

No. 672,195.

Patented Apr. 16, 1901.

H. SHOEMAKER.
AUTOMATIC CURRENT INTERRUPTER.

(Application filed Nov. 28, 1900.)

(No Model.)

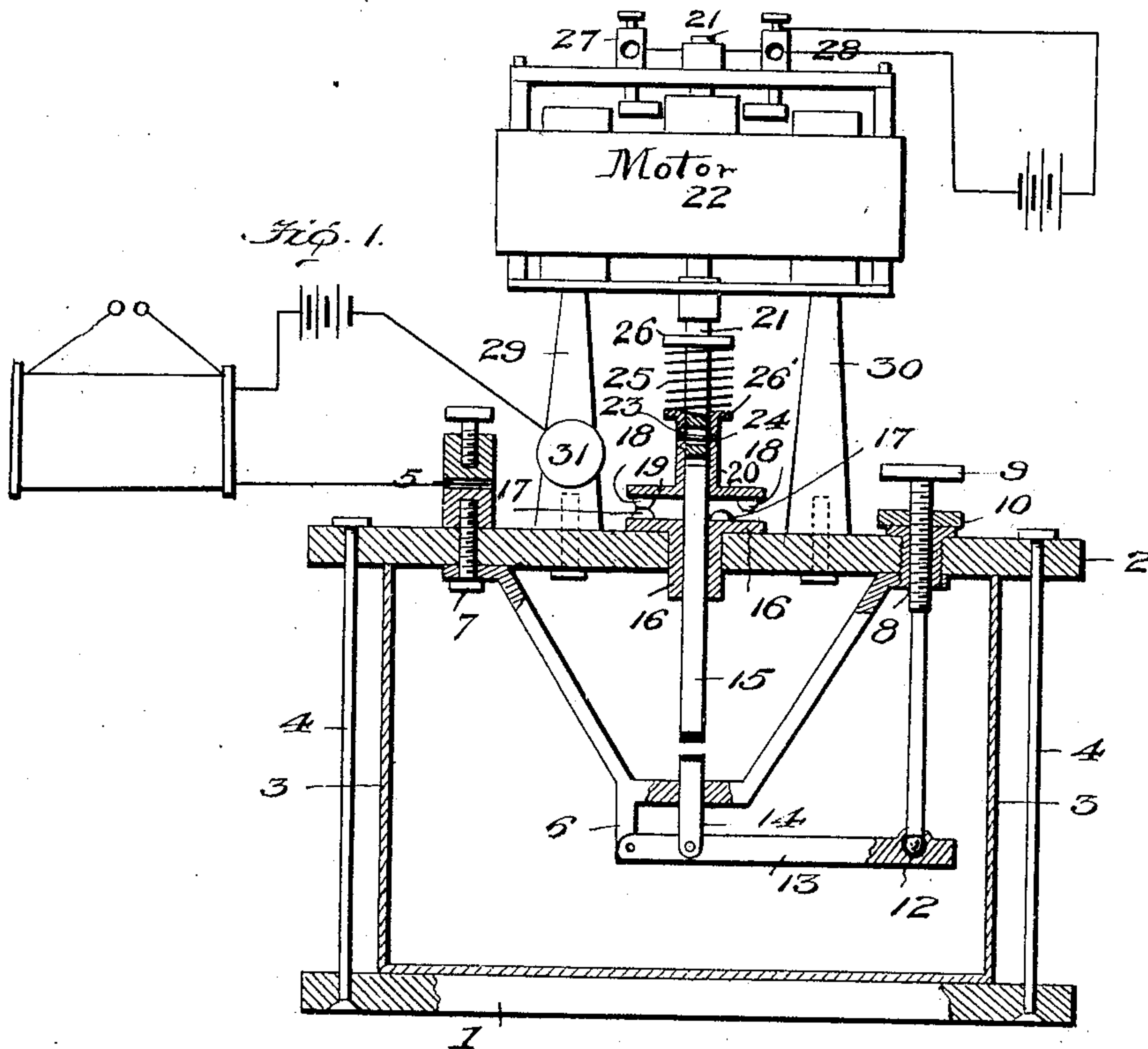


Fig. 2.

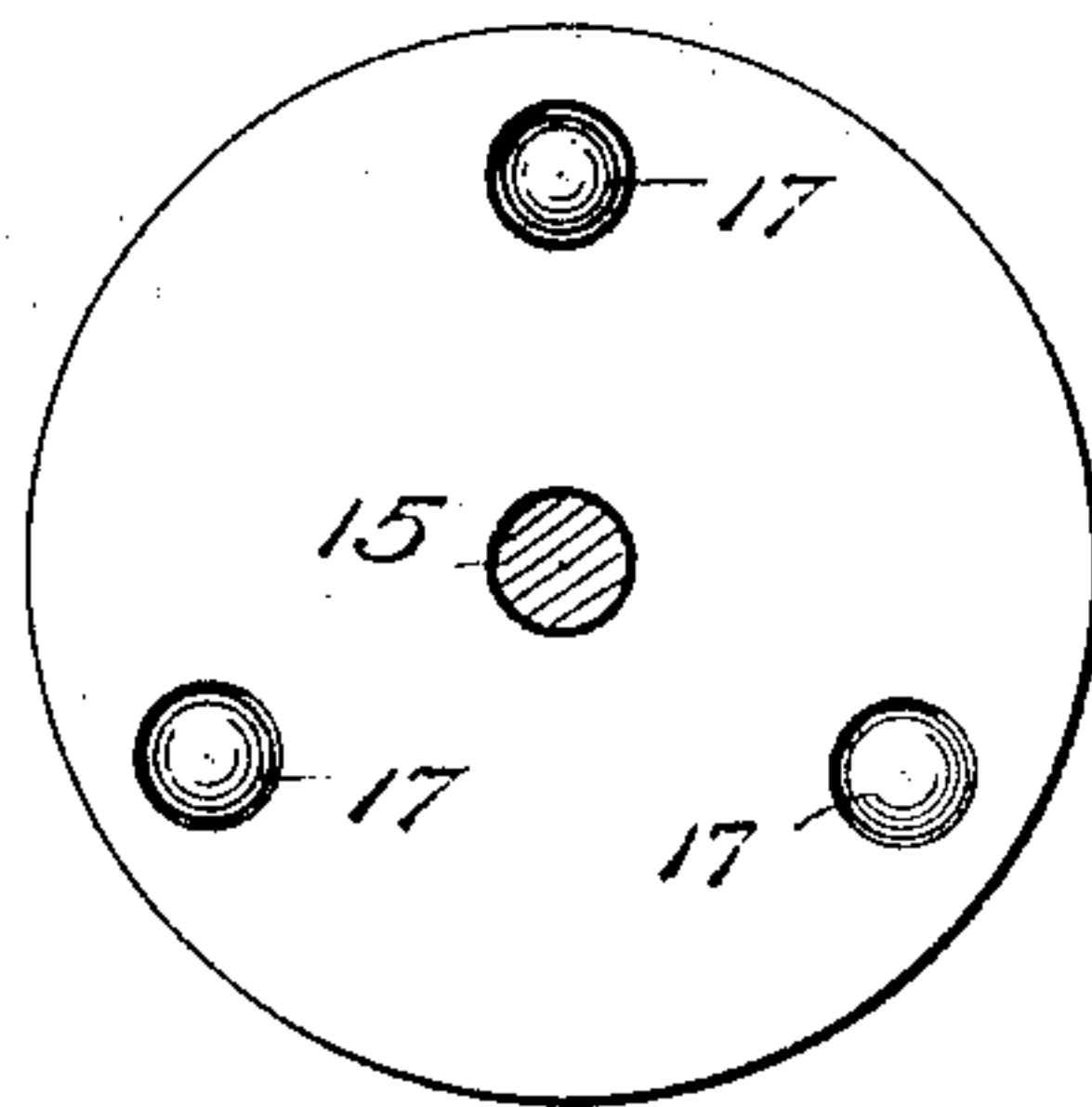


Fig. 4.

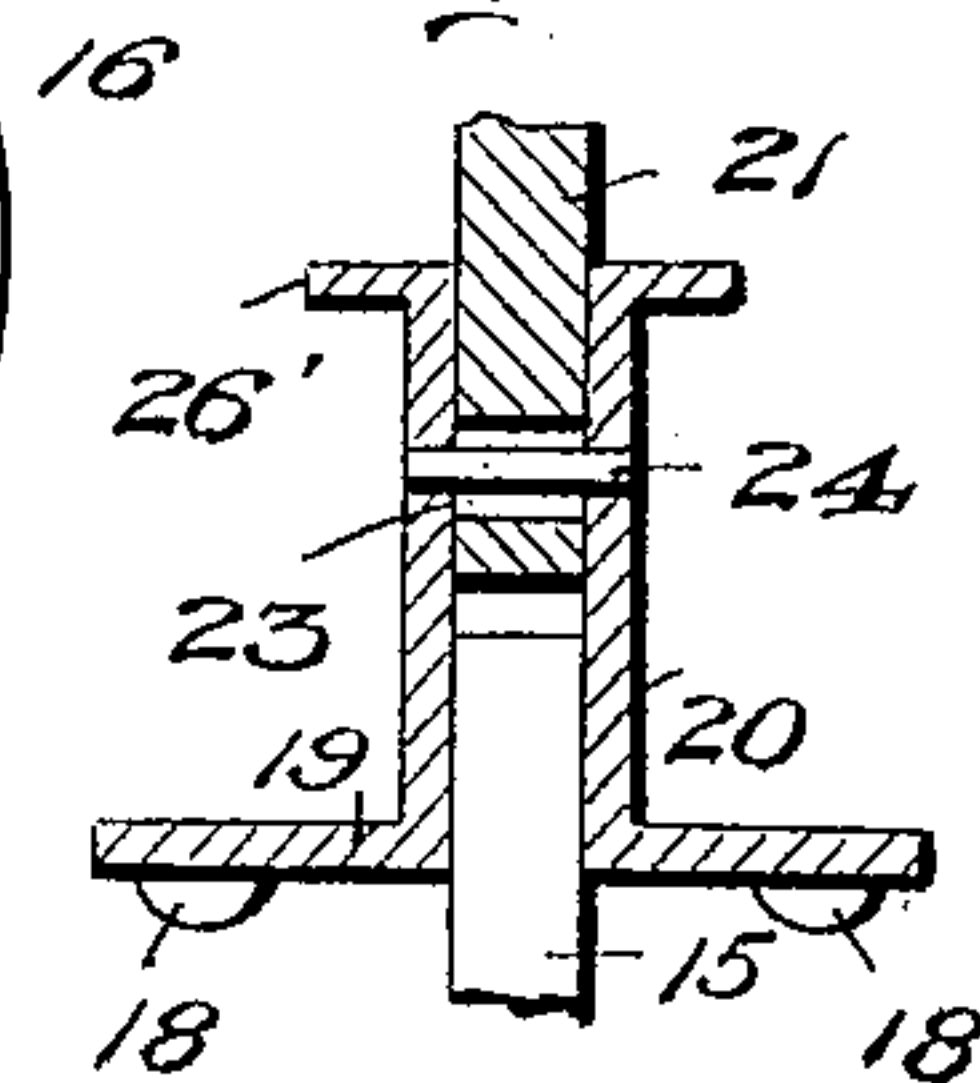
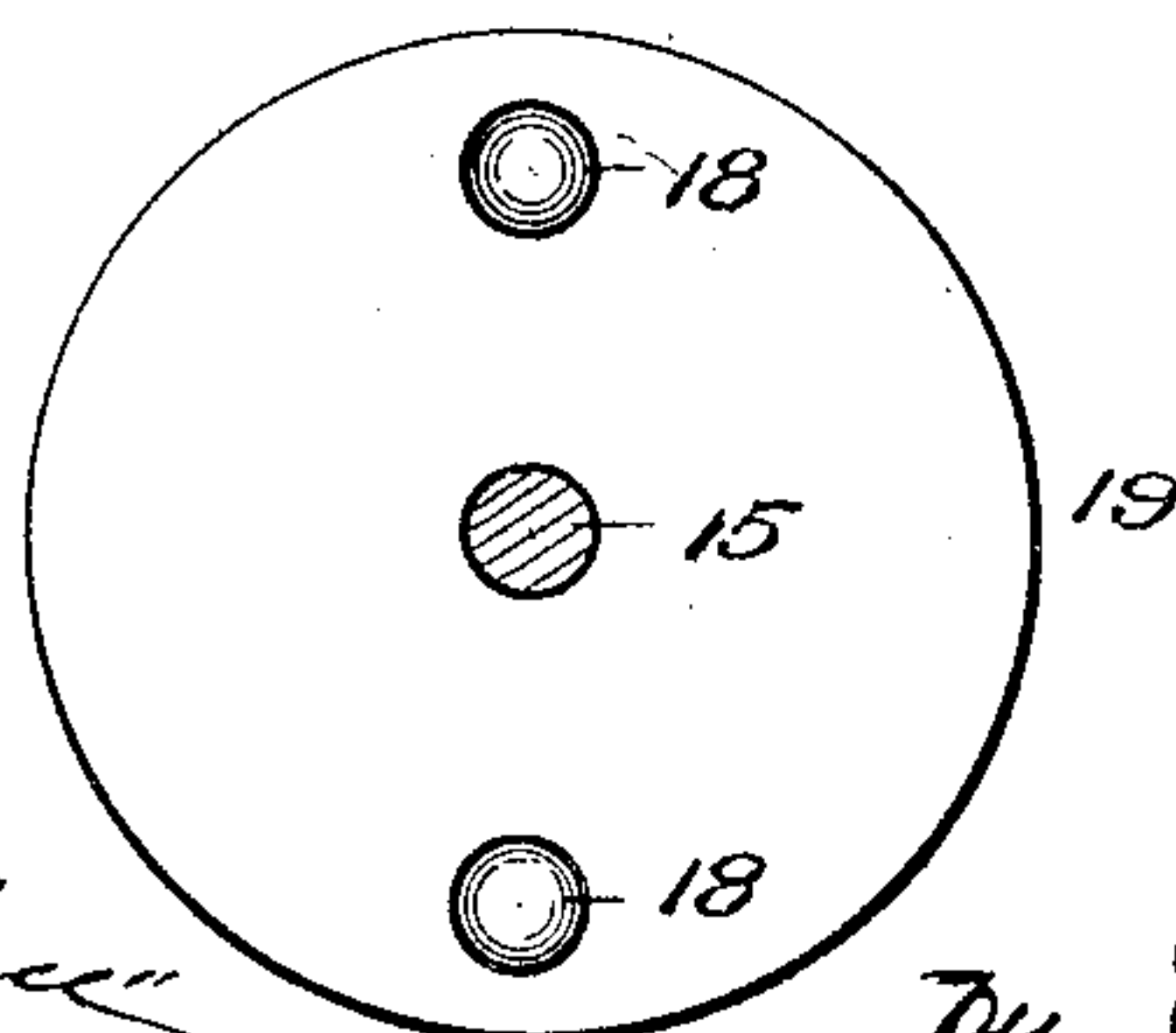


Fig. 3.



Witnesses

Wm. O. Dushier
Bernard Hoffmann

Inventor
Harry Shoemaker

E. W. Ennis & Co. Attorneys

UNITED STATES PATENT OFFICE.

HARRY SHOEMAKER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO GUSTAVE P. GEHRING, OF SAME PLACE.

AUTOMATIC CURRENT-INTERRUPTER.

SPECIFICATION forming part of Letters Patent No. 672,195, dated April 16, 1901.

Application filed November 28, 1900. Serial No. 38,018. (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 Automatic Current-Interrupters; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain novel improvements in independent automatic current-interrupters for the "primary" circuit of Ruhmkorff or induction coils, and the object is to provide an independent high-frequency "make-and-break" for the battery-circuit of the induction-coil that shall be automatic, reliable, and independent of the primary or energizing circuit of the coil itself.

To these ends my invention consists in the construction, combination, and arrangement of the several elements of the device, as will be hereinafter more fully described, and particularly pointed out in the claims.

In the accompanying drawings the same reference characters indicate the same parts of the invention.

Figure 1 is a side elevation, partly in section, of my improved automatic current-interrupter shown in connection with its proper circuits, which are in diagram. Figs. 2 and 3 are detail views of the same, and Fig. 4 is an enlarged detail section of the motor-coupling.

1 designates the base-plate, and 2 the top plate, which forms the cover for the cell 3 and which is adapted to contain any suitable liquid dielectric, such as a heavy oil or the like, and 4 4 denote the bolts which clamp the cell or jar between the plates 1 and 2. This top plate (and cell) may be of hard rubber, glass, or any suitable electric non-conductor, and in it is mounted the binding-post 5, from which a conductor extends to one pole of the primary circuit of a Ruhmkorff or induction coil.

6 denotes a depending bracket, one arm of which is secured to the plate 2 and the post 5 by the screw 7 and the other arm is likewise secured to said plate by a hollow bolt 8,

which is externally threaded to enter the bracket and internally threaded to receive the adjusting-screw 9, which is provided with a lock-nut 10 to secure it in its adjusted position. The lower end of this adjusting-screw 9 is connected by a "ball-and-socket" joint 12 to the free end of the lever 13, fulcrumed in the lower end of the bracket 6, and 14 denotes a platinum-tipped contact-point pivoted to the lever 13 and extending through a guide-orifice in the bridge of the bracket 6, as shown. 15 designates a correspondingly-aligned and platinum-tipped contact-rod having a vertical movement in the guide-socket 16, fixed in the top plate 2, and the upper face of this guide-socket 16 is provided with three equidistant hemispherical lugs 17 17 17, (see Fig. 2,) which project into the path of two corresponding lugs 18 18, (see Fig. 3,) formed on the bottom face of the collar 19, fixed on the rod 15, and 20 denotes a female coupling fixed on the rod 15 above the collar 19 to receive the lower end of the shaft 21 of the electromagnetic motor 22, the lower end of said shaft being formed with a transverse or diametrical slot 23, through which the coupling-pin 24, fixed in the coupling 20, passes, the construction being such that while the motor-shaft revolves it has no vertical or end movement, while the driven shaft or rod 15 does have a vertical or end movement in addition to its rotary movement.

25 designates a spiral spring encompassing the motor-shaft 21 between the collar 26 on the motor-shaft and a corresponding collar 26' on the coupling 20, the office of which is to provide for the return movement of the downward motion of the rod 15 after it has been forced upward by the action of the hemispheres.

The motor 22 is provided with the usual binding-posts 27 and 28 and is mounted on the standards 29 30, fixed to the top plate 2, the post 29 being provided with a binding-screw 31, from which a conductor extends to a suitable battery, and from this battery the usual conductor extends to the remaining pole of the primary circuit of the induction-coil heretofore mentioned, the said circuit being completed through the motor-frame, shaft, and rod 15 and thence through the aligned

contact-point 14, bracket 6, and post 5, so that it will be seen that the primary circuit of the coil is entirely separate and independent of the motor-circuit, and thus it will be understood that any defect in the one will not affect the other circuit—an advantage not possessed by an apparatus in which the interrupter is in the primary circuit of the coil, and consequently both dependent on the same battery.

From this description the operation of my interrupter is readily understood and its numerous advantages fully appreciated; but, briefly stated, it is as follows: As the motor is revolved the spring-actuated collar 19, carrying the rod 15, which is guided in the socket 16, is revolved, and by reason of the spring and the hemispherical lugs 17 of the socket 16 and the corresponding lugs 18 of the collar 19 the rod 15 is raised or lowered or reciprocated six times to one revolution of the motor, thus causing a quick making and breaking of the circuit or interrupting of the current through the platinum-tipped contact-point 14, carried by the fulcrumed lever 13, which holds the point at the proper adjustment by means of the adjusting-screw 9.

In the accompanying drawings I have shown my invention in the best form now known to me; but very many changes in the details may be made within the skill of a competent mechanic without departing from the principle or spirit of the invention as set forth in the claims at the end of this specification.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A stationary contact-point, a movable alined contact-rod and means for simultaneously imparting a reciprocating and a rotary movement to said rod, as and for the purpose set forth.

2. A stationary contact-point, means for ad-

justing said point, an alined contact-rod and means for simultaneously reciprocating and rotating said rod, substantially as and for the purpose set forth.

3. An electric circuit, comprising a stationary contact-point and an alined contact-rod, of means, independent of said electric circuit for simultaneously rotating and reciprocating said contact-rod, substantially as and for the purpose set forth.

4. A "make-and-break" contact device arranged to interrupt the primary circuit of an induction-coil, and a prime motor adapted to operate said contact device, substantially as and for the purpose set forth.

5. A prime motor, a reciprocating contact-rod carried by said motor and a stationary contact-point arranged in the path of said contact-rod, as and for the purpose set forth.

6. A prime motor, a reciprocating conductor-rod rotated by said motor, and an adjustable contact-point arranged in the path of said reciprocating rod, substantially as and for the purpose set forth.

7. A movable contact-rod, a prime motor and means for imparting a reciprocating and a rotary movement to said rod and a stationary contact-point arranged in the path of said rod, as and for the purpose set forth.

8. The combination with the prime motor and its rotating shaft, of an alined conductor shaft or rod driven thereby and having an end movement in addition to its rotary movement, and a conductor-rod, insulated and alined in the path of said conductor-shaft, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HARRY SHOEMAKER.

Witnesses:

GUSTAVE P. GEHRING,
JOSEPH S. HAGAN.