(No Model.)

5 Sheets—Sheet 1.

D. HEPP.

WATCHMAN'S TIME RECORDER.

No. 591,254. Patented Oct. 5, 1897.

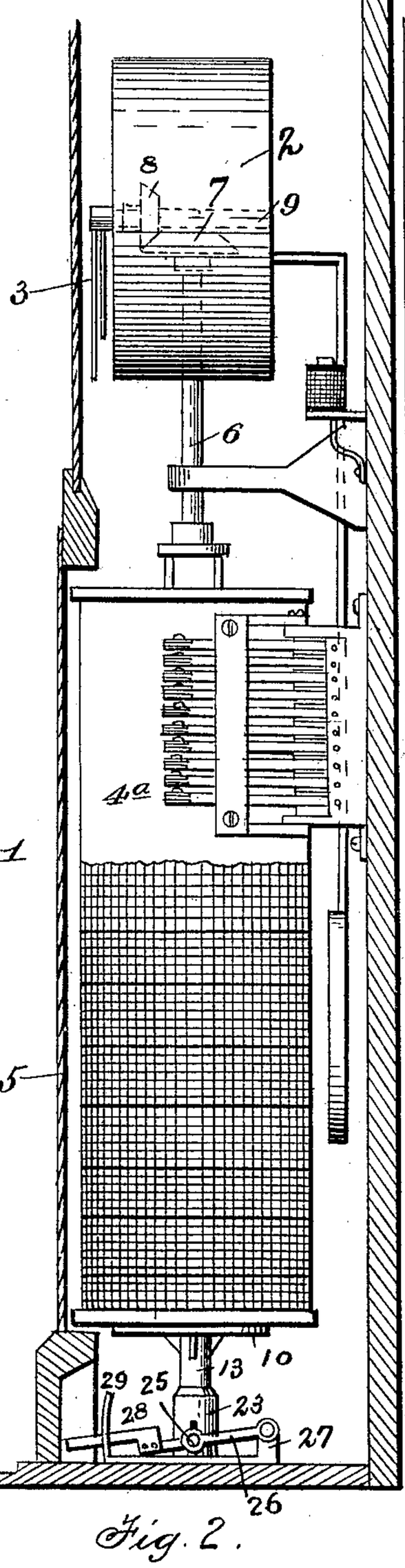

Fig. 2.

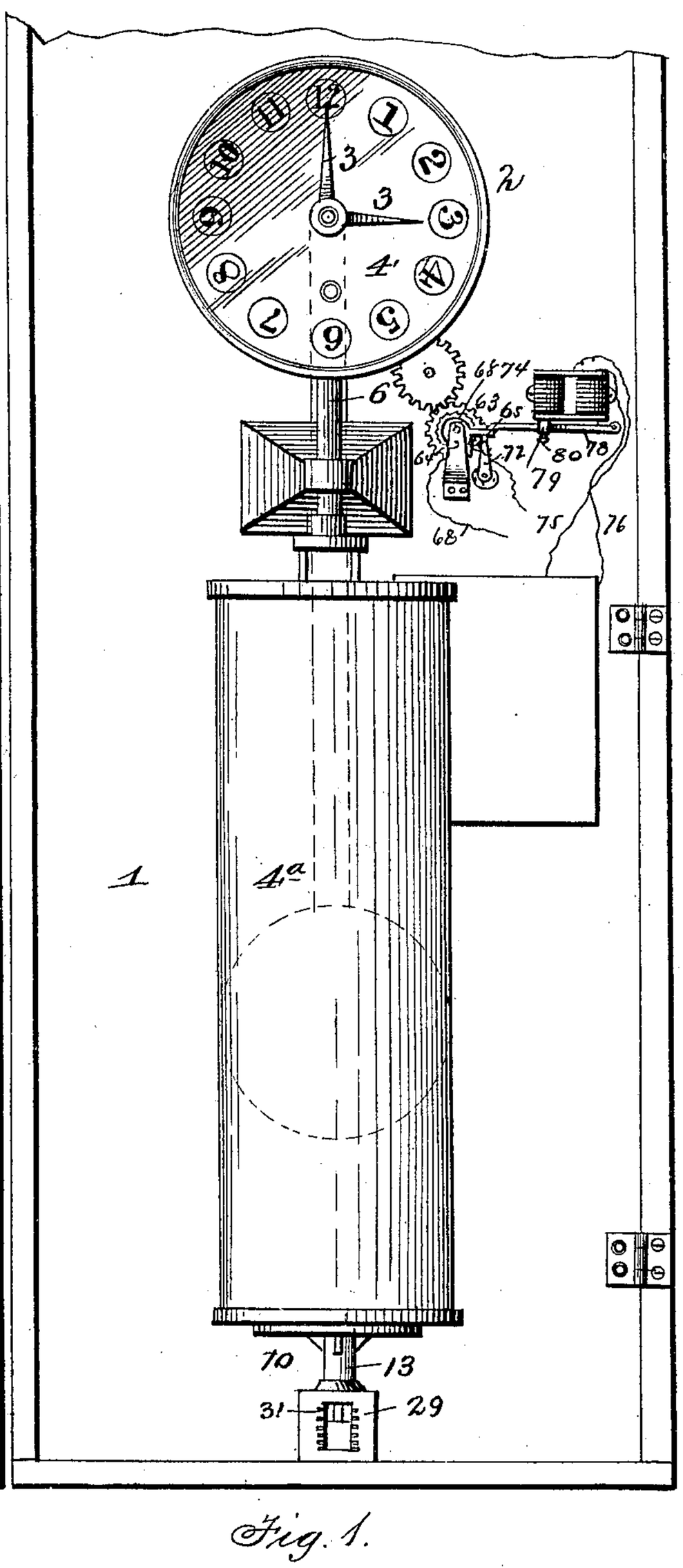

Fig. 1.

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(No Model.) 5 Sheets—Sheet 2.

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WATCHMAN'S TIME RECORDER.

No. 591,254. Patented Oct. 5, 1897.

Fig. 3.

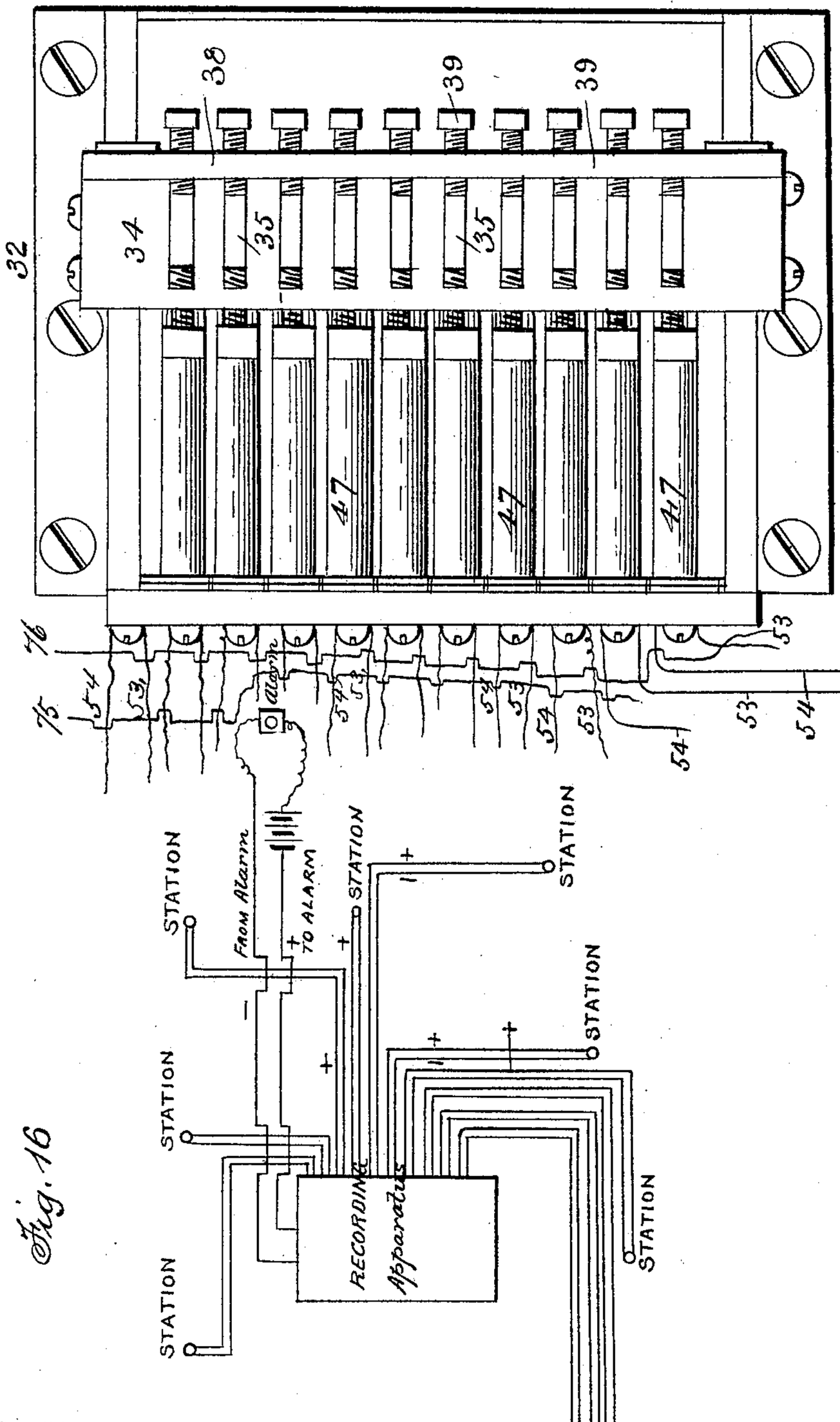

Fig. 16

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WATCHMAN'S TIME RECORDER.

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Fig. 5.

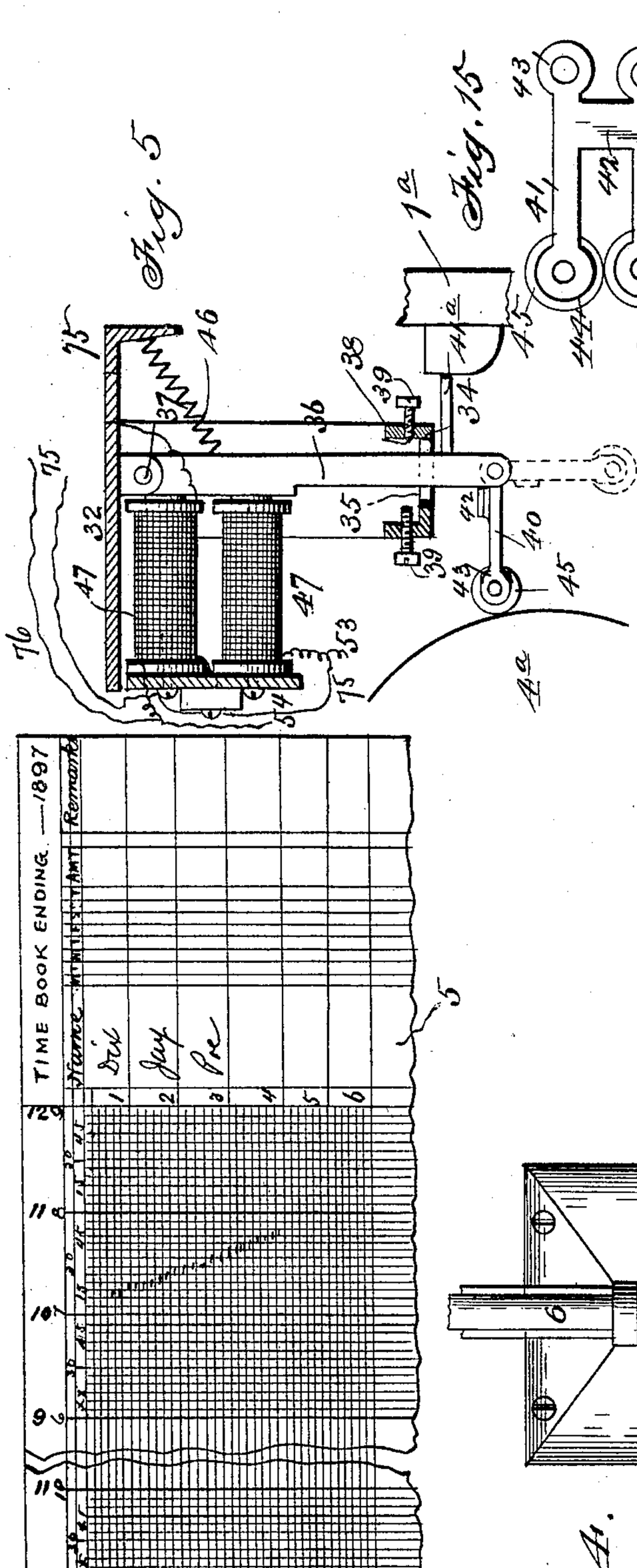

Fig. 17.

Fig. 4.

Fig. 9.

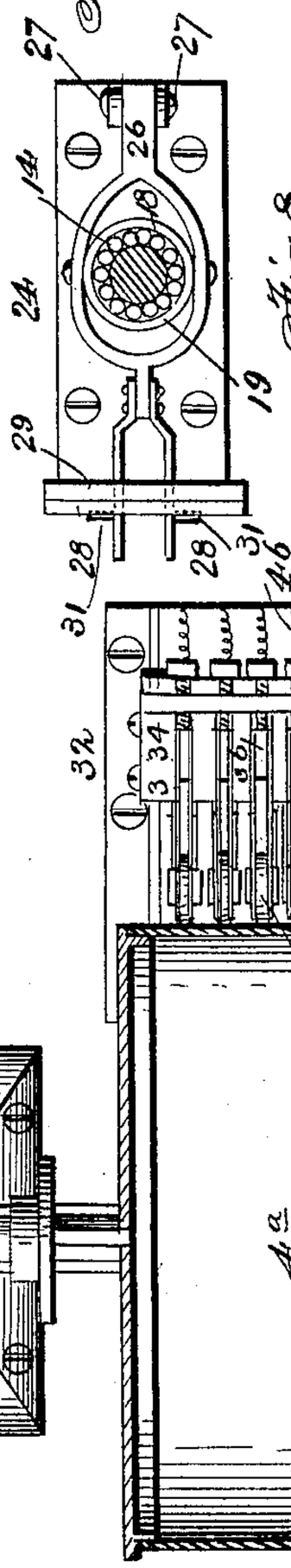

Fig. 10.

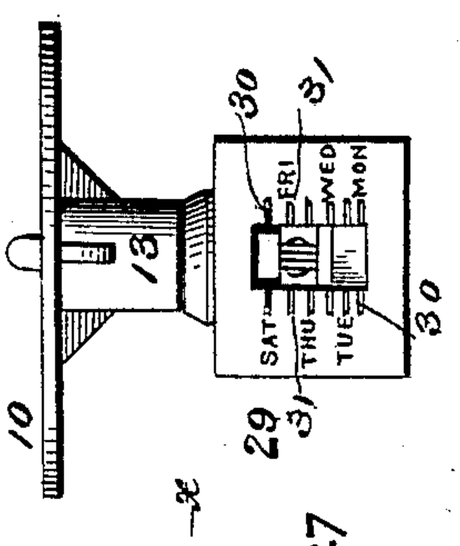

Fig. 8.

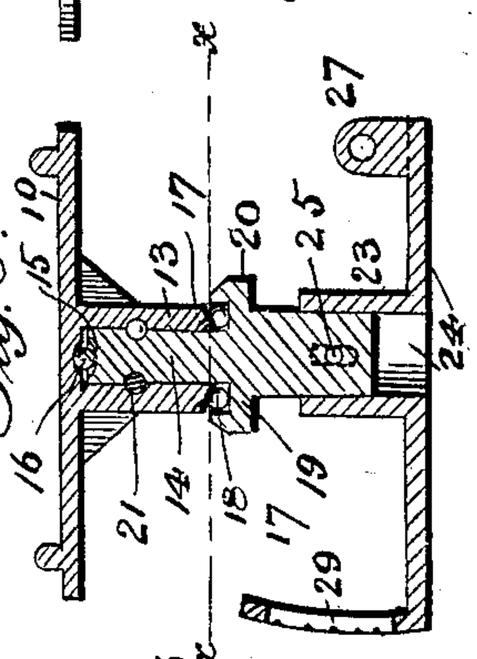

Fig. 6.

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(No Model.) 5 Sheets—Sheet 4.

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WATCHMAN'S TIME RECORDER.

No. 591,254. Patented Oct. 5, 1897.

Fig. 6.

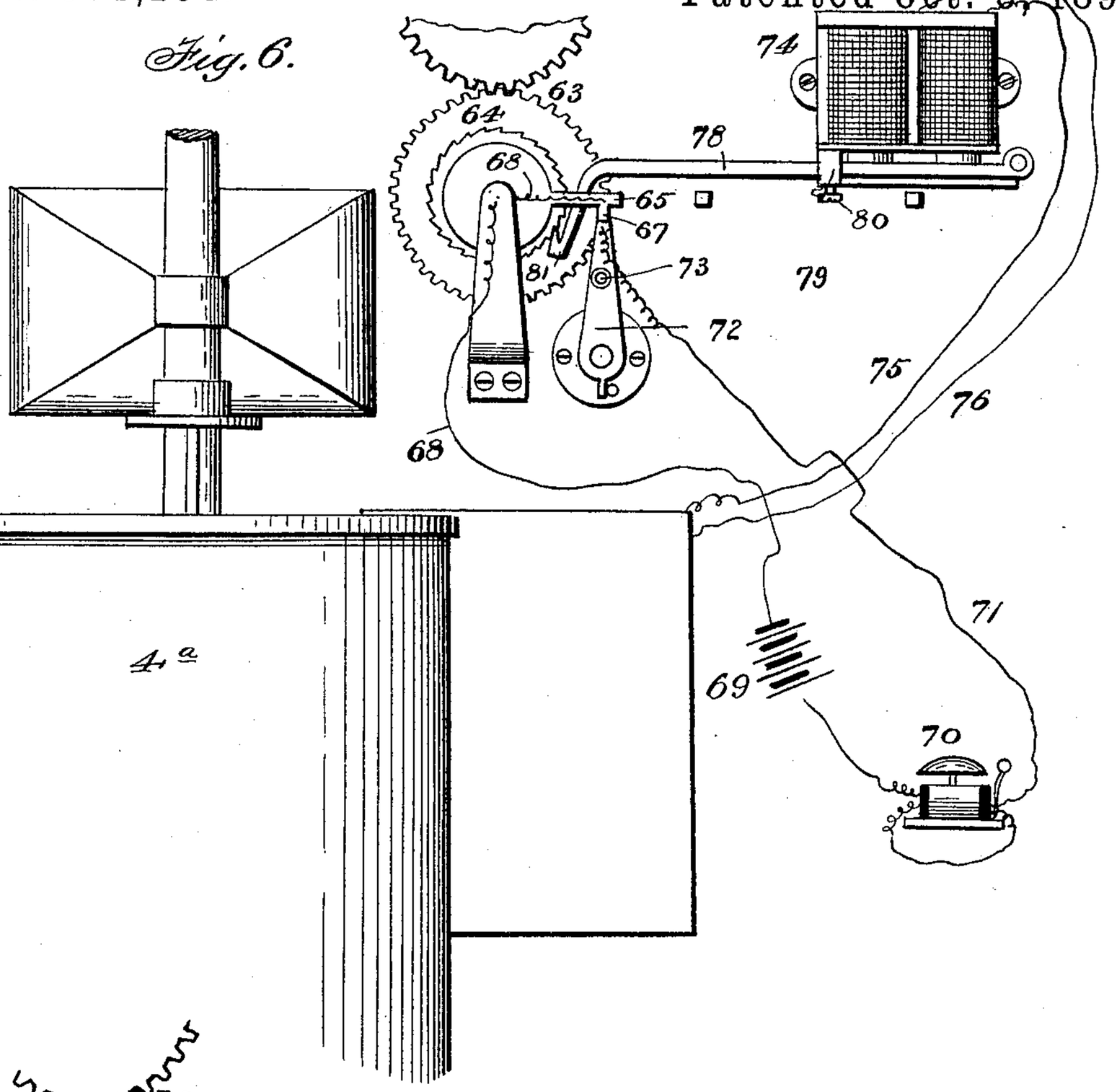
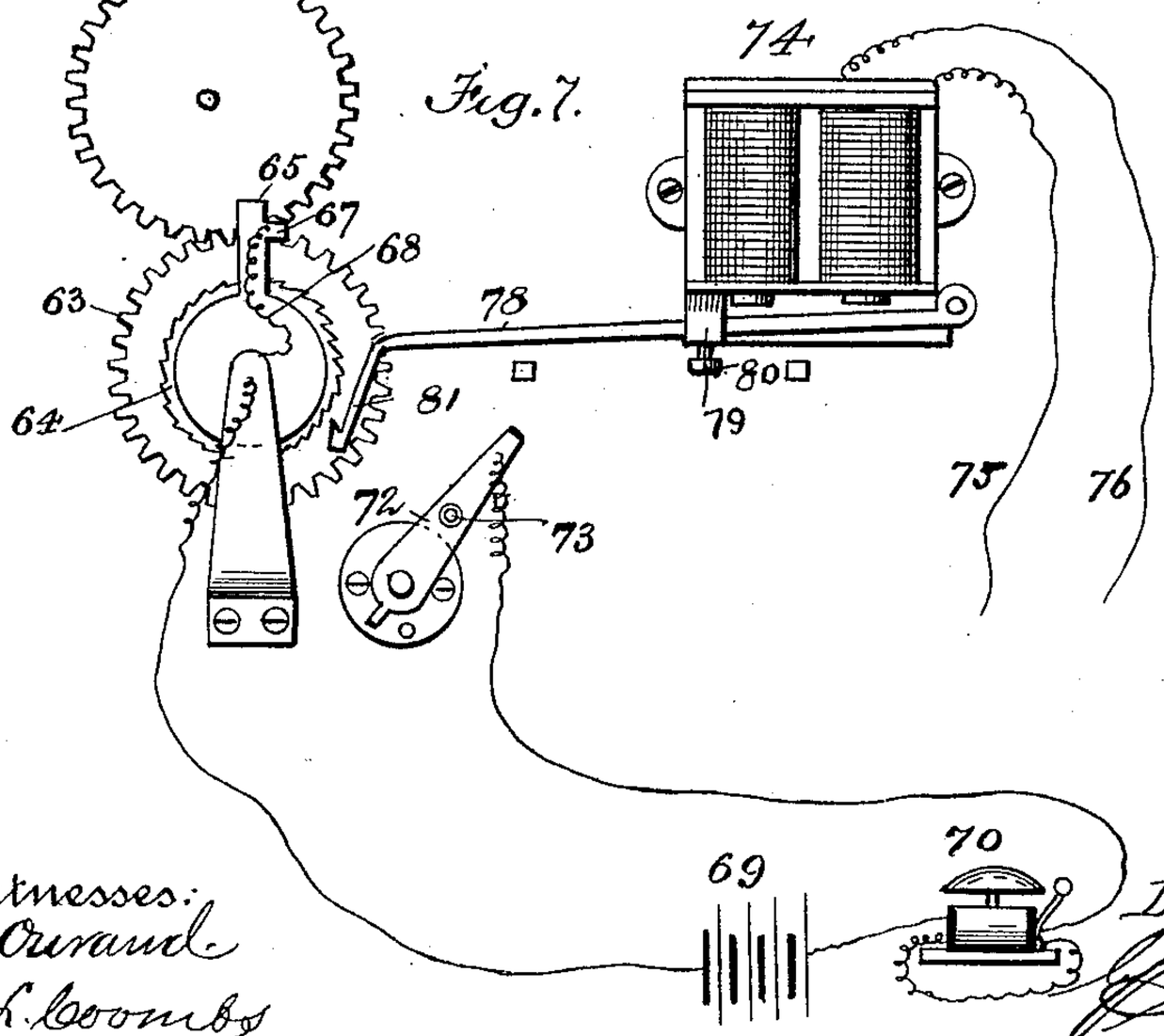


Fig. 7.



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WATCHMAN'S TIME RECORDER.

No. 591,254. Patented Oct. 5, 1897.

Fig. 11.

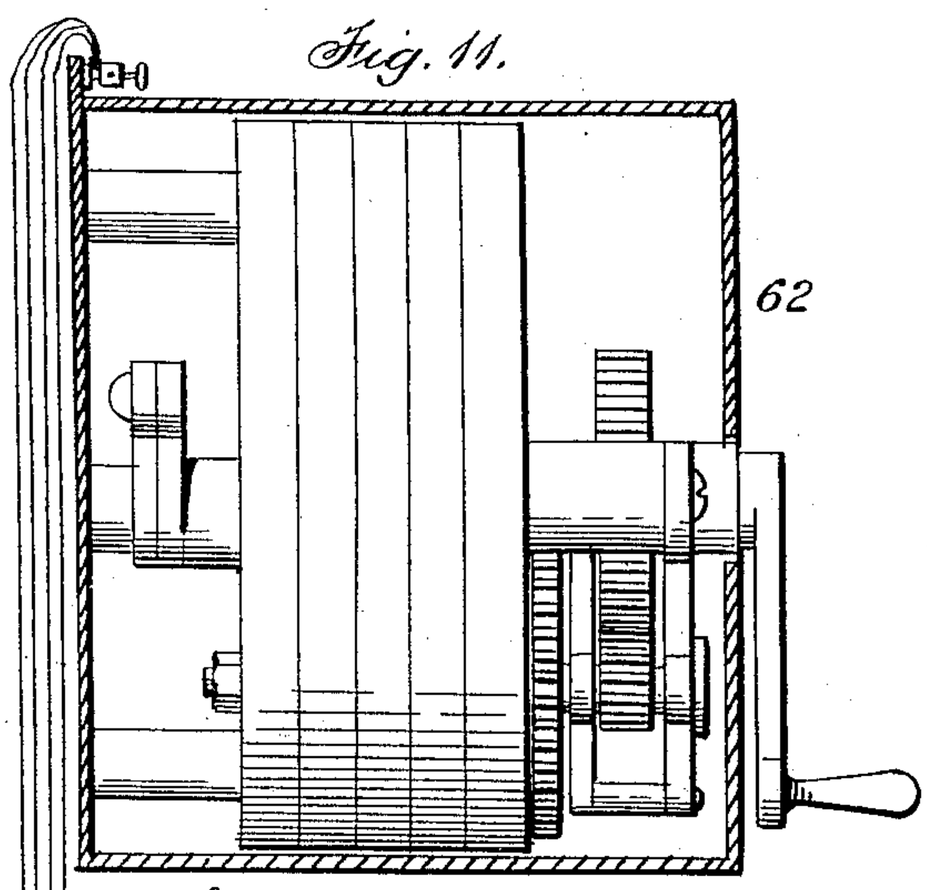


Fig. 12.

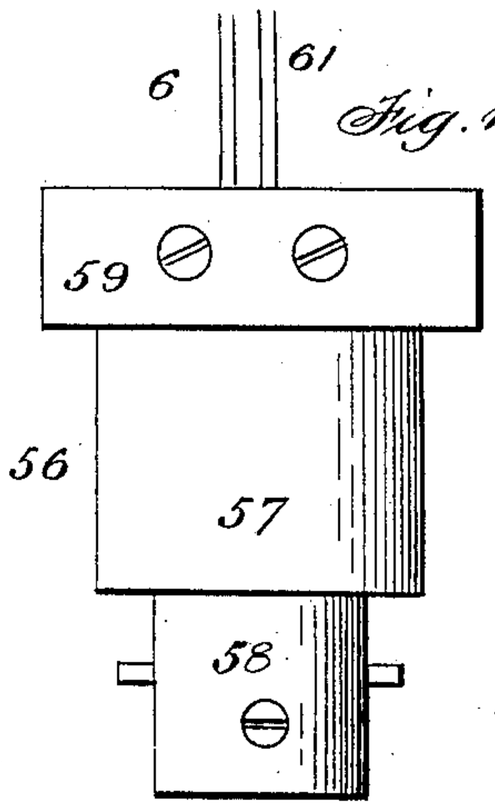


Fig. 14.

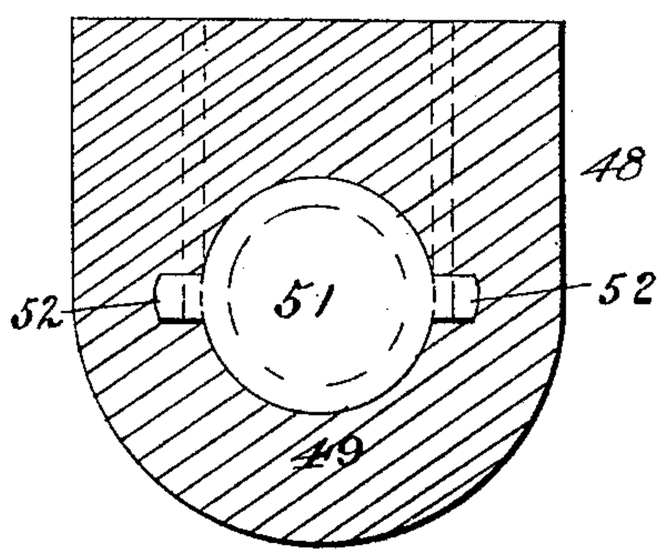


Fig. 13.

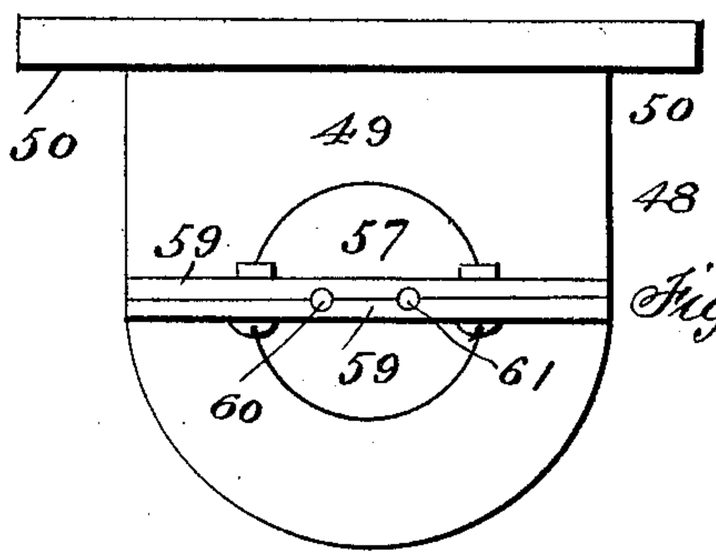
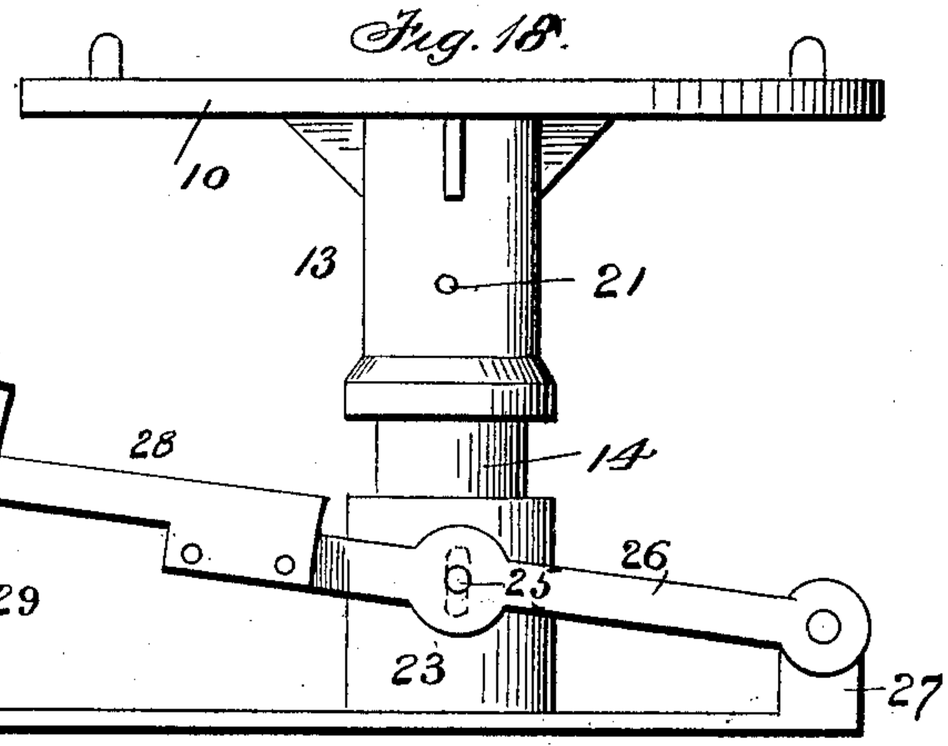


Fig. 15.



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UNITED STATES PATENT OFFICE.

DANIEL HEPP, OF CHICAGO, ILLINOIS.

WATCHMAN'S TIME-RECORDER.

SPECIFICATION forming part of Letters Patent No. 591,254, dated October 5, 1897.

Application filed January 25, 1897. Serial No. 620,632. (No model.)

To all whom it may concern:

Be it known that I, DANIEL HEPP, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Watchmen's Time-Recorders; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to watchmen's time-registers or detectors of that class or description in which the watchman is required to visit certain stations at predetermined times and there operate the mechanism which will record the time of his visits.

The object of the invention is to provide a recording apparatus located at some central point, which is electrically connected with all the stations in such a manner that when electrical connection is established between a station and the recorder by means of a portable electric generator carried by the watchman the time of the visit of the watchman will be recorded.

It is also an object to provide an alarm which is sounded whenever the watchman fails to visit any station at the proper time. This alarm may be located at the residence of the person in authority over the building or other place where the watchman is employed to watch, and whenever sounded it indicates that the watchman is not attending to his duty. This alarm will continue sounding until the watchman operates the station mechanism to record his visit.

The invention consists in the novel construction and combination of parts hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a front view of a watchman's recording apparatus constructed in accordance with my invention, the door of the casing being removed. Fig. 2 is a side elevation of the same, the side of the casing being removed to show the interior thereof. Fig. 3 is an end view of the magnets by which the recording mechanism is operated. Fig. 4 is a longitudinal section of the same. Fig. 5 is a horizontal section of the same. Fig. 6 is an elevation showing the alarm mechanism. Fig. 7 is a similar view showing the parts in a different position. Fig. 8 is a detail sectional view showing the means for elevating the recording-roll. Fig. 9 is a horizontal section on the line $x\,x$, Fig. 8. Fig. 10 is a detail side view of the same. Fig. 11 is a sectional view of the portable generator and connector, showing the connector applied to the casing at a station by which electric connection is established between the station and the recording apparatus. Fig. 12 is a side elevation of the connector. Fig. 13 is a top view of the circuit-closing casing and connector applied thereto. Fig. 14 is a horizontal section on the line $a\,a$, Fig. 11. Fig. 15 is a detail view showing the arm which carries the recording-disk and the manner of constructing the same. Fig. 16 is a diagrammatic view showing the circuits between the electromagnets and the stations. Fig. 17 is an elevation of the recording-roll. Fig. 18 is an elevation, on an enlarged scale, of the means for supporting and elevating the paper-roll cylinder.

In the said drawings the reference-numeral 1 designates the casing of the recording apparatus, provided with a door 1^a with a lock thereon, so as to prevent access being had to the interior of the casing by unauthorized persons. Located in the upper part of this casing is a clock-train (not shown) having hands 3 and a dial 4. In the lower part of the casing is a rotatable and vertically-movable cylinder 4^a, upon which is wound a paper strip 5, provided with a number of longitudinal and vertical lines. This cylinder is so connected with the clock mechanism as to make a single revolution every twelve hours, the different hours being represented by the vertical lines on the paper form or strip, while the horizontal lines represent the different stations.

The numeral 6 designates a shaft at the upper end of the cylinder, provided with a bevel-gear 7, which meshes with a corresponding gear 8 on the arbor 9 of the hour-hand of the clock-movement.

The lower end of the cylinder is supported by a plate 10, provided with a depending sleeve 13, mounted upon a stud-shaft 14. This stud-shaft at its upper end is provided

with a recess 15, in which is located a ball-bearing 16, and has the lower end of the sleeve beveled, as seen at 17, forming a seat for the balls 18, located in a groove 19 in a flange 20, formed intermediate the ends of said shaft. These balls form the bearings for the sleeve.

The numeral 21 designates a pin passing through the sleeve and engaging with a peripheral groove in the stud-shaft for holding the sleeve in place thereon. The lower end of the stud-shaft fits in a socket 23 of a plate 24, secured to the casing 1, and is provided with a pin 25, which projects through vertical slots in said socket. This pin passes loosely through apertures in a lever 26, pivoted at one end to a lug 27, and has secured to its free end two spring-arms 28, which pass through an opening in a curved upwardly-extending arm 29. The sides of this opening are formed with opposite slots 30, with which are adapted to engage outwardly-extending blades 31 on the spring-arms to hold the lever in place.

The object of the mechanism just described is to elevate the cylinder step by step each day for a week, or seven days, so as to bring new portions of the paper form into coincidence with the recording mechanism. This is accomplished by contracting the spring-arms, which will disengage the blades from the slots 30, when the lever can be raised until the blades register with the next slots below, when the spring-arms are released, and the blades will engage with said last-mentioned slots. This movement of the lever will elevate the cylinder and paper form and is repeated each day until the week has ended.

The recording mechanism hereinafter described will indicate time of the watchman's visits at the different stations each day, and by this means a week's record is kept on each form or slip.

Located in the casing at the upper end of the cylinder is the recording mechanism, constructed as follows: The numeral 32 designates a casting secured to the casing provided with a vertical plate 34, the ends of which are turned at a right angle and secured to the casting 32. This plate 34 at one side is formed with a number of rectangular slots 35, through which pass armatures 36, pivoted at one end to a vertical rod 37. These armatures are held in place in the slots by means of a plate 38, bolted to plate 34, and passing through said plates are adjusting-screws 39 for limiting the movement of the armatures. Pivoted to the end of each of these armatures is a recording-disk holder 40. This holder is made from a single piece of sheet metal of the form shown in Fig. 15—that is to say, it consists of two arms 41, connected together by a web 42 and provided at each end with apertured disks 43 44. The web 42 is bent over at the center, so that the two arms will be parallel with each other, as shown in Fig. 15, the disks 44 engaging with the armatures and pivotally connected therewith. The free ends of the armatures are made with extensions 41^a, which are adapted to engage with a curved plate secured to the door of the casing or cabinet when the door is closed, which will throw the disks into close proximity with the cylinder. Springs 46 throw the armatures away from the cylinder when the door is open, so that they will not interfere with removing the cylinder when desired. Felt marking-disks 45 are pivoted to the opposite ends of the arms 41. These disks are to be saturated with any suitable marking fluid. The numeral 46 designates springs secured to said armatures and to the castings 32 for returning the levers to normal position after their electromagnets, hereinafter described, have been demagnetized by breaking the electric circuit.

The numeral 47 designates electromagnets of any suitable construction and corresponding in number with the number of the stations, there being one magnet for each station. These magnets are located in front of the armatures, and the wires of each magnet extend to the station with which it corresponds. In the present instance there are ten magnets shown, each being connected with a socket 48 at each station. These sockets are all identical with each other and consist of a cylindrical casing 49, having apertured lugs 50 for the passage of screws for securing it to a wall or other place or object. The lower end of this casing is formed with a reduced bore 51, formed with opposite recesses 52, in which are seated the wires 53 and 54, leading to the electromagnets.

The numeral 56 designates a circuit-closing plug or connection consisting of a cylindrical block 57, having a reduced lower end 58. This plug is made of rubber or other insulating material in two parts connected together by screws. At the upper end it is provided with a rectangular finger-hold 59. Passing down through this plug are two conductors 60 61, the ends of which are bent laterally outward and extend through the lower end of the plug, so that when the latter is inserted in the casing the said projection will engage in the recess 52 and contact with the wires of the electromagnet and thus establish a circuit from a magneto-electrical generator with which the conductors are connected, when the generator is operated to generate an electrical circuit.

The numeral 62 designates the generator, which may be of any ordinary or suitable construction, which is to be carried by the watchman as he visits the various stations. For convenience the generator should be secured to the watchman's belt.

I will now describe the means for sounding an alarm when the watchman fails to record his visit to any station.

Located in the casing 1 is a wheel 63, so connected with the clock-movement as to make a revolution every four hours—that is to say, it makes a quarter-revolution each hour. Mounted on the shaft of this wheel is

a ratchet-wheel 64, which turns with said shaft. This ratchet-wheel is held on the shaft by frictional contact therewith only and is provided with a radial arm 65, provided with a contact projection 67. Connected with this arm is a conductor 68, extending to one pole of an electric battery 69, the other pole of which is connected with an electric bell 70, located at any place or point desired—say, for instance, at the residence of the owner or superintendent of the building in which the watchman is employed. This bell is also connected by a conductor 71 with a pivoted contact 72, provided with a knob 73.

The numeral 74 designates an electromagnet the wires 75 and 76 of which are connected with each of the electromagnets which operate the recording mechanism.

The numeral 78 designates a pivoted armature working in guide 79, provided with an adjusting-screw 80. The free end of this armature is bent downwardly and formed with a hook 81, which is adapted to engage with the teeth of the ratchet-wheel.

The operation of the invention is as follows: The paper form is placed on the cylinder and the clock-movement is started, causing the cylinder to be rotated at the rate of one revolution every twelve hours. The watchman in going his rounds as he visits each station successively will insert the plug of his generator in the circuit-closing socket and will give the handle of the generator a turn or two, generating an electric current which will flow to the electromagnet in circuit with the socket of such station, magnetizing the same and causing its armature to be attracted, which will cause the recording-disk carried by the armature to be pressed against the paper form, making an impression thereon, as seen in Fig. 5. By means of the lines drawn on the form the time when the station was visited can be readily ascertained by the person in authority inspecting the form the next day or at some subsequent time. The absence of these impressions will show that the watchman failed to visit the station. In case the watchman fails to visit a station at the proper time and insert the circuit-closing plug this bell is sounded automatically as follows: At the commencement of the movement of the clock-train the arm 65 of the ratchet-wheel 64 will occupy a perpendicular position and will move at the rate of one-quarter of a revolution per hour. When the watchman inserts his plug in a circuit-closing socket to record his visit, as before stated, a secondary circuit will be established between the recording-electromagnet and the alarm-sounding magnet. This will cause the armature 78 of this magnet to be operated, when the hook on the end thereof, engaging with the ratchet-wheel, will turn the latter backward to normal position, the wheel being connected with its shaft by frictional contact only. When the current is broken, the armature will drop down to normal position. In case, however, the watchman fails to visit a station then the armature will not be operated, and the arm 65 will come in contact with the contact-piece 72, completing the bell-circuit and sounding an alarm, which will continue ringing until the circuit-closing plug is inserted in its socket, when the operation before described will be repeated, and the ratchet-wheel and its arm will be returned to normal position. The ringing of the bell will notify the owner or superintendent of the neglect of the watchman, so that an investigation may be made to ascertain the cause thereof.

While I have stated that the ratchet-wheel makes one-fourth of a revolution each hour, it is obvious that this rate can be changed, as all that is necessary is that the ratchet and arm when moved back by the armature when a station is visited shall rotate so that the arm will strike the contact-piece at about the time the next station should be visited if the watchman neglects his duty. The contact-piece 72 is pivotally connected, so that it can be turned back by the knob in the daytime and be out of the way of the arm 65.

Each day for a week the cylinder containing the paper form is elevated a step by the lever at the lower end thereof to bring a new surface into coincidence with the recording-disks. In this way a week's register of the watchman's doings will be made on the form.

Having thus fully described my invention, what I claim is—

1. In a watchman's time-recorder, the combination with the rotatable cylinder, the supporting-plate, and the vertically-movable shaft, provided with pins, of the socket, having opposite slots through which said pins project, the pivoted lever, the spring-arms provided with blades, and the plate having an opening, the sides of which are formed with slots with which said blades engage, substantially as described.

2. In a watchman's time-recorder, the combination with the rotatable cylinder, the supporting-plate, the sleeve and the stud-shaft provided with a pin, of the socket in which said shaft is stepped, having a slot through which said pin projects, the pivoted lever, the spring-arms provided with blades, and the plate having an opening, the sides of which are formed with slots with which said blades engage, substantially as described.

3. In a watchman's time-recorder, the combination with the rotatable cylinder, the supporting-plate, the sleeve secured thereto, the stud-shaft fitting loosely in said sleeve having a recess in its upper end and a grooved annular flange intermediate its ends, the balls seated in said groove and recess, the pin secured to said shaft, the socket in which said shaft is stepped, having a slot through which said pin projects, the pivoted lever, the spring-arms provided with blades, and the plate

having an opening, the sides of which are formed with slots with which said blades engage, substantially as described.

4. In a watchman's time-recorder, the combination with the recording-electromagnets, of the armature, the disk-holders pivoted thereto each consisting of a piece of sheet metal, bent over to form two parallel arms and the felt disks pivoted to the free ends of said arms, substantially as described.

5. In a watchman's time-recorder, the combination with the casing, the rotatable cylinder, the recording-electromagnets, the station sockets or casings, and the conductors connecting said magnets and sockets, of the shaft provided with a cog-wheel adapted to mesh with a train of clock-gearing located in said casing, the ratchet journaled on said shaft and rotating therewith by frictional contact, provided with a contact-arm, the pivot contact-piece with which said arm is adapted to contact by the rotation of said ratchet, and the electric bell electrically connected with said arm and contact-piece, substantially as described.

6. In a watchman's time-recorder, the combination with the casing, the rotatable cylinder, the electromagnets, the station sockets or casings, and the armatures and recording-disks, and the conductors connecting said sockets and electromagnets, of the shaft provided with a cog-wheel driven by a clock-movement located in said casing, the ratchet journaled on said shaft and rotating by frictional contact therewith, provided with a contact-arm, the contact-piece with which said arm is adapted to contact by the rotation of said shaft, the electromagnets electrically connected with said first-mentioned electromagnets, the conductors electrically connecting said arm and contact-piece with the same, the pivoted armature provided with a hook adapted to engage with said ratchet and the bell in circuit with the electromagnets connected with said arm and contact-piece, substantially as described.

7. In a watchman's time-recorder, the combination with the cabinet and the door provided with a curved plate at the inner side, of the rotatable vertically-movable form-cylinder, the pivoted armatures and marking-disks, the springs for throwing said disks away from said cylinder, the arms secured to the free ends of the armatures against which said curved plate strikes when the door is closed, to force the armatures into close proximity to the cylinder, the station-sockets and the conductors connecting them with said electromagnets, substantially as described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

DANIEL HEPP.

Witnesses:
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EDWARD HENDRICKSON.