

N. L. WINE.
POLE CHANGER.
APPLICATION FILED JULY 10, 1907.

924,712.

Patented June 15, 1909.

FIG. 1.

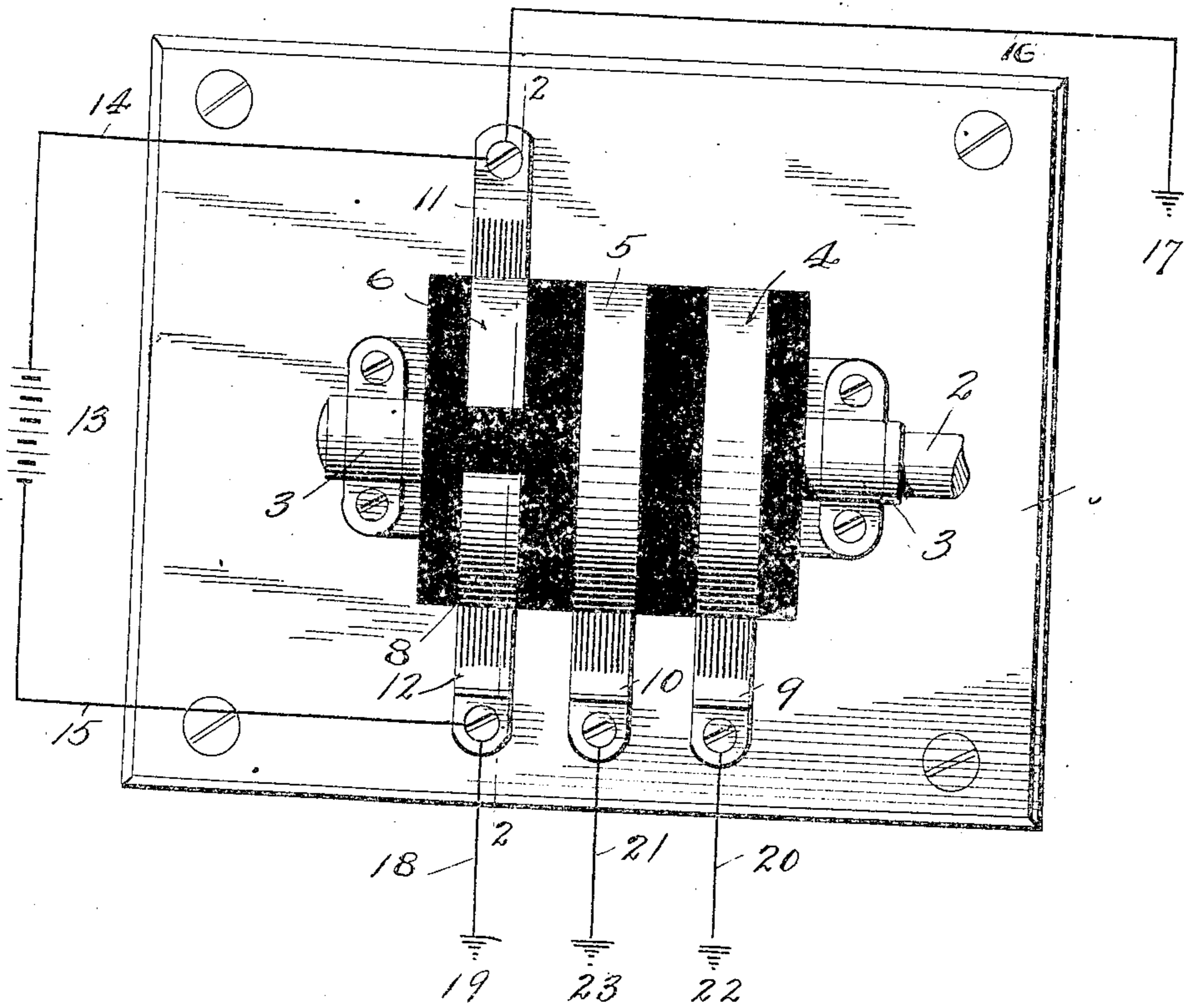


FIG. 2.

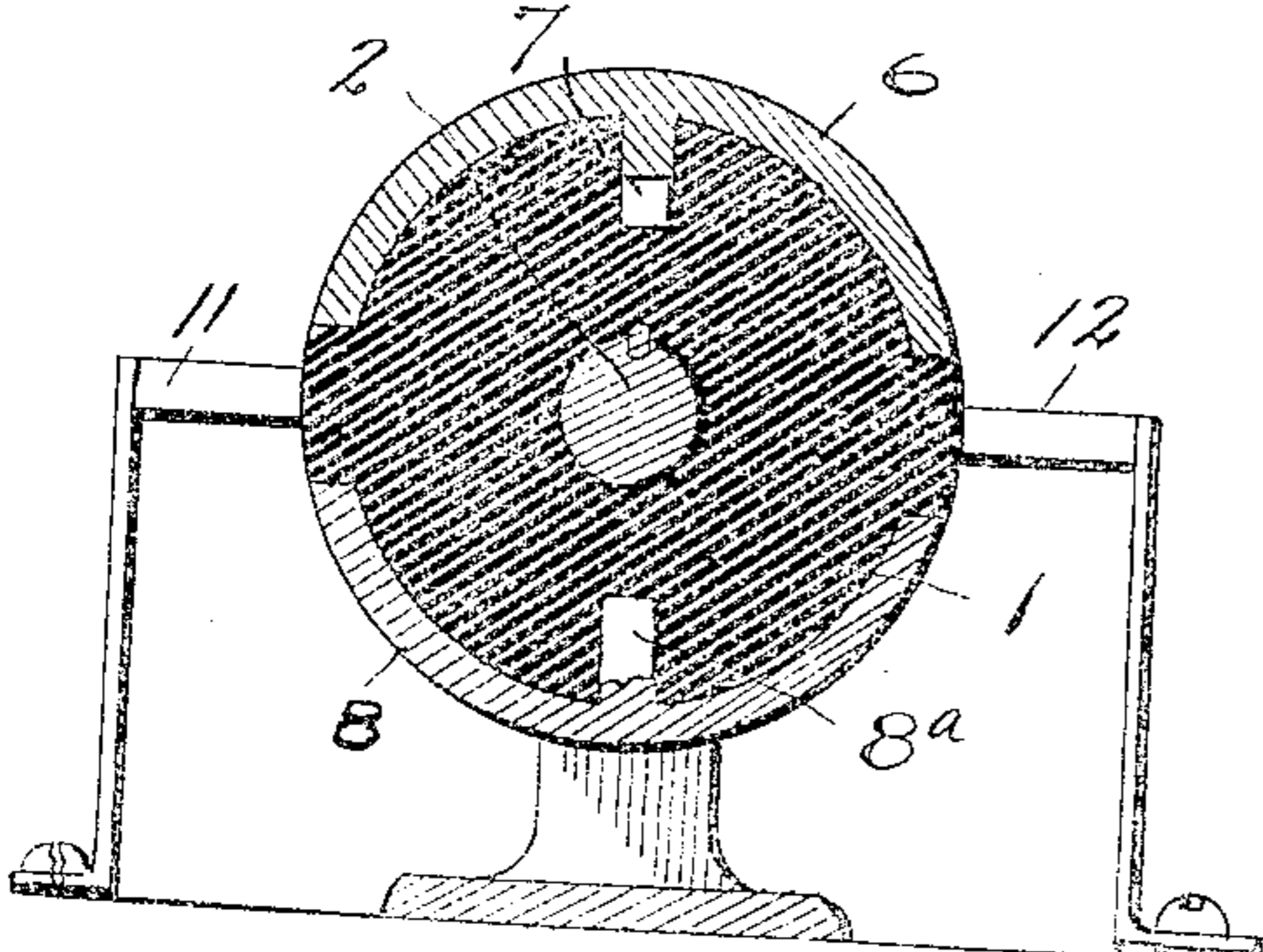
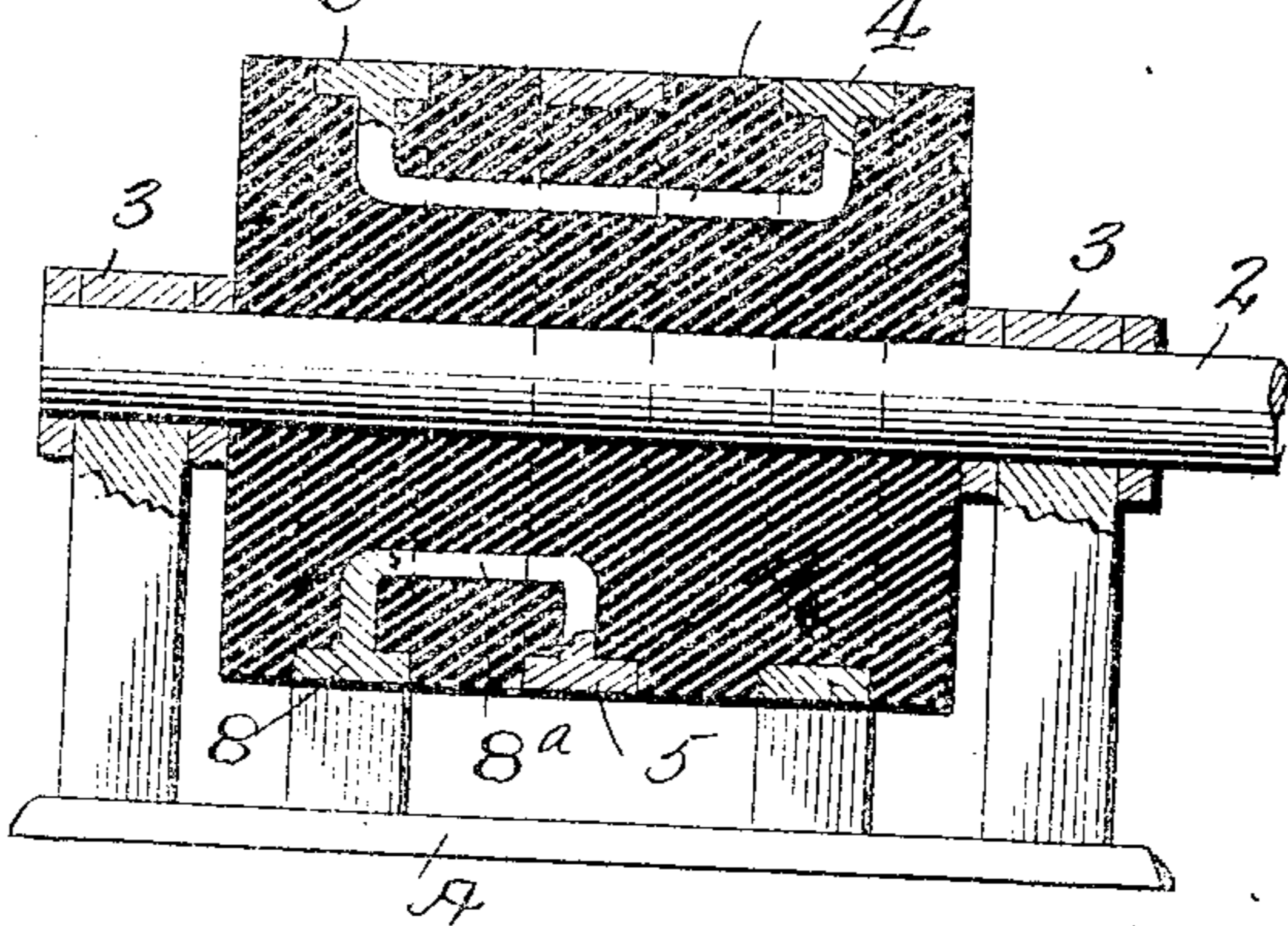


FIG. 3.



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NOAH L. WINE, OF POLO, ILLINOIS.

POLE-CHANGER.

No. 924,712.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, NOAH L. WINE, a citizen of the United States, residing at Polo, in the county of Ogle and State of Illinois, have invented certain new and useful Improvements in Pole-Changers, of which the following is a specification.

My invention relates to improvements in that class of electrical devices known as pole-changers and the objects of my invention are, first to provide a device for continuously receiving therein a direct constant current and for producing successive alternating currents along a selected line; and second to provide means for producing a series of pulsating direct currents of positive and negative polarity respectively from the same source of electricity and simultaneously with the production of the alternating current.

My invention further resides in the provision of a device in which the alternation takes place when the current enters the device, rather than when delivered therefrom as in ordinary types.

My invention further resides in the provision of a device in which the pulsating currents are led directly from the source of electricity, through ringing circuits, through a common return brush and back again, thus using but one set of contacts for all the currents.

My invention further resides specifically in the following features of construction, arrangement and operation as will be herein-after described with reference to the accompanying drawings, in which like numerals are used to designate like parts in the several figures, and in which—

Figure 1 is a plan view of my improved apparatus, Fig. 2 is a transverse section on the line 2—2 of Fig. 1, and Fig. 3 is a vertical longitudinal sectional view therethrough.

In the practical embodiment of my invention I provide a cylinder 1 of insulating material arranged to be constantly revolved by means of a rotatable shaft 2 upon which it is mounted. The shaft 2 may be arranged in suitable bearings 3 mounted upon a base plate A as desired, although said mounting is in no way tributary to this invention.

The cylinder 1 is provided with two spaced rings 4 and 5, of brass or other conducting material, embedded therein and extending completely therearound. Said cylinder 1 is further provided with a pair of segments 6 and 7 embedded within and extending upon

the same plane partially around said cylinder to form a conductive band on the opposite sides of said cylinder with insulated portions lying between their ends on opposite sides of said cylinder parallel with the axis thereof. The commutator ring 4 is connected to the segment 6 by means of a concealed conductor 7 extending therebetween below the surface of the cylinder 1 upon one side of the cylinder, while the commutator ring 5 is connected with the segment 8 by means of a similarly formed concealed conductor 8^a within said cylinder from the opposite side thereof. Brushes 9 and 10 are arranged to contact with the complete commutator rings 4 and 5 respectively upon the same side, while brushes 11 and 12 are arranged to contact successively with the segments 6 and 7 upon opposite sides of the cylinder 1.

A direct constant current is led from the battery 13 through positive and negative conductors 14 and 15 to the brushes 11 and 12 respectively, a supplemental circuit 16 extending from the brush 11, being conveniently grounded at 17, and forming telephone circuit for the action of the positive pulsating current. In like manner a conductor 18 is led from the opposite brush 12 and is grounded at 19 forming a telephone circuit for the action of the negative pulsating currents. Conductors 20 and 21 leading from the brushes 9 and 10 respectively are mounted at 22 and 23 respectively, conductor 20 forming a common return for the positive and negative pulsating currents, the conductor 21 forming a telephone circuit to receive, and for the action of, the alternating currents.

In operation, current is led from the battery 13 through the positive conductor 14 into the brush 11, it being understood that the shaft 2 and cylinder 1 are constantly rotated by any suitable means. From the brush 11 the current flows into the commutation segment 6 in the position shown in Fig. 1; from segment 6 to ring 4 by the concealed conductor 7; from ring 4 through brush 9, conductor 20 to the ground at 22; through the ground to the telephone circuit 21, through brush 10, ring 5, to segment 8 through concealed conductor 8^a and through the conductor 15 back to the battery 13. Upon a half revolution of the cylinder 1 however, the current will flow from battery 13 through the conductor 14, brush 11, commutation segment 8, ring 5, brush 10, down through the telephone circuit 21, to the

ground at 23, through the ground to conductor 20, to brush 9, ring 4, segment 6, brush 12 and conductor 15 back to the battery; thus it will be seen that when cylinder 1 is in the position shown in Fig. 1 the current passes up through the telephone circuit 21 while when said cylinder has revolved one half revolution the current passes down through said telephone circuit 21 as described, and by which means the alternation is effected, it being further seen however, that the alternation takes place as the current enters the cylinder 1, depending upon the position of the segments 6 and 8, rather than when the current leaves the cylinder as in other devices.

It will be further seen that simultaneous with the production of alternating currents I am able to obtain pulsating currents, that is currents which are successively intermittently produced to actuate a telephone bell or the like, wound to respond only to intermittent currents of a positive or negative polarity. When the cylinder 1 is in the position shown in Fig. 1 the current will flow through the conductor 15 through the telephone circuit 18 to the ground at 19; through the ground to the return conductor 20, through brush 9, ring 4, segment 6, through concealed conductor 7, brush 11, back through conductor 14; this circuit as described being completed each and every time the segment 6 contacts with the brush 11, and forms a negative pulsating current within the telephone circuit 18 thereof.

When the cylinder 1 is rotated one half revolution current flows through conductor 14, telephone circuit 16 is grounded at 17; through the ground to the return conductor 20, brush 9, commutator ring 4, segment 6, brush 12 and back through conductor 15;

this current as described being formed each and every time the segment 6 contacts with the brush 12 and forming a positive pulsating current within the telephone circuit 16.

Having thus fully described my invention, I claim:

In a pole changer for transforming direct constant currents into alternating currents and pulsating currents of positive and negative polarity, the combination of a constantly rotating cylinder of insulating material having a pair of spaced commutation rings extending continuously therearound and a pair of commutation segments extending partially therearound in the same plane and leaving portions of said insulated cylinder between the adjacent ends thereof, each of said segments having connection through said cylinder with respective ones of said rings, brushes mounted to contact upon the surface of said rings and segments, a battery having conductors leading to each of said segment brushes, grounded conductors leading from each of said ring brushes, one of said grounded conductors constituting a telephone circuit adapted to receive the current alternately in different directions there-through, and grounded conductors leading from said segment brushes, and constituting telephone circuits adapted to receive direct pulsating positive and direct pulsating negative currents respectively having a common return through the other of said ring brush conductors, substantially as described.

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

NOAH L. WINE.

Witnesses:

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