(No Model.)

D. W. ODIORNE

POLE CHANGER.

No. 260,228. Patented June 27, 1882.

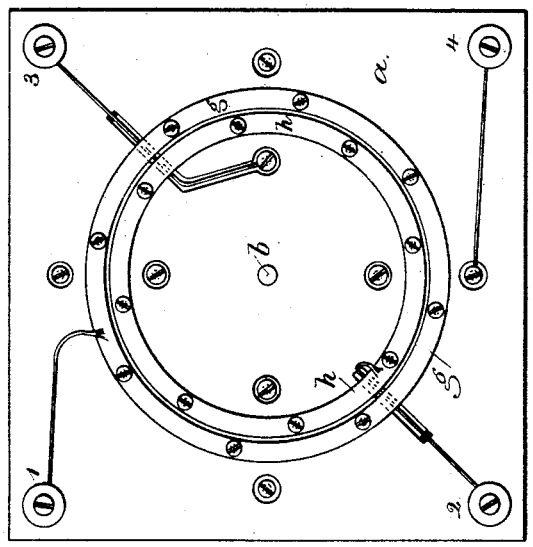

Fig. 2.

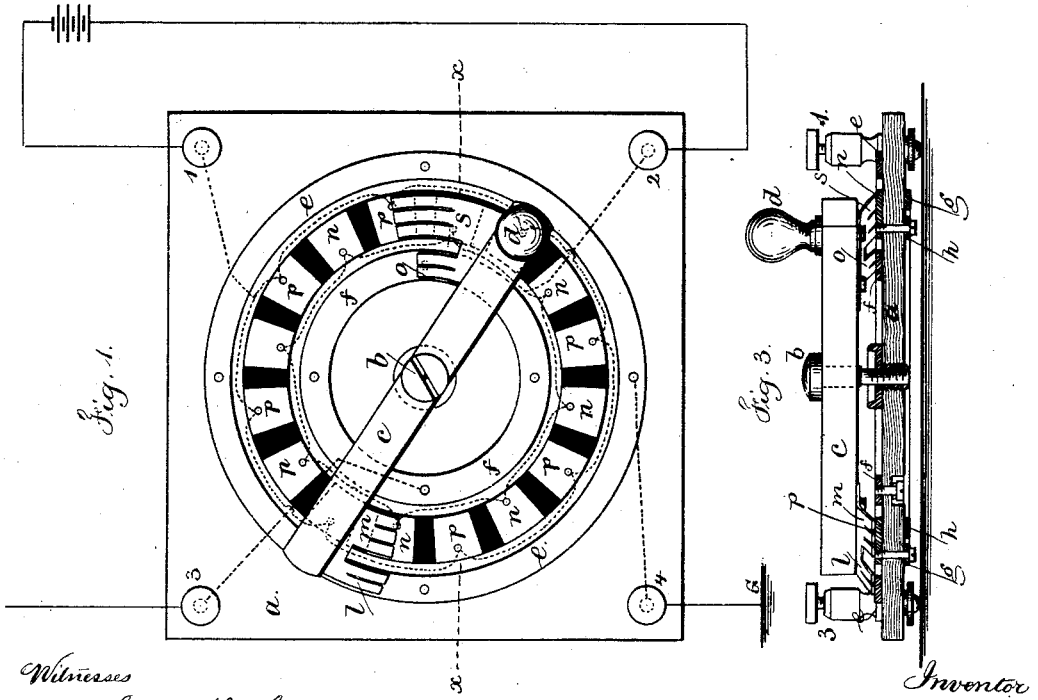

Fig. 1.

Fig. 3.

Witnesses
Chas. N. Smith
I. Hail

Inventor
David W. Odiorne
per Lemuel W. Serrell
atty

UNITED STATES PATENT OFFICE.

DAVID W. ODIORNE, OF ELIZABETH, NEW JERSEY.

POLE-CHANGER.

SPECIFICATION forming part of Letters Patent No. 260,228, dated June 27, 1882.

Application filed January 12, 1882. (No model.)

To all whom it may concern:

Be it known that I, DAVID W. ODIORNE, of Elizabeth, in the county of Union and State of New Jersey, have invented an Improvement in Pole-Changers for Electric Circuits, of which the following is a specification.

Devices have been made for changing the direction of current upon telegraph-lines, so as to alternate the polarity and ring bells or give other signals. These have usually been in the form of levers with contact-springs alternately moved into contact.

My improvement is made for alternating the polarity of the current by a revolving crank and contact-springs, so that very rapid changes can be made and call-bells rung on telephone-instruments, or other signals given at a distance.

This improved pole-changer is especially adapted to central offices, where a battery-current can be brought into action in place of magneto-generators that are often employed to pulsate a current on the line.

In the drawings, Figure 1 is a plan of the pole-changer. Fig. 2 is an inverted plan; and Fig. 3 is a section at the line *x x*, the lever and contact-springs being shown in elevation.

The base *a* of the instrument is composed of wood or other insulating material. In the center is a stud, *b*, forming a pivot for the revolving crank-arm *c*, that can be turned by the fingers applied to the handle *d*.

There are two rings, *e* and *f*, upon or let into the surface of the base *a*, and two rings, *g* and *h*, upon the under side of the base. There are also contact-blocks *p n* upon the surface of *a*, or inlaid so as to be flush with the surface. The blocks *p* are fastened to the ring *g*, and the blocks *n* are fastened to the ring *h*, and I find it most convenient to employ screws running through the rings and the base, and into the respective contact-blocks. There are an even number of these contact-blocks arranged in a circle, and alternating *p* and *n*, *p* and *n*, all around the circle. These blocks may be at equal distances apart, so that the pulsations of the current will be uniform, or they may be in groups of two or more, with longer spaces between them, so that the strokes of the bell or other signal given at the distance will indicate numbers or particular calls. The spaces between the contact-blocks should be filled with insulating material flush with the surfaces of the blocks.

The crank-arm *c* is preferably of insulating material, and there are insulating-springs, *l m* and *s o*, upon the said arm, at opposite sides of the pivot on which it is revolved. The springs *m s* run over the contact-blocks *p n*. The spring *l* rests on the ring *e* and the spring *o* upon the ring *f*. The spring *s* is longer than the spring *m*, so that it rests upon a block *p* at the time the spring *m* rests upon a block *n*, and the reverse. The binding-post 1 is presumed to be connected to positive pole of battery, and the current passes from that to the ring *g*, and to all the contact-plates *p*. The negative pole is presumed to be connected to the binding-post 2, and thence by the ring *h* with all the contact-blocks *n*. The line and ground connections are by the rings *e f* and binding-posts 3 and 4, as indicated in the diagram. When *s* rests on one of the contact-blocks *p* the current will be through 1 *g p s o f* 3 to line and return, or negative be from G, 4, *e*, *l*, *m*, *n*, *h*, and 2 to battery. When *m* rests on one of the contact-blocks *p* the current will be through 1, *g*, *p*, *m*, *l*, *e*, and 4 to ground, and the return or negative be from line by 3, *f*, *o*, *s*, *n*, *h*, and 2 to battery. Hence the circuit is changed each contact-block that is passed over, and the speed of reversal will depend on the rapidity of movement given to the crank-arm in proportion to the width of the contact-plates.

This pole-changer is very cheaply made, and it is not liable to get out of order, because the points of the springs rub over the rings and contact-blocks, and hence are kept clean and bright.

I claim as my invention—

1. The combination, in a pole-changer, of a plate of insulating material, the pivoted arm *c*, capable of being revolved, the contact-springs *l m o s* upon such arm, the rings *e f* and alternating contact-blocks *p n* upon such

plate, and the circuit-connections, substantially as set forth.

2. In a pole-changer, a plate of insulating material with a circular range of contact-blocks upon one surface and two rings upon the other surface, and alternating connections from the contact-blocks to the respective rings, and the electric circuit connected to such rings, substantially as set forth.

Signed by me this 5th day of January, A. D. 1882.

D. W. ODIORNE.

Witnesses:
HAROLD SERRELL,
GEO. T. PINCKNEY,
WILLIAM G. MOTT.