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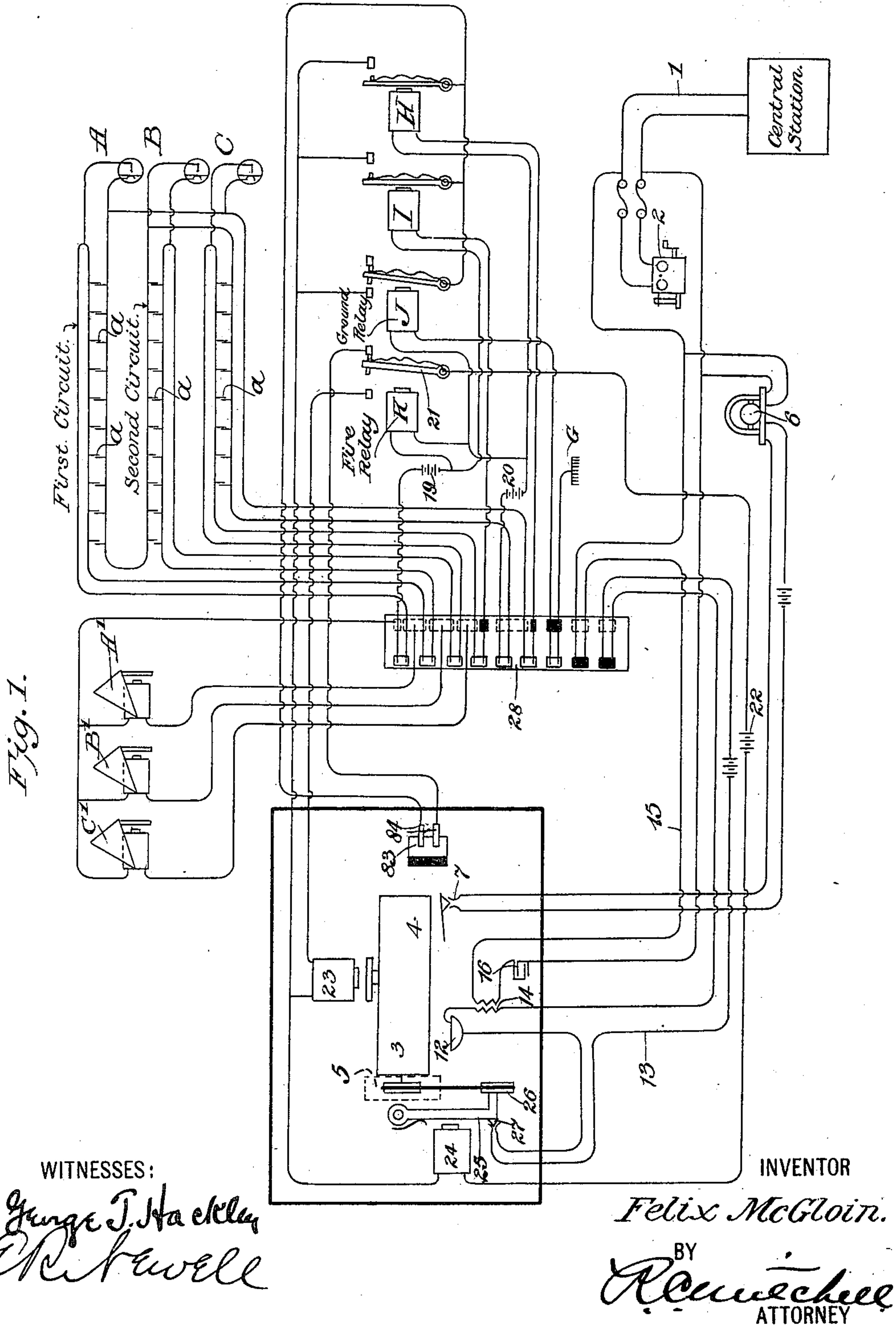
Patented Feb. 12, 1901.

F. MCGLOIN.
TALKING MACHINE.

(Application filed June 6, 1900.)

(No Model.)

6 Sheets—Sheet 1.



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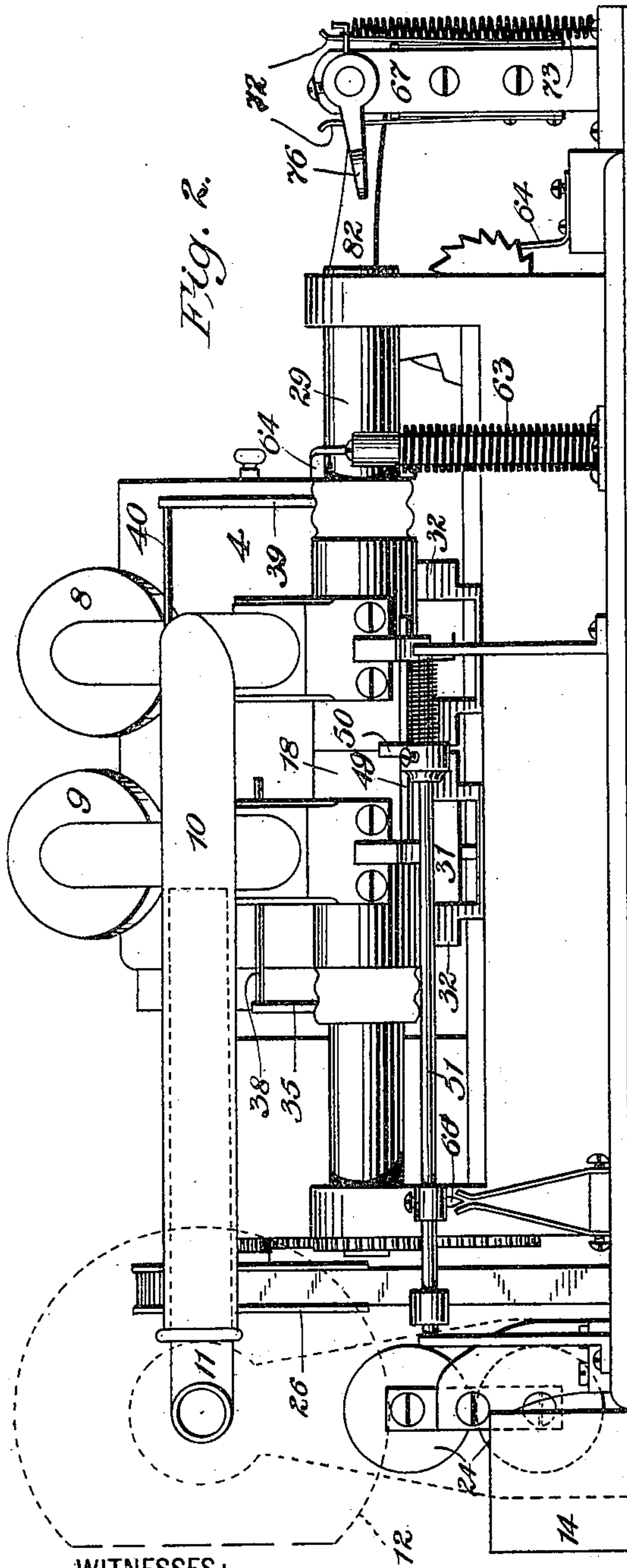
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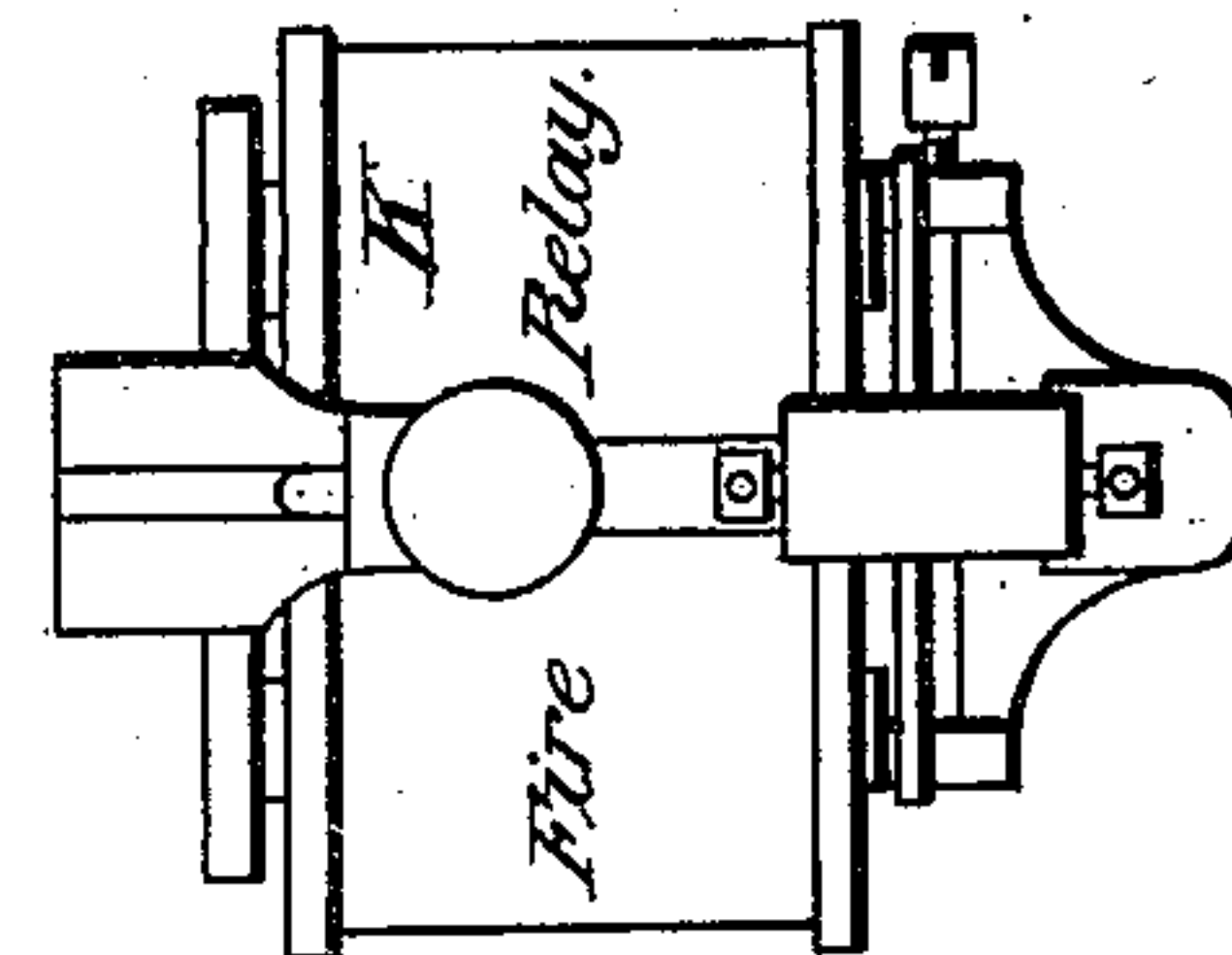
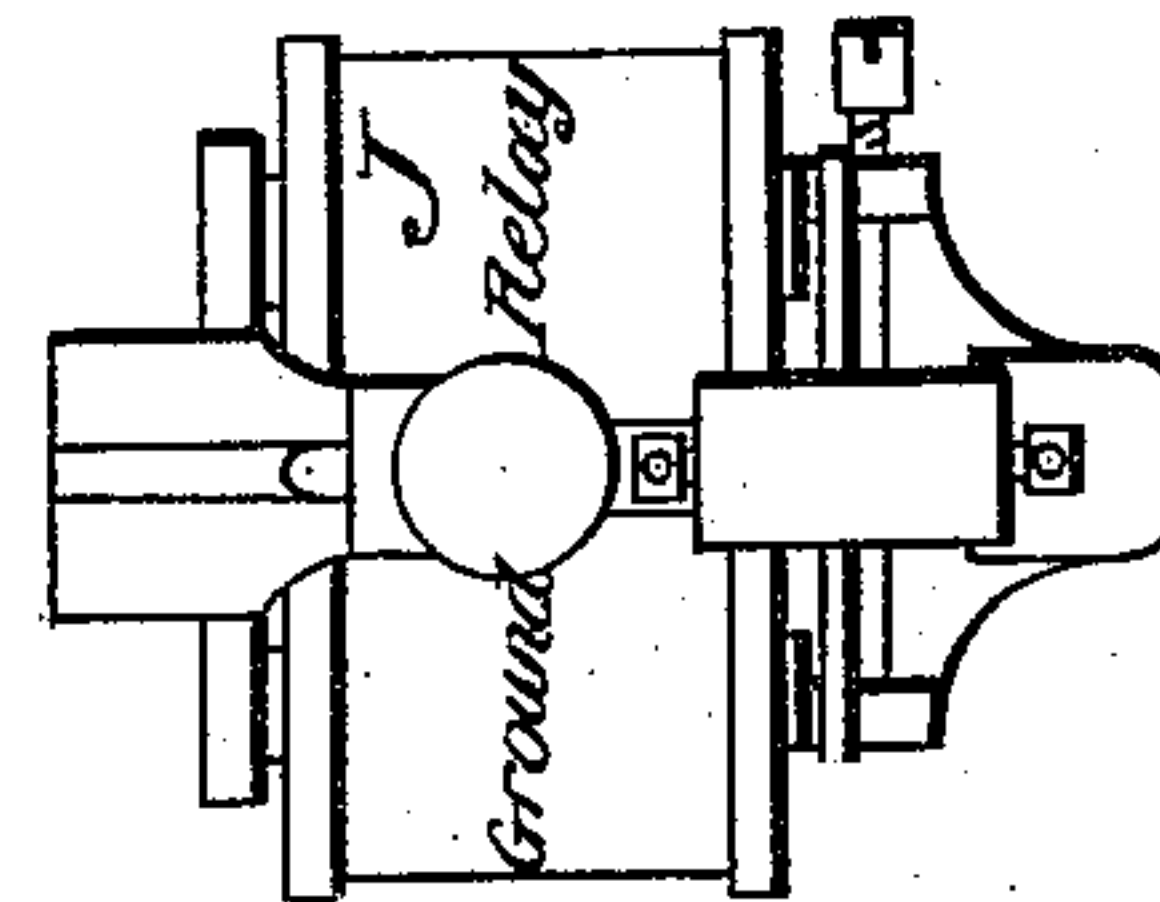
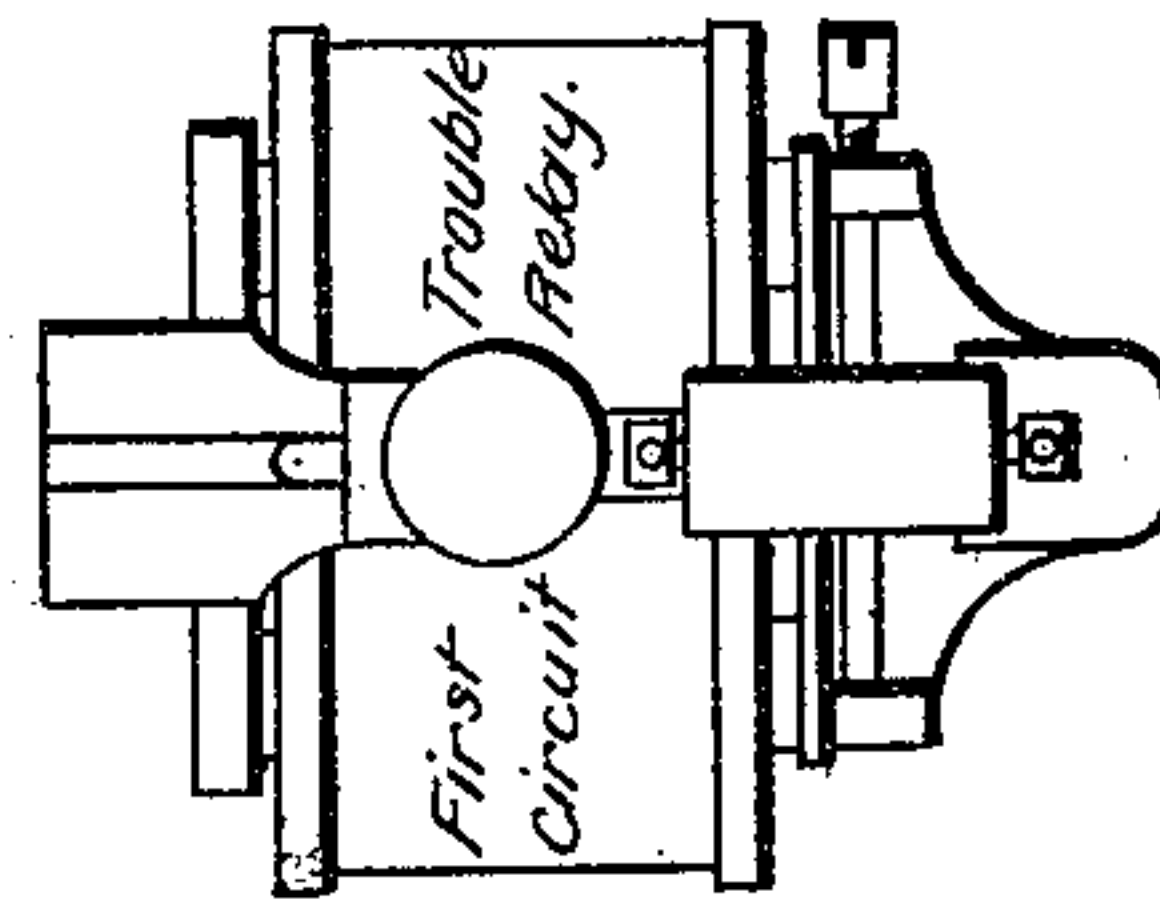
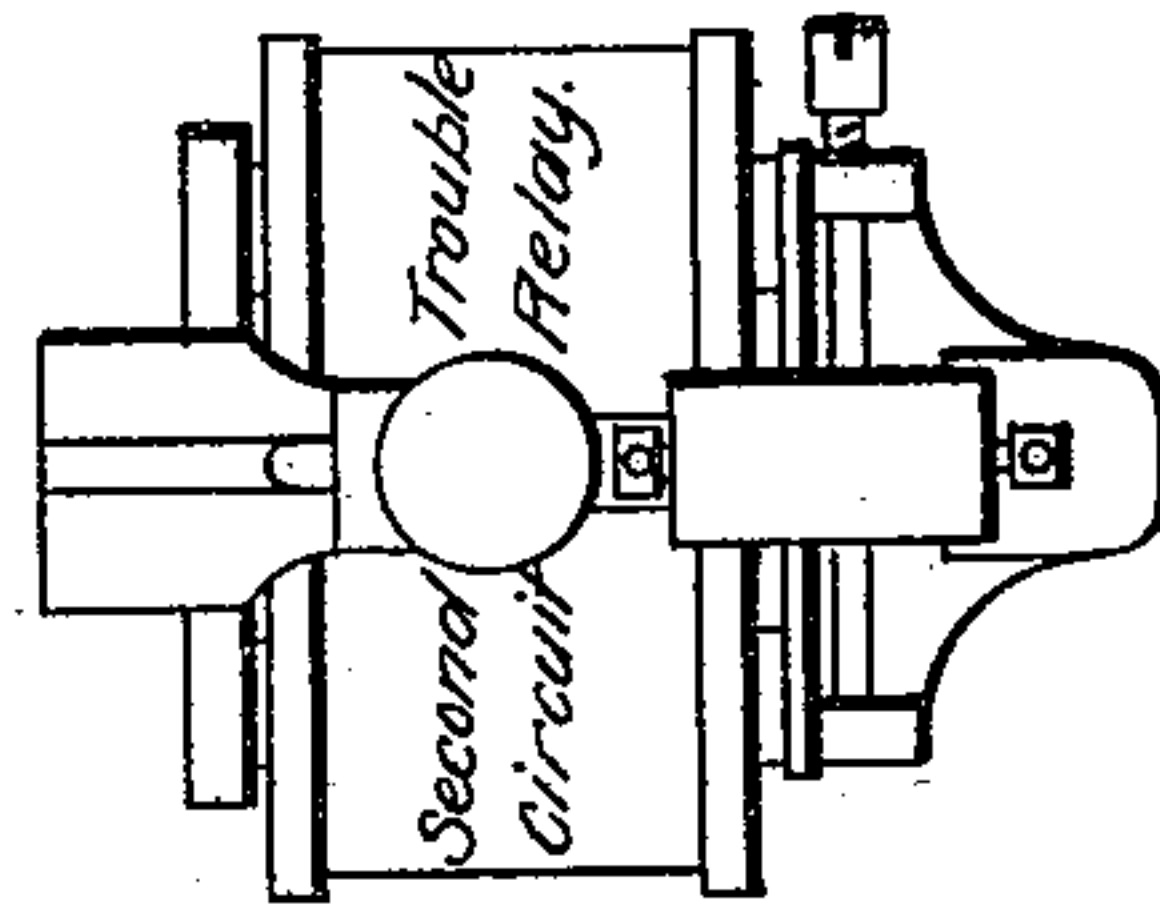
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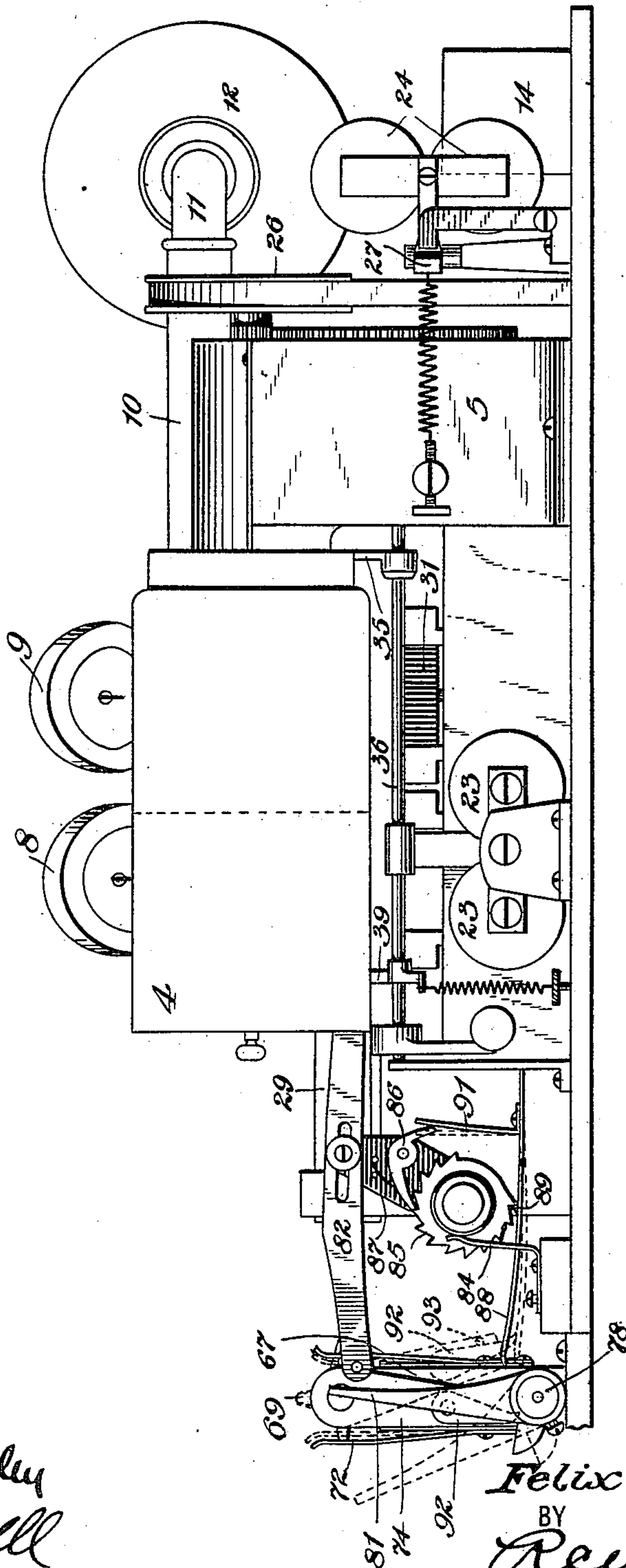
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6 Sheets—Sheet 3.

Fig. 3.



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Fig. 4.

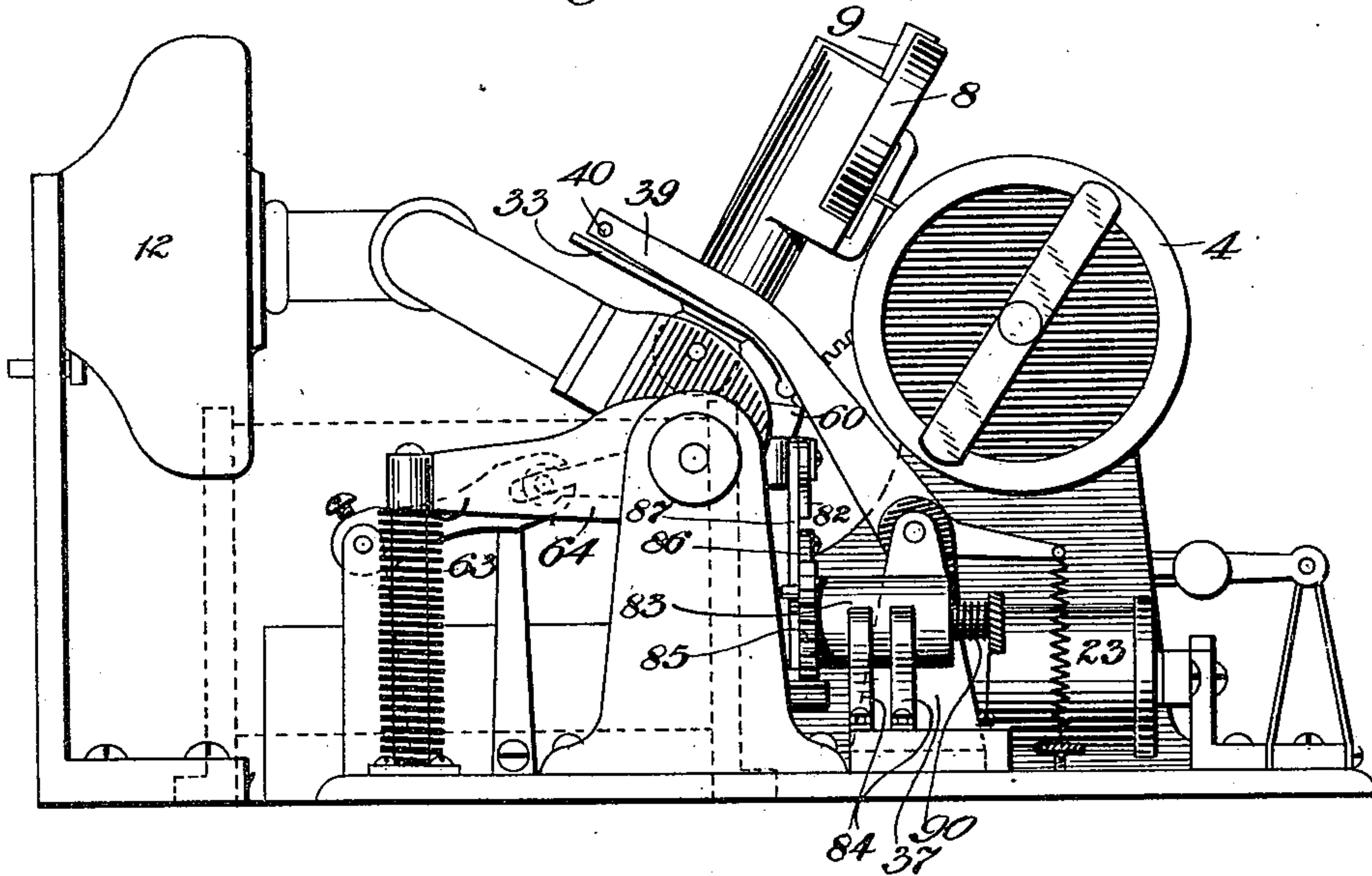
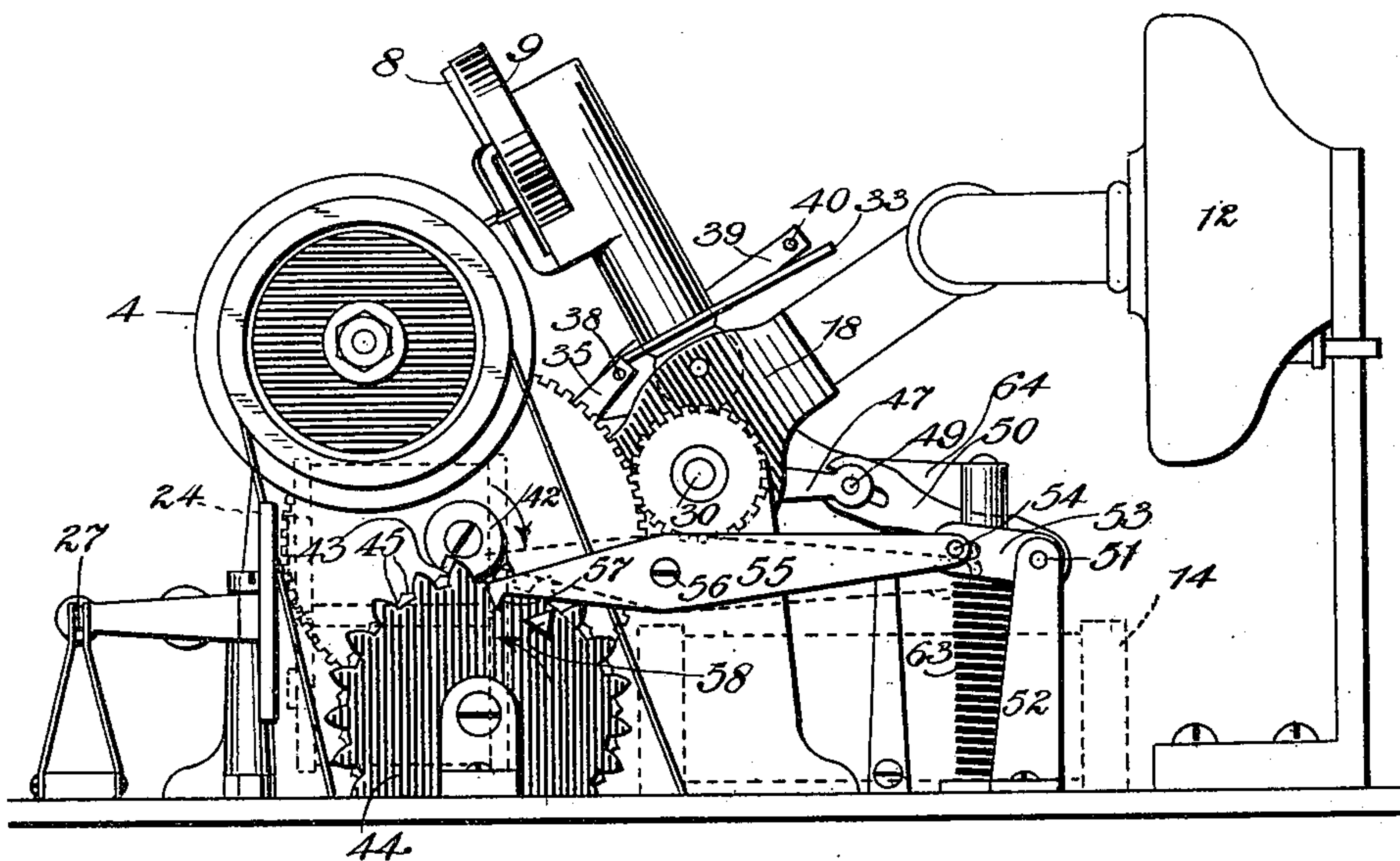


Fig. 5.



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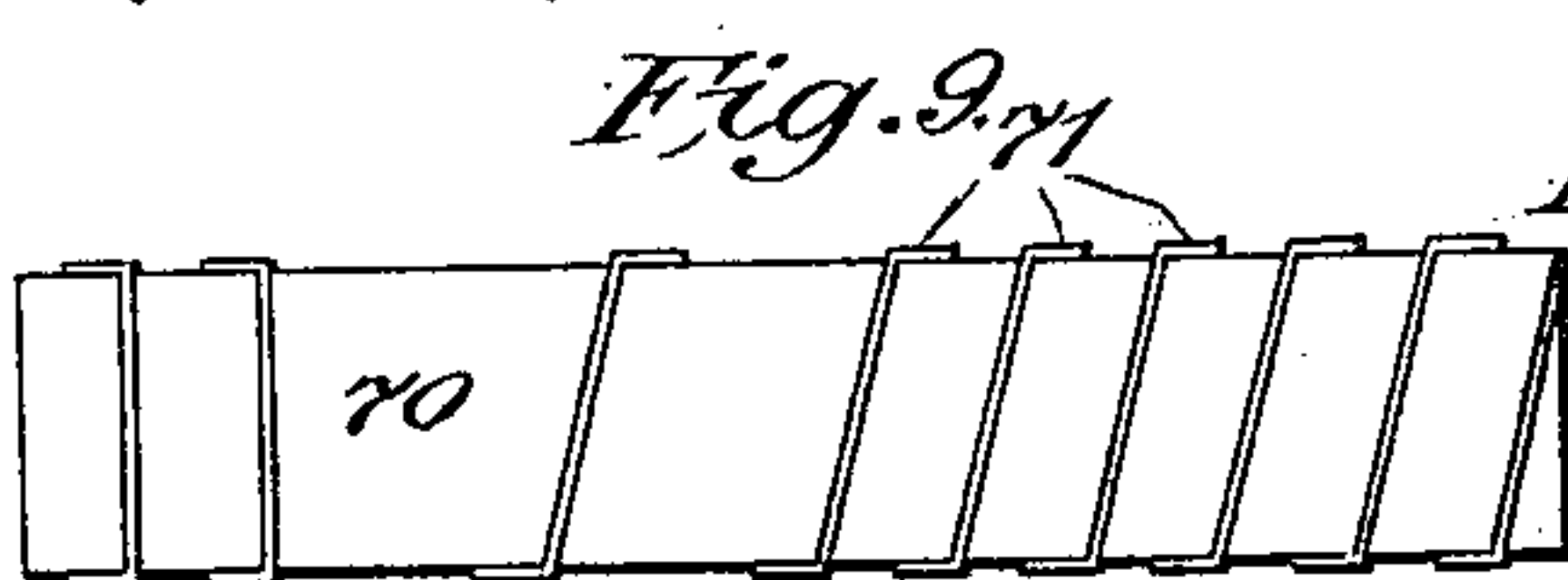
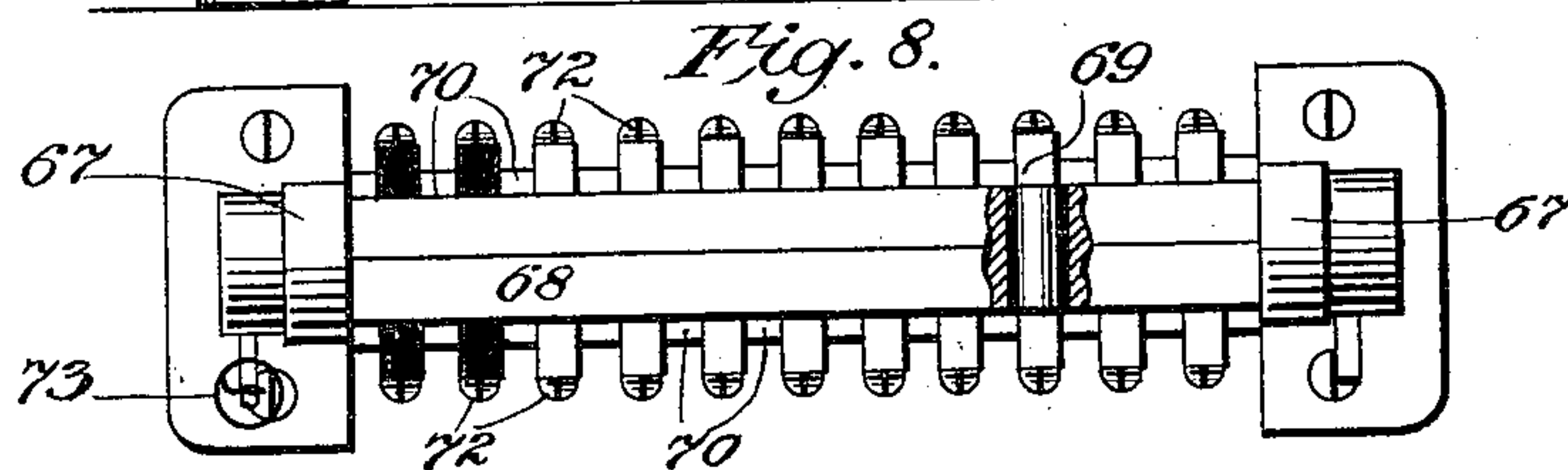
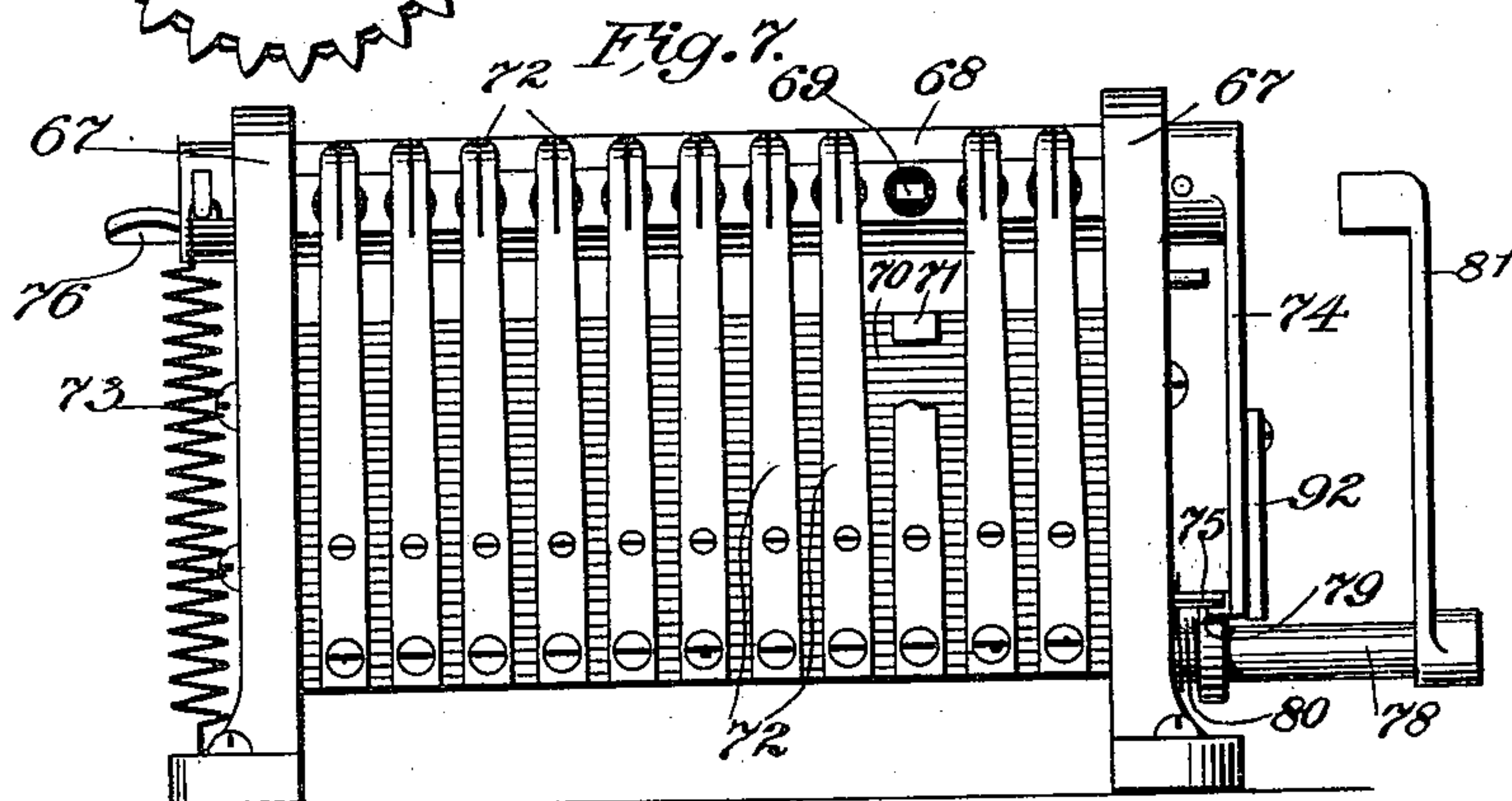
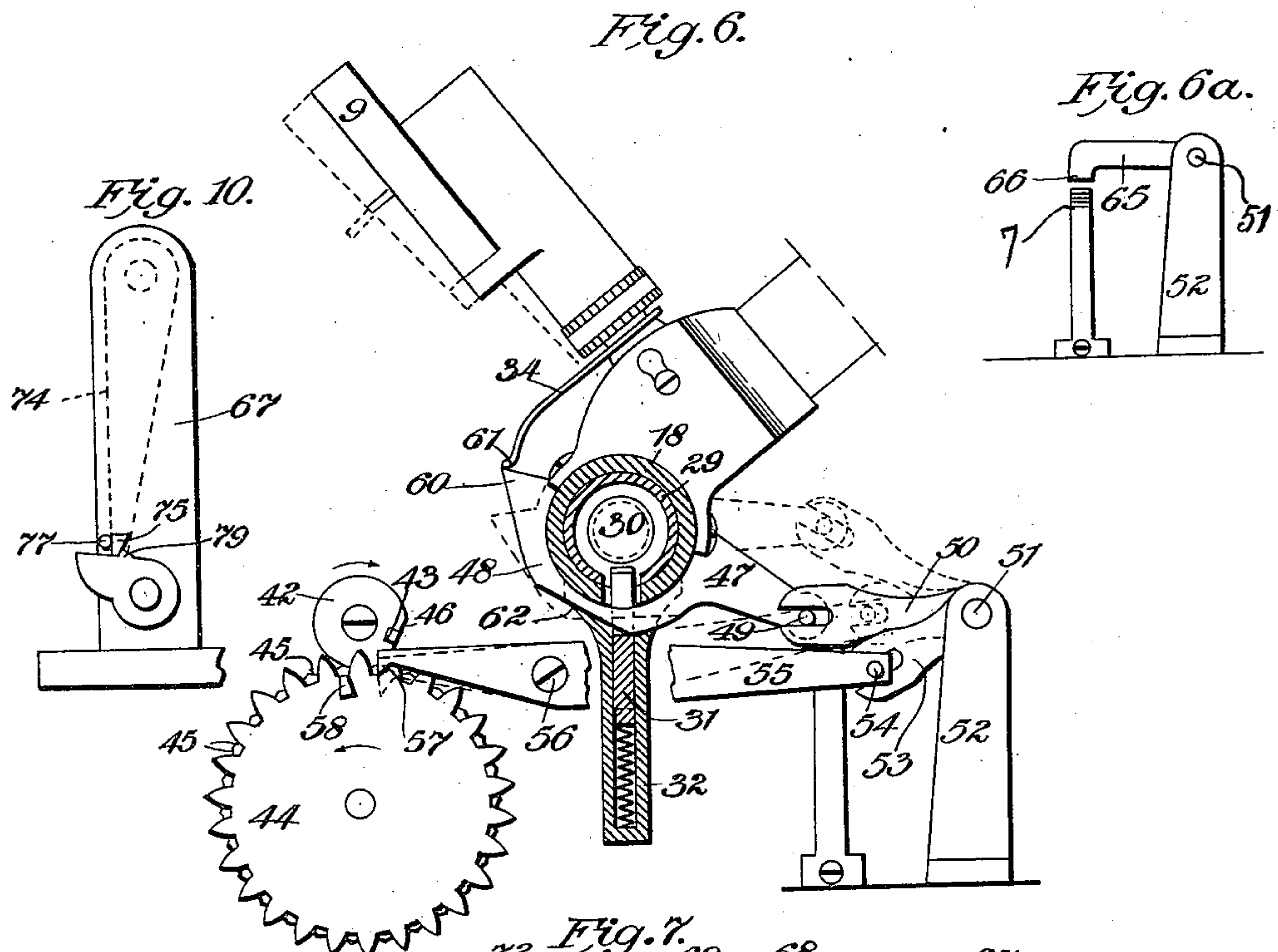
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(Application filed June 8, 1900.)

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6 Sheets—Sheet 5.



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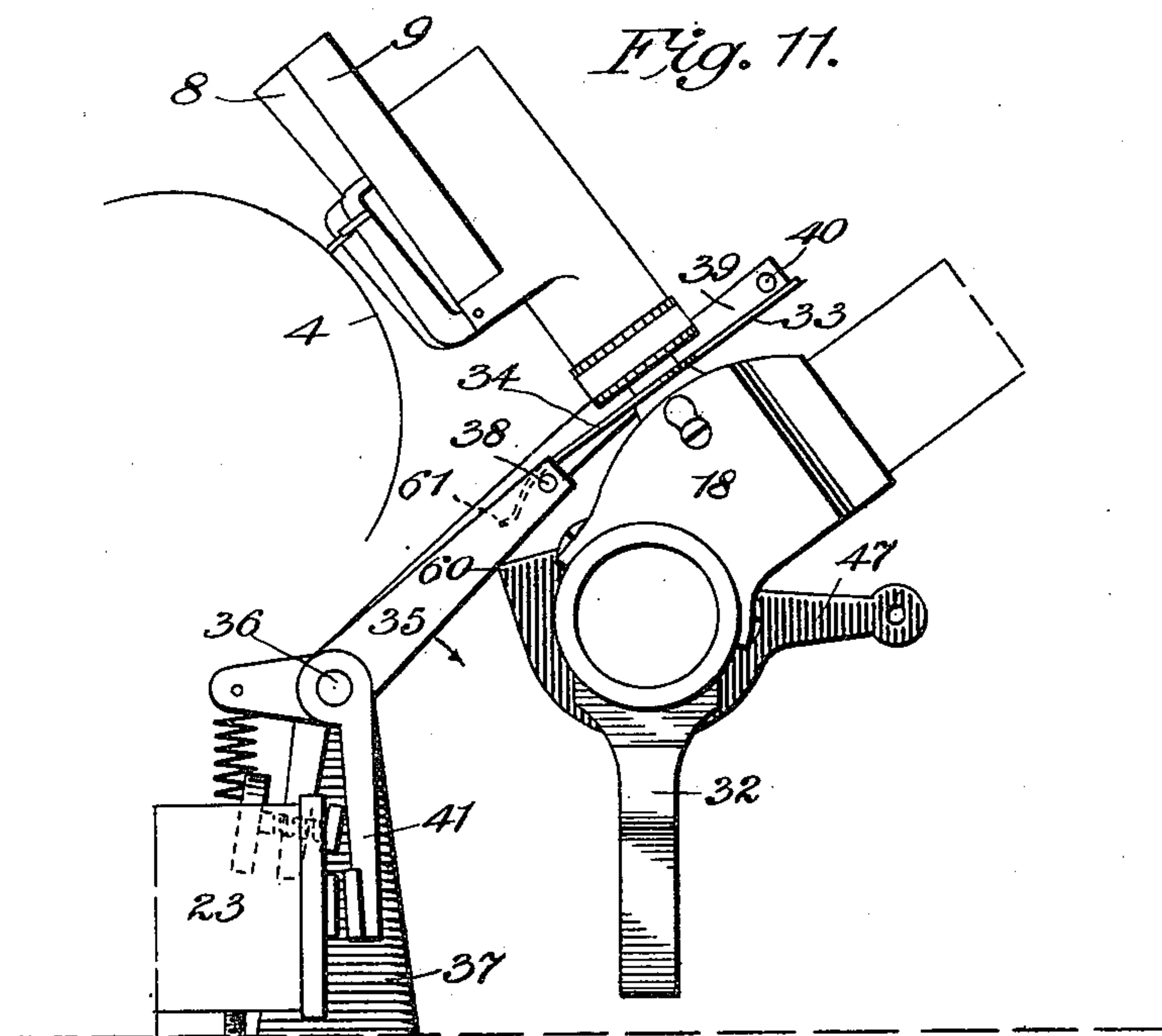
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6 Sheets—Sheet 6.



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UNITED STATES PATENT OFFICE.

FELIX MCGLOIN, OF NEW YORK, N. Y., ASSIGNOR TO THE AUTOMATIC FIRE ALARM COMPANY, OF SAME PLACE.

TALKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 667,728, dated February 12, 1901.

Application filed June 6, 1900. Serial No. 19,203. (No model.)

To all whom it may concern:

Be it known that I, FELIX MCGLOIN, a citizen of the United States, residing at New York city, county and State of New York, have invented certain new and useful Improvements in Talking-Machines, of which the following is a full, clear, and exact description.

My invention relates to talking-machines and attachments therefor which are particularly useful in an improved automatic-alarm system; and one of my objects is to provide a system which by the variation in the electrical condition of an electric circuit will automatically send in an alarm. This is particularly useful in a fire-alarm system; but it will be obvious that it may be applied to send in a burglar or other alarm. I prefer to employ the system in connection with the common telephone-circuit in general commercial use at the present day, and in such case I provide a talking-machine so arranged as to send in an alarm-message over the telephone-circuit, such as "There is a fire at 41 Park Row. Please notify the fire department," an electric protective circuit, and means to automatically send a signal over said telephone-circuit when a certain variation in the electrical condition of said protective circuit, such as a closing of the circuit, takes place. This will call attention to the fact that an alarm-message is to be sent. The signal is then interrupted and the talking-machine sends the alarm-message over the telephone-circuit. All this takes place automatically on said variation in the electric protective circuit. I prefer to provide the talking-machine with a plurality of records to indicate the different causes of different variations in the protective circuit, and I have provided in this embodiment electric circuits, preferably independent and forming parts of the protective circuit, which will also send a signal in case of trouble on the wires, such as a break or a ground, and automatically select the proper record to indicate this trouble and cause the talking-machine to send a "trouble-message," such as "There is trouble on the wires at 41 Park Row," over the telephone-circuit. I have also provided a construction by which the record is passed over by the reproducer a plurality of times before the alarm-message is

interrupted, so that the signal and message are repeated over the telephone-circuit, thus insuring their being received.

Some of the features shown and described in the following specification are broadly claimed in my former application, Serial No. 17,340, filed the 21st day of May, 1900.

In this present application I have claimed more particularly the construction; and my object is to claim, among other things, the automatically-operating switches.

In the preferred embodiment shown in the drawings, Figure 1 is a diagrammatic view showing my system. Fig. 2 is a front elevation of the talking-machine—in this case a phonograph—and some of the switches, showing also some of the relay-magnets. Fig. 3 is a rear view of the device shown in Fig. 2. Fig. 4 is an end elevation of the device shown in Fig. 3 looking from left to right of said figure, the automatic switch at the left of Fig. 3 having been removed. Fig. 5 is an end elevation of the device shown in Fig. 3 looking from right to left. Fig. 6 is a detail, partly in section, of the device shown in Fig. 5. Fig. 6^a is a detail. Fig. 7 is a rear elevation of the automatic switch shown at the left of Fig. 3. Fig. 8 is a plan view of the device shown in Fig. 7. Fig. 9 is a detail of the switch shown in Fig. 7. Fig. 10 is a detail of the catch mechanism at the right end of Fig. 7, and Fig. 11 is a detail showing the magnet and connections for selecting the proper reproducer.

In the above diagram of the preferred embodiment of my invention, (shown in Fig. 1,) 1 represents an electric circuit provided with means to communicate intelligence at a distance, preferably, as has been stated heretofore, a telephone-circuit, such as is in common commercial use at present day. This circuit is provided with a subscriber's transmitting and receiving instrument 2, and the circuit passes through a central or receiving station. 3 is a machine to send a message over the circuit 1—in this case a talking-machine—such as a phonograph having a cylindrical record 4, actuated by any suitable means, such as by a spring in a box 5, through suitable gear connections. 6 is a device, such as an interrupter, for transmitting a signal

over the telephone-circuit, such as ringing the bells of the subscriber's instrument and also causing a signal-annunciator to be operated in the central station. The circuit in this interrupter is normally open, as shown at 7, and the secondary of the interrupter is connected in the present case in parallel with the subscriber's instrument. The record-cylinder 4 is preferably provided with a plurality of records—such as a "trouble-record" to indicate that there is some trouble with the wires, such as a ground or a break, and also with a "fire" or other record to indicate a fire or other cause—and each of these records is preferably provided with a reproducer. These reproducers 8 and 9 are preferably both carried on the carriage 18, Fig. 6, and are provided with a sound-carrying tube 10, which telescopes with a stationary sound-tube 11, connected with the telephone-transmitter 12 in an electric circuit 13. This circuit through the transmitter 12 is preferably normally open, as shown, and may be connected with the telephone-circuit, preferably in parallel with the subscriber's instrument. In the present case the circuit 13 is not connected mechanically with the telephone-circuit, but electrically through the secondary of the induction-coil 14 in the circuit 15, which is in parallel with the subscriber's instrument. 16 is a condenser.

Referring now to Fig. 1, I have provided what I have called an "electric protective circuit" and devices, preferably electrically actuated, which when the electrical condition of this electric protective circuit is varied or changed, such as by closing the open protective circuit or by a ground or break, will send in a cautionary signal over the telephone-circuit and then interrupt the same and send in a message over said circuit to indicate the cause of the trouble, such as fire or trouble on the wires. In the present embodiment this electric protective circuit is normally open and is closed by a connection between two normally independent circuits. These normally independent circuits in the present embodiment are indicated by "first circuit" and "second circuit." These independent circuits, as will be seen from an inspection of the diagram, are normally closed through relay-magnets I and H, which magnets are therefore normally energized to keep their armatures in the position shown.

A, B, and C represent different floors of a building to be protected or different buildings, and *a a* thermostats, which when heated will vary the electrical condition of the first circuit by in this case closing the same by making connection between the two independent circuits.

J and K are two normally inactive relay-magnets, the winding of the magnet K being connected across the first circuit and second circuit, as shown; but the circuit through said magnet will not therefore be completed, as there is no return-path for a current passing between said circuits. When, however,

a fire occurs and one of the thermostats *a* is heated, the same makes a connection between the two independent circuits and completes the circuits through magnet K. The protective circuit, which is then closed, will start, for instance, from battery 19 and go through the first circuit until it reaches the thermostat *a*, which has been actuated, through said thermostat to the second circuit, to and through battery 20, and from thence through the wiring of magnet K. The energizing of this magnet will draw its armature 21 to the left and close the circuit from battery 22 through magnets 23 and 24.

25 is a lever forming an armature for magnet 24 and engaging the wheel 26 to form a brake to prevent the operation of the talking-machine, and when this circuit through magnet 24 is closed the armature 25 will be drawn to the left and allow the talking-machine to operate.

27 is a contact-piece carried by this armature 25, which closes the circuit 13 from the transmitter as far as the automatically-operated switch 28. This switch 28 is automatically thrown from one position to another, shown by the two lines of contact-points, the unshaded blocks being conducting portions and the shaded blocks being non-conductors.

Referring now to the other figures of the drawings, 29 is a shaft forming a track along which the carriage 18 travels. Attached to this carriage—in the present embodiment pivoted thereto—so as to be independently movable to and from their operative position in relation to the record 4, are reproducers 8 and 9. 30 is a threaded shaft rotated by the motor and engaged by a movable spring-pressed threaded block 31, carried in a casing 32 on the carriage. When the threads on this block 31 engage the threads of the shaft 30, the carriage, and therefore the reproducers, will be carried along the record-cylinder, which will be suitably rotated as usual in this class of machines. The reproducer 8 is normally in its operative position in contact with the record-cylinder, and preferably in contact with the trouble record, while the reproducer 9 is normally out of contact with its record.

When a fire occurs, it is desirable to transmit the "fire-message" and not the trouble-message, and I therefore have provided a means for selecting the proper record, so as to send the proper message when a fire occurs. As before explained, when one of the thermostats is actuated to close the protective circuit the magnet 23, as well as the magnet 24, will be actuated.

Referring now to Fig. 11, 33 is a projection in the form of an arm from the "trouble-reproducer" 8, and 34 is a similar arm projecting from reproducer 9. These arms in the present embodiment project in opposite directions. 35 is a lever fixed to shaft 36, which shaft is pivoted in the stationary frame 37 of the instrument. This lever 35 carries a laterally-extending pin 38, (see Fig. 2,) over

which the arm 34 slides as the carriage moves in one direction or the other. 39 is a lever similar to 35 and having a pin 40, which pin extends in an opposite direction from pin 38.

41 is a short arm, also attached to shaft 36 and forming the armature of magnet 23. As pins 38 and 40 stand on opposite sides of the arms 33 and 34, when the magnet 23 is actuated and the arms 35 and 39 therefore drawn down the reproducer 8 will be raised out of contact with the record-cylinder and the reproducer 9 will be dropped into contact therewith. As the reproducer 9 is the one for producing the fire-message, this closing of the protective circuit will therefore cause the apparatus to select the "fire-record" and also start the talking-machine.

Referring now to Figs. 2, 5, and 6, 42 is a wheel rotated by the motor and carrying lug 43. 44 is a toothed wheel having curved depressions 45, which fit the circumference of wheel 42. As the lug 43 on wheel 42 strikes a tooth on wheel 44 a cut-away portion 46 of the wheel 42 releases the wheel 44 and allows the same to be rotated one tooth. The wheel 44 is intended to rotate a little less than once at each traverse of the carriage from left to right in Fig. 2. 47 is an arm attached to a sleeve 48, pivoted on and carried by the carriage 18. This arm 47 is provided with a rod 49, which slides between the jaws of an arm 50, attached to a shaft 51, pivotally mounted in bearings 52 on the frame. 53 is a second arm, also attached to rod 51 and engaging pin 54 on the end of a lever 55, pivoted at 56. The left end of this lever 55 has a foot 57, which is engaged by a lug 58 on the wheel 44. The parts shown in Fig. 6 are normally in the position indicated by dotted lines in Fig. 6 and in full lines in Fig. 5. The wheel 44 is intended to make nearly one complete revolution in one traverse of the carriage from left to right in Fig. 2. When, therefore, the wheel 44 has made nearly one complete revolution, the lug 58 will strike foot 57 and throw the parts into the position shown in full lines and the nose 60 on sleeve 48 will strike a curved projection 61 on arm 34, attached to reproducer 9, and will not only raise the reproducer 9, but will throw both reproducers up from the position shown in Fig. 11, thus raising both reproducers away from their operative position with relation to the record-cylinder. At the same time a cam formed by a cut-away portion 62 of sleeve 48 forces down the plunger 31 out of engagement with the threaded shaft 30. The carriage is thus released from the shaft 30, and a spring 63 and pivoted arm 64, Figs. 2 and 4, then throw the carriage back to the starting position at the left. When the carriage is at the end of its traverse to the right, as shown in Fig. 2, and the parts are in the position shown in full lines, a rod 65, also attached to rod 51, Figs. 2 and 6, which arm carries a contact-piece 66, is thrown upward, and the contact-piece 66 engages with the contact-points at 7 and closes the

circuit through the interrupter 6, thus sending the cautionary signal over the telephone-circuit.

Referring now to Figs. 1, 3, and 7, the switch 28 (shown in diagram in Fig. 1 and in elevation in Fig. 7) is at the left in Fig. 3. This switch is automatically thrown by the movement of the carriage in its first traverse, and said switch makes different connections with the circuits. 67 67 are standards attached to the frame of the machine, and pivoted in them is a rotating or rocking bar 68, carrying contact-blocks 69, which are insulated from the bar and from each other, as shown in Fig. 8. 70 is a non-conducting portion of the switch having contact-strips running through the same, as shown in Fig. 9, and bent over on each side, as seen at 71. 72 indicates contact-strips which spring toward and make contact with the contact-points 71; but when the contact-carrier 68 is rotated, so that the contact-blocks 69 engage the strips 72, these strips are pushed away from contact with the portions 71. The normal position of the switch is shown in Figs. 7 and 8, with the contact-blocks 69 making the connections shown in the left-hand line of contacts in the switch 28 in Fig. 1. 73 is a spring tending to throw the contact-carrier 68 into a position in which the contact-blocks 69 will be vertical, as shown in dotted lines in Fig. 3.

To retain the parts in the position shown in Fig. 7, I have provided a catch device which may be automatically released by the movement of the reproducer-carriage. 74 is an arm attached to the contact-carrier 68 and having a lug 75 at its lower end. 76 is a finger-lever extending from contact-carrier 68, by which the contact-carrier may be thrown into the position shown in Fig. 7. 77 is a pin to limit the motion of the arm 74. 78 is a rotatable shaft carrying a stop 79, which arm is by a spring 80 normally thrown into the position shown in Fig. 10. Stop 79 has an inclined front face, so that when the arm 74 is pushed downward the lug 75 will engage this inclined face and slightly rotate the arm 78 against the action of spring 80 until lug 75 passes into the position shown in Fig. 10, when the stop 79 will spring up and engage the same, thus securely holding the parts in the position shown in Fig. 7. 81 is a finger-lever for manually releasing the parts, if desired. The contact-strips 71 make the connections shown in the line of contacts at the right of switch 28 in Fig. 1.

Referring now to Fig. 3, as the carriage moves to the left in that figure (to the right in Fig. 2) a projection 82 from the carriage will be moved to the left and will strike arm 81. This will occur just before the plunger 31 is disengaged from the shaft 30. The movement of the arm 81 to the left in Fig. 3 by the projection 82 will therefore release the lug 75 on arm 74 and the spring 73 will suddenly rotate the contact-carrier 68 into the position shown in dotted lines in Fig. 3 and allow the

contact-strips 72 to engage with the contact-pieces 71, thus changing the connections of the circuits and closing the circuits 13 and 15, and thus automatically connecting the telephone-transmitter 12 with the telephone-circuit. The contact-point 66 will be in engagement with the contact portion 7, thus sending in the cautionary signal over the telephone-circuit until the lug 43 on wheel 42 comes into contact with the left end of lever 55, throwing the parts back into the position shown in dotted lines in Fig. 6 and in full lines in Fig. 5 and breaking the interrupter-circuit at 7. The cautionary signal will therefore be sent in only for the time during which the wheel 42 makes one revolution. The spring 63 and arm 64 have now thrown the carriage to the left in Fig. 2 and to the right in Fig. 3, and the lug 42 has returned the parts to their original position, dropping one of the reproducers into contact with the record. The reproducer will then travel over the record, and as the circuit from the transmitter 12 through the telephone-circuit is closed the talking-machine will then, as the carriage travels to the left in Fig. 3, send the message over the telephone-circuit. I prefer to have the message repeated several times, and to this end the reproducer travels over the record a plurality of times. To prevent the repetition of the alarm more than a given number of times, I have provided a device in the form of a switch, which will automatically stop the machine after one alarm has been transmitted a certain number of times. It is not so important that the "trouble-alarm" should be immediately attended to as the "fire-alarm." Therefore I have provided a device which will repeat the fire-message until the device is reset, but will only repeat the trouble-message a few times—say three or four times. To accomplish this, I have provided a switch 83, Fig. 1, which in this embodiment (Fig. 3) is in the form of a rotatable shaft having an insulated portion, shown in black in Fig. 1, and a conducting portion, shown in white. This conducting portion makes electrical connection between the contact-points 84. 85 is a ratchet attached to this shaft and engaged by a pawl 86, normally pressed into contact with said ratchet by a spring, as shown in Fig. 3. This pawl 86 is carried on a rocking lever 87, from which a pin extends through a slot in the arm 82. The ratchet is therefore moved to the left in Fig. 3 at each traverse of the carriage and rotates the ratchet, and therefore the switch, a certain distance. The conducting portion of the switch-shaft may be just broad enough, so that after the trouble-message has been repeated three or four times the insulated portion will come under the contact-points 84 and break the circuit. 88 is a spring carrying a detent 89 for engagement with the teeth on the ratchet to hold the same in opposition to the force of

spring 90, Fig. 4, which spring tends to rotate said switch-shaft from left to right in Fig. 3 back to the normal position. (Shown in Figs. 1 and 3.) This spring 88 also carries a spring-arm 91, which engages with the heel of the pawl to throw the same out of engagement with the ratchet.

In order to set both switches in normal position, I have provided a connection between the two switches, whereby by the movement of one switch to its normal position both switches are automatically set. In this embodiment I have provided a swinging finger 92, carried by lever 74. This swinging finger is free to be moved to be left in Fig. 3, but is stopped from movement to the right by the pin 93 on lever 74. This finger 92 is long enough to engage with the end of spring 88 when the switch 28 is thrown back to the position shown in full lines in Fig. 3 and press this spring 88 downward, thus releasing stop 89 from engagement with the teeth on the ratchet and also causing spring 91 to throw pawl 86 out of engagement with the ratchet. The pressing downward by hand of arm 76, Fig. 7, will therefore throw the parts into the position shown in Figs. 10 and 7, and at the same time on the release of the ratchet 85 the spring 90 will throw the switch-shaft of switch 83 back into its normal position. Both switches will therefore be set in their normal position by the setting of one.

When a variation in the electrical condition of the protective circuit by a break in either the first circuit or the second circuit occurs, either the electromagnet I or H will be deenergized, allowing its armature to spring to the right and close the circuit through battery 22, thus starting the talking-machine. The magnet 23 will not, however, be energized.

To send in a trouble-alarm when a variation in the protective circuit occurs by one of the circuits becoming grounded, I have connected one end of the winding of magnet J to the ground, as at G, and have connected the other end to the winding of "fire-magnet" K. When, therefore, a ground occurs on either the first or the second circuit, a circuit will be completed through the "fire" and "ground" magnets in series. To prevent the fire-magnet being actuated when the ground occurs, I have wound the ground-magnet with many turns of fine wire and the fire-magnet with a few turns of large wire. This will provide sufficient ampere-turns in the ground-magnet to actuate the same with a current which is not strong enough to energize the fire-magnet. The trouble-alarm will therefore be sent in as before.

When the switch 28 is thrown and the second line of contacts is made, an annunciator A', B', or C' will be dropped to show the location of the trouble.

It will be obvious that many changes may be made in the constructions herein disclosed without departing from the spirit of my in-

vention. I therefore do not desire to be limited to the particular embodiments shown and described.

Whenever the apparatus is used as a burglar or other alarm, a suitable circuit-closing device instead of a thermostat should be employed.

What I claim is—

1. In a talking-machine in combination, a record, a reproducer and means to cause the reproducer to pass over the record a plurality of times, means to stop said machine including an electric circuit and a switch in said circuit, and means to automatically actuate said switch after said record has been passed over a given number of times.

2. In a talking-machine in combination, a record, a reproducer, means to cause the reproducer to pass over the record a plurality of times, means to stop said machine including an electric circuit and a switch in said circuit having as a part thereof a ratchet and a pawl engaging the same and reciprocated at each traverse of the reproducer, and means to automatically actuate said switch after said record has been passed over a given number of times.

3. In a talking-machine in combination, a record, a reproducer and means to cause the reproducer to automatically pass over the record a plurality of times, means to stop said machine including an electric circuit and a switch in said circuit having a rotatable barrel, a ratchet, and a pawl engaging said ratchet, said ratchet being reciprocated at each traverse of said reproducer and a catch to hold said ratchet, and means to automatically actuate said switch after said record has been passed over a given number of times.

4. In combination, a talking-machine, automatic means to cause said machine to repeat the message a plurality of times, means to stop said machine including an electric circuit and a switch therein adapted to be automatically thrown to stop said machine after the message has been repeated a plurality of times, a second switch adapted to be automatically thrown, and a connection between said two switches whereby by the movement of one switch to its normal position both switches are automatically set.

5. In combination, a talking-machine, automatic means to cause said machine to repeat the message a plurality of times, means to stop said machine including an electric circuit and a switch therein adapted to be automatically thrown to break said circuit and stop said machine after the message has been repeated a plurality of times, a spring-actuated switch adapted to be automatically thrown, and a connection between said two switches whereby by the movement of one switch to its normal position both switches are automatically set.

6. In combination, a talking-machine, au-

tomatic means to cause said machine to repeat the message a plurality of times, means to stop said machine including an electric circuit and a spring-actuated switch therein adapted to be automatically thrown to break said circuit and stop said machine after the message has been repeated a plurality of times, a second spring-actuated switch adapted to be automatically thrown, a connection between said two switches whereby by the movement of one switch to its normal position both switches are automatically set.

7. In an automatically-operating switch in combination, a rotating carrier provided with contact-terminals, stationary spring contact-strips pressing against said terminals, a spring tending to rotate said carrier in one direction and a catch to hold said carrier from so rotating, and means to automatically release said catch and allow said spring to rotate said carrier.

8. In an automatically-operating switch in combination, a rotating carrier provided with contact-terminals, stationary spring contact-strips pressing against said terminals, a spring tending to rotate said carrier in one direction, a catch to hold said carrier from so rotating including an arm on said carrier and a movable stop in the path of said arm, and means to automatically release said catch and allow said spring to rotate said carrier.

9. In an automatically-operating switch in combination, a rotating carrier provided with contact-terminals, stationary contact-terminals, stationary spring contact-strips adapted to spring toward said stationary terminals but pressed away from the same by said terminals on said carrier, a spring tending to rotate said carrier in one direction, a catch to hold said carrier from so rotating, and means to automatically release said catch and allow said spring to rotate said carrier and release said spring-strips.

10. In an automatically-operating switch in combination, a rotating carrier provided with contact-terminals projecting from both sides thereof, electric circuits connected to said terminals, stationary contact-terminals, connections to said latter terminals, stationary spring contact-strips on each side of said carrier adapted to spring toward and contact with said stationary terminals but pressed away from the same by said projecting terminals on said carrier, a spring tending to rotate said carrier in a direction to release said spring contact-strips and allow the same to press against said stationary terminals, a catch to hold said carrier from so rotating, and means to automatically release said catch and allow said spring to rotate said carrier.

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