(No Model.) 2 Sheets—Sheet 1.

A. LE BLANC.

ELECTRICAL TRANSMITTING INSTRUMENT.

No. 566,917. Patented Sept. 1, 1896.

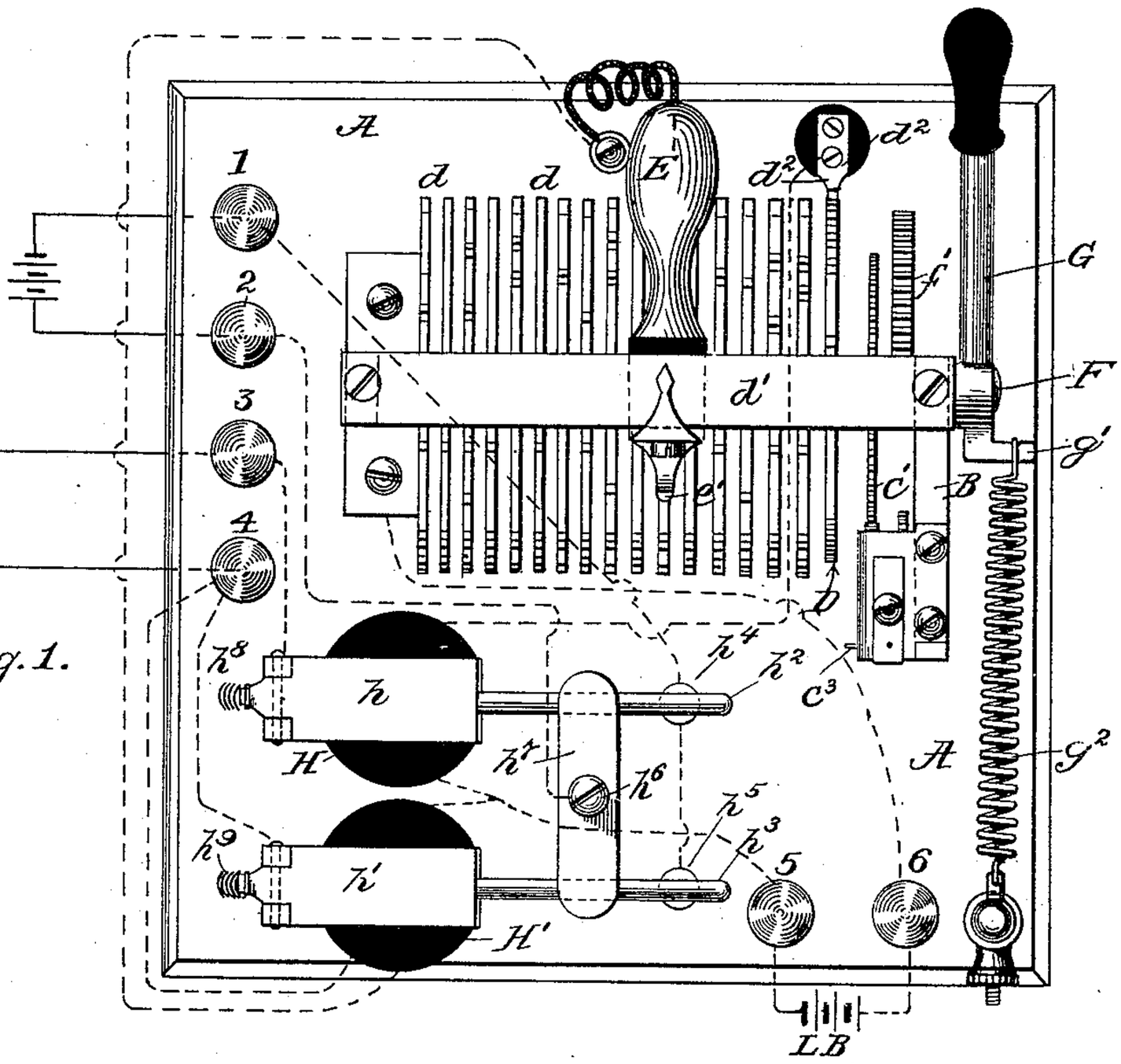

Fig. 1.

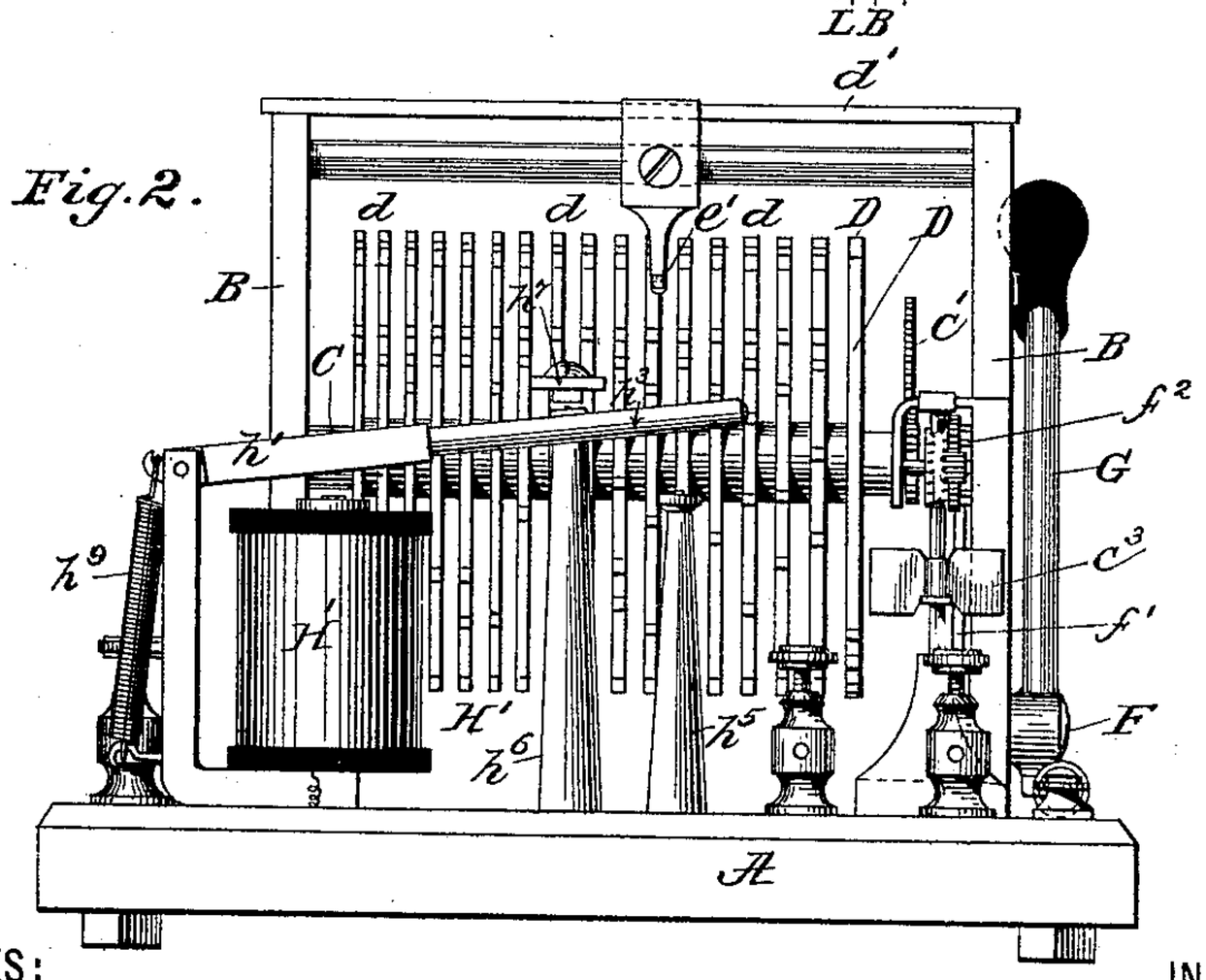

Fig. 2.

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Fig. 3.

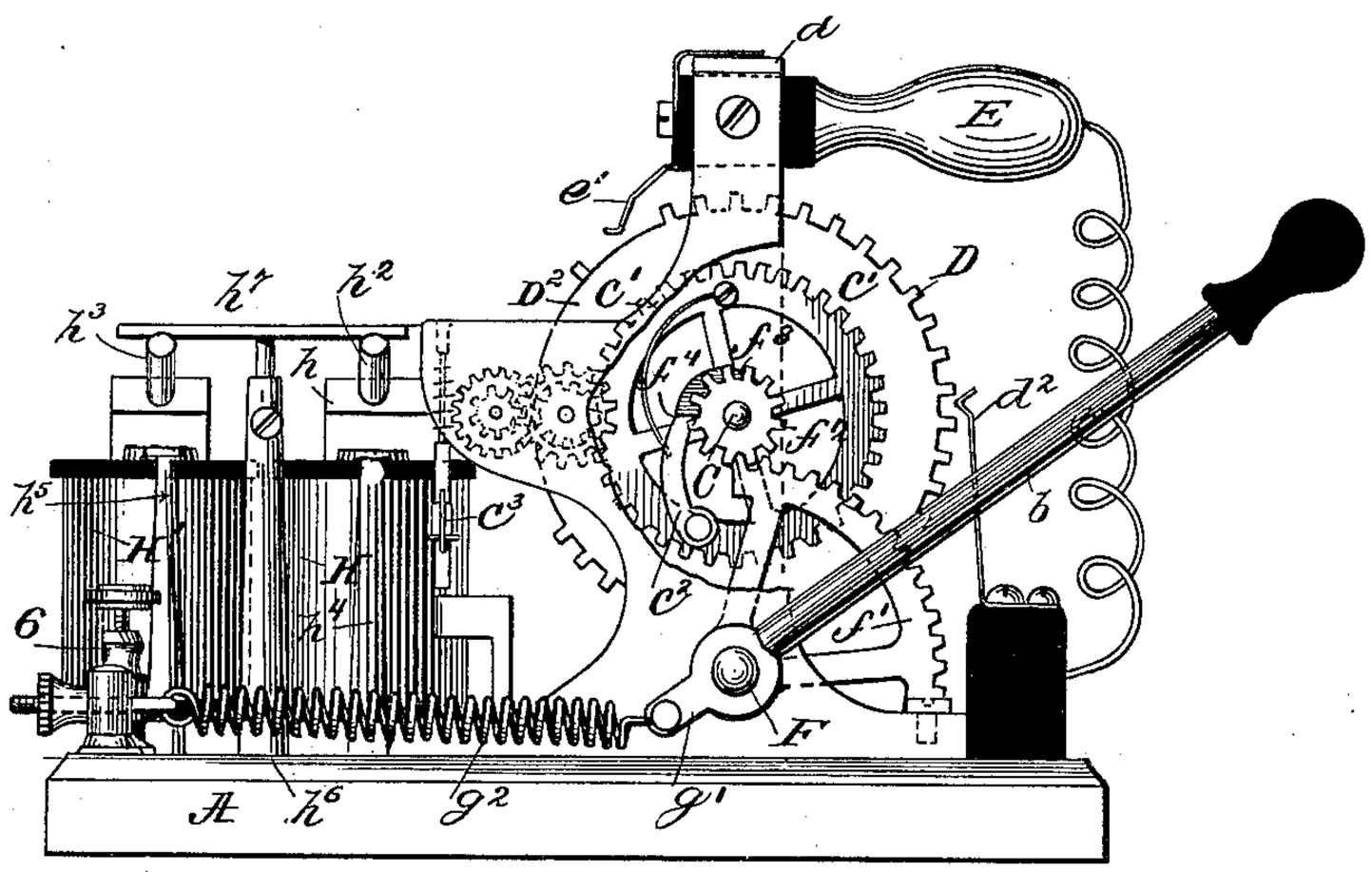
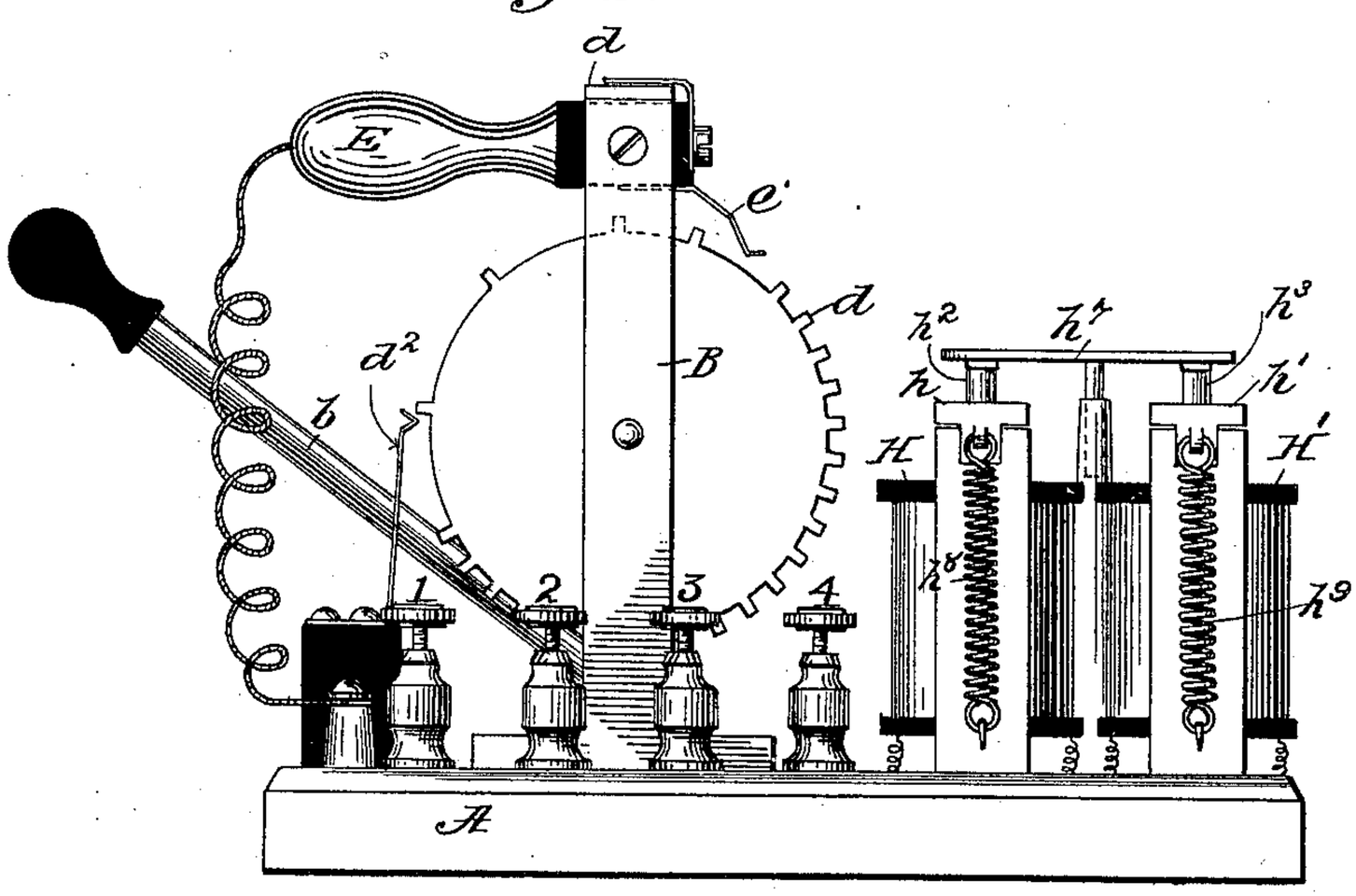


Fig. 4.



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UNITED STATES PATENT OFFICE.

ALEXIS LE BLANC, OF NEW YORK, N. Y., ASSIGNOR TO THE ELECTRIC SELECTOR AND SIGNAL COMPANY, OF WEST VIRGINIA.

ELECTRICAL TRANSMITTING INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 566,917, dated September 1, 1896.

Application filed October 16, 1894. Renewed March 31, 1896. Serial No. 585,663. (No model.)

To all whom it may concern:

Be it known that I, ALEXIS LE BLANC, of the city, county, and State of New York, have invented a certain new and useful Improvement in Electrical Transmitting Instruments, of which the following is a full description.

The drawings accompanying this description illustrate the invention, of which—

Figure 1 is a plan view. Fig. 2 is a front view; Fig. 3, an end view looking at the right of Fig. 1; Fig. 4, an end view looking at the left of Fig. 1.

The instrument is designed to transmit impulses of opposite polarities and may be used with selecting instruments constructed to respond to such impulses or with any other device wherein such electrical impulses are transmitted.

Upon a suitable base A are erected the standards B, in which are journaled the ends of the shaft C. Upon this shaft are secured a series of disks *d* and a single disk D. The disk D is provided with teeth around its periphery in succession, with a cut-out space hereinafter described. A cross-piece *d'* joins the uprights B B at the top and is used as a support and slide for the handle E, which carries a brush *e'*. This handle may be slipped or moved along the cross-piece, so that the brush *e'* may be made to contact with any one of the disks *d*.

Journaled in the frame is the shaft F, which carries on its outer end the lever G, having a projection *g'*, which projection is attached to one end of a spring g^2, whose other end is attached to a suitable part of the frame. The action of this spring is to retract the lever when thrown forward and by means of suitable gearing turn the shaft C, which carries the disks. Upon the shaft F is secured a toothed segment *f'*, which meshes with a pinion f^2, secured to a cam f^3, provided with a notch f^4, and both loosely revolve upon the shaft C when actuated by the segment *f'*. A toothed wheel *c'* is secured to the shaft C and carries a pivoted pawl c^2, so that when the pinion f^2 has been turned by the segment one revolution this pawl drops again into the notch f^4, and the shaft C, carrying the disks, is ready to be revolved by the action of the spring g^2 and makes one revolution, stopping at normal position, as shown in Fig. 3. This wheel *c'* meshes with suitable gearing which actuates the fan c^3 to steady the movement of the shaft C and disks when revolving.

The disks *d* are provided with teeth which are arranged or adjusted to suit the requirements of the various combinations, and as the shaft C revolves those teeth transmit electrical impulses through the brush *e'* to the coil of the magnet H'. The disk D is provided with the brush d^2, and as the disk revolves its teeth transmit electrical impulses to the coil of magnet H, so that the disks *d* and the disk D coöperate with each other and transmit, as required, the impulses to actuate the armatures of the magnets H H', that is to say, an impulse of one polarity excites magnet H and of the other polarity magnet H'. On the base, which is made of insulating material, are erected the electromagnets H H', having armatures *h h'*, provided with conducting extensions h^2 h^3. Upon the same base is also erected post h^4, post h^5, and post h^6. The post h^6 is provided with the cross-piece h^7, which serves as a contact and stop for the extensions h^2 and h^3 when retracted by the springs h^8 h^9.

The device is connected up as follows: On the base are shown the binding-posts 1 2 3 4 5 6. Connected to binding-post 1 is a wire leading to posts h^4 h^5, and connected with binding-post 2 a wire leading to post h^6, supporting cross-piece h^7. The wires leading into binding-posts 1 and 2 are from the terminals of a dynamo or generator. Connected to binding-post 3 is a wire leading to frame of magnet H, and from binding-post 4 a wire leading to frame of magnet H'. The wires leading into binding-screws 3 and 4 are terminals of main line, over which impulses are transmitted to operate selecting instruments or other devices. A wire running from binding-post 5 is connected with inner ends of coils of magnets H and H'. The outer end of coil of magnet H leads to brush d^2, and the outer end of coil of magnet H' leads to brush *e'*. Wire from binding-post 6 is connected via frame of machine to rotating disks, and the posts 5 and 6 are the terminals of local battery L B. It will be seen that an impulse from the teeth of any one of the disks *d*

through brush e' energizes magnet H', whose extension makes contact with post h^5. The current then flows through extension h^3, armature h', to binding-post 4, then via line through selector or other instrument back to binding-post 3, then to armature h, to cross-piece h^7, post h^6, to binding-post 2, out to generator, thus transmitting an impulse of one polarity through the instruments on the line. An impulse from the teeth of the disk D energizes magnet H, whose armature extension makes contact with post h^4, and the current runs through said extension and armature h to binding-post 3, thence through instruments on line to binding-post 4, thence via frame to armature h', to cross-piece h^7, post h^6 to binding-post 2 to generator, thus transmitting an impulse to line of opposite polarity to that above described.

In order to made different combinations of impulses of opposite polarities to suit the requirements of the different combinations of the instruments, it is only necessary to adjust or regulate the teeth of each of the disks d with the teeth on the disk D, the teeth on the latter remaining without change, while the brush e' may be slipped or moved to contact with any one of the disks d.

The operation of the device is as follows: The operator first selects the combination for a given instrument on the line and moves the brush e' to contact with its corresponding disk. He then throws forward the lever G until the pawl c^2 drops into notch f^4 on the cam, then releases the lever, when the shaft C revolves one revolution, the teeth of the disks D and d make their contact with their respective brushes and work out the combination with the instruments on the line. In operation, with a selecting instrument arranged for the purpose, the wheel D transmits the impulses which turn the wheels or sectors of these instruments to the ends of their phases and the wheels d send the impulses which restore them to zero. When other instrumentalities are connected with the transmitter by the operation of the selector, such as a mechanical device which is to be operated by impulses of opposite polarity to those which actuate the selector-wheels, the disk D is cut out, as shown at D^2, to allow the teeth on wheels d to transmit these impulses.

What I claim, and desire to secure by Letters Patent, is—

1. In an electrical transmitting instrument, a disk-carrying shaft, provided with means for imparting a rotary movement thereto, in combination with a disk as D secured in a fixed position on said shaft and provided with a series of teeth arranged in succession to coöperate with a suitable conductor and thereby transmit electrical impulses of one polarity, and a series of disks as d each provided with a set of teeth differently composed or arranged to coöperate with a conductor and thereby transmit electrical impulses of an opposite polarity to those transmitted by the disk D, said disks d, adapted to be adjustably arranged on said shaft whereby each of them may be combined with the teeth on the fixed disk D, to coöperate therewith and transmit different combinations of electrical impulses of opposite polarities.

2. In an electrical transmitting instrument, a disk-carrying shaft, provided with means for imparting a rotary movement thereto, in combination with a disk as D, secured in a fixed position on said shaft, and provided with a series of teeth arranged in succession to coöperate with a fixed conducting-brush, whereby electrical impulses of one polarity are transmitted, and a series of disks d each provided with a set of teeth differently composed, or arranged to coöperate with a conducting-brush adapted to be moved in contact with any one of the disks d, and thereby transmit electrical impulses of an opposite polarity to those transmitted by the disk D, said disks d, adapted to be adjustably arranged on said shaft whereby each of them may be combined with the teeth on the fixed disk D, to coöperate therewith and transmit different combinations of electrical impulses of opposite polarities.

3. In an electrical transmitting instrument a disk-carrying shaft provided with the single disk D provided with teeth arranged in succession and the disks d, provided with teeth differently composed and arranged in combination with the fixed conducting-brush d^2 coöperating with the disk D, whereby impulses of one polarity are transmitted, the cross-piece d', and the sliding brush e', coöperating with the disks d, whereby impulses of an opposite polarity to those above referred to are transmitted.

4. In an electrical transmitting instrument, a disk-carrying shaft provided with the toothed disk D, provided with teeth arranged in succession and its conducting-brush d^2, the toothed disks d, provided with teeth differently composed and its conducting-brush e', in combination with the electromagnets H and H' interposed in the circuit, the disk D arranged to transmit its impulses through the coils of magnet H and the disks d' arranged to transmit their impulses through the coils of magnet H'.

5. In an electrical transmitting instrument, a disk-carrying shaft provided with the toothed disk D, provided with teeth arranged in succession and its conducting-brush d^2, the toothed disks d, provided with teeth differently composed and its conducting-brush e', and means for rotating the shaft in combination with the magnets H and H', and their armatures h, h', having the extensions h^2, h^3, and the contact-stop h^7 arranged and operating substantially as described.

6. In an electrical transmitting instrument a disk-carrying shaft provided with means for imparting a rotary movement thereto in combination with a disk as D secured in fixed position on said shaft, and provided with a

series of teeth arranged in succession to coöperate with a suitable conducting-brush and thereby transmit electrical impulses of one polarity, and a series of disks as *d*, each provided with a set of teeth differently composed and arranged to coöperate with a conductor and thereby transmit electrical impulses of an opposite polarity to those transmitted by the disk D, and adapted to be adjusted with the teeth on the latter disk and to be combined therewith to form different combinations and transmit said combinations in impulses of opposite polarities, in combination with a selecting instrument adapted to respond to a fixed combination of electrical impulses, to work out its phase, by means of the impulses, transmitted from the wheel D and be restored to starting-point by means of the impulses transmitted from one of the wheels *d*.

Signed at the city of New York, in the county of New York and State of New York, this 21st day of April, A. D. 1894.

ALEXIS LE BLANC.

Witnesses:
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C. R. WATERBURY.