No. 710,373. Patented Sept. 30, 1902.

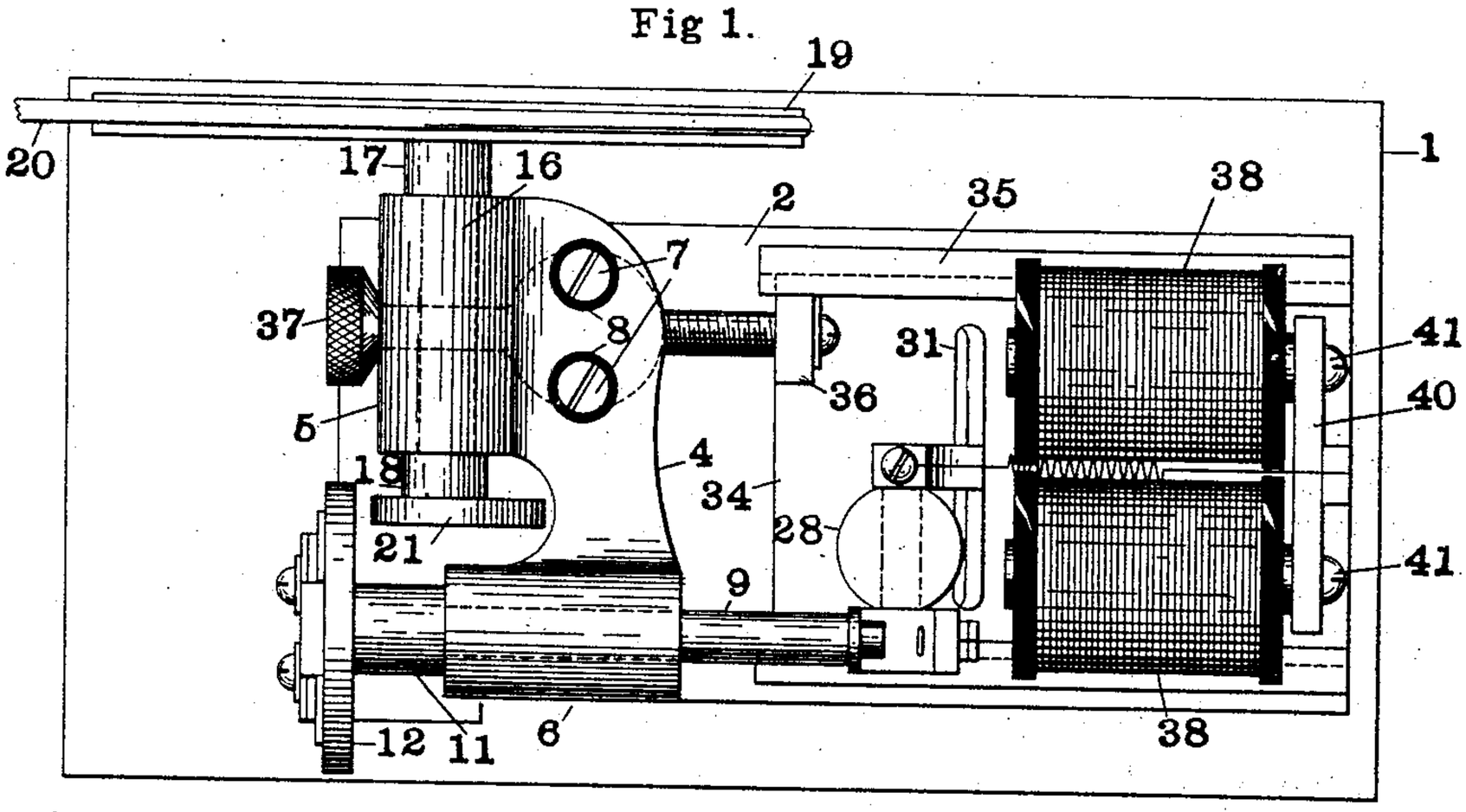
# H. SHOEMAKER.

## INTERRUPTER FOR ELECTRIC APPARATUS.

(Application filed June 13, 1902.)

(No Model.)

Fig 1.



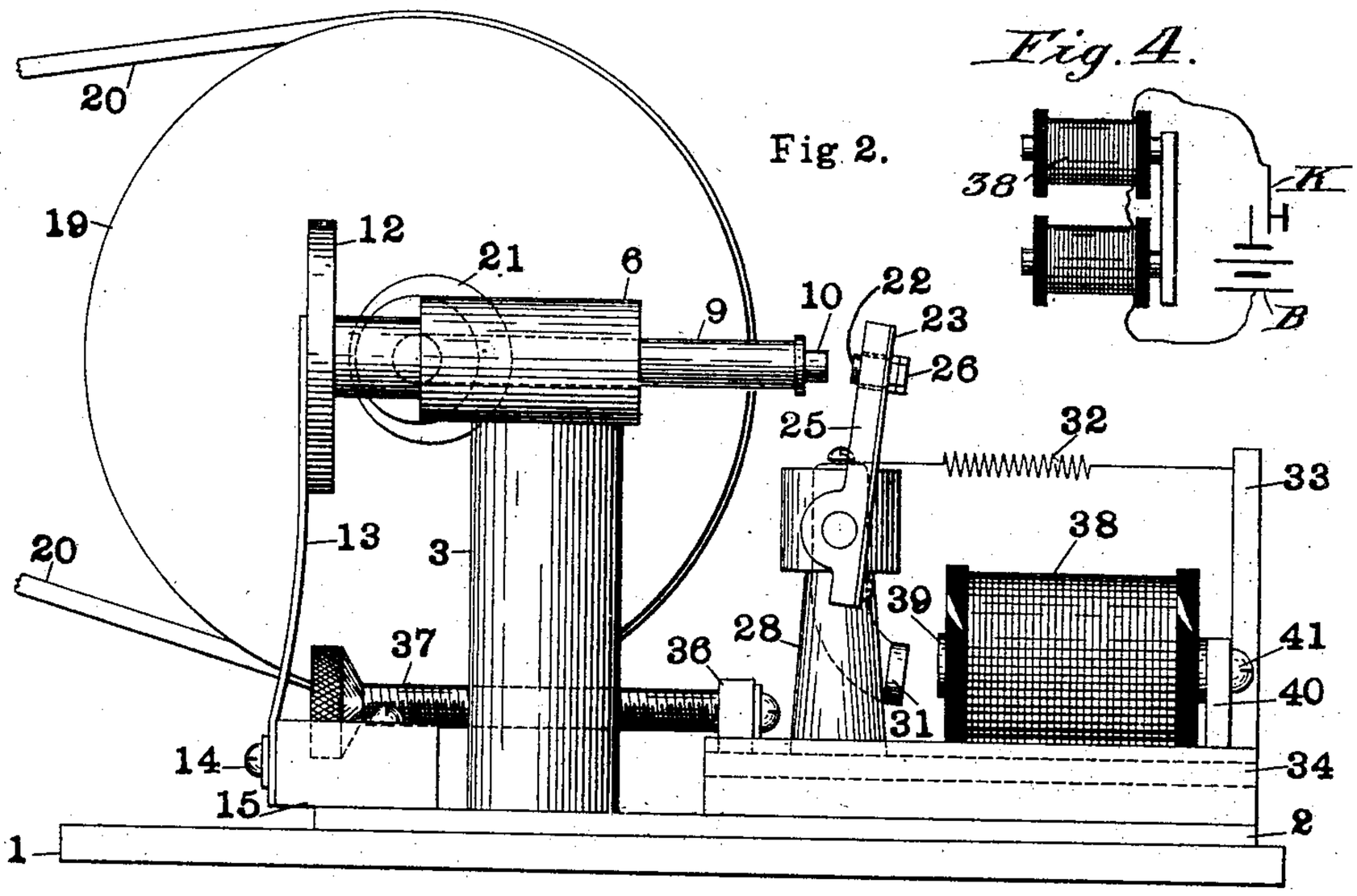
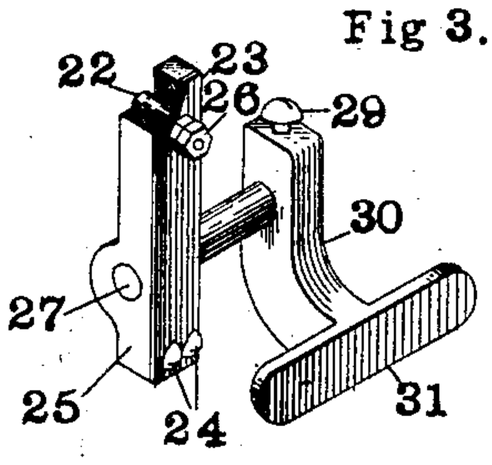




Fig 2.

*Fig. 4.*




Fig 3.




Witnesses
Mae Hofmann
J. W. Howsdale

Inventor
Harry Shoemaker
by Cornelius D. Ehret
his Attorney

# UNITED STATES PATENT OFFICE.

HARRY SHOEMAKER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO MARIE V. GEHRING AND THE CONSOLIDATED WIRELESS TELEGRAPH AND TELEPHONE COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

## INTERRUPTER FOR ELECTRIC APPARATUS.

SPECIFICATION forming part of Letters Patent No. 710,373, dated September 30, 1902.

Original application filed January 11, 1902, Serial No. 89,249. Divided and this application filed June 13, 1902. Serial No. 111,448. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY SHOEMAKER, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Interrupter, of which the following is a specification.

My invention relates to an electromechanical means for interrupting an electric current at a rapid rate, more especially the current in the primary of an induction-coil or transformer for use in wireless signaling, X-ray work, and, in fact, any work where the induction-coils, especially those of high power, are used.

More specifically, it consists of a motor-driven reciprocating contact into the path of travel of which contact is brought a second contact under the control of a telegraph key, switch, or any other known device.

It consists, further, in an arrangement whereby the reciprocating contact is also rotated in order that the wear of the active contact may be uniform and that it should always present a bright surface to its coöperating contact.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a plan view of the interrupter, and Fig. 2 is a side elevation of the same. Fig. 3 is a detailed view of the contact which is moved into the path of the reciprocating contact. Fig. 4 is a diagram of the control-circuit.

At 1 is shown a piece of wood or any suitable material, upon which is mounted the plate 2, preferably of metal. Extending vertically from said plate 2 is the standard 3, also of metal, and which has secured at its top a bracket 4, having the two members 5 and 6 extending at right angles to each other. This bracket 4 is secured to the post or standard 3 by means of screw 7 and is insulated from standard 3 by the material 8.

Member 6 of the bracket 4 has a cylindrical hole in which reciprocates the rod 9, having at its extreme right end the platinum contact 10. At the left end of said rod 9 is a shoulder or enlargement 11, integral with or secured to which is the disk 12. Shoulder 11 limits the travel of the rod 9 toward the right, in which direction it is urged by spring 13, which is secured at its lower end by screws 14 to a block 15, secured to plate 2.

In the transversely-extending member 5 of the bracket 4 is also a cylindrical hole operating as a bearing for the shaft 16, having at its ends the shoulders 17 and 18. Next to the shoulder 17 and integral therewith or secured thereto is the belt-wheel 19, over which travels the belt 20, driven by an electric motor or some other prime mover. (Not shown.)

On shaft 16 is the eccentric 21, which is driven at a high rate of speed by belt 20.

As shown in Figs. 1 and 2 the rod 9 is in its extreme position to the right under the influence of the spring 13. As the shaft 16 revolves, however, the eccentric 21 comes in contact with the disk 12 and moves the same and also rod 9 to the left in opposition to the spring 13. In its further travel the eccentric progresses to a position out of contact with the disk 12, and said disk 12 under the influence of 13 follows the eccentric until the shoulder 11 comes in contact with the bearing 6, as shown in Fig. 1. This continued rotation of eccentric 21 causes, therefore, a reciprocating motion of the contact 10. At the same time, however, it will be seen that, due to the friction between disk 12 and eccentric 21, the disk 12 is caused to rotate as well as to reciprocate.

22 is the second contact of the interrupter and is mounted upon a leaf-spring 23, secured by screws 24 to the bottom of the member 25, and said contact 22 extends through the upper end of said member 25, as clearly shown in Fig. 3.

The contact 22 is held rigid by the spring 23 by means of the nuts 26.

27 is a small rock-shaft upon which member 25 is secured, and said shaft 27 has a bearing in the upper end of the standard 28 and extends through the same, and on its opposite end, outside of such bearing, is fastened by means of the screw 29 the downwardly-extending and curved member 30, carrying at its lower end the armature 31, of iron.

Around screw 29 is fastened one end of the adjustable spring 32, whose opposite end is secured to the upright 33, which is fastened to the plate 34, which slides in guideways in the member 35, fastened to plate 32. On said member 34 is a lug 36, to which is rotatively secured the screw 37, which engages screw-threads in the standard 3. By turning the screw 37 the plate 34, carrying the standard 28 and the second main contact 22, is made to slide in member 35 for the purpose of determining the point at which the contacts 10 and 22 shall come into engagement and the period of time during which they shall remain in engagement.

38 represents electromagnets with cores 39, secured to back armature 40 by means of screw 41, all mounted on plate 34. When these magnets 38 are energized, they attract armature 31, and thereby tilt the upper end of the member 25 toward the left as viewed in Fig. 2, so that the contact 22 shall come into the path of the reciprocating contact 10. Upon the deënergization of said magnets 38 the spring 32 retracts the contact 22 out of the path of contact 10. When employed on wireless-telegraph systems, the magnets 38 are in a circuit of a source of energy B and an operator's key K—such as the ordinary Morse key, as shown in Fig. 4—and upon every closure of circuit and interruption of same at the points 10 and 22 there are emitted sparks or currents from the secondary of the transformer or induction-coil in whose primary are located the aforementioned contacts 10 and 22.

In connecting the interrupter in the circuit a connection is made to the bracket 4, and the other connection is made to the standard 28 or to any other metal parts which are in electrical communication with the contact 22.

The interrupter herein described has been described by me in my application for Letters Patent, Serial No. 89,249, filed January 11, 1902, of which this application is a division.

What I claim is—

1. An interrupter comprising an eccentric, a reciprocating member engaged by said eccentric, a terminal of the interrupter on said reciprocating member, a pivoted member, a leaf-spring secured to said member, and supporting the second contact of the interrupter, and means for rotating the eccentric.

2. An interrupter comprising an eccentric, a reciprocating member engaged by said eccentric, a terminal of the interrupter on said reciprocating member, a pivoted member, a leaf-spring secured to said member and supporting the second contact of the interrupter, means for rotating the eccentric and means for bringing the second contact into the path of travel of the reciprocating member.

3. An interrupter comprising a continuously-reciprocating rod carrying a contact, and means for bringing the second contact of the interrupter into the path of travel of the reciprocating contact at predetermined intervals.

4. An interrupter comprising a reciprocating contact and means for bringing the second contact of the interrupter into the path of travel of the reciprocating contact.

5. An interrupter comprising a reciprocating and rotating contact, a second contact, and means for bringing said second contact into the path of travel of the reciprocating and rotating contact.

6. An interrupter comprising an eccentric, a contact reciprocated and rotated by said eccentric, a second contact, and means for bringing said contact into the path of travel of the reciprocating and rotating contact.

7. In an interrupter, a spring, a contact mounted on said spring, said spring mounted on a rock-shaft and means for rocking said shaft at desired intervals.

8. In an interrupter a leaf-spring, a contact mounted thereon, a rock-shaft, said spring mounted on said shaft, and electromagnetic means for rocking said shaft.

9. In an interrupter a leaf-spring, a contact mounted thereon, a rock-shaft carrying said leaf-spring, an armature secured to said rock-shaft, and an electromagnet coöperating with said armature.

10. An interrupter comprising a reciprocating and rotating contact, a second contact, and means for moving said contact into the path of travel of the reciprocating and rotating contact, said second contact mounted upon a member, and means for adjusting the position of said member.

HARRY SHOEMAKER.

Witnesses:
GREENLEAF W. PICKARD,
ALICE T. BURROUGH.