G. S. TIFFANY.

TELAUTOGRAPH.

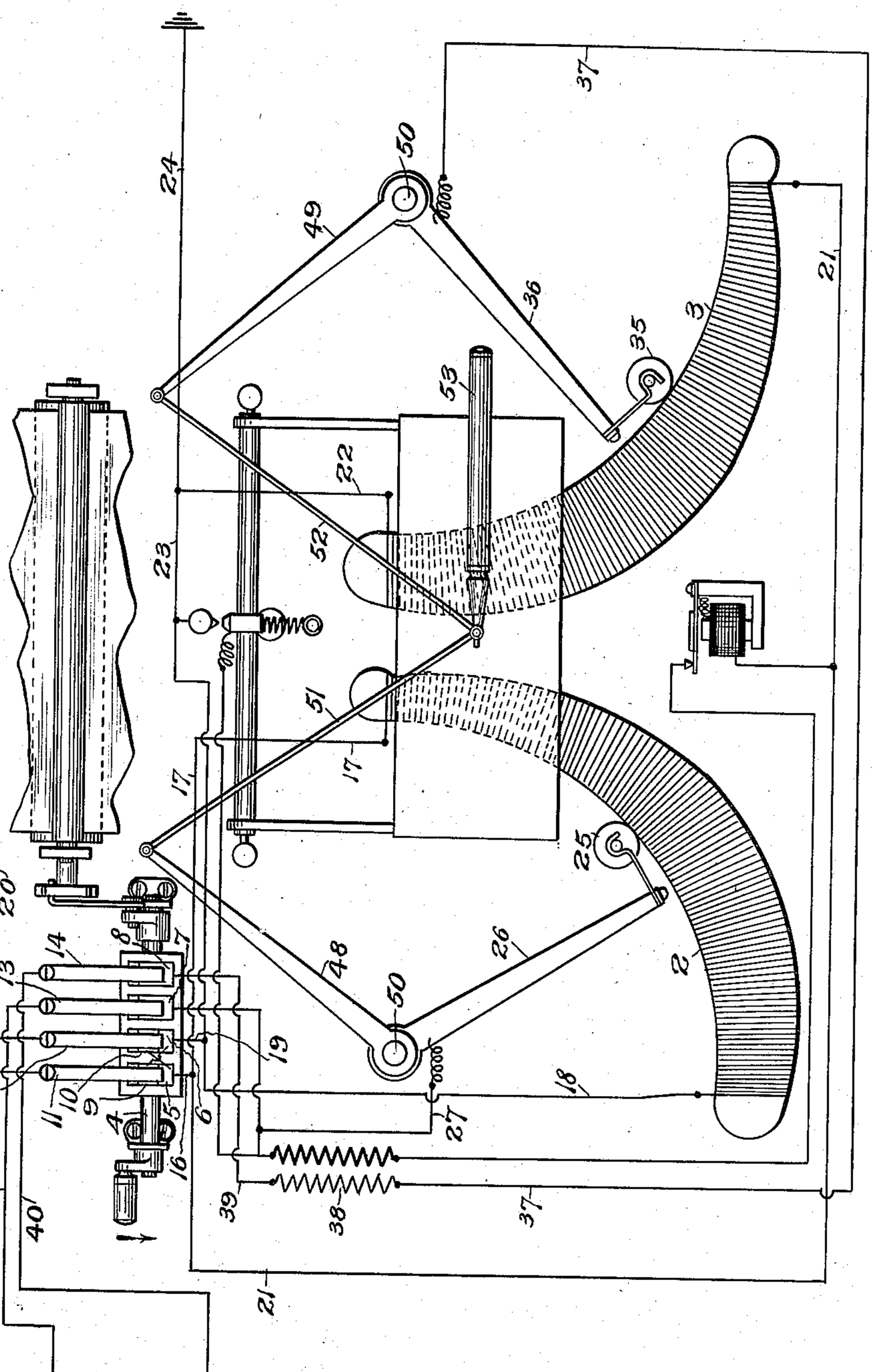
APPLICATION FILED MAY 16, 1907. RENEWED APR. 28, 1909.

924,512.

Patented June 8, 1909.

3 SHEETS—SHEET 1.

Fig. 1.



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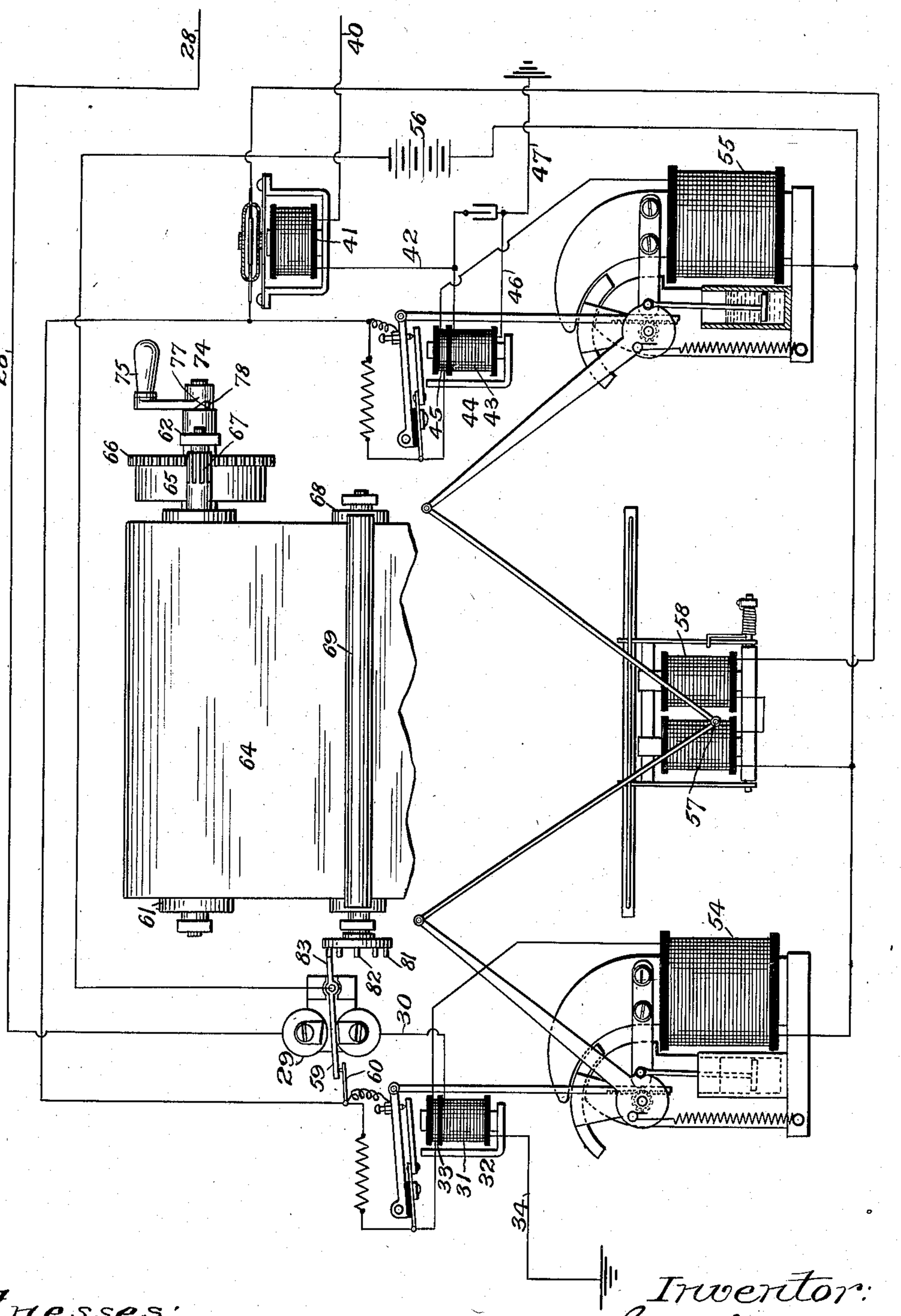
3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

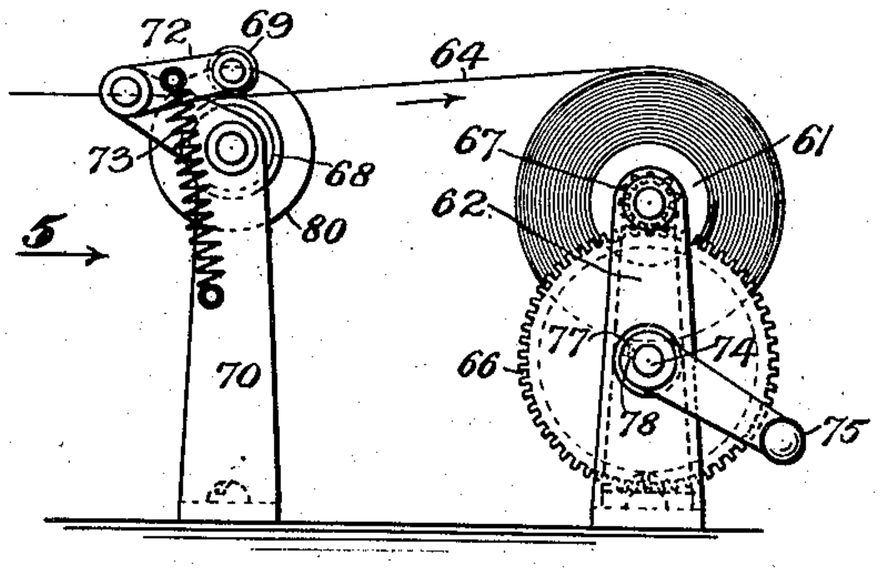


Fig. 4.

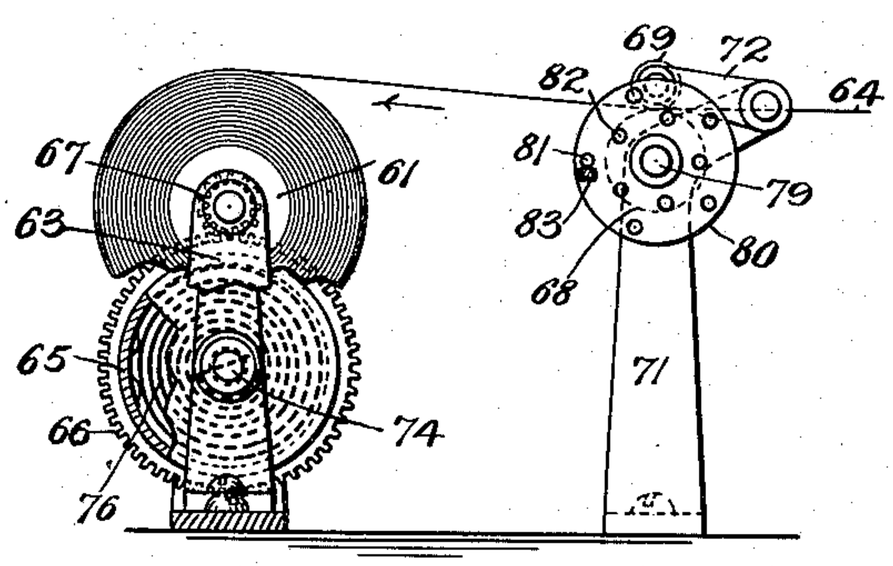
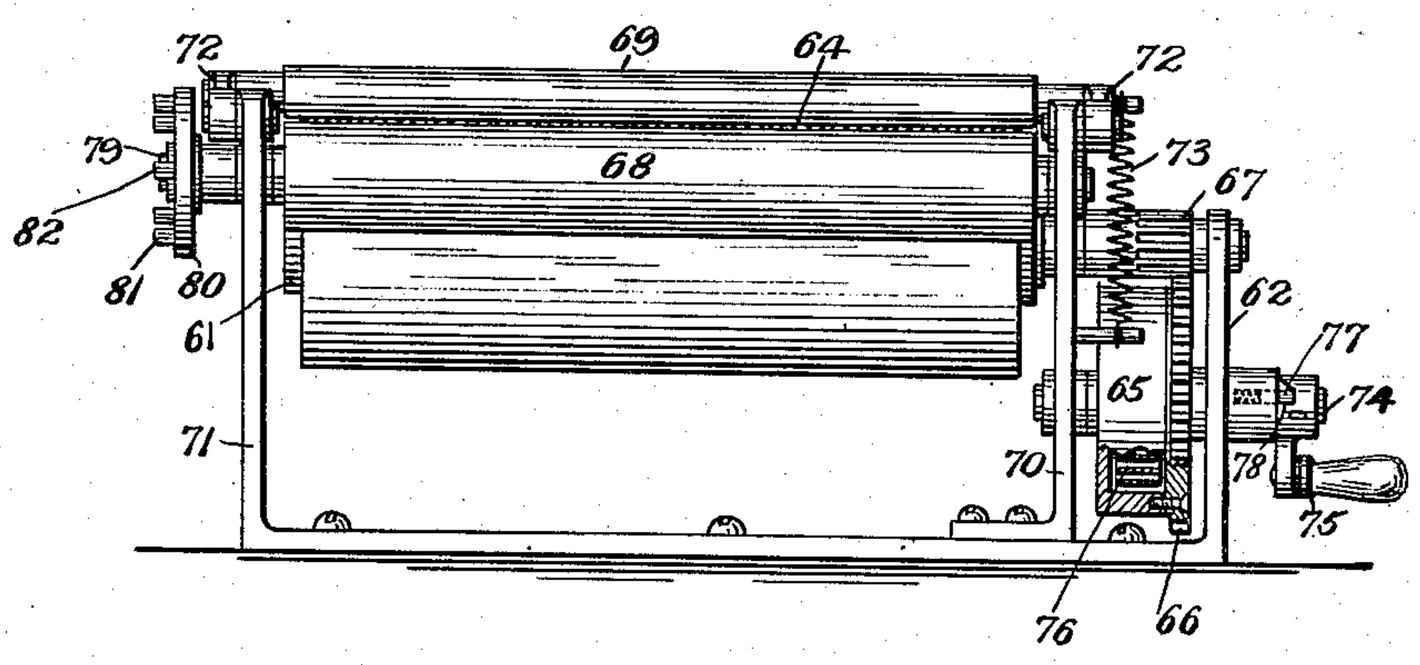


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE STEELE TIFFANY, OF SUMMIT, NEW JERSEY, ASSIGNOR TO THE GRAY NATIONAL TELAUTOGRAPH COMPANY, OF NEW YORK, N. Y., A CORPORATION OF VIRGINIA.

TELAUTOGRAPH.

No. 924,512. Specification of Letters Patent. Patented June 8, 1909.

Original application filed July 6, 1906, Serial No. 324,960. Divided and this application filed May 16, 1907, Serial No. 374,038. Renewed April 28, 1909. Serial No. 492,768.

To all whom it may concern:

Be it known that I, GEORGE S. TIFFANY, a citizen of the United States, residing at Summit, county of Union, and State of New Jersey, have invented certain new and useful Improvements in Telautographs, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The invention of this application, which is a division of an application filed by me July 6, 1906, Serial No. 324,960, relates to improvements in paper shifting mechanisms for the receiving instrument of telautographic systems; it being the object of the present invention to provide a shifting mechanism controlled from the distant transmitting instrument and which will not only feed the paper step by step over the writing field of the receiver a distance at each step equal to the feed of the paper at the transmitting instrument, but will also store or reel up the strip as written upon so that a permanent and convenient chronological record may be had of messages received.

Figures 1 and 2 are diagrammatic views of the transmitting and receiving instruments, respectively, of a telautographic system equipped with paper shifting mechanism embodying the present invention. Figs. 3 and 4 are end elevations, and Fig. 5 a front elevation, of the paper shifting mechanism embodying the present invention.

The telautographic apparatus shown in the drawings is identical with that illustrated in my prior application aforesaid, and said apparatus therefore need only be described briefly here, reference being made to said application for a more detailed description thereof.

The apparatus shown is of the type in which the lateral movements of the receiving pen are effected by variations in the current strength on the two main lines from the transmitting instrument, such variations in current strength being in turn effected by the lateral movements of the transmitting tracer in writing, so that, as the tracer is thus moved laterally, the receiving pen is moved in the same direction and to the same extent and will thus reproduce the movements of and writing performed by the transmitting tracer.

The source of energy for the main line circuits is a battery 1 at the transmitting instrument, the currents from which are shunted into the main line circuits through a pair of rheostats 2, 3. The transmitting instrument is also provided with an oscillating master switch 4 of suitable insulating material provided with a series of contact plates 5, 6, 7, 8, 9, 10 coacting with a series of contact springs 11, 12, 13, 14, and through the latter controlling the making and breaking of the two main line circuits to the distant receiver (Fig. 2) as well as the independent circuit or circuits connecting rheostats 2, 3 with battery 1. Contact plates 5 and 10 are connected together, as shown in Fig. 1, as are also contact plates 6 and 9, for a purpose hereinafter explained.

The master switch 4, as shown in Fig. 1, is in position for the transmission of messages to the distant receiver (Fig. 2). In this position the independent circuit from battery 1 is closed, this circuit consisting of wire 15 from the positive pole of said battery, contact spring 11, contact plate 5, on master switch 4, and wire 16 where the circuit divides, one part of the circuit consisting of wire 17, left hand rheostat 2, wire 18, wire 19, contact plate 6 on master switch 4, contact spring 12, and wire 20 to the negative pole of battery, while the other part of the circuit consists of wire 21, right hand rheostat 3, wire 22, wire 23, wire 19, contact plate 6, and wire 20 to the negative pole of the battery,—this pole of the battery being connected with ground by wires 23, 24. In this position of master switch also, the two main line circuits to the distant receiver are also closed. The left hand main line circuit consists (Fig. 1) of a contact roller 25, an arm 26 carrying it, wire 27, contact plate 7 on master switch 4, contact spring 13, wire 28, and (Fig. 2) wire 28, the winding of a polarized relay 29, wire 30 leading therefrom, one winding 31 of a relay 32 (which has a second winding 33), wire 34, to ground, and (Fig. 1) from ground, by wires 24, 23, 19, contact plate 6, contact 12, and wire 20 to the negative pole of battery 1. The right hand main line circuit consists of contact roller 35, arm 36 carrying it, wire 37, secondary winding 38 of an induction coil, wire 39, contact plate 8 on the master

switch 4, contact spring 14, wire 40, and (Fig. 2) wire 40, the winding of a relay 41, wire 42, one winding 43 of a relay 44 (corresponding to relay 31 and having a second winding 45), wires 46, 47 to ground, and (Fig. 1) from ground, by wires 24, 23, 19, contact plate 6, contact 12, and wire 20 to the negative pole of battery 1. Arms 26, 36 are connected rigidly with arms 48, 49, respectively, each pair of arms 26, 48 and 36, 49 being pivotally mounted, as at 50, so as to swing freely in a horizontal direction, and said arms 48, 49 have connected with them, by ball and socket joints, a pair of arms 51, 52, respectively, in the converging pivotally connected ends of which is loosely mounted the transmitting tracer 53.

As fully described in my aforesaid prior application, when the master switch 4 is in the position shown and the transmitting tracer 53 is moved laterally, as in writing, contact rollers 25, 35 are moved along rheostats 2, 3, respectively, assuming different positions along them according to the direction and extent to which the tracer 53 is moved laterally, and positive currents, varying in strength in accordance with the lateral movements of the tracer, will therefore be shunted from battery 1 through rheostats 2, 3 into the left and right main line circuits just described. The currents thus shunted into the left main line circuit pass, by wires 28, 30, 34, through relays 29, 32 at the left hand side of the receiving instrument, while those shunted into the right main line circuit pass, by wires 40, 42, 46, 47, through relays 41, 44, at the right hand side of the receiving instrument. Relays 32, 44 control a pair of magnets 54, 55, included in a local circuit from a battery 56, and which in turn control the lateral movements of the receiving pen 57; relay 41 controls a pen lifting magnet 58 which in turn controls the movements of the receiving pen to and from its writing field; and polarized relay 29 controls the local circuit just referred to from battery 56 and also the operation of the paper shifting mechanism constituting the present invention. These devices, and the circuits and other devices with which they are shown connected, are fully described in my prior application aforesaid, and for this reason they need not be further described here except in so far as the polarized relay 29 and its control of the paper shifting mechanism are concerned. Before describing this paper shifting mechanism, it may be well to note that when positive currents traverse the main lines from battery 1, as in writing and as in the case when master switch 4 is in the position shown, that traversing the left main line will bias armature 59 of relay 29 against a contact 60 and thus close the local circuit referred to from battery 56 through magnets 54, 55, and that when, as will hereinafter appear, the current traversing the left main line from battery 1 is reversed, armature 59 will be biased away from contact 60, thus opening this local circuit. This reversal, in direction, of the current traversing the left main line, is controlled by the master switch 4 at the transmitting instrument, as will presently appear.

The paper shifting mechanism at the receiving instrument consists of a reel 61, journaled in standards 62, 63, and on which the leading end of the record strip 64 for the receiving pen is wound; a spring barrel 65 provided with a gear 66 meshing with a pinion 67 on the shaft of reel 61, (the tendency of said barrel being to rotate said reel to wind the strip 64 thereon) and a pair of retarding rollers 68, 69 between which said strip passes on its way from the writing field of the receiving pen to the wind-up reel 61, and which normally resist movement of the strip. The roller 68 is journaled in standards 70, 71, while the roller 69 is journaled in the ends of arms 72 pivotally mounted in said standards, a spring or springs 73, connected with said standards and arms, or one of each, serving to hold the roller 69 yieldingly engaged with roller 68, with the paper strip 64 between them. The barrel 65 turns on a shaft 74 journaled in standard 63 and provided with a handle 75 by which it may be rotated, and said barrel contains a coiled spring 76, the outer end whereof is connected with the barrel, its inner end being connected with shaft 74. This spring is wound up by turning handle 75 and shaft 74 in a counter-clockwise direction, retrograde movement of the handle and shaft when the spring is so wound being prevented by a spring pressed pin 77 inserted in a hole in standard 63 and adapted to engage a shoulder 78 on the hub of the handle. When spring 76 is thus wound up its tendency is to turn in the direction of the arrow, Figs. 3, 4, and rotate reel 61, but this tendency is resisted by the retarding rolls 68, 69, which in turn are normally held against rotation by means which will now be described.

Referring to Figs. 3–5 it will be observed that the shaft 79 of roll 68 has fixed to its left hand end a disk 80, the outer face of which is provided with two concentric rows of pins 81, 82, which are designed to be alternately engaged by a tail piece 83 (see Fig. 2) with which the armature 59 of polarized relay 29 is provided, rotation of rolls 68, 69, and therefore movement onward of strip 64, being prevented while said tail piece is so engaged with any of said pins. The tail piece 83 is disengaged from a pin 81 or 82, as the case may be, in the following manner: As the parts are shown in Fig. 2 a positive current is on line from the trans-

mitting instrument, and armature lever 59 is biased against contact stop 60, its tail piece 83 being therefore in engagement with a pin 81, in the outer row on disk 80. When the parts are in this position, the record strip 64 may be shifted by rocking master switch 4 at the transmitter forward from the position in which it is shown in Fig. 1, and when it is so rocked contact plates 5, 6, will pass out of contact with contact springs 11, 12, which will then contact with contact plates 9, 10, respectively, on master switch 4. As before stated, contact plate 5 is electrically connected with contact plate 10, while contact plate 6 is electrically connected with contact plate 9, so that when the master switch 4 is thus rocked the polarity of the current from battery 1, in both main line circuits will be reversed. Armature 59 of polarized relay 29 will therefore be moved away from stop 60 and its tail piece 83 swung inwardly out of engagement with the pin 81 in the outer row on disk 80 and into position for engagement with the following pin 82 in the inner row, the pins in the two rows being staggered as shown. Barrel 65 will then rotate reel 61 and wind strip 64 thereon until movement of the latter is arrested by engagement of tail pieces 83 with the next following pin 82 in the inner row. Master switch 4 being then rocked rearwardly to the position shown in Fig. 1, the polarity of the current on line is again reversed to positive, armature 59 reassuming the position in which it is shown in Fig. 2 and tail piece 83 passing out of engagement with the inner pin 82 and into position for engagement with the next following pin 81 in the outer row, thus permitting further movement of strip 64. This rocking movement of the master switch 4 also shifts the paper strip 84 at the transmitter as described in my said prior application. With the paper shifting mechanism at the transmitter and that just described at the receiver properly adjusted with relation to each other, it will be obvious that each time master switch 4 is thus rocked to shift the paper at the transmitter, the paper at the receiver will be correspondingly shifted a like amount, and further, that by rocking the master switch 4 back and forth, the paper at the transmitter may be shifted to any extent desired by the transmitter operator.

What I claim is:—

1. In a telautographic system, the combination with one of the main line circuits connecting the transmitting and receiving instruments, of a spring actuated reel normally tending to wind up the recording paper strip of the receiving instrument and draw it over the writing field, an escapement normally resisting movement of the paper, and a magnet in said main line circuit controlling said escapement independently of the movement of the pen or other recording instrument, substantially as described.

2. In a telautographic system, the combination with one of the main line circuits connecting the transmitting and receiving instruments, of a spring-actuated reel normally tending to wind up the recording paper strip of the receiving instrument and draw it over the writing field, a retarding device engaging the paper and normally resisting movement thereof, an escapement for said retarding device, and a magnet in said main line circuit controlling said escapement independently of the movement of the pen or other recording instrument, substantially as described.

3. In a telautographic system, the combination with one of the main line circuits connecting the transmitting and receiving instruments, of a spring-actuated reel normally tending to wind up the recording paper strip of the receiving instrument and draw it over the writing field, a retarding device comprising two rotative members engaging opposite sides of the paper and normally resisting movement thereof, an escapement for said retarding device, and a magnet in said main line circuit controlling said escapement independently of the movement of the pen or other recording instrument, substantially as described.

4. In a telautographic system, the combination with one of the main line circuits connecting the transmitting and receiving instruments, of a spring-actuated reel normally tending to wind up the recording paper strip of the receiving instrument and draw it over the writing field, a retarding device comprising two rotative members engaging opposite sides of the paper and normally resisting movement thereof, an escapement for said retarding device, and a magnet in said main line circuit controlling said escapement, said escapement comprising two concentric and staggered rows of projections at the end of one of the members of the retarding device and a part moved by the magnet and alternately engaging said projections, substantially as described.

5. In a telautographic system, the combination with one of the main line circuits connecting the transmitting and receiving instruments, of a spring-actuated reel normally tending to wind up the recording paper strip of the receiving instrument and draw it over the writing field, a retarding device comprising two rotative members engaging opposite sides of the paper and normally resisting movement thereof, an escapement for said retarding device, and a magnet in said main line circuit controlling said escapement, said escapement comprising two concentric and staggered rows of projections at the end of one of the members of the

retarding device and a part carried by the armature of the magnet and alternately engaging said projections, substantially as described.

6. In a telautographic system, the combination with one of the main line circuits connecting the transmitting and receiving instruments, of a spring actuated reel normally tending to wind up the recording paper strip of the receiving instrument and draw it over the writing field, an escapement normally resisting movement of the paper, and a magnet in said main line circuit controlling said escapement independently of the movement of the pen or other recording instrument, the armature of said magnet having a part constituting one member of said escapement, substantially as described.

7. In a telautographic system, the combination with one of the main line circuits connecting the transmitting and receiving instruments, of a spring-actuated reel normally tending to wind up the recording paper strip of the receiving instrument and draw it over the writing field, a retarding device engaging the paper and normally resisting movement thereof, an escapement for said retarding device, and a magnet in said main line circuit controlling said escapement independently of the movement of the pen or other recording instrument, the armature of said magnet having a part constituting one member of said escapement, substantially as described.

8. In a telautographic system, the combination with one of the main line circuits connecting the transmitting and receiving instruments, of a spring actuated reel normally tending to wind up the recording paper strip of the receiving instrument and draw it over the writing field, an escapement normally resisting movement of the paper, and a polarized relay in said main line circuit controlling said escapement independently of the movement of the pen or other recording instrument, substantially as described.

9. In a telautographic system, the combination with one of the main line circuits connecting the transmitting and receiving instruments, of a spring-actuated reel normally tending to wind up the recording paper strip of the receiving instrument and draw it over the writing field, a retarding device engaging the paper and normally resisting movement thereof, an escapement for said retarding device, and a polarized relay in said main line circuit controlling said escapement independently of the movement of the pen or other recording instrument, substantially as described.

10. In a telautographic system, the combination with one of the main line circuits connecting the transmitting and receiving instruments, of a spring actuated reel normally tending to wind up the recording paper strip of the receiving instrument and draw it over the writing field, an escapement normally resisting movement of the paper, and a polarized relay in said main line circuit controlling said escapement independently of the movement of the pen or other recording instrument, the armature of said relay having a part constituting one member of said escapement, substantially as described.

11. In a telautographic system, the combination with one of the main line circuits connecting the transmitting and receiving instruments, of a spring-actuated reel normally tending to wind up the recording paper strip of the receiving instrument and draw it over the writing field, a retarding device engaging the paper and normally resisting movement thereof, an escapement for said retarding device, and a polarized relay in said main line circuit controlling said escapement independently of the movement of the pen or other recording instrument, the armature of said relay having a part constituting one member of said escapement, substantially as described.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses.

GEORGE STEELE TIFFANY.

Witnesses:
A. WHITE,
A. JOURNEAY.