

No. 703,225.

Patented June 24, 1902.

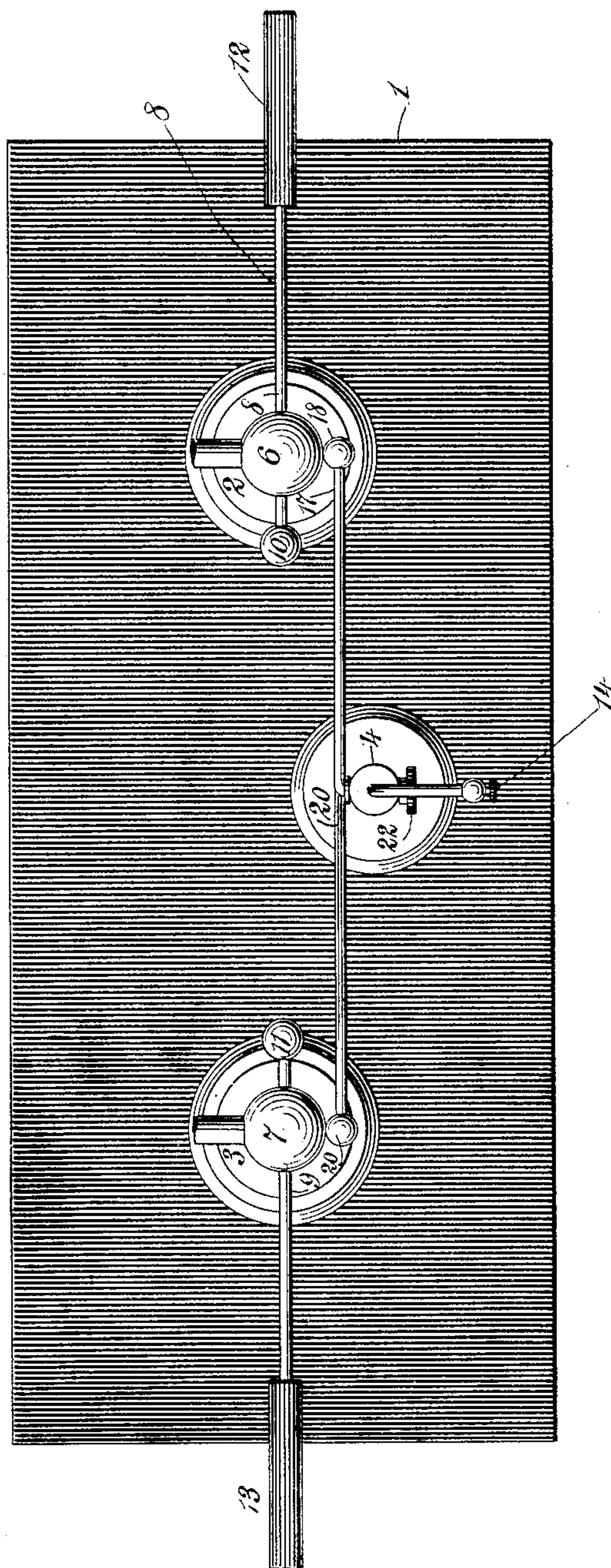
J. M. G. BEARD.  
POLE CHANGER.

(Application filed Feb. 12, 1902.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



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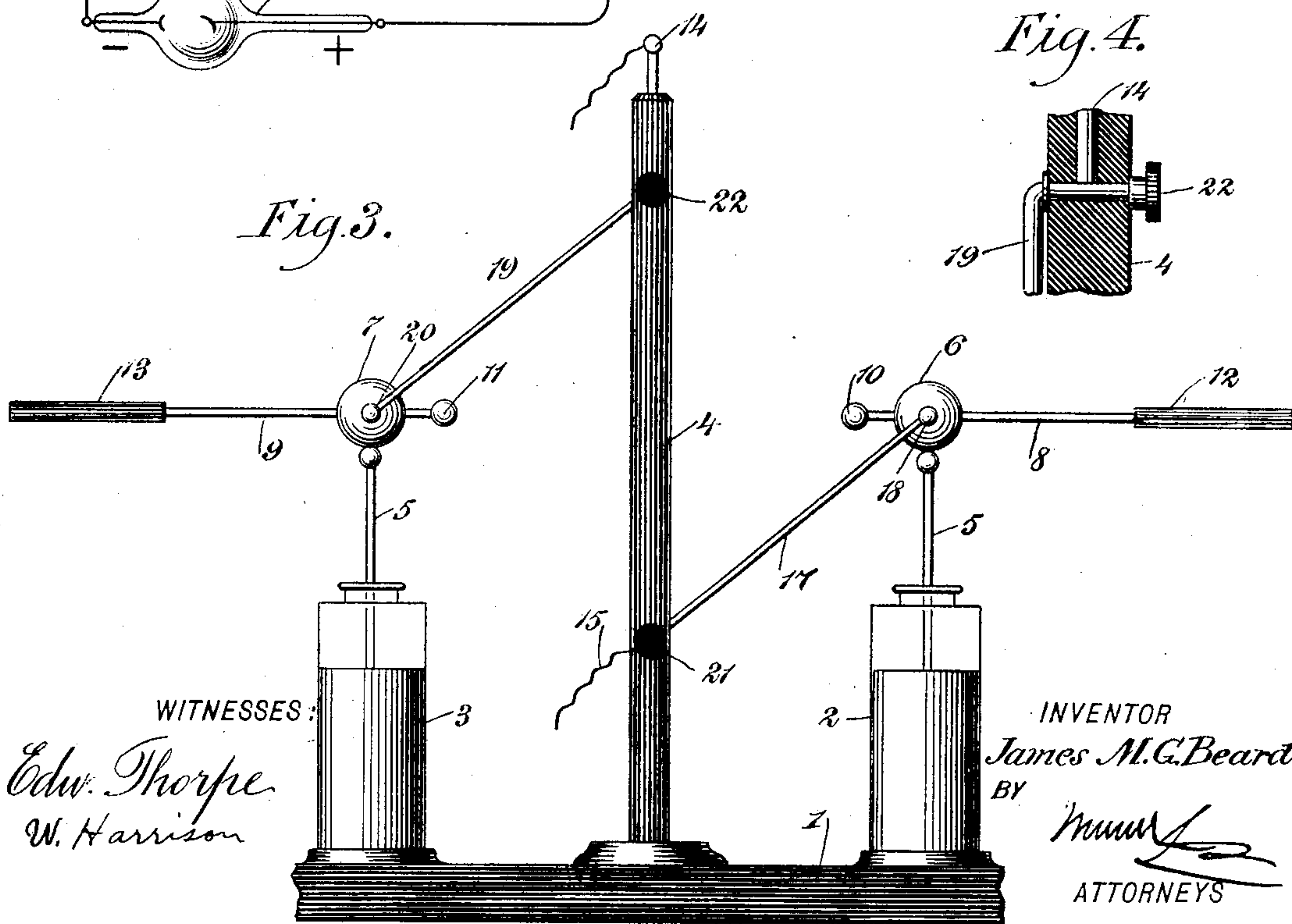
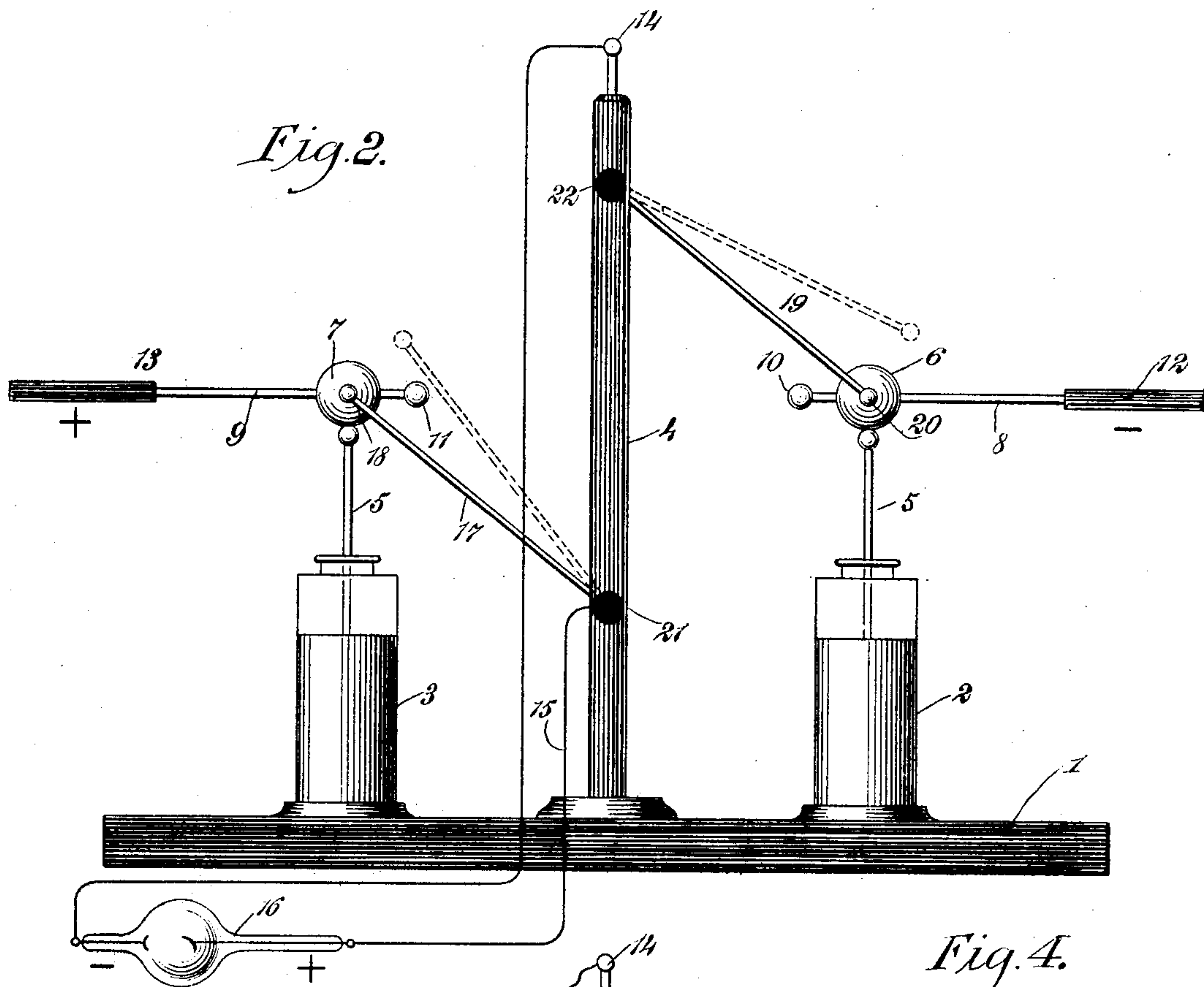
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2 Sheets—Sheet 2.





# UNITED STATES PATENT OFFICE.

JAMES M. G. BEARD, OF FRUITA, COLORADO.

## POLE-CHANGER.

SPECIFICATION forming part of Letters Patent No. 703,225, dated June 24, 1902.

Application filed February 12, 1902. Serial No. 93,707. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES MOORE GREGG BEARD, a citizen of the United States, and a resident of Fruita, in the county of Mesa and State of Colorado, have invented new and useful Improvements in Pole-Changers, of which the following is a full, clear, and exact description.

My invention relates to pole-changers, more particularly those used for electricity of high potential—such, for instance, as currents from static machines, induction-coils, and oscillators.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of my device. Fig. 2 is a side elevation of the same. Fig. 3 is likewise a side elevation showing certain of the parts slightly altered in position, and Fig. 4 is a fragmentary section showing one of the electrical connections.

Upon a base-board 1 of insulating material the two Leyden jars 2 3 are mounted, and between these jars is the insulating vertical standard 4. The stems 5 of the jars engage the knobs 6 7 of the prime conductor, one of said knobs being constantly charged with positive electricity and the other being constantly charged with negative electricity. The rods 8 9, which slide in the knobs 6 7, are provided with polished knobs 10 11 and with insulating-handles 12 13 in the usual manner. The electrical connections 14 15 are for the purpose of attaching the pole-changer to the device through which the current is to be sent—for instance, the Crookes tube 16. Metallic arms 17 19 are provided with polished knobs 18 20 and are pivoted upon the vertical standard 4, so as to swing freely, as indicated by dotted lines in Fig. 2. The insulating-handles 21 22 are made preferably of vulcanite and are for the purpose of manipulating the metallic arms 17 19.

My invention is used as follows: The plate 1 being set in front of a static machine or other device for producing currents of high potential, the vulcanite handles 21 22 are turned by hand, so as to bring the metallic arms into any desired position—for instance, as shown in Fig. 3. The knobs 18 20 can be

brought to touch the knobs of the prime conductor, as indicated in Fig. 3, or can be independently spaced a little distance therefrom, as indicated in Fig. 2. When the device is in the position indicated by dotted lines in Fig. 2, a spark-gap is formed between the knob 18 and the knob 7 of the prime conductor, and independently a spark-gap is formed between the knob 20 and the prime conductor 6. The arms 17 19 being movable independently it follows that the spark-gap can be made either upon the negative or the positive terminal or both the negative and positive terminals of the prime conductor.

If now it is desired to change the direction of the currents through the Crookes tube, the arm 19 is moved radially and over to the left from the member 6 to the member 7, while the arm 17 is moved radially and over to the right from the member 7 to the member 6, as indicated in Fig. 3. The current now changes polarity and passes through the Crookes tube in the opposite direction.

A Crookes tube is not essential to my apparatus, which may be used in connection with any mechanism in which it is desirable to change the direction of the currents.

When the apparatus is not in use, the arms 17 19 may be folded parallel with the general direction of the vertical member 4 and substantially parallel with each other, so as to occupy but little space and yet be ready for immediate use. The Leyden jars 2 3 act merely as condensers in the usual manner and may be discarded, if desired.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A pole-changer for currents of high potential, comprising a base, a vertical insulating standard mounted thereon, radially-movable metallic arms pivoted upon said standard and provided with knobs, insulating-handles connected with said arms for actuating the same, and means for connecting said arms with an electrical supply.

2. A pole-changer for currents of high potential, comprising a base, an insulating member mounted thereon, Leyden jars mounted upon said base and disposed about said insulating member, metallic arms pivotally mounted upon said insulating member and

provided with knobs for discharging said Leyden jars, insulating-handles for actuating said arms, and electric conduits connected with said metallic arms.

- 5 3. A pole-changer for currents of high potential, comprising a base, an insulating-standard mounted thereon, Leyden jars mounted upon said base, means for continuously charging said jars by currents of opposite sign, metallic arms mounted upon said  
10 insulating-standard and free to swing radially, said arms being provided with metallic knobs and with insulating-handles and separate electrodes connected with said metallic  
15 arms.

4. A pole-changer comprising a base, an in-

insulating-standard mounted thereon, a plurality of metallic arms pivoted upon said standard and terminating in knobs, means for actuating said arms, and conduits for connecting said arms with opposite poles of an electric machine, the arrangement being such that said arms when not in use may be folded parallel with each other and with said standard.

25 In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES M. G. BEARD.

Witnesses:

GEO. W. NEWBURY,  
JOHN G. BEARD.