No. 676,854. Patented June 18, 1901.

H. SHOEMAKER.

AUTOMATIC TELEGRAPH.

(No Model.) (Application filed Feb. 12, 1901.)

2 Sheets—Sheet 1.

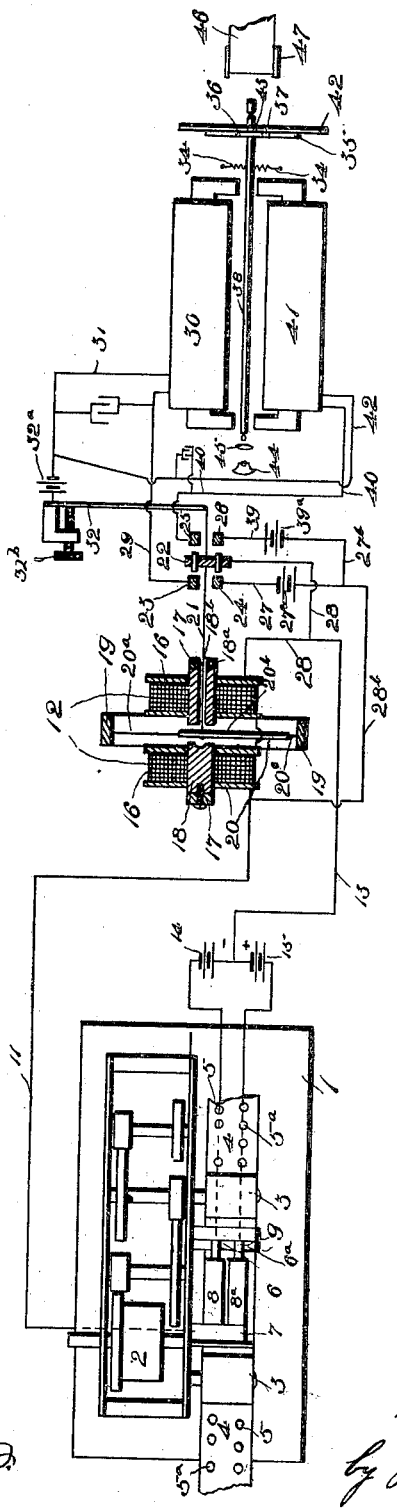

Fig. 1.

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Fig. 2.

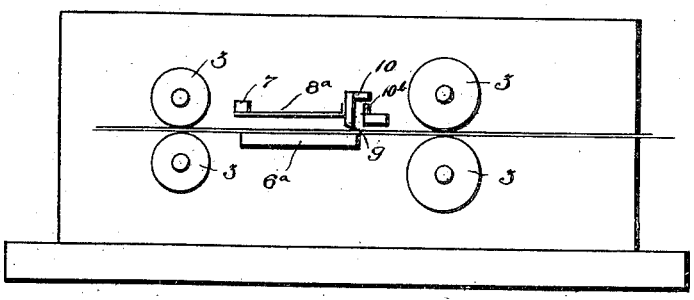


Fig. 3.

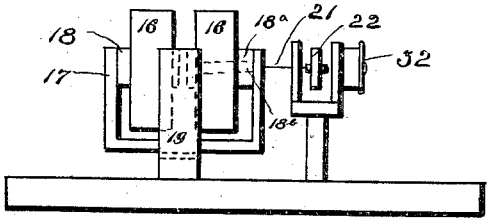
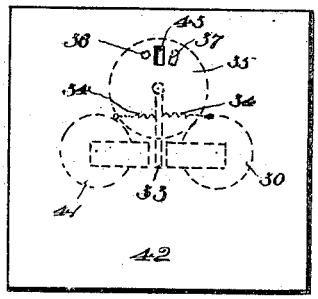


Fig. 4.



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HARRY SHOEMAKER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO GUSTAVE P. GEHRING AND MARIE V. GEHRING, OF SAME PLACE.

AUTOMATIC TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 676,854, dated June 18, 1901.

Application filed February 12, 1901. Serial No. 46,989. (No model.)

To all whom it may concern:

Be it known that I, HARRY SHOEMAKER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Telegraphs, of which the following is a specification.

This invention relates to improvements in automatic telegraphs; and the main object of the invention is the provision of an automatic telegraph which will transmit and receive messages in very rapid succession and which is very simple and practical in construction and use.

To attain the desired objects, the invention consists of an automatic telegraph embodying novel features of construction and combination of parts, substantially as disclosed herein.

In the drawings, Figure 1 is a diagrammatical view of the entire system. Fig. 2 is a side elevation of the transmitting mechanism. Fig. 3 is a side elevation of the central magnets, and Fig. 4 is an end view of the receiving and printing mechanism.

Referring to the drawings, the numeral 1 designates the base, upon which is mounted a clock mechanism 2 or any suitable motive power. Operated by this mechanism are the paper-feeding rollers 3, which are adapted to pass the perforated oiled paper 4, provided with "dash-spaces" 5 and "dot-spaces" 5^a, over the surfaces or plates 6 and 6^a, mounted upon the base. Connected to the post or block 7 are the plates 8 and 8^a, provided with the downwardly-extending pointed ends 9 and the extensions 10, which are adapted to contact the points 10^b to make a circuit when the points 9 enter the perforations in the paper. When the plate 8 makes a circuit, it is through the plate, the block 7, the wire 11, the electromagnet 12, the wire 13, its batteries 14, and wire leading to one of the contact-points 10^b, and when the plate 8^a contacts the other of the points 10^b a reverse-current is sent through the batteries 15, wire 13, electromagnet 12, wire 11, block 7, and the plate 8^a. The wire 11 is connected to and always in circuit with the post or block 7, so that a circuit is always made with said wire whether the plate 8 or 8^a makes a circuit. This electromagnet 12 consists of the two coils 16, connected by the yoke 17. It also has the two cores 18 and 18^a, the core 18^a being provided with a channel 18^b therethrough. Mounted upon the base with the magnets are the vertical standards 19, which are the coils of a permanent magnet and between which is suspended the vibrating plate or strip 20, composed of the spring 20^a, the magnetic strip 20^b, and the non-magnetic strip 20^c. I make this strip 20 of the three different parts in order that the spring 20^a will allow it to be vibrated properly, that the magnetic strip 20^b can be readily attracted by the cores 18 and 18^a, and that the non-magnetic strip 20^c cannot be affected by the magnetic standards or poles 19, between which this strip is suspended. Connected to the magnetic strip 20^b is the wire 21, which passes through the hollow core of the magnet and is connected with the suspended disk 22, which is adapted to contact the posts 23, 24, 25, and 26, the posts 23 and 24 being contacted when the core 18 is magnetized in one direction, thus closing a circuit through the wire 27, batteries 27^a, wire 28^b, through the magnets, and the wire 28, to the disk 22, thus making a reverse-circuit in the magnets. At the same time another circuit is made through the post 23, wire 29, which connects with the magnet 30, a wire 31, battery 32^a, completing the circuit through the adjustable spring 32, wire 21, and disk 22, connected to the end of the wire 21, as shown. This spring 32 and the plate 20 are normally parallel, the set-screw 32^b being adjusted and the tension of the spring 20^a being strong enough to hold the disk 22 about midway between the two pairs of posts 23 24 and 25 26 when the apparatus is passive. This circuit operates the magnet 30, which attracts the armature 33, held normally in a vertical position by the two springs 34, toward it, thus turning the disk or shutter 35, provided with the dot-aperture 36 and the dash-slot 37. This disk is mounted upon the armature-shaft 38. When the disk 22 contacts the posts 25 and 26, two circuits are formed, one through the post 26, the wire 39, batteries 39^a, wire 27^b, wire 28^b, the magnets, the wire 28, and disk 22, and another circuit through the post 25, wire

40, magnet 41, and thence through the wire 42 to the batteries 32^a and the spring 32, wire 21, disk 22, this circuit pulling the armature toward the other magnet to bring the shutter in proper position to print a dash. This shutter is mounted behind the plate or guide 42, provided with the opening 43, which allows rays of light from a lamp 44 and lens 45 to be concentrated upon the opening of the disk as it is moved in front of the opening 43 to expose or print a dot or dash upon the sensitized film or paper 46, mounted upon the rollers 47.

From this description, taken in connection with the drawings, the operation of my automatic telegraph is readily understood; but, briefly stated, it is as follows: The oiled paper is perforated, as desired, with the dot and dash spaces upon their respective sides. The clock mechanism is set in operation, the paper being fed between the rolls over the plates below the points 8 and 8^a. When the perforations pass below their respective points, the extensions 10 of the plates form a circuit with the points 10^b—that is, one at a time. These circuits operate the magnets 12, which attract the plate 20^b in this proper direction, this plate making proper circuits with the short reversing-circuit, which helps tear down the magnets and makes the action rapid, and the magnets 30 and 41, which become magnetized and attract the armature carrying the disk 35, causing it to be oscillated in the proper direction to present the dot or dash aperture of the disk, so that the outline thereof is transferred to the sensitized film or paper, which is afterward developed to secure the message.

Thus it will be seen that I produce a very simple and thorough automatic telegraph, which can send messages in a very rapid manner and which is therefore very useful and practical.

I claim—

1. In an automatic telegraph, a transmitting mechanism, and a receiving mechanism, consisting of an electromagnet, a means operated by said magnet to form circuits to help tear down itself and magnetize electromagnets, one at a time, and a printing mechanism operated by said last-mentioned electromagnets.

2. In an automatic telegraph, a transmitting mechanism, consisting of a paper-feeding mechanism, a perforated paper fed by said mechanism, and plates adapted to make circuits when engaged by the perforations of said paper; and a receiving or printing mechanism operated by said transmitting mechanism, said receiving mechanism comprising an electromagnet, means operated by said electromagnet to form circuits to help tear down itself, electromagnets in circuit with said means and magnetized one at a time by said means, and a printing mechanism operated by said last-mentioned electromagnets.

3. In an automatic telegraph, a transmitting-station consisting of means for feeding paper, an endless strip of paper provided with perforations adapted to be fed by said means, vibrating plates provided with points to contact the paper and be raised and lowered to make circuits, and an electromagnet to be magnetized by one point in one direction and magnetized in the other direction with the other point; and a receiving-station to print the transmitted message upon sensitized film or paper, said receiving-station, comprising an electromagnet, means operated by said electromagnet to form circuits to help tear down itself, electromagnets in circuit with said means and magnetized one at a time by said means, and a printing mechanism operated by said last-mentioned electromagnets.

4. In an automatic telegraph, a transmitting apparatus, and a receiving apparatus, said receiving apparatus, consisting of an electromagnet, means operated by said electromagnet to form circuits to help tear down itself, a pair of electromagnets adapted to be energized one at a time by said means, an armature operated by said magnets and caused to oscillate, a shutter connected with said armature, and means for transferring the message through the shutter upon a sensitized film or paper.

5. In an automatic telegraph, a transmitting-station, consisting of means for feeding paper, an endless strip of paper provided with perforations adapted to be fed by said means, and vibrating plates provided with points to be raised or lowered by contact with the paper, and a receiving-station consisting of an electromagnet to be operated by the circuits formed by the vibrating plates, means operated by said electromagnet to form circuits to help tear down itself, a pair of electromagnets in circuit with said means adapted to be energized one at a time, an armature operated by said magnets and caused to oscillate, a shutter connected with said armature, and means for transferring the message through the shutter upon a sensitized film or paper.

6. In an automatic telegraph, a paper-feeding means, paper provided with perforations fed by said means, means for making circuits when the perforations pass below it, an electromagnet energized by said circuits, a vibrating plate mounted in a permanent magnet and caused to be vibrated when the electromagnet is energized, a circuit formed by said vibrating plate to help tear down the magnetism in the electromagnet, and another circuit formed, and a printing mechanism operated by the last-mentioned circuit.

7. In an automatic telegraph, a transmitting-station, a receiving-station consisting of an electromagnet, means operated by said electromagnet to help tear down itself, a printing mechanism consisting of two electromagnets adapted to be energized one at a time by said means, a shaft mounted between the magnets, an armature mounted upon the shaft, a disk provided with a "dot-aperture"

and a "dash-slot" mounted upon the shaft, a plate or diaphragm mounted back of the shutter, means for throwing light upon the shutter, and a roll of sensitized film or paper mounted so that the outlines of the "dot" or "dash" apertures are transferred upon the film or paper.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY SHOEMAKER.

Witnesses:
M. WIEGAND,
JOSEPH S. HAGAN.