

(No Model.)

3 Sheets—Sheet 1.

B. DUBINSKI.

TELEGRAPHIC CALL FOR MESSENGERS, &c.

No. 389,839.

Patented Sept. 18, 1888.

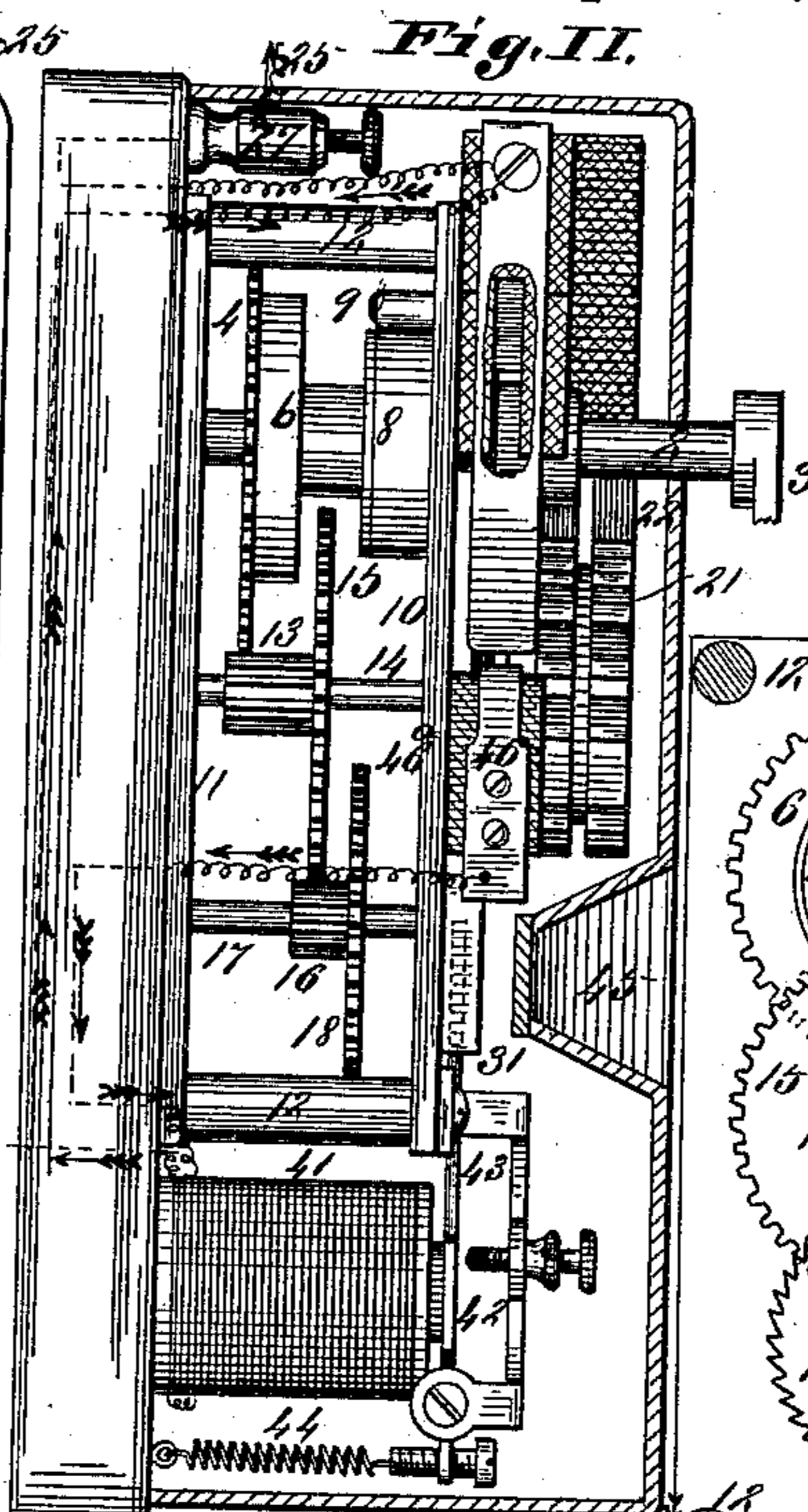
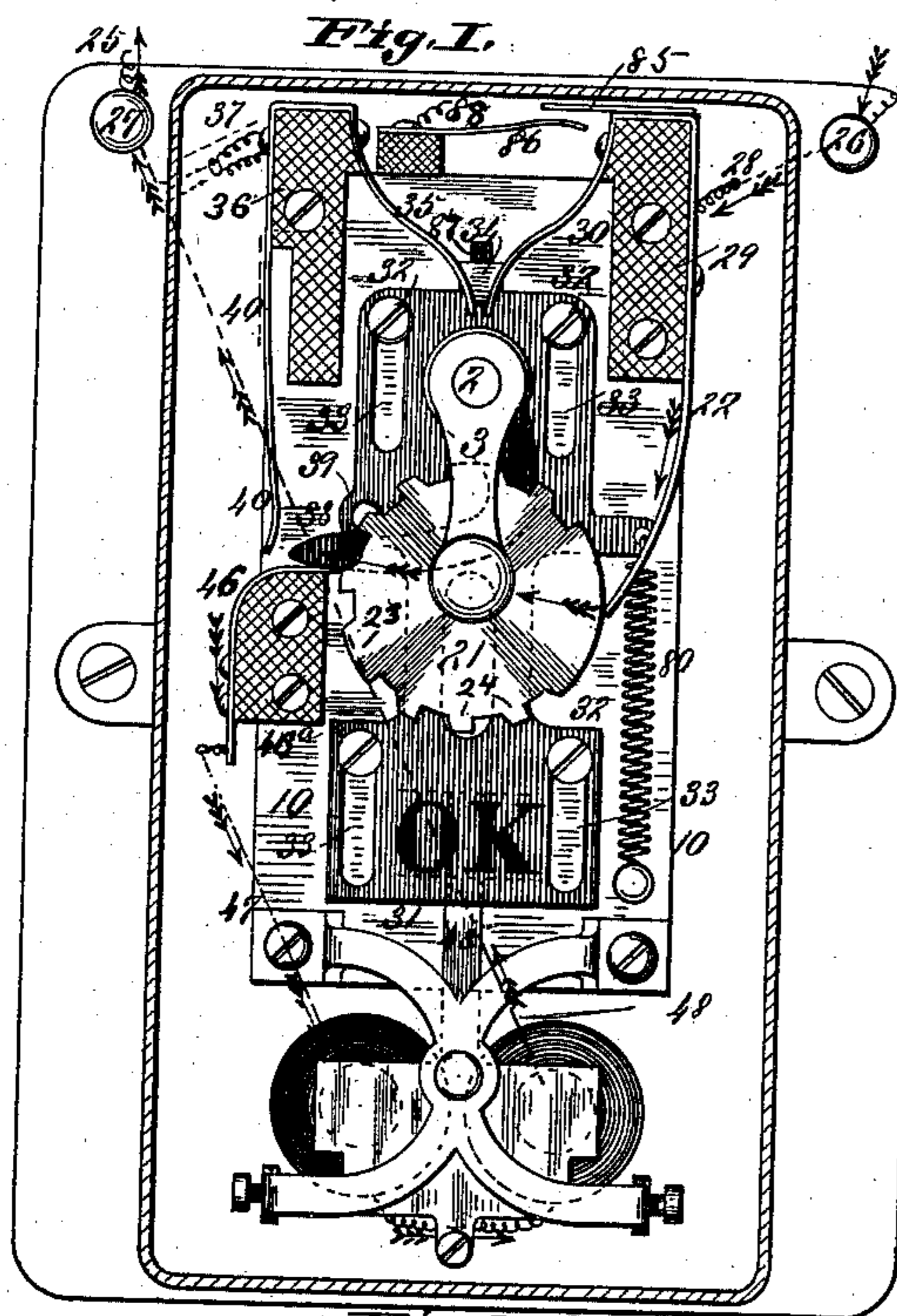


Fig. VI.

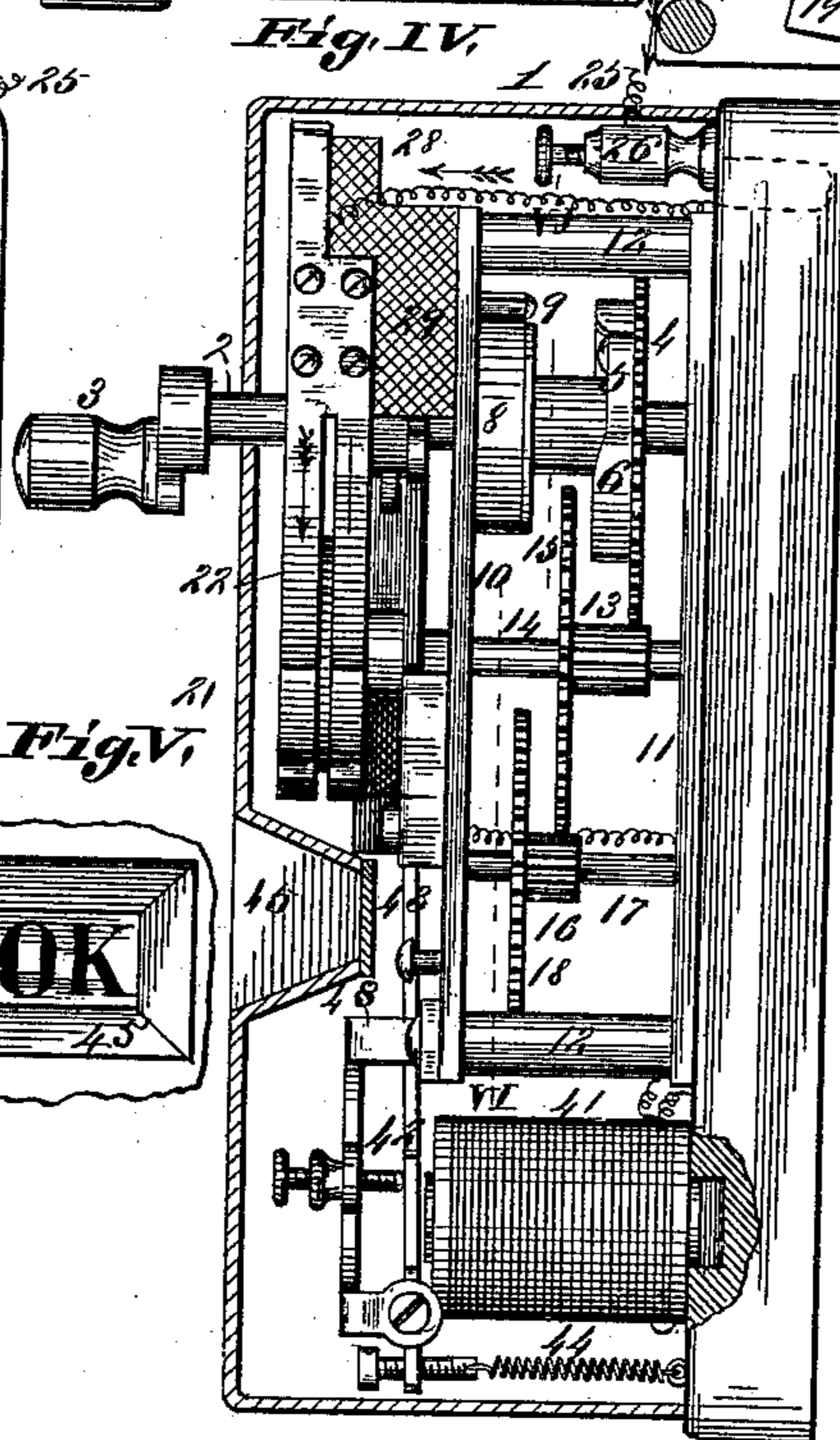
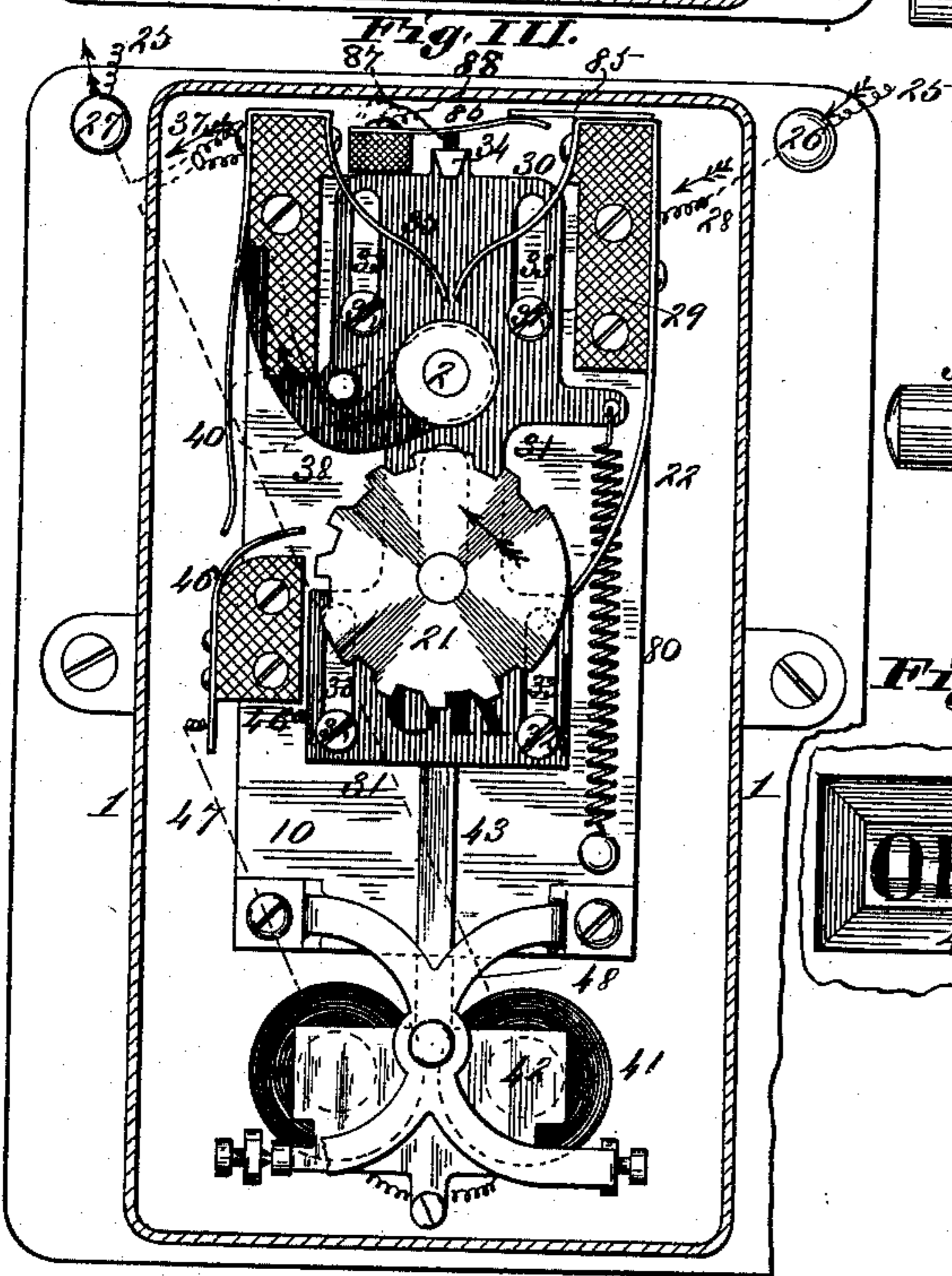
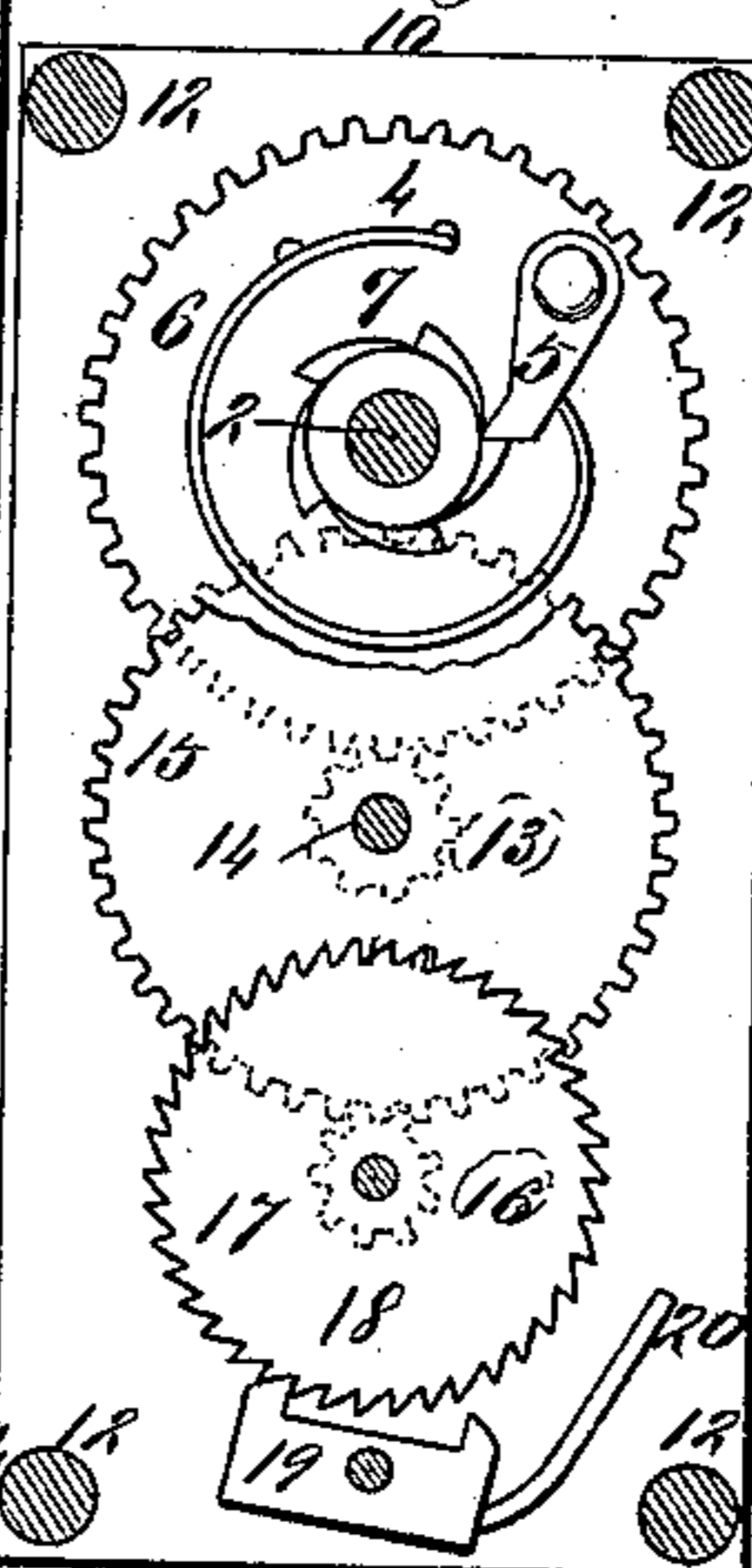
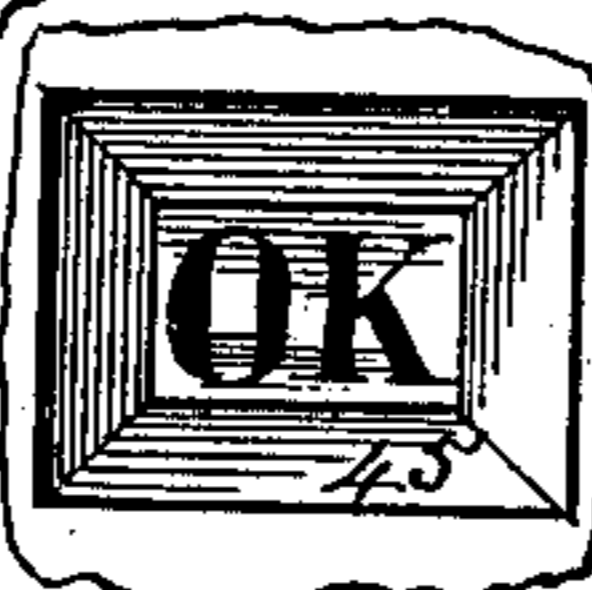


Fig. V.



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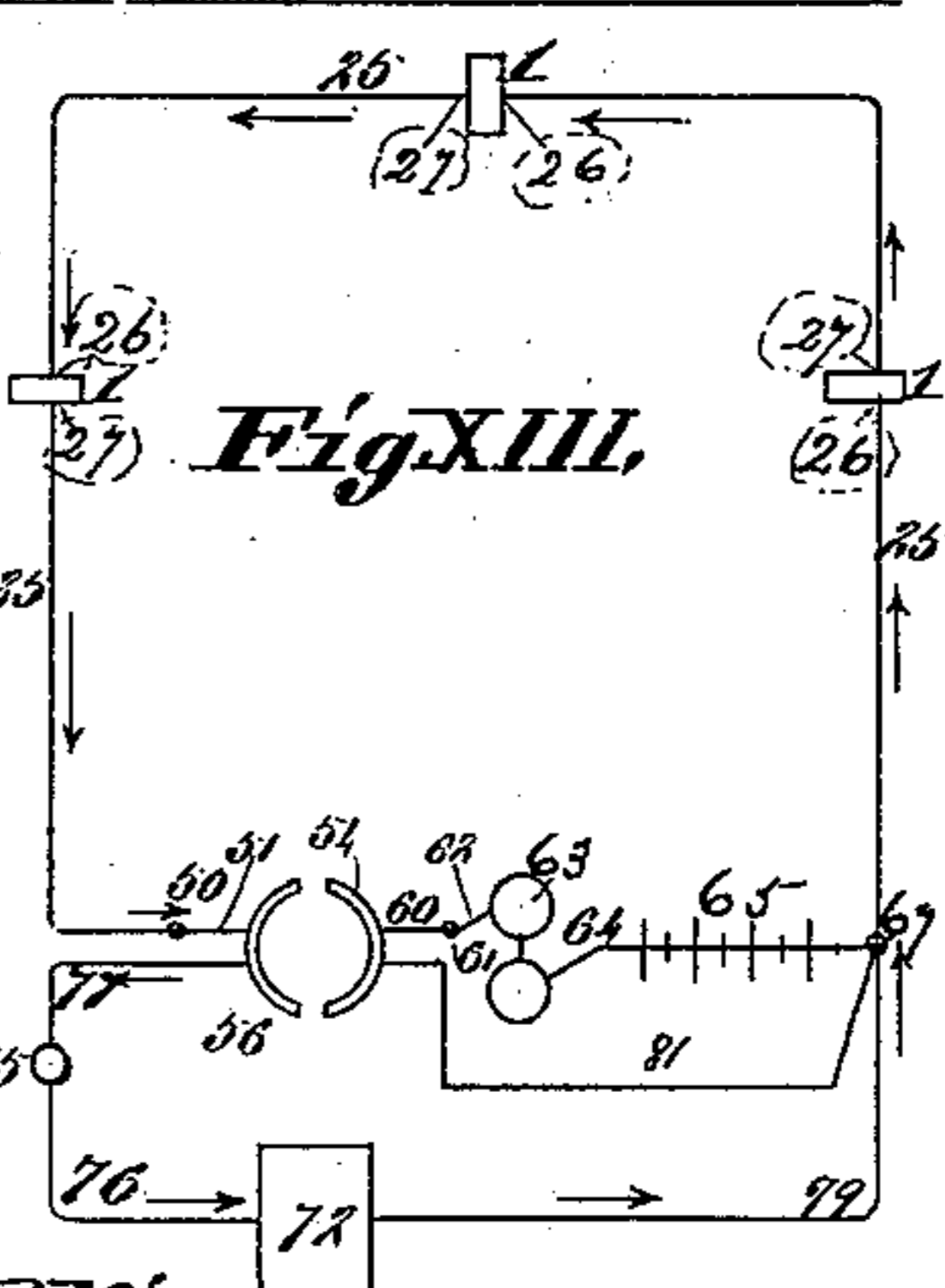
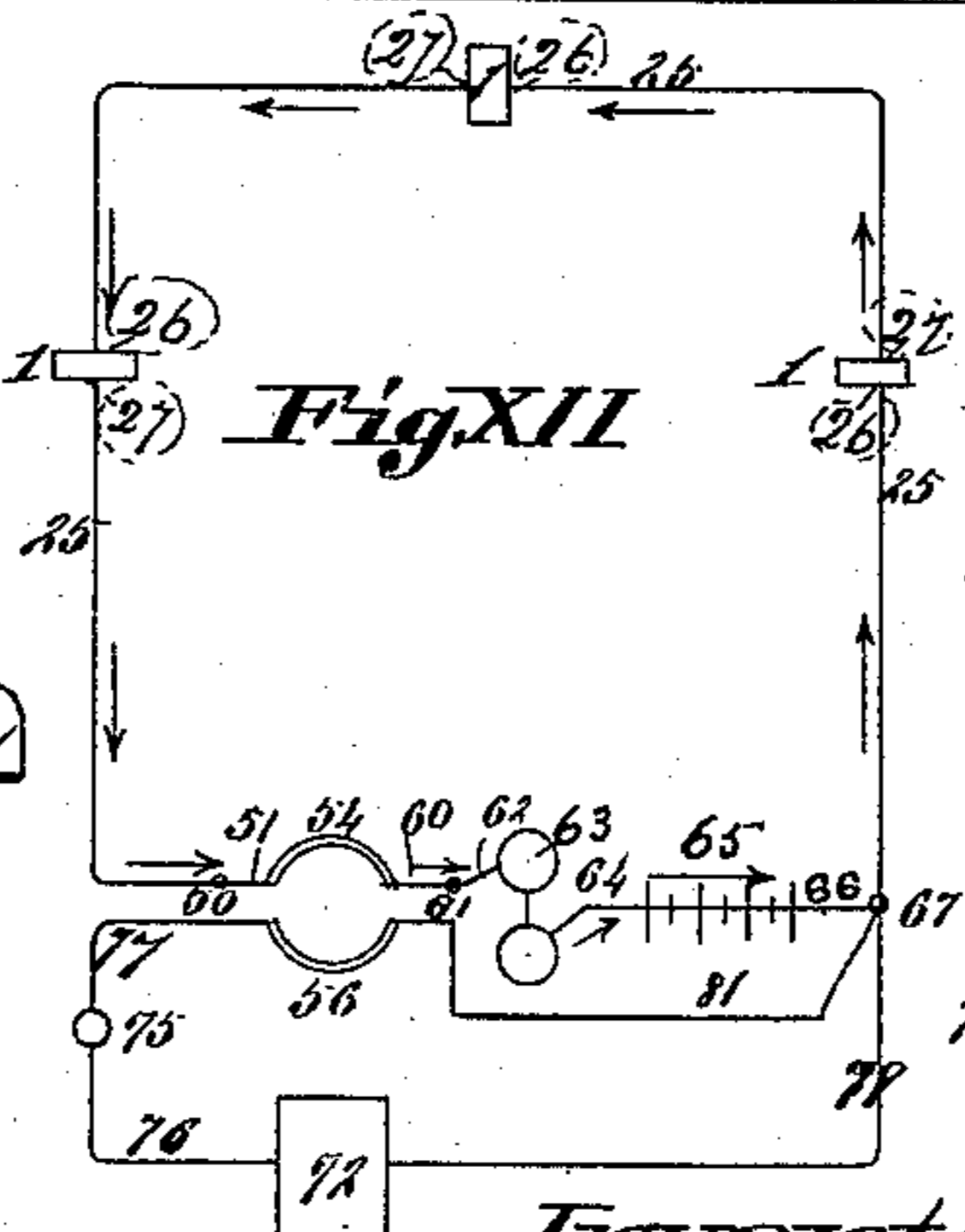
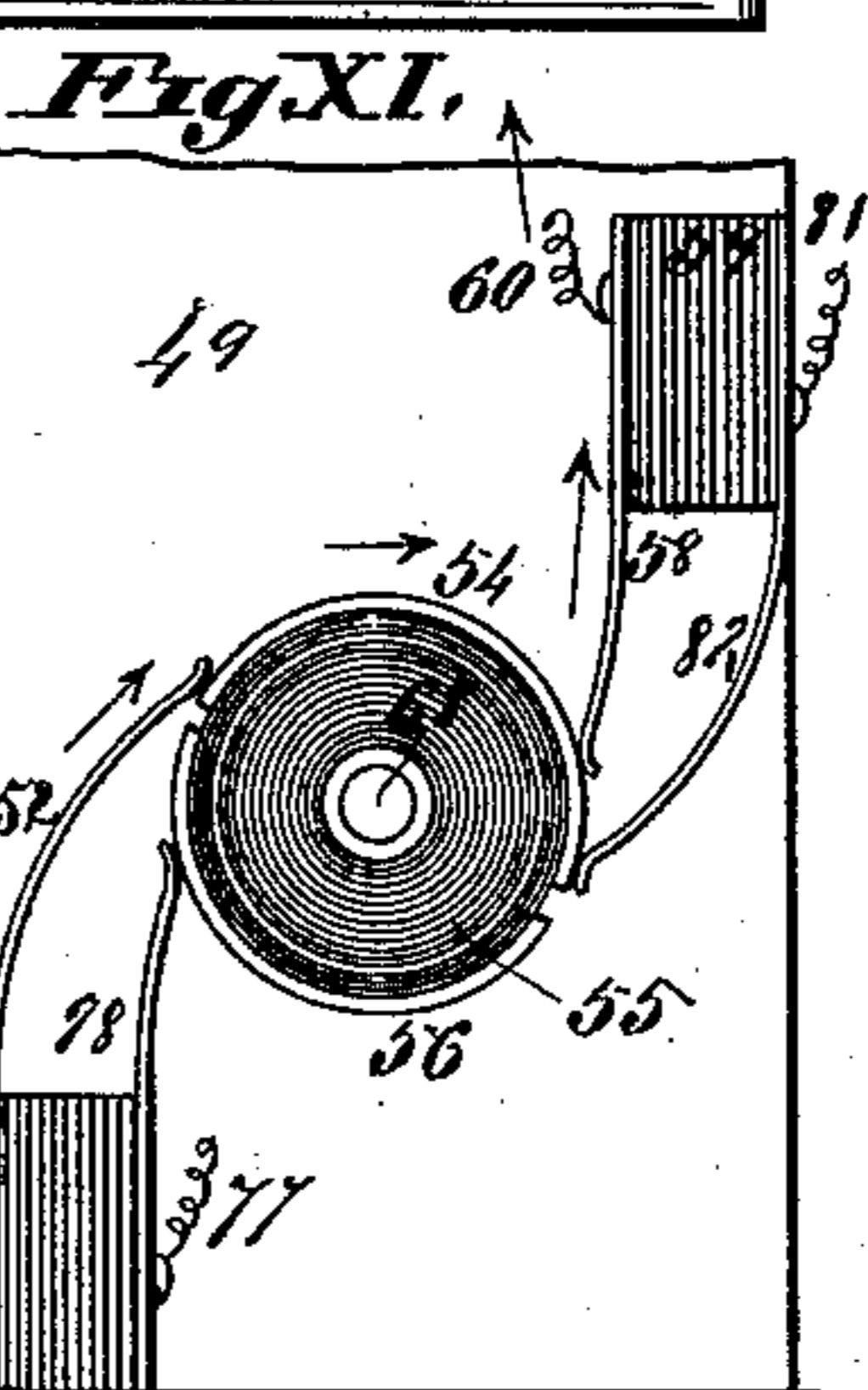
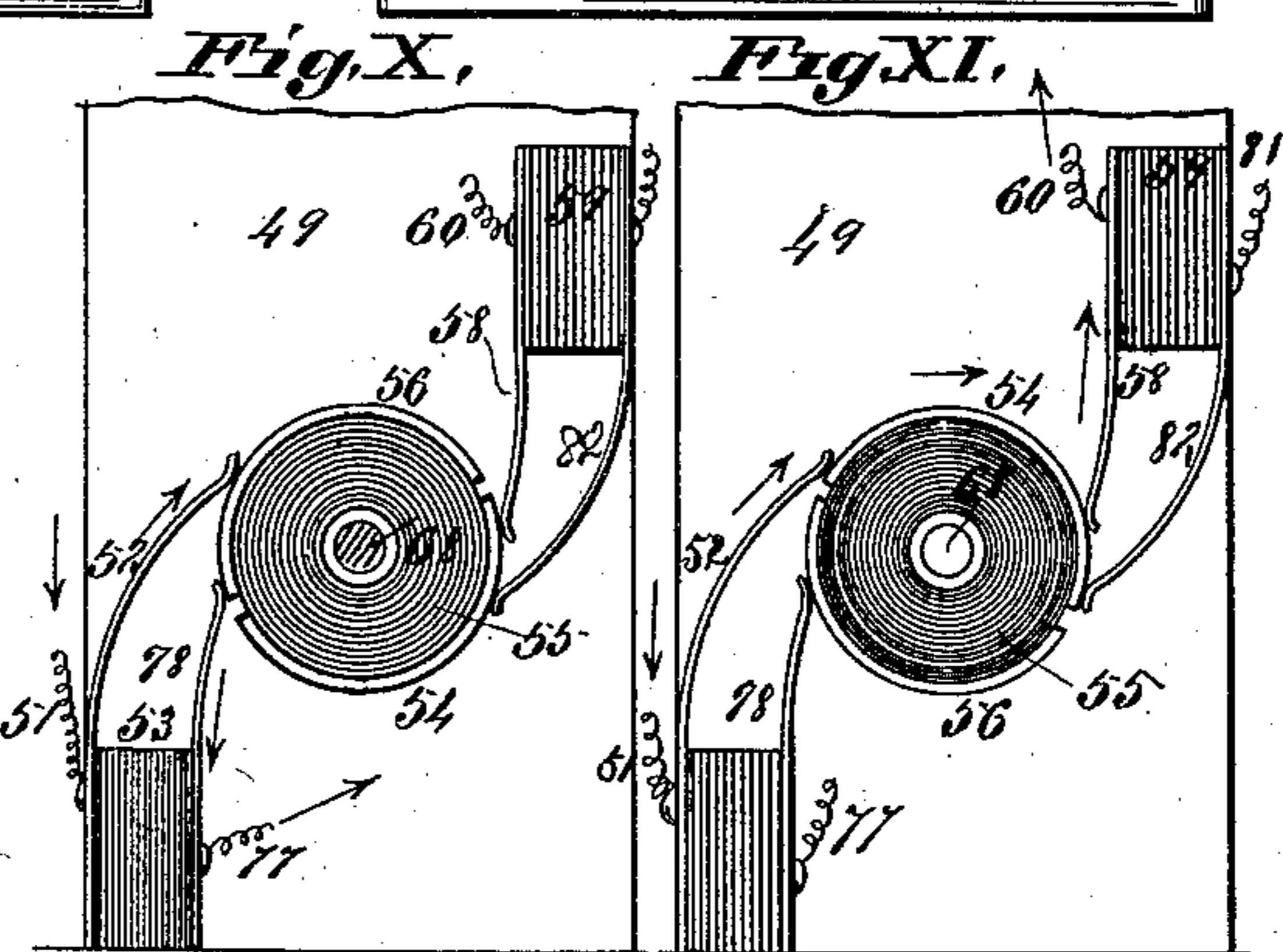
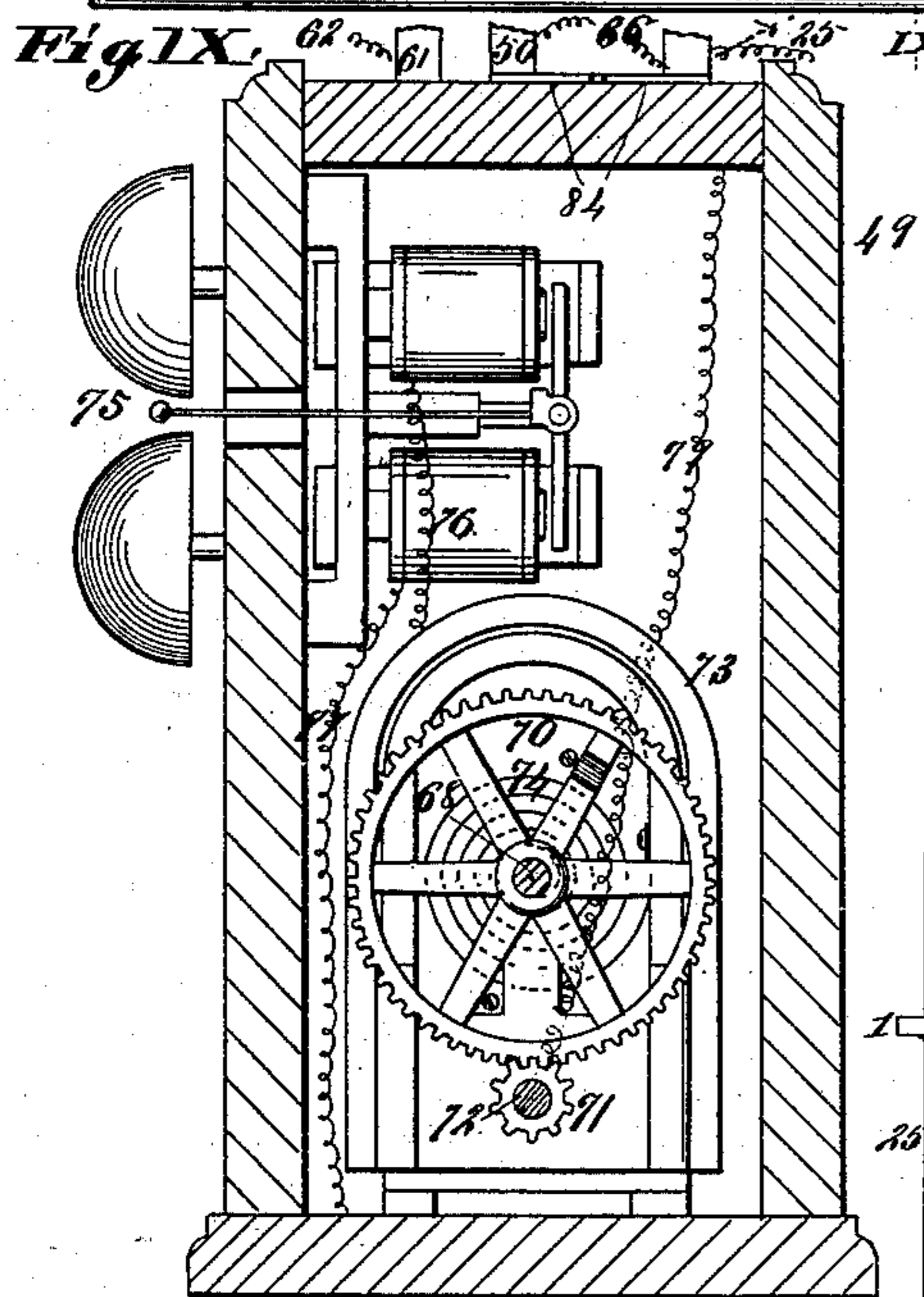
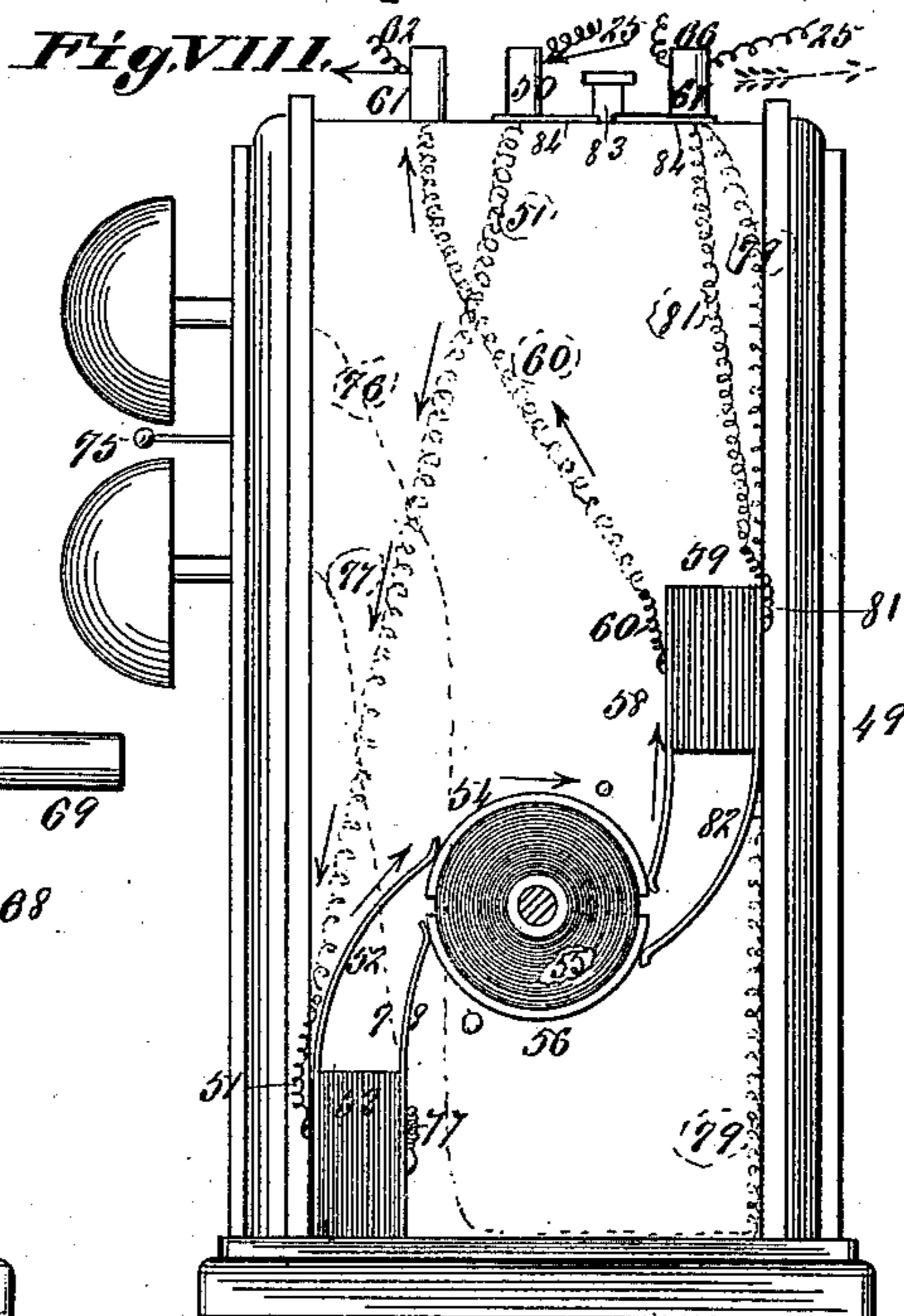
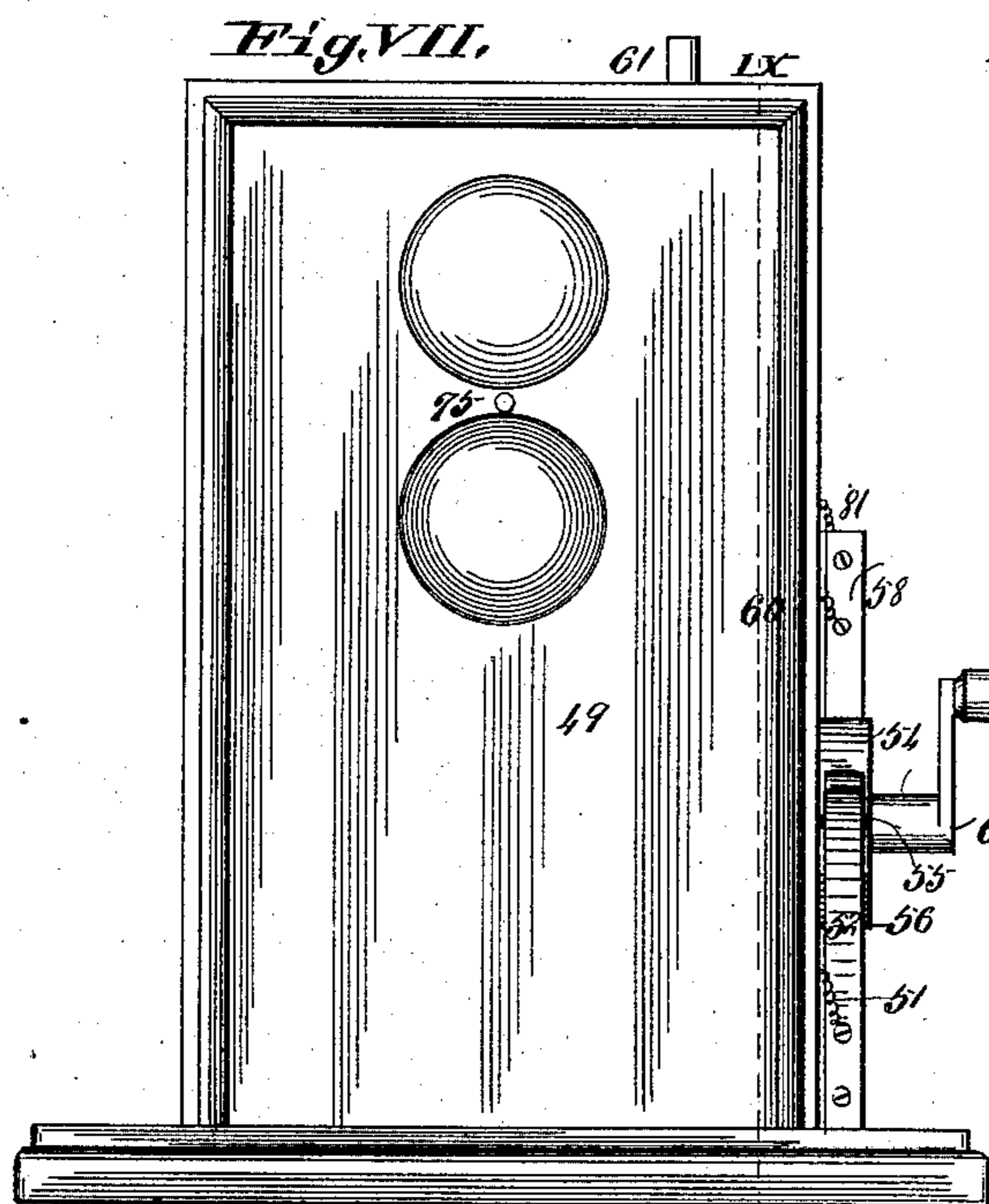
3 Sheets—Sheet 2.

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TELEGRAPHIC CALL FOR MESSENGERS, &c.

No. 389,839.

Patented Sept. 18, 1888.



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(No Model.)

3 Sheets—Sheet 3.

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TELEGRAPHIC CALL FOR MESSENGERS, &c.

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Patented Sept. 18, 1888.

Fig. XIV.

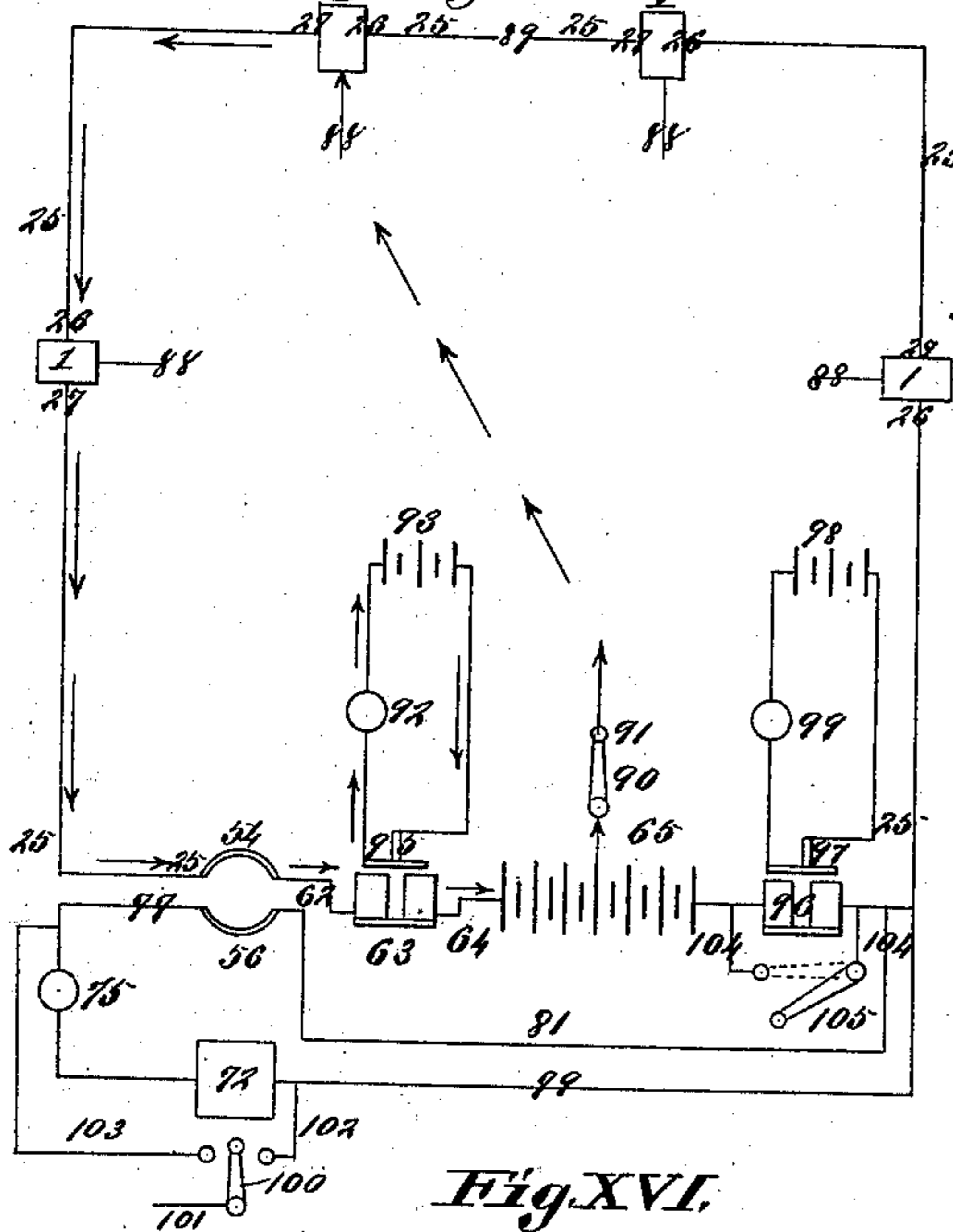


Fig. XV.

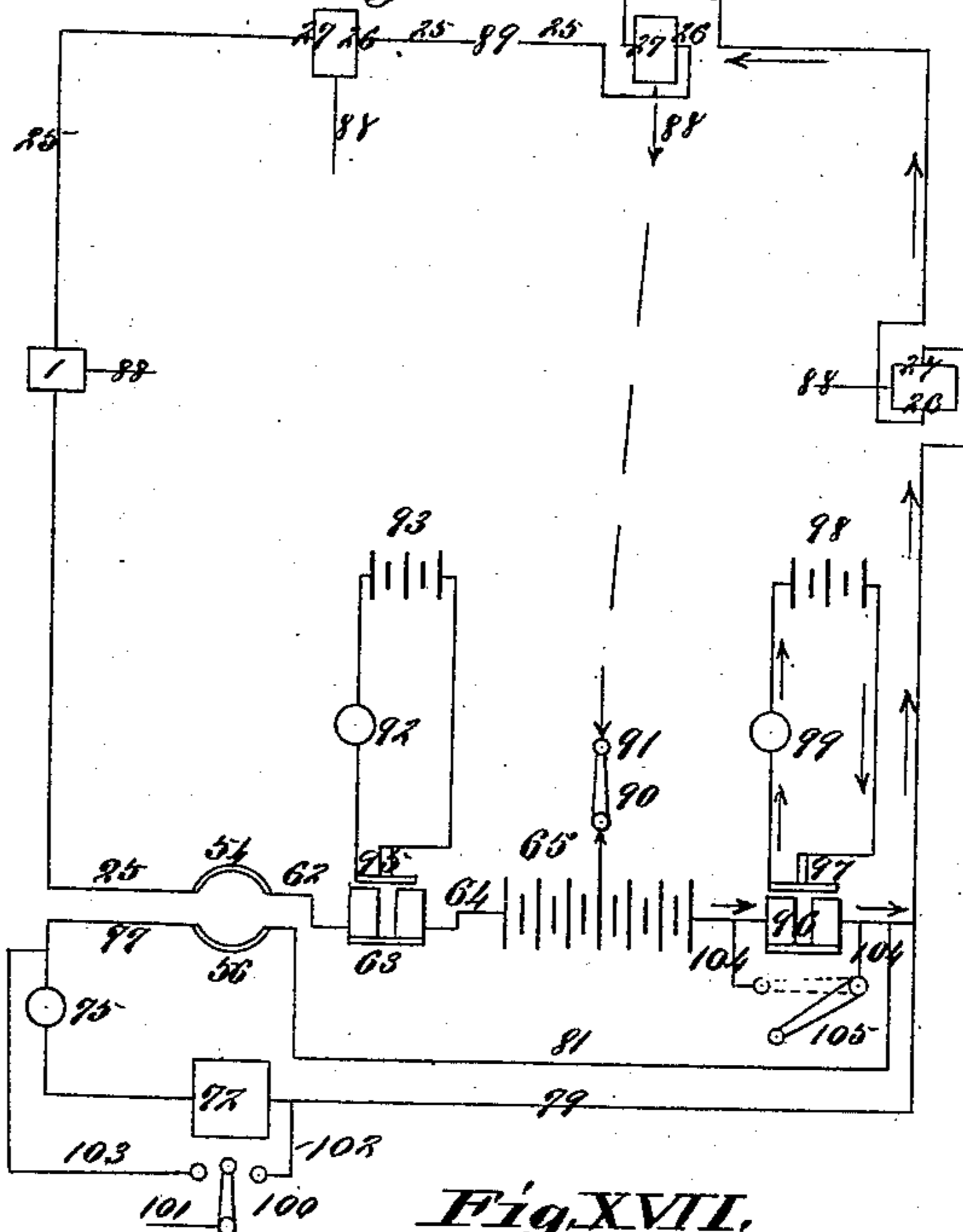


Fig. XVI.

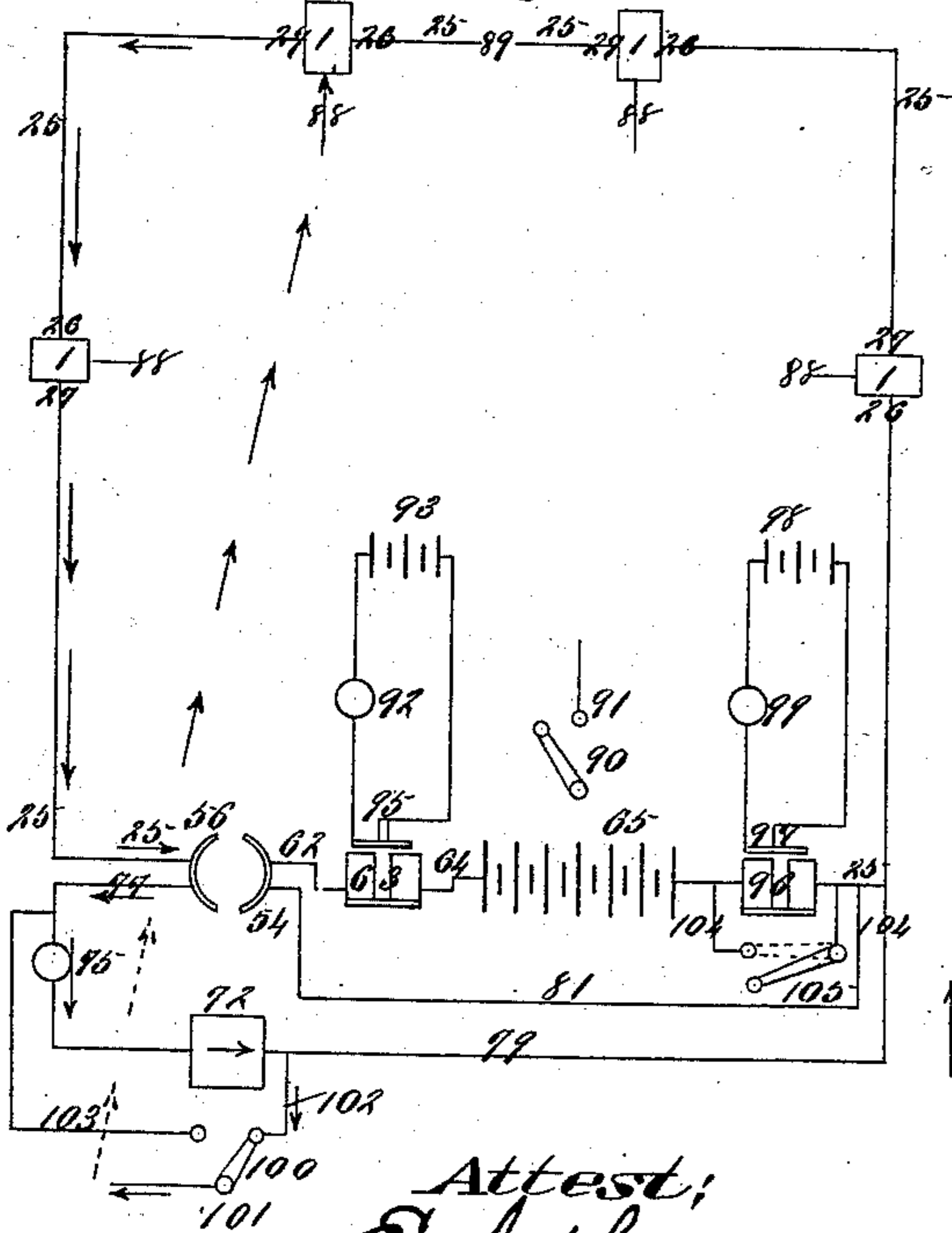
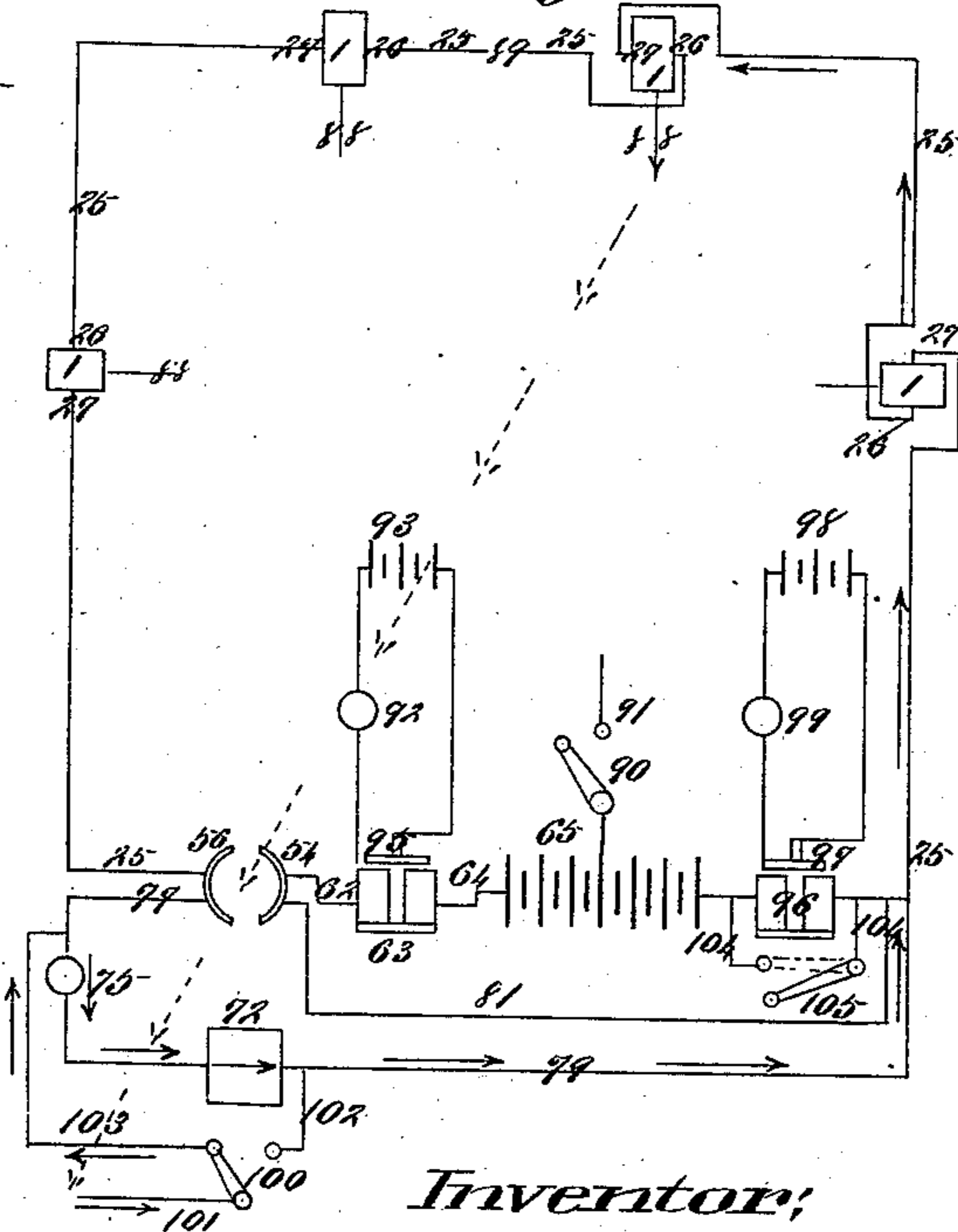


Fig. XVII.



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UNITED STATES PATENT OFFICE.

BENJAMIN DUBINSKI, OF ST. LOUIS, MISSOURI, ASSIGNOR TO CHARLES P. BUDD, LAMBERT J. KISER, AND WILLIAM J. KISER, OF SAME PLACE.

TELEGRAPHIC CALL FOR MESSENGERS, &c.

SPECIFICATION forming part of Letters Patent No. 389,839, dated September 18, 1888.

Application filed November 14, 1887. Serial No. 255,139. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN DUBINSKI, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Telegraphic Calls for Messengers, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 This is an electro-magnetic device by which, by the mere turning of a crank, a certain number is indicated by a relay-magnet at a distance—say from a private office to a messenger-office—and by turning a crank at the messenger-office acknowledgment of reception of the call is made to the private office and a bell sounded, indicating that such acknowledgment has been sent.

20 Figure I is a vertical longitudinal section of the signaling-box, showing the works in front elevation and in normal position. Fig. II is a vertical transverse section of the signaling-box, showing the works in side elevation and in normal position. Fig. III is a similar view to Fig. I, except that the parts are in position to commence the transmission of a call. Fig. IV is a view showing the box in vertical transverse section and the works in elevation in the same position as shown in Fig. III. Fig. V is a front view of the peep-hole. Fig. VI is a detail section at VI VI, Fig. IV. Fig. VII is a front elevation of the generator-box. Fig. VIII is a side elevation of the generator-box, the shaft of the switch-wheel being in section. 35 Fig. IX is a section at IX IX, Fig. VII. Figs. X and XI are detail side elevations showing the switch-wheel in different positions. Figs. XII and XIII are diagrams showing the parts in position for respectively sending call and 40 for return. Figs. XIV and XV are diagrams illustrating means for transmission of call, by means of a ground-circuit, in case of broken line, on opposite sides of break, respectively. Figs. XVI and XVII are diagrams illustrating 45 means of transmission of answer to call, by means of a ground-circuit upon opposite sides of the break, in a broken line.

1 is the box of the signaling apparatus.

2 is a shaft, which is capable of turning about

(or nearly) one fourth of a circle. Upon the 50 shaft is a hand-crank, 3, and a cog-wheel, 4, which latter turns loose on the shaft. Upon the wheel 4 is a pawl, 5, depressed by a spring, 6, and engaging a ratchet-wheel, 7, which is fast on the shaft. The construction is such 55 that when the shaft is turned forward the pawl slides free over the teeth of the ratchet-wheel, and when the handle of the crank is released the shaft is turned backward by a coiled spring, 8, one end of which is fixed to the shaft and 60 the other end fixed at 9 to the plate 10. The shaft is journaled in the two plates 10 and 11, which are connected by bars 12. As the shaft 3 is turned backward it carries with it the wheel 4, which engages a pinion, 13, on a shaft, 65 14, which carries a cog-wheel, 15, engaging a pinion, 16, upon a shaft, 17. The shaft 17 carries a scape-wheel, 18, which works on a verge, 19, that carries an arm, 20. This train of gearing and escapement is to limit and regulate the speed of the retrograde rotation of the 70 shaft 2. The shaft 14 carries a break-wheel, 21, whose periphery is notched out in such a way that, in conjunction with a brush, 22, which bears on the periphery, any number 75 may be indicated by a relay-magnet at the messenger-office. This is done by well-known means, the contact being made and broken by the projections 23 and 24 and intermediate notches. The projections 23 extend farther 80 along the periphery of the break-wheel than the projections 24, and while the latter serve to indicate dots or rapidly-recurring sounds at the relay, the former (23) give the dashes or lines or the less rapidly-recurring sounds. 85 This manner of producing marks or sounds at the relay, by means of a break-wheel at a distance, is a well-known device and needs no further explanation.

25 is the line-wire, which may be in connection with a number of signaling-boxes in series, the wire being cut at each box and its ends connected to the binding-posts 26 and 27 upon each box. From the binding-post 26 a wire, 28, extends to the brush 22, which is 95 attached to an insulating block or bracket, 29. The brush 22 has a flexible extension, 30.

31 is a vertically-sliding plate connected to

the plate 10 by guide screws 32, which pass through vertical slots 33 in the sliding plate, and are fixed in the plate 10. When the sliding plate is in its lower position, as seen in Fig. 1, the flexible extension or spring of the brush 22 bears against a connecting block or stud, 34, upon the plate, and against this block bears another flexible piece or conducting-spring, 35, which is attached to an insulating-block, 36, and which has metallic connection with the binding-post 27 by means of a wire, 37. Thus it will be seen that the current of electricity, when a signaling-box is not in use, passes through the binding-post 26, wire 28, spring 30, block 34, spring 35, wire 37, and binding-post 27.

We will now suppose that a call has to be sent. The shaft 2 is turned into the position shown in Figs. III and IV. 38 is a curved horn or finger upon the shaft 2, which, as the shaft is turned forward, acts on a stud, 39, projecting from the plate, and lifts the plate into the position shown in Figs. III and IV. This carries the stud 34 out of contact with the conducting-springs, and breaks the circuit through these springs. The horn 38 is moved into contact with the spring 40, which is in one piece, or otherwise in electric contact with the spring 35, and which is, by the wire 37, in connection with the binding-post 27. It will now be seen that the electric current will flow from the binding-post 26, through the wire 28, spring 22, break-wheel 21, horn 38, spring 40, and wire 37, to the binding-post 27.

41 is an electro-magnet, whose armature 42 has a detent-arm, 43, which, as the plate 31 attains its elevated position, is drawn beneath the lower edge of the plate by the armature-spring 44, and holds the plate in its elevated position until a current of electricity is sent through the electro-magnet, which acts on the armature and draws the detent from beneath the plate. The plate 31 is held up by the detent 43 while the break-wheel is rotating and the call being transmitted to the messenger-office, which takes place on the release of the crank 31, when the shaft 2 is turned backward by the spring 8 and the break-wheel is turned forward a single turn, indicating by the relay-magnet at the messenger-office the number of call-box. As the shaft 2 makes its backward rotation, the horn 38 is moved back to the position shown in Fig. 1 and out of contact with the spring 40. This again breaks the current through the line-wires; but the connection through the signaling-box is again made by means of the contact of the horn 38 with a spring, 46, supported on an insulating-block, 46^a, and connected by a wire, 47, with one end of the coil-wire of the electro-magnet 41. The other end, 48, of the magnet-coil connects with the binding-post 27, so that it will be seen that the circuit from the binding-post 26 to the binding-post 27 passes through the coil of the magnet 41. The force of the ordinary battery-circuit through the coils of magnet 41 is insuf-

ficient to draw the detent 43 from beneath the plate 31, so that the plate remains in its elevated position until a stronger current is sent through the line-wires. This stronger current is produced by a generator in the messenger-office, and thus the receipt of the call is made known.

49 is the generator and alarm box in the messenger's office. This has a binding-post, 50, to which one end of the line-wire is connected.

51 is a wire connecting the binding-post to a brush, 52, fixed to an insulating-block, 53, the brush bearing against an insulated conducting-plate, 54, of a switch-wheel, 55. The plate 54 is concentric with the wheel and extends about half around it. A similar insulated plate, 56, extends around the opposite side of the periphery of the wheel 55. These plates are separated from each other at their ends, so that there is no electric connection between them.

58 is a brush adapted to bear upon either of the plates 54 or 56 and attached to an insulating-block, 59. When the parts are in normal position, the brushes 52 and 58 are both in contact with the plate 54, so that the current of electricity passes from the former to the latter.

60 is a wire in contact with the brush 58 and extending to the binding-post 61, which is connected by a wire, 62, to one end of the coil of the relay-magnet 63.

64 is a wire connecting the other end of the relay-magnet coil to one pole of the galvanic battery 65. The other pole of the battery is connected by a wire, 66, to the binding-post 67, to which one end of the line-wire 25 is also connected. Thus it will be seen that when everything is in a normal position the electric current passes through the relay and the galvanic battery, and is short-circuited through the signaling-boxes and in a condition for a call to be made.

The switch-wheel 55 is on a shaft, 68, which is turned by a hand-crank, 69. The shaft 68 carries a spur-wheel, 70, that engages a pinion, 71, on the armature shaft or core 72 of an electric generator or dynamo, of which 73 is the permanent horseshoe-magnet.

74 is a spring on the shaft 68, by which said shaft is turned back to a normal position after it has been turned forward and the crank has been released from the pressure of the hand.

75 is an electric bell with conducting-wires 76 and 77 leading from the opposite ends of its coils. The wire 76 leads to the dynamo, and the wire 77 leads to a brush, 78, fixed to the insulating-block 53, and adapted for contact with the peripheral plates 54 and 56 on the switch-wheel. It will be seen that the bell-magnet is not in circuit when the switch-wheel is in normal position, as seen in Fig. VIII; but when the wheel is turned into the position as seen in Fig. X the circuit passes from the brush 52, through the plate 56, to the brush 78, through wire 77, to the coil of

the bell-magnet, and from the coil, through wire 76, to the magneto-electric generator, whose armature has been rotated a number of times by the part rotation of the wheel 70, and a current of electricity produced. I do not confine myself to any special kind of generator or dynamo. The other pole of the generator is connected by a wire, 79, to the binding post 67, to which one end of the line-wire 25 is connected, and thus the generator-current is sent through the line-wire with force sufficient to draw the detent 43 from beneath the plate 31, and the plate descends, carrying the letters "O. K." into line with the peep-hole, so that they can be seen, and will indicate that the call has been received at the messenger-office.

80 is a spring tending to draw down the plate 31. This spring enables the use of the signaling-box in a horizontal instead of a vertical position.

81 is a wire connected to the binding-post 67 and to a brush, 82, secured to the insulating-block 59. This brush 82 is adapted to bear against the plates 54 and 56 of the switch-wheel.

It will be seen that when a call is made the generator and bell 75 are out of circuit and the relay and galvanic battery are in circuit, and that when a return is made from the messenger's office acknowledging the call, the generator and bell 75 are in circuit and the relay and galvanic battery out of circuit, because the generator-wire 79 has direct connection, through the binding-post 67, with one end of the line-wire.

The position of the switch-wheel shown in Fig. XI is that which it attains when it has been turned a little distance from the normal position. In this position the bell 75 and generator are out of circuit, as the brush 78 is the only one bearing against the conducting plate 56. At this time there is direct connection between the brushes 52, 58, and 82 by means of the plate 54, so that the relay-magnet and galvanic battery are out of the line-wire circuit, as the current from the galvanic battery passes through the wire 66 to the post 67, wire 81, brush 72, plate 54, brush 58, wire 60, post 61, and wire 62 to the relay and from the relay to the galvanic battery, so completing the circuit.

83 is a plug which may be put between the two plates 84, which are respectively in connection with the two line-posts 50 and 67, so as to short-circuit the current from post to post, cutting out the battery, relay, generator, and the bell 75 when desired.

85 is a spring in contact with the brush 22. 86 is a spring attached by an insulating-block to the plate 10.

88 is a grounded wire in contact with spring 86. The construction is such that whenever the plate 31 is raised an insulating wood or rubber knob, 87, on the plate 31 forces the spring 86 against the spring 85, and so ground-

connection is made with the brush 22, and by this means the earth may be thrown into circuit and used in case the line-wire may be broken in any place.

It will be understood that the circuit is made by means of the earth and that part of the line-wire 25 extending from the signaling-box which may be in use to the messenger-office. A break in the line-wire is shown at 89.

To enable the apparatus in the messenger-office to be used with a broken circuit, some additions are required, as seen in the Diagrams XIV, XV, XVI, and XVII.

In Fig. XIV is represented the arrangement for sending a call to the messenger-office. The galvanic battery 65 consists of a number of cells in series, and whose central one is connected by a switch-arm, 90, which has ground-connection at 91, and so has connection through the ground with the grounded wire 88 of the signaling-box. Now it will be seen that on a call being sent the current will pass through the half of the galvanic battery upon the left side in the diagrams and through the switch-arm 90 to the ground, and through the signaling-box to line-wire 25, to the plate 54, and through the relay to the galvanic battery. In connection with the relay is a single tap-bell, 92, operated by a galvanic battery, 93, whose circuit is closed by the release of the relay-armature 95 by the electro-magnet. A single tap is given to the bell each time the circuit is closed. Thus the connection is made with all of the signaling-boxes having connection with the messenger-office upon the side marked with the arrows in Fig. XIV. With the boxes on the other side of the break 89 in the wire, the wires 25 must be transposed between the binding-posts 26 and 27, so that the electric current will not be short-circuited and avoid the break-wheel, for it will be seen that if this transposition were not made the current would simply pass from the binding-post 26, through the wire 28, to the brush 22, and through springs 85 and 86 and grounded wire 88, thus avoiding the break-wheel; whereas if the wire 25 is taken from post 26 and fixed in post 27, the current will pass from the binding-post 27 through wire 37, to the spring 40, and through the break-wheel to the brush 22, and through the springs 85 and 86. In short, the part of the line-wire used in making the call must be connected to the binding-post 27.

As shown in Fig. XV, the electric current passes through the right-hand end of the galvanic battery 65 through the supplemental relay 96, whose armature 97 is attracted, thus keeping the circuit of the supplemental battery normally open, the same being closed when the line-circuit is broken by a notch or notches in the break-wheel 21 in a call-box, at which time the said armature is released, and, closing the supplemental circuit, causes a tap of the bell 99 for each notch in the break-wheel. From the relay the current passes along the line-wire 25 to the binding-post 27, then

through wire 37, spring 40, horn 38, and plate 31 to the break-wheel, and from that to the brush 22, springs 85 and 86, grounded wires 88, to the ground, and through the ground to the grounded wire 91 and switch-arm 90 to the galvanic battery.

In Fig. XVI is illustrated the manner of sending the acknowledgment of a call, (in case of a break, 89, in the line-wire,) using the ground in circuit and the part of the line-wire 25 with arrows beside it, indicating direction of positive current. The switch-arm 90 is first turned out of connection with the ground at 91, and the switch-arm 100 is thrown into the position shown, so as to connect a grounded wire, 101, with a wire, 102, in contact with the wire 79, so as to connect the latter with the ground. The turning of the switch-wheel into the position shown throws the bell 75 and the magneto-electric generator (at 72) in circuit with the line-wire 79, so that the generated current passes through the wire 102 and switch-arm 100 to the grounded wire 101. The current of electricity will then pass through the ground to the wire 88, springs 86 and 85, brush 22, break-wheel 21, horn 38, spring 46, wire 47, coils of the electro-magnet 41, and the detent 43 will be drawn from beneath the plate 31, allowing it to descend from the electro-magnet. The current passes along wire 48 to the binding-post 27 and along line-wire 25 to the plate 56 of the switch-wheel, thus completing the circuit. It will be seen that the galvanic batteries and their appurtenances are thrown out of circuit.

In Fig. XVII is illustrated, by diagram, the manner of sending an acknowledgment of a call along the part of the line-wire in which the direction of the positive current is indicated by arrows, the ground being used in the circuit. It is understood that the line-wire has been transposed in the binding-posts 26 and 27 when the call has been made, and they remain in this position until the break 89 is repaired. The switch-arm 90 is first disconnected from the ground-connection 91, then the arm 100, having ground-connection at 101, is connected with the wire 103, which is in connection with wire 77. The current produced by the generator at 72 passes along the line-wire 25 to the signaling-box and returns through the ground to 101 and through the bell 75 to the generator, its course being through the electro-magnet 44 and through the binding-post 27 and ground to the wire 77. When the line-wire 25 is unbroken, the supplemental relay 96 is cut out or short-circuited by a wire, 104, and switch-arm 105.

Any other letters, or other mark, such as the number of the box, may be used in place of the letters "O. K." and for the same purpose.

I claim as my invention--

1. In an electrical signaling-box, the combination of an electro-magnet whose armature carries a detent, 43, a sliding plate, 31, carrying a stud, 34, and springs 30 and 35 in electric connection with the ends of the line-wire

and in position to be connected by the stud 34 on the descent of the plate 31, for the purpose set forth.

2. The combination of the sliding plate with a stud thereon, a hand-shaft, 2, with a horn, 38, a spring, 40, in connection with the binding-post 27, and a spring, 46, in connection with the coil of the electro-magnet 41, substantially as and for the purpose set forth.

3. The combination, in a signaling-box, of the sliding plate 31, carrying a conducting stud, 34, the springs 30 and 35, adapted for contact with the stud 34 in the depressed position of the plate, and in connection with the opposite ends of the line-wire a hand-shaft carrying a horn, 38, adapted to lift the plate 31 and for connection with the springs 40 and 46, substantially as and for the purpose set forth.

4. The combination, in a signaling-box, of the vertically-moving plate 31, with conducting-stud 34 and insulating-block 87, the short-circuit springs 30 35 in electric connection with the different ends of the line-wire, ground-circuit springs 85 86, with grounded wire 88, brush 22, and spring 40 in connection with the different ends of the line-wire, break-wheel 21, and horn 38 on the motive-shaft of the break-wheel, substantially as and for the purpose set forth.

5. The combination, in a signaling-box, of a hand-shaft with a horn, 38, thereon, a sliding plate, 31, with a stud engaged by the horn, a break-wheel actuated by the hand-shaft, brush 22, and spring 40 in electric connection with one end of the line-wire, an electro-magnet whose armature has a detent, 43, holding the plate 31 in elevated position, spring 46 in electric connection with one end of the coil of the magnet, and wire connecting the other end of the coil to the line-wire, substantially as and for the purpose set forth.

6. The combination of a signaling-box, a line-wire connected therewith, so that the electric current passes through the box, a relay-magnet, a galvanic battery, a magneto-electric generator, and a switch-wheel, 55, with plates 54 and 56, brushes 52, 58, 78, and 82, and conducting-wires, substantially as and for the purpose set forth.

7. The combination of a signaling-box, a line-wire connected thereto, a relay-magnet and galvanic battery in line with each other, an electric bell and magneto-electric generator in line, and a switch consisting of the wheel 55, having the strips 54 and 56, and the brushes 52 58 78 82, bearing on the periphery of said wheel and having suitable connections, as set forth.

8. The combination of a signaling-box, a line-wire with the signaling-box in circuit, a galvanic battery, an electric bell and magneto-electric generator, a ground-switch arm, 90, grounding the galvanic battery, as set forth, the switch-wheel 55, with brushes 52, 58, 78, and 82, and conducting-wires, as set forth, two relay-magnets, 63 and 96, electric bells 92 and

99, actuated by the relays, and switch-arm 100, for grounding the circuit of the magneto-electric generator, substantially as and for the purpose set forth.

- 5 9. The combination of a line-wire, 25, with signaling-box in circuit, a galvanic battery and magneto-electric generator, and a switch-wheel, 55, with plates 54 and 56, brushes 52,

58, 78, and 82, with described connecting-wires and gear-connection between the wheel-shaft 10 and the armature-shaft of the generator, substantially as and for the purpose set forth.

BENJAMIN DUBINSKI.

In presence of—

SAML. KNIGHT,
EDWD. S. KNIGHT.