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H. SHOEMAKER.

WIRELESS TELEGRAPHY.

(Application filed Feb. 1, 1901.)

(No Model.)

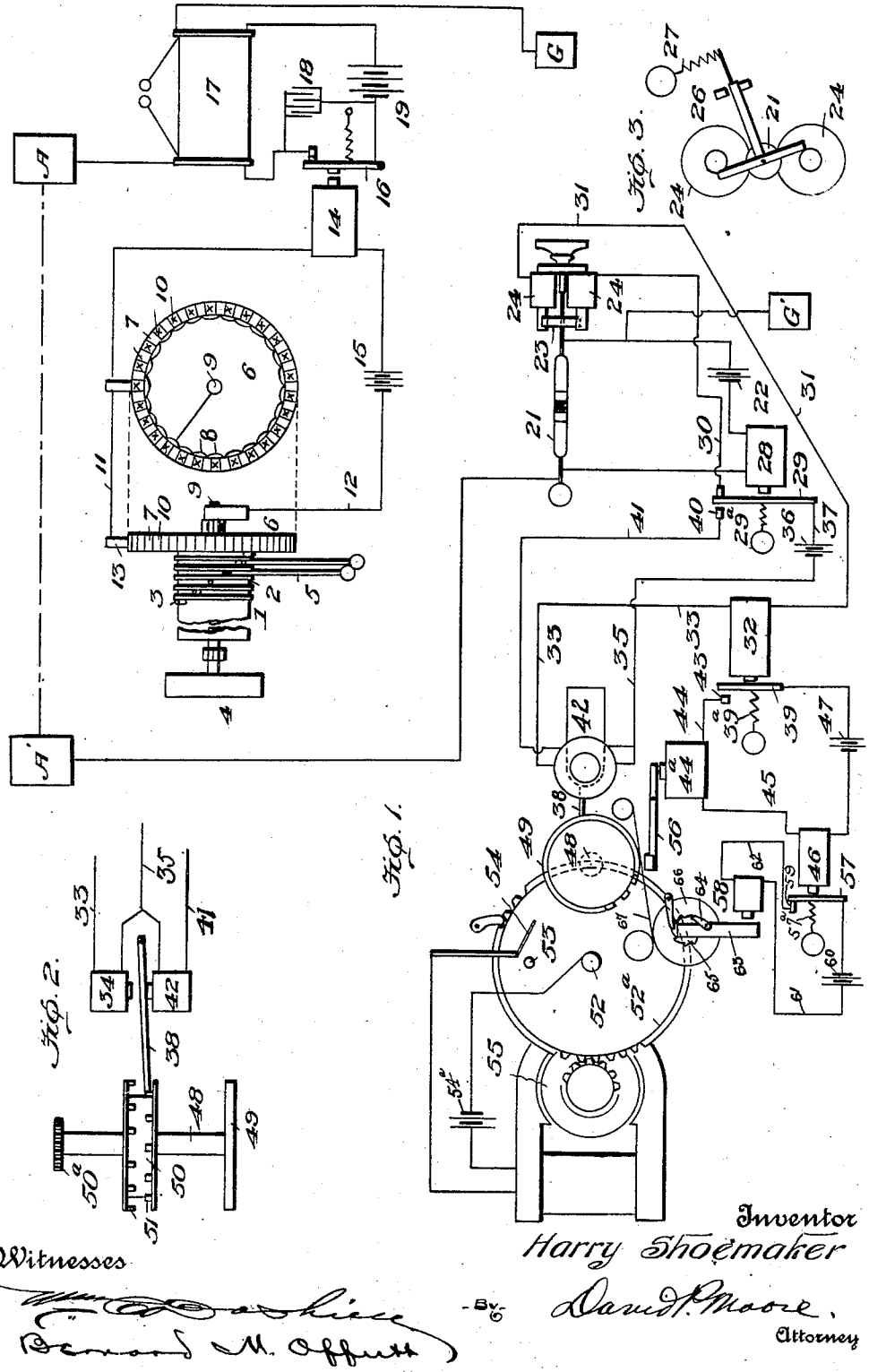

Fig. 1.

Fig. 2.

Fig. 3.

Witnesses

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WIRELESS TELEGRAPHY.

SPECIFICATION forming part of Letters Patent No. 680,001, dated August 6, 1901.

Application filed February 1, 1901. Serial No. 45,586. (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 Wireless Telegraphy, of which the following is a specification.

This invention relates to improvements in wireless telegraphy, and has special reference to a type-writing wireless telegraph, the main object being to provide a device which will print the proper type upon the paper without the use of conductor-wires.

Another object of my invention is the provision of a type-writing wireless telegraph which consists of a transmitting-station which is adapted to operate a receiving-station, which has apparatus to print and space, and a winding mechanism for operating a type-wheel shaft.

To attain the desired objects, the invention consists of a type-writing wireless-telegraph system embodying novel features of construction and arrangement of parts, substantially as disclosed herein.

In the drawings, Figure 1 is a small diagrammatical view of the entire system. Fig. 2 is a detail view of the operating-drum on type-wheel shaft, and Fig. 3 is a detail view of the coherer and operating mechanism.

Referring by characters to the drawings, the numeral 1 designates the cylinder, provided with grooves 2 and pins 3, said cylinder being provided with a fly-wheel 4 to be revolved by any well-known power. To stop this cylinder at the proper place—that is, so that the brush 13 is upon a conductor-space 7 of the commutator 6—I employ the type keys and bars 5. Mounted upon the shaft is a commutator 6, provided with the conductor-spaces 7, joined together by means of the wires 8 to the shaft 9 of the cylinder and commutator, the conductors being separated from each other by means of the insulators 10. The wires 8 are connected to the conductor-blocks and the shaft 9, a proper circuit being formed through the wires 11 and 12, connected to the brush 13, the electromagnet 14, and the batteries 15, this arrangement causing circuits to be made at each contact of the brush with a conductor-block. This electromagnet oscillates the lever 16, which conveys the impulses to the induction-coil 17 in circuit with the air and ground plates A and G. This apparatus constitutes the transmitting-station of my type-writing wireless-telegraph system. As the commutator is revolved impulses are caused to energize the electromagnet 14, which in turn opens and closes the coil's circuit, said coil causing ether or Hertzian waves to be transmitted to the receiving apparatus hereinafter fully set forth and described.

The receiving-station consists of the air and ground plates A′ and G′, connected in circuit with the coherer 21. By means of the batteries 36 the centrally-pivoted armature 23 is oscillated as a current is sent through the electromagnets 24, thus causing the coherer to oscillate, a pin 26 limiting the movement of the armature and the spring 27 assisting in the return of the armature between the impulses. When an impulse is received, the electromagnet 28 attracts the lever 29, which makes a circuit through the wires 30, magnets 24, wire 31, electromagnet 32, wire 33, electromagnet 34, wire 35, batteries 36, and wire 37, the electromagnet 34 operating the lever 38 and the electromagnet 32 operating its lever 39. When the lever 29 is returned by its spring 29^a, it contacts the post 40, as the electromagnet 28 has become demagnetized by reason of the keys being released and the coherer-circuit being open, making a circuit through wire 41 with the electromagnet 42, which causes the spacing-lever 38 to be attracted toward it, completing its circuit through wire 35, batteries 36, wire 37, and the lever 29. The spring 39^a of the lever 39 returns the lever and causes it to contact the post 43 when this last circuit is made, and another circuit is made through the wires 44, electromagnet 44^a, wire 45, electromagnet 46, and batteries 47, its use being stated fully hereinafter.

A shaft 48 has mounted thereon a type-wheel 49, a drum 50, and a cog-wheel 50^a, said drum being provided with the stepped pins or stops 51, projecting from the inner surfaces of the flanges and arranged alter-

nately one on each flange. These pins are adapted to be contacted by the free end of the lever 38 to stop the wheel at the proper place. As the impulse at first energizes the magnet 34, causing the lever 38 to be drawn toward it, causing the lever to disengage one of said pins upon the opposite flange and engage the proper pin upon the other flange, the drum is turned the distance between one pin on one side and the other pin on the other side. At this point the lever 29 contacts the post 40, causing the magnet 42 to be energized. This magnet attracts the lever, releasing the pin just engaged and causing it to engage the proper pin upon the other flange. Thus it will be seen that one impulse from the commutator causes two impulses, respectively, in magnets 34 and 42, causing the drum to be moved two spaces.

Mounted upon a shaft 32 is a large spring-actuated drum or wheel 52^a, which is geared to the cog-wheel 50^a and is adapted to revolve the type-wheel shaft. Upon the outer face of this wheel 52^a is a pin 53, which is adapted to every revolution thereof engage or contact the spring-plate 54, causing a circuit with the batteries and axle of the wheel to operate the motor 55 to wind the spring of the drum 52^a, which is geared to said motor.

The electromagnet 44^a, which is in circuit with the wires 44 and 45, electromagnet 46, batteries 47, lever 39, and post 43, is energized when the lever 29 is released by the electromagnet 28 and contacts the post 40, thus operating the pivoted printing-lever 56. At the same time that the printing-lever is operated the electromagnet 46 attracts the lever 57, which when this electromagnet is demagnetized is returned by its spring 57^a to contact the post 59, making a circuit with the batteries 60, wire 61, electromagnet 58, and wire 62, said electromagnet 58 attracting the paper-spacing lever 63, whose dog or detent 64 engages the ratchet-wheel 65 and revolves the feed-wheel 66, which causes the paper 67 to be passed between the printing-lever 56 and the type on the wheel 49, so that the message may be read.

An important device contained in this apparatus is the device for operating the shaft carrying the type-wheel, as I employ two electromagnets operated by two circuits to operate the lever 38, which is caused to move from one magnet to the other as the circuits are made one after the other, the shaft being revolved by the spring-actuated drum two spaces to one impulse of the commutator.

From this description, taken in connection with the drawings, the operation of my type-writing telegraph is readily understood; but briefly stated it is as follows: The commutator of the transmitting apparatus and type-wheel of the receiving apparatus are adjusted so that the type upon the wheel register exactly with its proper type-key of the board, thus insuring synchronous movement between the commutator and type-wheel, and as the proper key is pressed upon the cylinder and commutator are stopped, they during the remainder of the time being constantly revolved by any desired power. As the commutator is revolved the ether waves transmitted are received by the air and ground plates of the receiving apparatus, and after the coherer has been operated by the waves it loses its resistance and, in effect, closes the circuit. The magnet 28 is then energized and attracts the lever 29, which makes a circuit to oscillate the coherer and the magnet 34, and when the lever 29 is released, the magnet 28 becoming demagnetized, a circuit is made through post 40 and batteries 37 to energize the magnet 42, the magnet 34 having been energized before the magnet 28 was demagnetized. When the lever 38 is attracted by the magnet 42, one of the pins of the wheel 50 is engaged and the type-wheel is brought to a full stop. The magnet 32, which was magnetized when the magnet 34 was magnetized, is demagnetized at this point, and the spring of the lever 39 causes said lever to contact the post 43, making a circuit through magnet 44^a, wire 45, magnet 46, and batteries 47. The magnet 44^a being magnetized attracts the printing-lever and causes it to press the paper against the proper type of the type-wheel, and when the type-key just pressed upon is released the electromagnet 46 is demagnetized, releasing the lever 57, which by reason of its spring causes a circuit to be made through batteries 60, wire 61, magnet 58, and wire 62, said magnet being magnetized to attract lever 63, which causes the paper to be fed after the printing operation. The lever 39 is normally held against the magnet 32, which slightly holds over, as the impulses are so rapid and the spring 39^a so weak, thus not allowing the printing and paper-spacing mechanisms to be operated until the key is pressed at the transmitting-station. When the key is held down sufficiently long, the magnet 32 becomes demagnetized, allowing the spring to operate the lever 39 to make the proper connection to operate the printing and paper-spacing mechanisms.

By a simple device upon the motor-wheel 52^a a motor is operated to wind the wheel, thus insuring the winding of said drum, so that it will always revolve the shaft 48 at the proper time.

It is evident that I provide a practical type-writing wireless-telegraph system which is very simple in its construction and arrangement of the apparatus.

I claim—

1. In a type-writing wireless telegraph a transmitting apparatus and a receiving apparatus; said receiving apparatus consisting of the air and ground plates, a coherer connected therewith, a main relay-circuit connected with the coherer, another circuit operated to oscillate the coherer when the main relay-circuit is magnetized and demagnetized, means to operate a type-wheel, means for stopping

the type-wheel at the proper place, means for pressing the paper against the proper type and means for spacing the paper.

2. A type-writing wireless telegraph comprising a transmitting apparatus consisting of a commutator, means for revolving said commutator, a relay-circuit operated by said commutator and a circuit having an induction-coil operated by said relay-circuit; and a receiving apparatus consisting of air and ground plates, an imperfect electrical contact, means for operating a type-wheel, means for printing and means for spacing the paper operated by the influence of the oscillations received by the contact.

3. A type-writing wireless telegraph comprising a transmitting apparatus consisting of a keyboard, a cylinder and a commutator mounted upon a common shaft, means to revolve the same, a circuit in electrical connection with said commutator and an induction-coil circuit operated by said first-mentioned circuit; and a receiving apparatus consisting of air and ground plates, an imperfect electrical contact, a type-wheel operated simultaneously with the commutator and adapted to stop at the proper place when the commutator is stopped, means for causing the type-wheel to print and means to space the paper, all being operated by the influence of the impulses sent by the transmitting apparatus and received by the contact.

4. A type-writing wireless telegraph comprising a transmitting apparatus consisting of a cylinder and a commutator upon a common shaft, means to stop the same, means to revolve the same and an electromagnetic circuit operated by said commutator, another circuit operated by said first-mentioned circuit, and a spark-producer in said last-mentioned circuit; and a receiving apparatus consisting of a coherer and an electromagnet in circuit therewith, means for operating a type-wheel, means for printing and means for spacing, all operated by said electromagnet.

5. A type-writing wireless telegraph comprising a transmitting apparatus and a receiving apparatus, said receiving apparatus consisting of air and ground plates, a coherer connected therewith, a relay-circuit connected therewith, a circuit for oscillating the coherer operated as the relay-circuit is magnetized and demagnetized, means for stopping the type-wheel at the proper time, means for printing and means for spacing the paper, all of which are controlled through different circuits by said relay.

6. A type-writing wireless telegraph comprising a transmitting and a receiving apparatus; said receiving apparatus consisting of an oscillated coherer, a relay-circuit connected therewith, means for operating a type-wheel, means for printing and means for spacing the paper controlled by said relay-circuit.

7. A type-writing wireless telegraph comprising a transmitting and receiving apparatus, said receiving apparatus consisting of a coherer, a relay-circuit in circuit with said coherer, electromagnets adapted to be energized by said relay-circuit, and a spring to oscillate said coherer, and separate means for operating a type-wheel for printing and for spacing paper operated by said relay-circuit.

8. A receiving apparatus for a type-writing wireless-telegraph system comprising an imperfect electrical contact, a relay-circuit connected to said contact, means for oscillating said coherer operated as the relay-circuit is magnetized and demagnetized, means operated after the contact gains its resistance to print and means to space the paper after the printing operation.

9. A receiver for a type-writing wireless-telegraph system comprising an imperfect electrical contact, means for oscillating the same after the contact loses its resistance, a relay-circuit connected with said contact, a pair of electromagnets adapted to be energized one at a time as said relay-circuit is energized and deënergized, a type-wheel operated by said pair of magnets and an electromagnetically-operated means for printing and an electromagnetic means for spacing the paper, all controlled by said relay-circuit.

10. A receiving apparatus for type-writing wireless-telegraph systems comprising an imperfect electrical contact, a main relay-circuit connected therewith, a pair of electromagnets operated one at a time as the relay-circuit is energized and deënergized, a stepped type-wheel, a lever operated by said pair of magnets to allow said type-wheel to be moved one step at a time, an electromagnet in the same circuit with the pair of magnets, another circuit having therein two electromagnets, a printing means operated by one of said last-mentioned magnets and a spacing-circuit operated by the other of said last-mentioned magnets.

11. In a type-writing wireless telegraph, a receiving apparatus comprising an imperfect electrical contact; a relay-circuit connected therewith; means for printing operated by said relay-circuit consisting of a type-wheel, a spring-drum connected with said wheel, means for making an electrical circuit at every revolution of said wheel for operating a motor to wind the spring, and a lever for pressing the paper against said type-wheel; and means for spacing the paper after the printing operation.

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

HARRY SHOEMAKER.

Witnesses:
G. P. GEHRING,
M. WIEGAND.