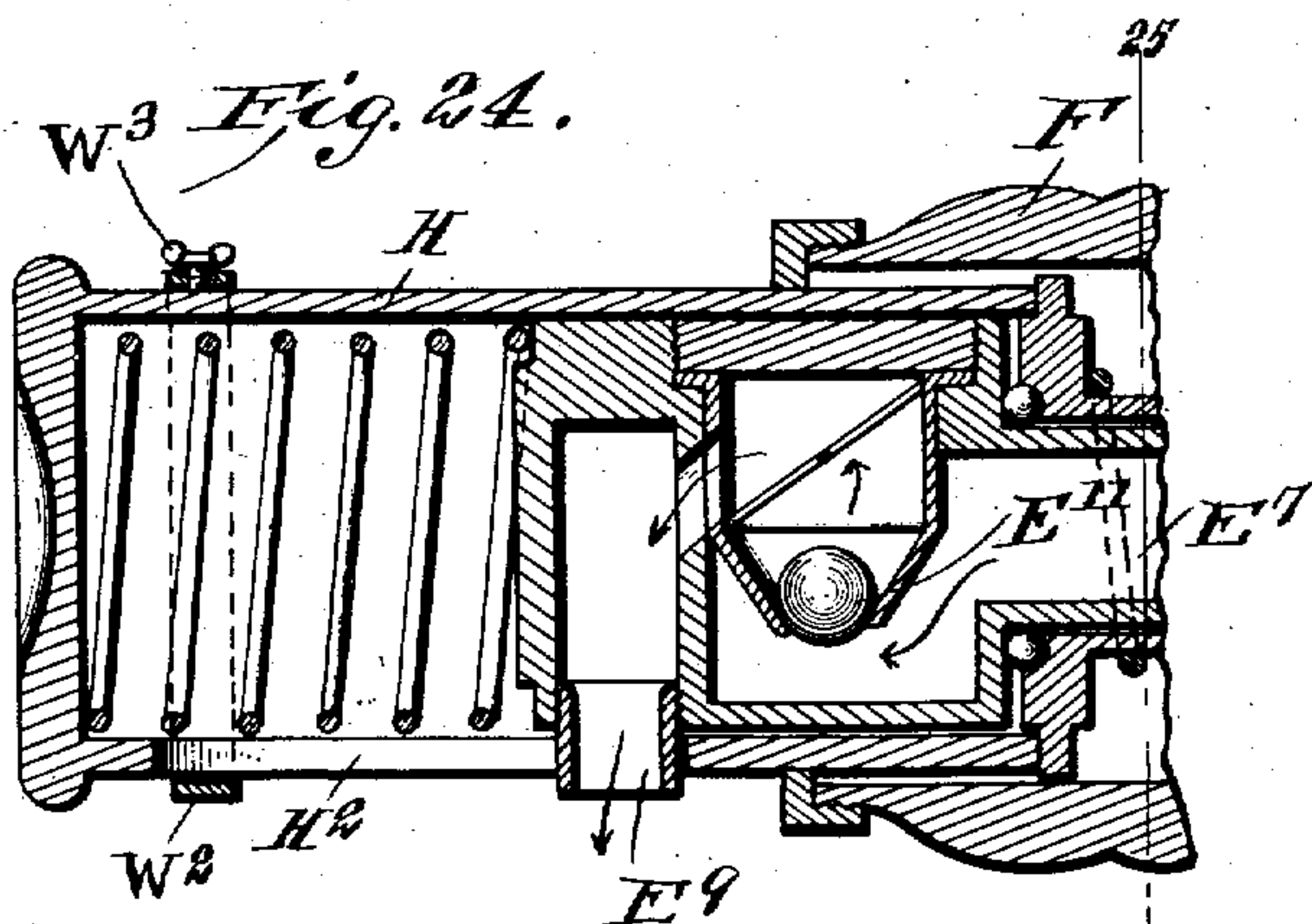
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6 SHEETS—SHEET 5.



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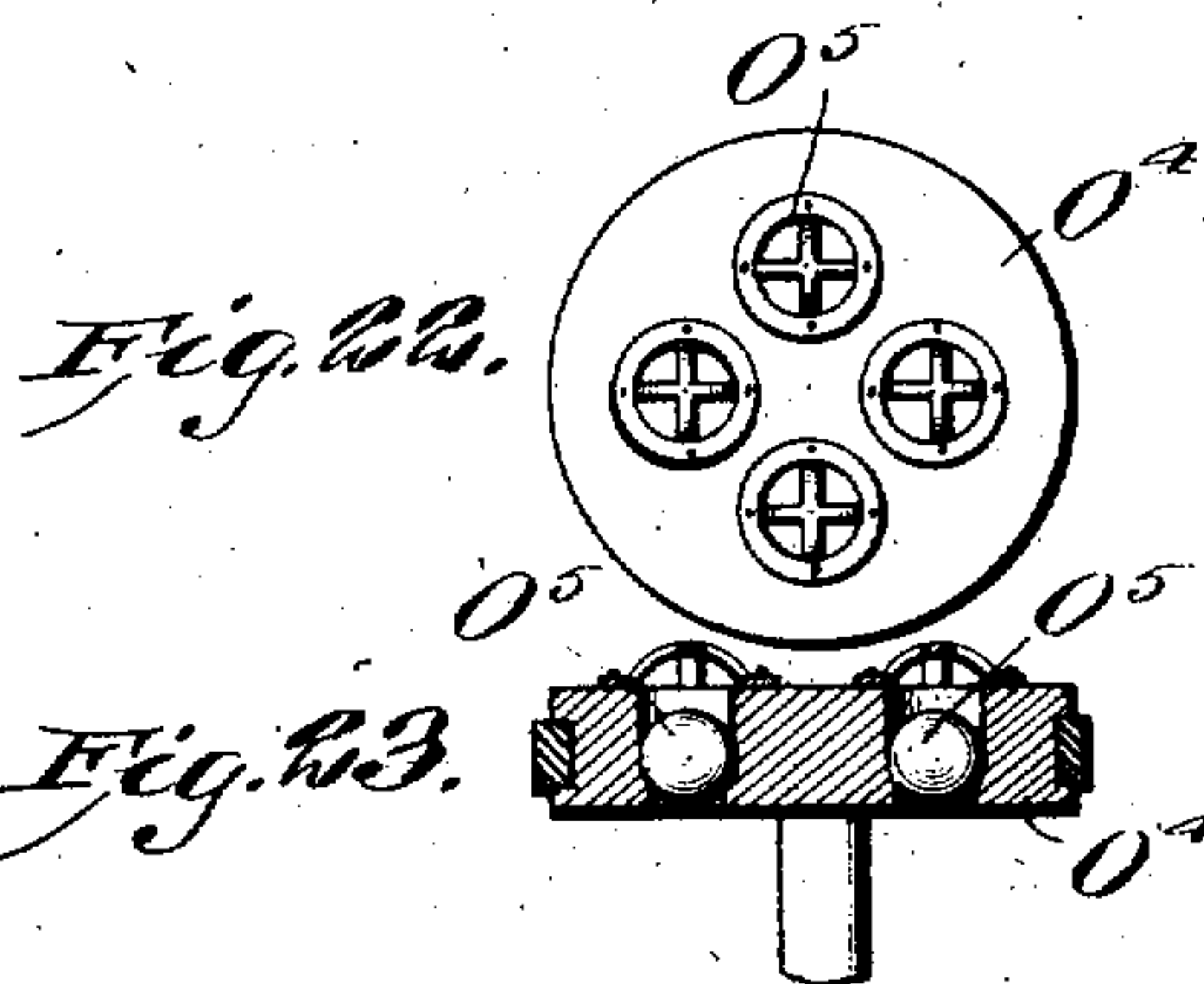
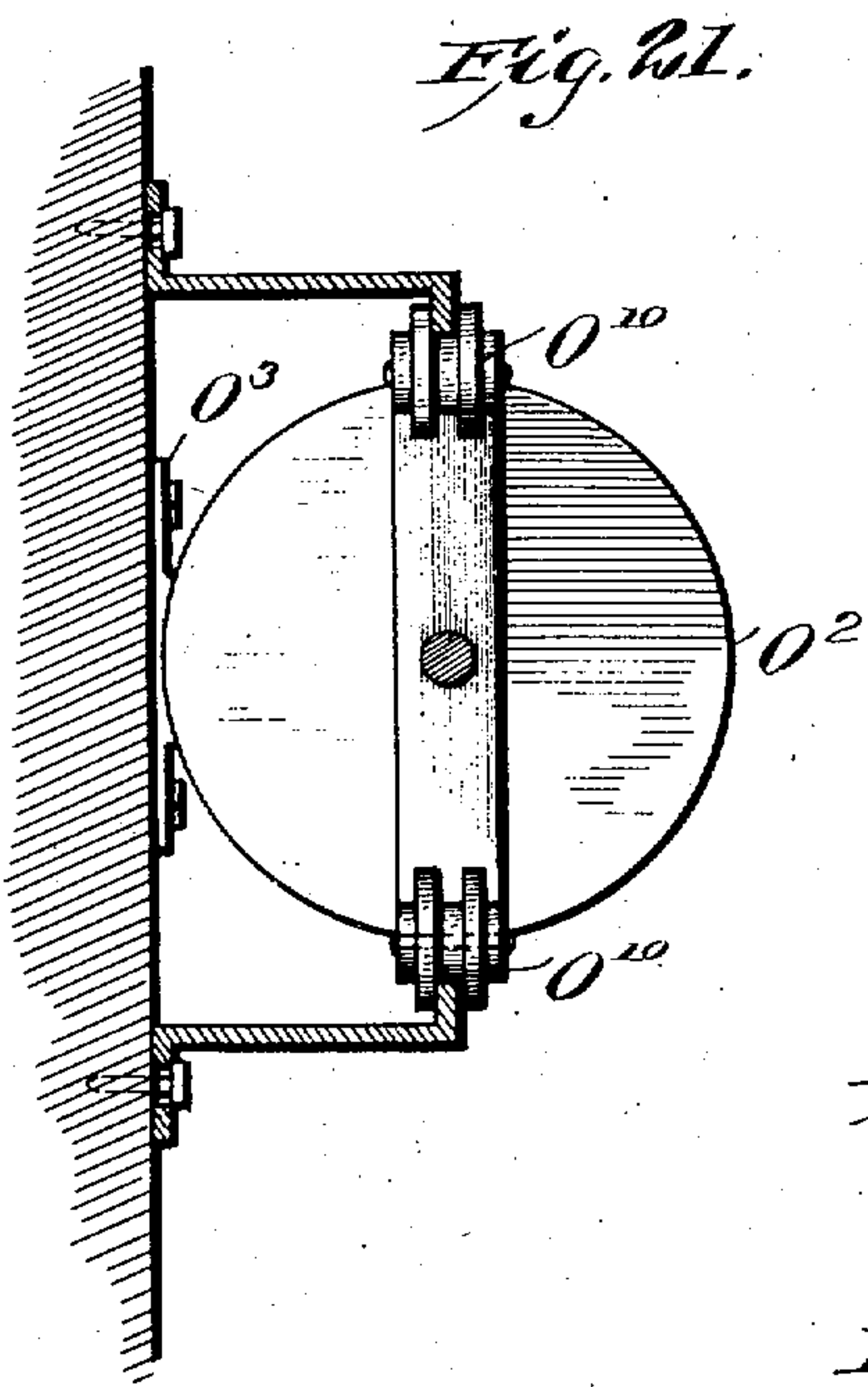
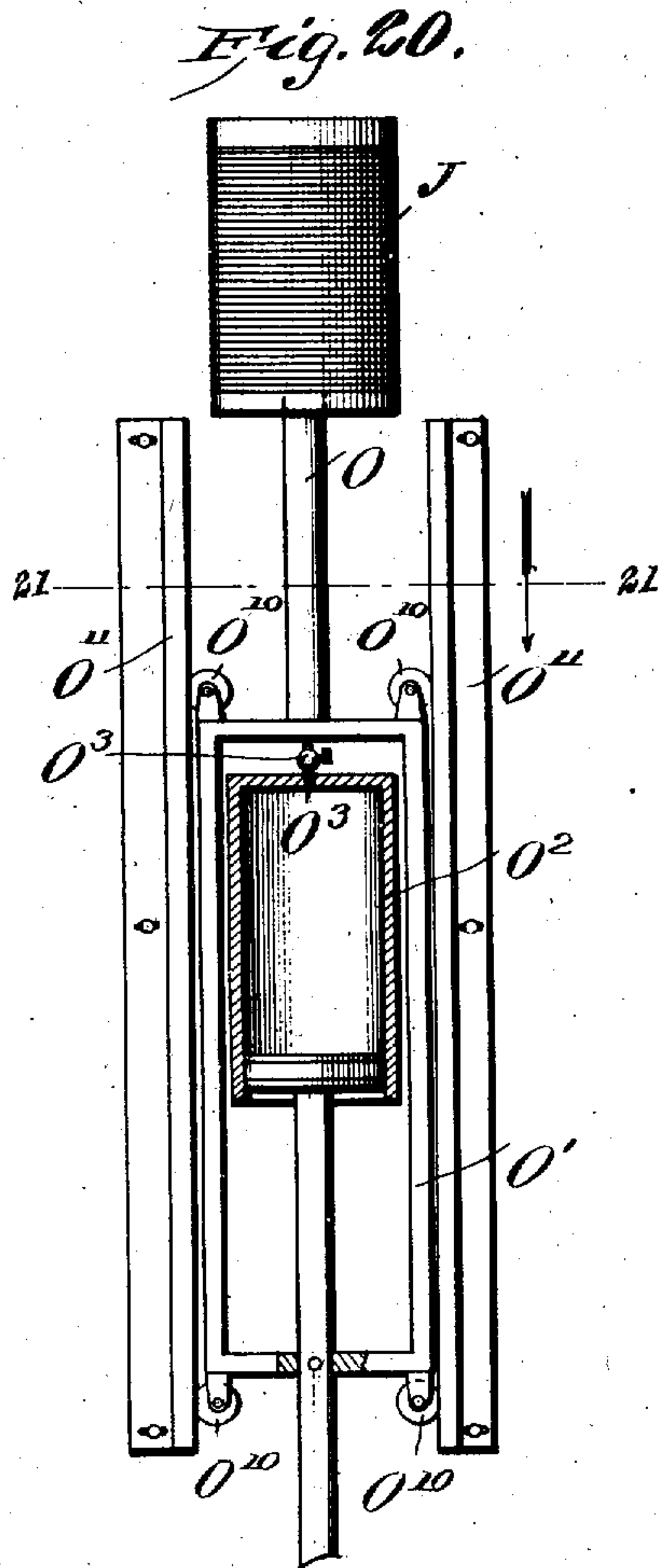
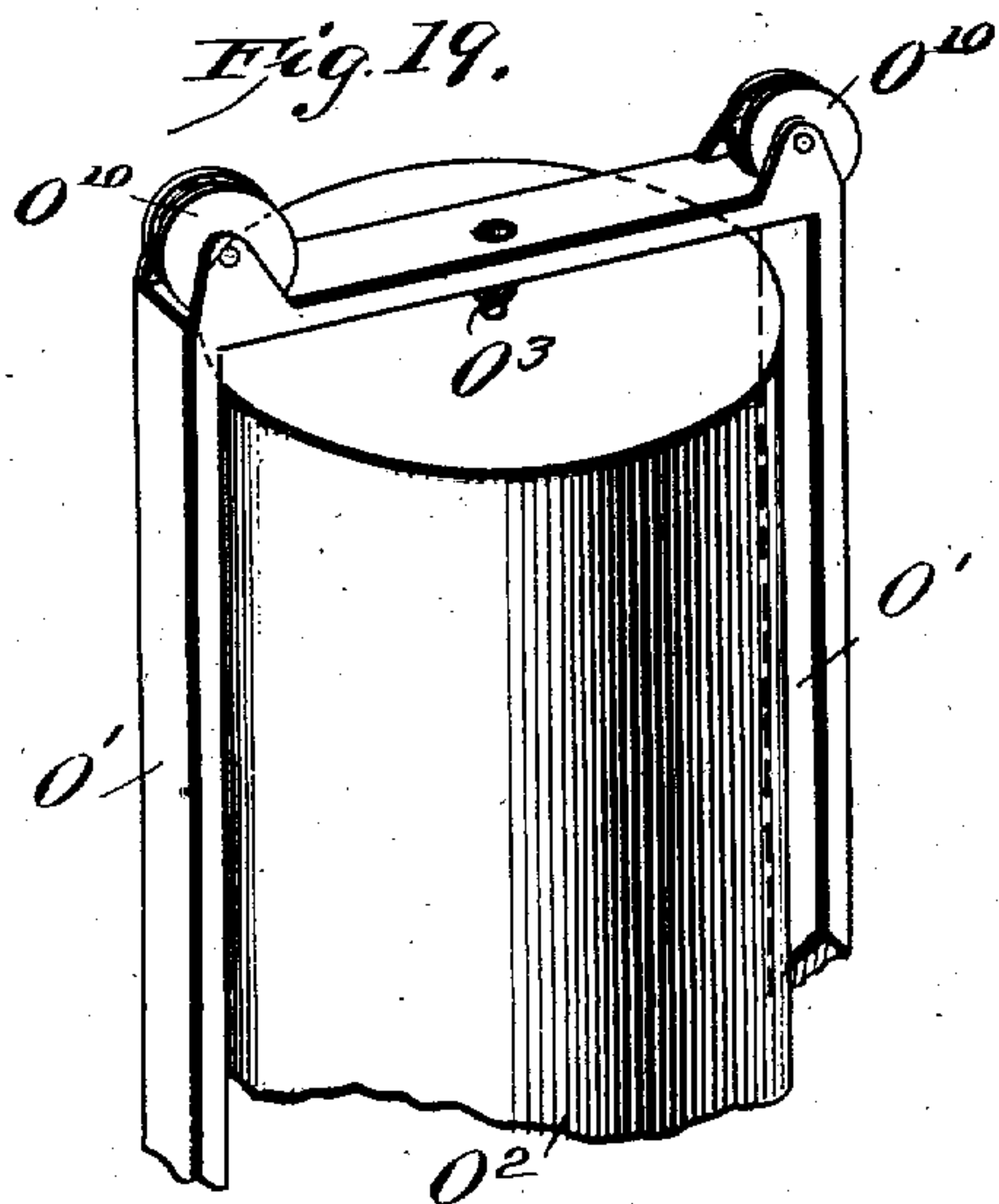
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6 SHEETS—SHEET 6.



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UNITED STATES PATENT OFFICE.

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SODA-FOUNTAIN.

No. 886,882.

Specification of Letters Patent.

Patented May 5, 1908.

Application filed September 19, 1907. Serial No. 393,595.

To all whom it may concern:

Be it known that I, HAMPTON K. SMITH, a citizen of the United States, and a resident of Union, in the county of Union and State of South Carolina, have invented certain new and useful Improvements in Soda-Fountains, of which the following is a specification.

This invention is an improvement in soda fountains; and consists in certain novel constructions and combinations of parts, as will be hereinafter described and claimed.

In the drawings Figure 1 is a front elevation, parts being removed, of a soda fountain embodying my invention. Fig. 2 is a vertical cross-section on about line 2—2 of Fig. 1. Fig. 3 is a detail enlarged vertical cross-section of a portion of the fountain, the section being drawn through the dispensing devices and the syrup jar. Fig. 4 is a cross-section on about line 4—4 of Fig. 3. Fig. 5 is a detail perspective view of the retaining strip for securing the jar neck in connection with the front plate. Fig. 6 is a detail perspective view of the upper portion of the jar, showing the neck thereon. Fig. 6^a is a detail perspective view of the upper portion of the front plate. Fig. 7 is a detail perspective view of the pump piston. Fig. 8 is a cross-section on about line 8—8 of Fig. 7. Fig. 9 is a cross-section on about line 9—9 of Fig. 3. Fig. 10 is a detail diagrammatic view illustrating one of the electric circuits employed in connection with the syrup dispensing devices. Fig. 11 is a front view partly in section illustrating the means for operating the syrup dispensing devices. Fig. 12 is a cross-section on about line 12—12 of Fig. 11. Fig. 12^a is a detail section on about line 12^a—12^a of Fig. 12. Fig. 13 is a detail vertical section on about line 13—13 of Fig. 11, illustrating the push devices for closing the circuit and for automatically connecting the frame, common to the several syrup dispensing devices with the predetermined bar for operating any particular one of said dispensing devices. Fig. 14 is a horizontal section on about the line 14—14 of Fig. 12. Fig. 15 is a detail vertical section on about line 15—15 of Fig. 14. Fig. 16 is a detail enlarged view illustrating the terminals of one of the electric circuits. Figs. 17 and 18 are detail perspective views illustrating the means for operating the syrup dispensing devices. Fig. 19 is a detail perspective view showing the sliding armature frame and a portion of the cushion cylinder. Fig. 20 is a front elevation partly in section,

showing the magnet, the sliding armature frame, guide rails for said frame and the piston and its rod. Fig. 21 is a cross-section on about line 21—21 of Fig. 20. Fig. 22 is a detail top plan view of the piston. Fig. 23 is a cross-sectional view of the piston, illustrating the valves therein. Fig. 24 is a detail longitudinal section of a portion of one of the syrup dispensing devices, illustrating a hand operated slide for use in dispensing the syrup in case the electrical devices should be out of order. Fig. 25 is a cross-section on about line 25—25 of Fig. 24. Fig. 26 is a detail perspective view of the hand operated slide shown in Fig. 24.

The fountain, as best shown in Fig. 1, is provided with a number of syrup-dispensing devices and these are preferably arranged in a plurality of series. As shown, I provide five syrup jars A and their respective dispensing devices B in each series, but manifestly the number of jars in each series may be varied without departing from some of the principles of my invention. The several jars A and their individual front plates C are alike, and the several dispensing devices are alike so a description of one of each will serve for all.

The jar A is provided near its upper end with the forwardly projecting neck A' through which it may be filled, and this neck A' is curved on its upper side and grooved at A² in such curved upper side, and the lower side of the neck is flat and the neck projects through an opening C' in the plate C and rests at its lower flat side upon a shelf C² projecting forwardly in line with the lower side of the opening C' in the front plate C. This shelf at its front edge has an upwardly projecting flange C³, as shown in Figs. 3 and 6^a. The neck A' projects through the opening C' and rests at its flat lower side upon the shelf C² abutting the flange C³, and the retaining strip D shown in detail in Fig. 5, is applied as shown in Fig. 3 to the upper curved edge of the neck A' and has on its inner side a curved bead D' which enters the groove A² in the neck A', as shown in Fig. 3, and holds the neck in the position shown in Fig. 3, a screw D² being applied, as shown in Fig. 3, to prevent any displacement of the retaining strip D when the latter is applied.

The screw D² operates to hold the retaining strip at its upper edge and at its lower end said retaining strip is provided with lugs or portions D³ which engage in rear of the up-

right flange C³ of the shelf C² and hold the strip at such points in engagement with the shelf, as will be understood from Figs. 3 and 5 of the drawings.

5 The retaining strip D is undercut at A³ to receive the upper edge of the closure plate A⁴, which may be utilized to receive the name of the particular syrup, and engages at its lower edge with a spring C⁴ mounted on the flange C³ of the shelf C² of the front plate. By this construction the jar may be conveniently held to the front plate and the closure plate may be readily removed and applied for the purpose of filling the jar, or otherwise, as may be desired in the use of the invention.

10 The front plate is provided with an upright series of openings C⁵ and the jar is provided with a series of forwardly projecting hollow tubular protuberances A⁵ which enter the openings C⁵, and being hollow, expose at the front of the fountain the contents of the jar A indicating the height of the syrup in the jar which is useful to the party manipulating the fountain and the protuberances also form attractive features at the front of the fountain.

15 The plate C and the jar are provided in their lower ends, respectively, with openings C⁶ and A⁶ for the syrup dispensing device. This includes a cylinder E having inlet openings E⁷ within the syrup jar, and the cross-partition E² between the said openings E⁷, the latter being adjacent to the partition, and the cylinder also having discharge openings E³ in its front end, adjacent to the partitions E² and communicating through branch pipes E⁴, a valve chamber E⁵ and the connection E⁶ with the outlet tube E⁷, which extends outwardly through the opening A⁶ and within the casing F and communicates through a valve chamber E⁸ with the discharge nozzle E⁹, as will be understood from Fig. 3 of the drawings. Valves E¹⁰ and E¹¹ are provided, respectively, in the valve chambers E⁵ and E⁸ and operate as checks and are best shown in Fig. 3 of the drawings.

20 The casing F may be ornamented in any suitable way and has a plate F¹ held within the opening A⁶ and forms an ornamental finish for the syrup discharging devices.

25 A piston operates in the cylinder E and comprises blades G spaced apart at G¹ at their inner edges to operate properly on opposite sides of the central shaft E¹² within the cylinder E, and the piston blades G are provided with valved openings G², see Figs. 7 and 8, are connected at one end by the end plate G³ and at their other ends by the plate G⁴ to which is fixed the forwardly projecting tube G⁵ having the rack segment G⁶, slotted at G⁷ for the passage of the connection E⁶ and extending outwardly within the casing F and surrounding the tube E⁷ and having at or near its outer end the studs G⁸ for engagement by the cams H¹ on the hand operated

slide H, shown in Figs. 24 and 26 of the drawings.

30 In operation, it will be noticed the piston is oscillated within the cylinder and when the piston is in the position shown in Fig. 4, the chambers of the cylinder will fill through the openings E⁷, then if the piston be moved from the position shown in full lines Fig. 4, to the dotted line position shown in the same figure, the syrup in the chambers of the cylinder will be forced out through the openings E³, thence through the connections E⁴, E⁵, E⁶, and into the tube E⁷, and thence through the chamber E⁸ and discharge through the nozzle E⁹. The piston is given this forcible operation by electrically operated means which actuate the dispensing devices, as will be fully described, and for readjusting the piston from the position shown in dotted lines Fig. 4 to that shown in full lines in the same figure, I employ a spring I encircling the tube G⁵ and suitably secured at its ends to readjust said tube and the piston carried thereby in the operation of the invention. If at any time the electrical devices should become inoperative or fail for any reason to act, the cap F² of the casing F may be unscrewed at F³, and the slide H, shown in Figs. 24 and 25, be applied for turning the piston. This slide has the cam surfaces H¹ to engage the studs G⁸ and is also provided with the longitudinal slot H², which receives the projecting nozzle tube E⁹, which operates to prevent the slide from turning so that as the slide is forced inwardly from the position shown in Fig. 24, it will by its cam surfaces H¹ operate to turn the piston from the position shown in full lines Fig. 4 to the position shown in dotted lines in the same figure. It will be understood that the dispensing devices of the several jars are constructed alike, so that the foregoing description of one will answer for all.

35 In connection with the syrup holders and the devices for dispensing syrup therefrom, I provide electrically operated means for actuating the dispensing devices, and I provide in connection with the individual dispensing devices in the respective syrup holders electrically operated means for actuating the respective syrup dispensing devices and in doing this, I find it desirable to provide means for selecting the dispensing device of any particular syrup holder for actuation by the electrically operated means. In the construction shown I effect this by the aid of a movable frame common to the several dispensing devices and I arrange a series of intermediate devices between the individual devices and such movable frame together with individual means for detachably connecting said intermediate devices with the frame so that the movement of the frame may cause the operation of any selected intermediate connection, and yet will not operate any of the other dispensing devices of

the other series. This movable frame is operated by the closing of the electric circuit in the manner more fully described and the selection of the dispensing device for the particular syrup desired is preferably effected by the operation of the same means that closes the circuit for energizing the magnets for operating the particular movable frame, all of which I will now describe more in detail.

For convenience, I usually in a fountain of any considerable size divide the syrup jars into sets and in Fig. 1, I have shown three sets 1, 2 and 3, each comprising five syrup jars, but manifestly, the number of sets and the number of jars in each set may be varied without departing from the broad principles of my invention. In Fig. 1, I show at the left the magnets J and J' for operating the movable frame of the said particular set 1, and have also shown one of the magnets K of the set 2, the cover plates L for the magnets J, J' and K being removed to expose the same. The magnets are arranged in an electric circuit, as indicated by dotted lines Fig. 1, and shown diagrammatically in Fig. 10, in which M and M' may be wires from a street supply and the magnets may be wired up therewith so that when the terminals N are connected the circuit will be completed through the magnets J and J' and such magnets will be energized and operate to lift their armatures O which connect with the frame P so the frame P will be caused to operate the dispensing devices in the manner more fully described hereinafter. Manifestly, the wiring may be varied without departing from any of the principles of the invention, the object being to energize the magnets J and J' when the circuit is closed at N. The armature O is connected with the frame O' which encircles the cushioning cylinder O². The frame O' is provided with rollers O¹⁰ operating on vertical rails O¹¹, thus guiding as well as easing the operation of the armature. The cylinder O² is secured at O³ to the casing of the fountain and is thus held permanently in place. The cushioning cylinder O² is to prevent the too sudden operation of the frame P and to this end the cylinder O² is provided at its upper end with a vent O³, provided with a valve so it may be regulated, and the said cylinder being open at its bottom is entered by a piston O⁴, connected with the armature and valved at O⁵, the valves opening upwardly so the piston may readily descend within the cylinder O², but can only rise by forcing the air out of the vent O³ thus cushioning the operation of the armature as will be understood from the drawings.

At its lower end the armatures O connect with the frame P and the latter extends below the several jars of its set or series 1, 2 or 3 as the case may be and its entire frame is raised at each operation of the frame, being connected at its opposite ends with its mag-

nets J and J' so it will be elevated uniformly throughout its length. While the frame P is moved throughout its length at each operation it does not operate the dispensing devices of the entire set of jars, but only the particular dispensing device selected as before suggested.

The magnet operated frame P slides vertically in a guide frame mounted on the base Q and this guide frame has a top bar Q' and guide rails Q² upon which slide the vertical rack bars R which are meshed with their respective segments G⁶ on the piston tube G⁵. The guide frame also includes uprights Q³ in advance of their respective guide rails Q² and having an upright bead Q⁴ which forms a bearing for a roller S' on the slide S, which operates to detachably connect the rack bar R with the armature-operated frame P in the operation of the apparatus. As shown, the means for detachably connecting the frame P with the rack bars R consist of the slide S which is movable transversely in the frame P, has at one end the roller S' which when it operates on one side of the head Q⁴, say the left-hand side shown in Fig. 15, is out of connection with its rack bar R and is held in such position normally by the spring S², see Fig. 12, and when the said roller S' moves up on the other side of the bead Q⁴, say that at the right in Figs. 12 and 15, the slide S will move at its end opposite the roller S' into a socket R' in the rack bar R, and will thus operate to connect the frame P with the said rack bar R so that as the frame P moves upwardly it will carry with it the rack bar R, thus selected and such bar R will operate its respective dispensing device as will be understood from the drawings.

It will be noticed on comparing Figs. 17 and 18 with Fig. 12 that the bar R of Figs. 17 and 18 is cut off below the cog teeth of said bar and for such reason the said cog teeth do not show in such figures.

For easing the vertical movement of the frame P, I prefer to provide said frame with rollers P' and P² (Fig. 14) sliding on tracks provided in the uprights Q³ and Q² and operating to maintain the said frame P in its true vertical position. For operating the slide S from the position shown in Figs. 12 and 14 on the front side of the bead Q⁴ to the position shown in Fig. 15 on the right side of said bead Q⁴ I provide a push block T movable transversely in guides T' and arranged at one end T² to bear against the roller S' and to move with said roller to a point sufficiently to the rear to press the rollers S' to the position shown in Fig. 15 in line with the rear of the bead Q⁴ so the said roller will pass up in rear of the bead Q⁴ when the frame P is raised by the action of the magnets. This push block T is actuated by a manually operated circuit closing key U to which is connected a laterally extending arm U' having a

spring U⁸ connecting it with the push block T so the key U in the form of a push button may be moved sufficiently to set the block T to position to adjust the roller S' to the point shown in Fig. 15 in rear of the bead Q' and then the said key U may be given a further movement in order to close the electric circuit at N as will be understood from Figs. 1 and 10 of the drawings. This is desirable because it is important to first effect the selection of the particular dispensing device to be operated, this being accomplished by means of the slide S, as before described, and then after the said slide S has been adjusted to the desired position in which it connects the frame P with the particular rack bar R desired, the circuit is closed, thus energizing the magnets and causing them to lift the frame P and the selected rack bar R to operate the dispensing devices; as desired in the operation of the invention. The upright pins P³ on the base Q are arranged to limit the downward movement of the magnet operated frame P, as will be understood from Fig. 1 of the drawings.

In more fully describing the circuit closing devices, it may be stated that the closing key U is provided with a depending lug or portion U¹⁰ which when the key is pushed to its innermost position passes between and in contact with the terminals at N as shown in dotted lines Fig. 16, and closes the circuit.

It will be understood that the several manually operated keys are constructed alike so that any one may be operated to bring into play its corresponding rack bar.

For operating the keys U, I preferably provide push buttons U¹⁰ operating in the glass front plates U¹² at the base of the fountain and alining with their respective keys U. The plates U¹² being of glass, expose the operating devices in the rear, and lamps may be arranged as shown at U³ in Fig. 2 to illuminate the operating devices so they will be readily visible from the front of the fountain and form an attractive feature thereof.

In draining any leakage from the fountain, I find it desirable to provide a trough 10 below the syrup jars, a trough 12 at the base of the fountain below the trough 10 and in rear of the devices P and Q and also to provide a trough 13 at the base of and in front of the fountain, the trough 13 having a cover plate 14 provided with openings 15 which may be alined with the syrup dispensing devices and with the faucets 16 for the carbonated water and pipes being provided leading from the several troughs for conducting the waste off at the rear of the fountain to any desired receptacle.

An important feature of my invention is the provision in a soda fountain in connection with a series of syrup holders and dispensing devices thereof, of electrically controlled means for actuating the said dispens-

ing devices together with a series of manually operated circuit closing keys corresponding to the syrup holders and this feature of my invention may be carried out in a simple and effective manner, as described.

For regulating the amount of syrup discharged at each operation of the dispensing device, I may in the construction shown in Figs. 12 and 12^a employ a stop screw W adjustable into any desired one of a series of sockets in the bar Q and engaging at W' with the bottom of a slot in the rack R to limit the upward movement of the rack bar. In the construction shown in Fig. 24, I regulate the amount of syrup by means of the stop band W² held adjustably on the slide H by a screw W³ and abutting the discharge nozzle E⁹ and thus regulating the amount of fluid discharged.

I claim—

1. The combination with a syrup jar and a front plate having alined openings, of a cylinder within the opening of the jar and having inlet and outlet openings, a casing having a face plate held within the opening of the front plate, said casing being provided at its outer end with a removable cap, a tube extending outwardly through the cylinder within the casing and having a discharge nozzle at its outer end, a partition within the cylinder, a piston having blades operating on opposite sides of the partition and provided with valved openings, a tube connecting with the piston and extending outwardly and encircling the cylinder tube and provided at its outer end with studs for engagement by a hand operated slide, a spring operating upon said tube whereby to readjust the piston, a rack on the piston tube, connections between the discharge openings of the cylinder and the cylinder tube, and electrically operated devices including a bar meshing with a toothed segment of the piston tube, substantially as set forth.

2. The combination of a syrup jar, a front plate, a casing secured to the front plate and encircling the syrup discharging devices, a cylinder in the jar and having a longitudinal partition and provided with a discharge tube extending outwardly through the casing, a piston operating in the cylinder and having blades on opposite sides of the partition and provided with an outwardly projecting tube encircling the discharge tube of the cylinder, and means operating upon said piston tube for actuating the piston, substantially as set forth.

3. The combination with the syrup jar, of the cylinder therein and having inlets and outlets, branch pipes E⁴ leading from the discharge openings of the cylinder, a valve chamber to which said branch pipes discharge, a discharge tube connected with said valve chamber, an oscillating piston in the cylinder, and a tube connected with such os-

oscillating piston and encircling the discharge tube of the cylinder, and means operating said piston tube, substantially as set forth.

4. The combination with a syrup jar and a piston constructed to oscillate therein, of a discharge tube in connection with the cylinder, a tube connected with the piston and encircling the cylinder discharge tube, and electrically operated means engaging with said piston tube for actuating the piston, substantially as set forth.

5. The combination with a syrup jar and a piston constructed to oscillate therein, of a discharge tube in connection with the cylinder, a piston tube connected with the piston and encircling the cylinder discharge tube, electrically operated means engaging with said piston tube for actuating the piston in one direction, and a spring for readjusting the piston, substantially as set forth.

6. The combination with the syrup jar, of a cylinder having a discharge tube, a piston operating in said cylinder and having a tube encircling the discharge tube of the cylinder, power operated means for actuating the piston, and means on the piston tube for engagement by hand actuated devices, substantially as set forth.

7. A soda fountain, comprising a series of syrup holders having dispensing devices, electrically controlled means for actuating said dispensing devices, and a series of manually operated circuit closing keys corresponding to the syrup holders, substantially as set forth.

8. In a soda water fountain having a series of syrup holders, individual dispensing devices for the respective syrup holders, electrically operated means for actuating the respective syrup dispensing devices, means for selecting the dispensing device of any particular syrup holder for actuation by the electrically operated means and a series of circuit closing devices corresponding to the syrup holders and arranged to operate their respective selecting means, substantially as set forth.

9. The combination in a soda fountain of a series of syrup holders, individual dispensing devices for the respective syrup holders, a movable part common to the several dispensing devices, a series of intermediate devices between the individual dispensing devices and said movable part, and individual means for detachably connecting said intermediate devices with said part whereby the movement of such part may be caused to operate any selected intermediate connection, means for operating the movable part and a series of keys corresponding to the syrup holders and cooperating with means for moving the movable part and also cooperating with the intermediate devices between such movable part and the dispensing devices, substantially as set forth.

10. The combination with a series of syrup holders, individual dispensing devices for the respective syrup holders, a movable part common to the several dispensing devices, a series of operating bars engaging with their respective dispensing devices, means for detachably connecting said bars with the movable part, electrically operated devices for moving the movable part, and manually operated circuit closing keys for actuating the means for connecting the movable part with their respective operating bars, substantially as set forth.

11. The combination in a soda fountain with syrup jars and dispensing devices therefor, of operating bars for their respective dispensing devices, a frame common to a series of said bars, a bar having a bead, a slide in the frame and movable longitudinally into and out of engagement with the operating bar and having a roller adapted to operate on one side of the bead when the slide is engaged with its operating bar and on the other side of said bead when the slide is out of such engagement, and means for operating the slide to set its roller to one or the other side of the bead, substantially as described.

12. The combination with the series of syrup jars and their individual dispensing devices, of bars for operating their respective dispensing devices, a frame common to the series of said bars, a series of slides for connecting the frame with their respective bars, means for shifting the slides into engagement with their bars, and means for holding the slides in such engagement when so shifted during the subsequent operation of the frame, substantially as set forth.

13. The combination of the series of syrup jars having individual dispensing devices and a series of bars operating their respective dispensing devices, a movable frame common to the bars of the series, slides in the frame and movable into and out of engagement with their respective bars, push blocks for moving the slides into engagement with their bars, electrically operated devices including a circuit having terminals corresponding to the several dispensing devices, a key for closing said circuit, and yielding connections between the key and the push block whereby the key may be operated to adjust the push block to set the slide into engagement with its respective operating bar and then said key may be given a further movement to close the corresponding circuit, substantially as set forth.

14. In a fountain the combination with the front plate having an opening for a jar neck and provided at the lower edge of said opening with a forwardly projecting shelf and with an upright flange at the outer edge thereof, a syrup jar having a neck projecting forwardly through said opening and having its upper side grooved in advance of the

front plate, a retaining strip fitting over the upper side of the neck and having at its inner side a rib or bead entering the groove therein, and means for holding the said retaining strip from displacement, substantially as set forth.

15. In a fountain a front plate having an opening for a jar neck combined with the jar having a neck projecting forwardly through such opening and provided in advance of the front plate with a groove in its outer side, a retaining strip having a portion entering such groove, and means for preventing the displacement of such retaining strip, substantially as set forth.

16. A front plate having an opening for a jar neck and a shelf at the lower edge of said opening and provided with an upright flange, combined with a jar having a neck projecting through said opening and provided in advance of the front plate with a groove, and a retaining strip entering the said groove and provided with lugs or portions engaging in the rear of the upright flange of the shelf, substantially as set forth.

17. The combination in a soda fountain with a series of syrup jars having individual dispensing devices, a frame common to the series of dispensing devices, individual means for operating their respective dispensing devices, means for detachably connecting said individual means with the frame, magnets, cushioning cylinders alined with the magnets and in fixed relation thereto, armatures operating in connection with the magnets and having frames extending past the cushioning cylinders and provided with pistons operating in the cushioning cylinders,

said armatures being connected with the frame common to the series of dispensing devices, and guides for the armature frames, substantially as and for the purpose set forth.

18. The combination of a series of syrup jars having individual dispensing devices, magnets at the opposite ends of said series, and having armatures, a frame common to the several dispensing devices and extending below the same and connected with the armatures at the opposite ends of the series of jars, individual operating bars for the several dispensing devices, means for detachably connecting the said bars with the frame common to the several jars, an electric circuit including the magnets, keys for closing said circuits, said keys corresponding to the several dispensing devices, and means operated by said keys for actuating their respective means for connecting the frame with the operating bar, substantially as set forth.

19. The combination with the series of syrup jars and their individual dispensing devices, and a front plate of glass below the same, of electrically operated means in rear of the glass whereby to operate the syrup dispensing devices, and push buttons extending through the glass for actuating said means, the glass supporting and guiding the buttons and exposing to view the operating means in rear of said glass substantially as set forth.

HAMPTON K. SMITH.

Witnesses:

SOLON C. KEMON,
PERRY B. TURPIN.