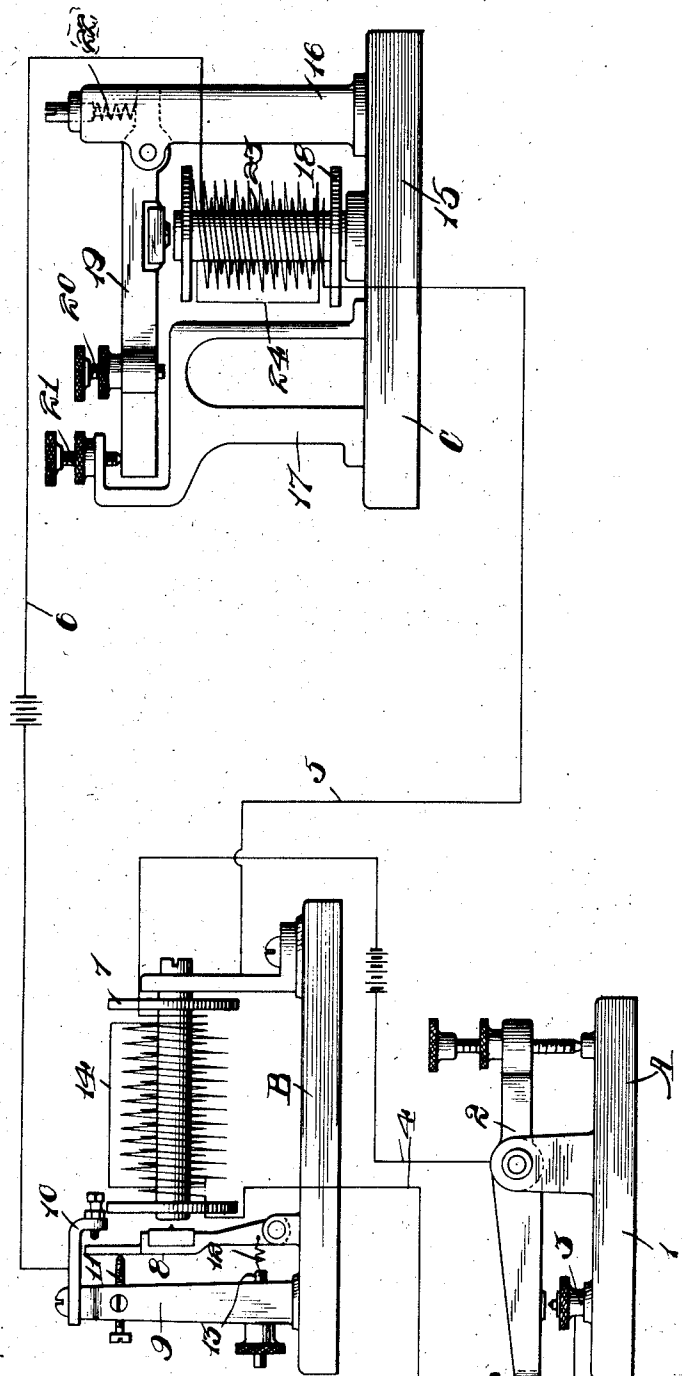
No. 812,773. PATENTED FEB. 13, 1906.

C. J. SCHWARZE.

TELEGRAPH INSTRUMENT.

APPLICATION FILED MAY 31, 1904.



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TELEGRAPH INSTRUMENT.

No. 812,773. Specification of Letters Patent. Patented Feb. 13, 1906.

Application filed May 31, 1904. Serial No. 210,476.

To all whom it may concern:

Be it known that I, CARL J. SCHWARZE, a citizen of the United States, residing at Adrian, in the county of Lenawee and State of Michigan, have invented a certain new and useful Improvement in Telegraph Instruments, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to telegraph instruments; and its principal object is to increase the efficiency and effectiveness of such instruments and to prevent the production of sparks in their operation.

In accordance with my present invention I provide the operating-magnet of the instrument with a closed secondary coil, so that the changes in magnetic flux caused by the making and breaking of the circuit operate to induce currents in such secondary coil. This delays the changes in magnetic flux and absorbs the inductive energy, thereby preventing the production of sparks at break. In this application I show both a relay and a sounder operating on this general principle.

In the accompanying drawing, the figure is a view of a telegraph system, showing a key, a relay, and a sounder, whereof the two latter embody my present invention.

Referring to the figure, A is the telegraph-key, which can be of any suitable or preferred construction. The key shown comprises a base 1, having a pivoted key-lever 2, which is adapted to make connection with a contact 3 to close and open the circuit.

B is a relay, and C is a sounder, the relay B being connected by a circuit 4 with the key A and the sounder being connected by a circuit 5 6 with the relay B. The relay B is provided with an electromagnet 7, having its coil included in the circuit 4, and is also provided with a vibratory armature 8, adapted to be controlled by the magnet 7. A post 9 is provided with a contact-piece 10 and an adjusting-screw 11, by which the movement of the armature 8 is controlled and the circuit 5 6 to the sounder C closed when the armature 8 is attracted. A spring 12 extends between the armature 8 and an adjustable thumb-screw 13, so as to hold the armature 8 normally in retracted position away from the magnet 7. The magnet 7 is provided with a closed induction-coil 14, consisting of a coil of comparatively fine wire having its ends connected together, so as to form a closed circuit. This closed induction-coil acts as a secondary for the coil of the magnet 7, thereby opposing the changes in magnetic flux in the core of said magnet and preventing the formation of sparks at the key A when the circuit is broken thereat. It also acts to delay the magnet changes in the core, and thereby secure greater amplitude of movement on the part of the armature.

The sounder C is constructed with a base 15 and posts 16 and 17, rising therefrom with an electromagnet 18 arranged upon the base between said posts. The armature 19 is pivoted to the post 16 and is provided with an adjusting-screw 20, by which its contact with the top of the post 17 is regulated. The post 17 is provided with an adjusting-screw 21 to regulate the upstroke of said lever. A spring 22 holds the lever 19 normally in retracted position. The coil 23 of the magnet 18 is included in the circuit 5 6, extending from the relay B. A closed induction-coil 24 is arranged upon the magnet 18, this coil being conveniently in the form of a fine-wire coil, with its ends connected together, the same in general arrangement and for the same purposes as the coil 14 of the relay B, the coil 24 acting to prevent sparking at the relay B when the sounder-circuit is opened at the relay and also acting to secure a more efficient operation of the sounder C.

It will be understood that changes and modifications can be made in the devices herein disclosed without departing from the spirit of the invention.

What I claim is—

1. In a telegraph instrument, the combination of an armature-actuating energizing-coil, and a closed secondary inductively related to said energizing-coil.

2. A telegraph instrument provided with an induction device on the armature-actuating electromagnet of the instrument so that changes in the magnetic intensity of said magnet have an inductive effect on said inductive device, substantially as described.

3. A telegraph instrument having an electromagnet and armature actuated thereby

and also having a closed induction-coil inductively related to said electromagnet, substantially as described.

4. A telegraph instrument having an electromagnet provided with a closed induction-conductor in combination with an armature actuated by said magnet, substantially as described.

5. A telegraph instrument comprising an electromagnet, a vibratory armature therefor, spring means controlling said armature and holding the same normally retracted, a stop against which said armature is normally held, and a closed induction-coil on said electromagnet, substantially as described.

6. A telegraph instrument having its armature-actuating electromagnets provided with closed induction-coils, substantially as described.

In witness whereof I hereunto subscribe my name this 9th day of May, A. D. 1904.

CARL J. SCHWARZE.

Witnesses:
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