No. 716,996. Patented Dec. 30, 1902.

M. FISCHER.

ELECTRIC CLOCK.

(Application filed Sept. 3, 1901.)

(No Model.)

Fig. 1

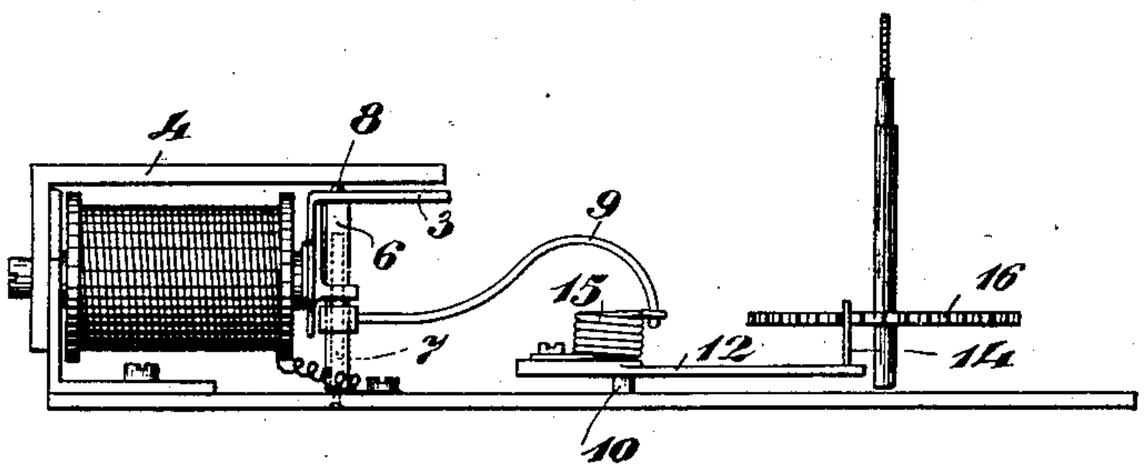
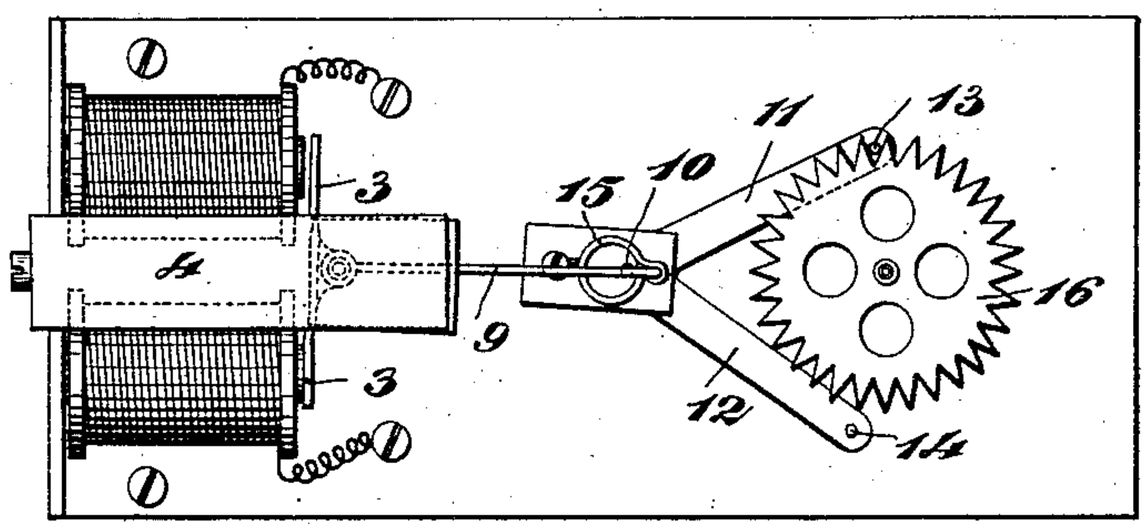


Fig. 2.



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UNITED STATES PATENT OFFICE.

MARTIN FISCHER, OF ZURICH, SWITZERLAND, ASSIGNOR TO ACTIENGESELLSCHAFT MAGNETA ELECTRISCHE UHREN OHNE BATTERIE & OHNE CONTACTE, OF ZURICH, SWITZERLAND, A FIRM.

ELECTRIC CLOCK.

SPECIFICATION forming part of Letters Patent No. 716,996, dated December 30, 1902.

Application filed September 3, 1901. Serial No. 74,163. (No model.)

To all whom it may concern:

Be it known that I, MARTIN FISCHER, a citizen of the Republic of Switzerland, residing at Zurich, Switzerland, have invented new and useful Improvements in or Relating to Armatures for Electric Clocks, of which the following is a specification.

This invention has reference to improvements in armatures for reversible-current subordinate clocks. According thereto the armature is constructed with a bent portion that is arranged with and quite close to the surface of a permanent magnet without being in contact therewith and is made comparatively large in area, so that a large surface is provided thereby, enabling smaller electromagnets to be used.

An example of apparatus according to this invention is shown in the accompanying drawings, in which—

Figure 1 is an elevation, and Fig. 2 is a plan.

3 is an armature constructed with a bent portion that is arranged parallel to a permanent magnet 4. The armature 3 is attached to a tube 6, which is placed on a pin 7, secured to the base-plate, so that the armature can oscillate, as well known, in front of the poles of the electromagnet M about the pin 7. On the bent portion of the armature there is provided in line with its axis of rotation a short pin 8, which projects upwardly, so as to prevent the armature, which is powerfully attracted by the permanent magnet 4, from coming into contact with the said permanent magnet. The bent portion of the armature is made comparatively large in area, so that a large and efficient surface is provided, thereby enabling very small electromagnets to be used, while at the same time producing a powerful polarity of the armature.

It will be observed that one end of the permanent magnet 4 is bent at right angles, the bent portion 4′ extending between the cores of the electromagnets M on the rear face of the conductive plate *m*, in which said cores are seated and to which said vertical portion 4′ of the permanent magnet 4 is secured by means of a screw, so that the other pole of the magnet 4 serves to polarize said cores.

On the tube 6 there is mounted an arm 9, whose free end is connected to one end of a spring 15. The other end of the spring 15 is attached to an anchor or a bell-crank lever 11 12, which is adapted to rotate on a stud 10. The point of connection of the spring 15 with the arm 9 is located close to the stud 10, while the point of connection of the bell-crank lever 11 12 with the said spring is located at a considerable distance from the stud 10, so that when the armature is moved by the current passing through the electromagnet the ends of the lever will make a considerable to-and-fro movement. The ends of the arms 11 and 12 of the bell-crank lever are provided with pins 13 and 14, which when the bell-crank lever is moved about the stud 10 come alternately into contact with the teeth of a wheel 16, so as to move the said wheel forward each time by one tooth and then hold it.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a reversible-current subordinate clock, the combination with the escapement-wheel and its anchor; of an electromagnet, a right-angular permanent magnet having one of its poles extended beyond said electromagnet, a pivotally-mounted armature for said electromagnet having a right-angular extension parallel with and proximate to the extended pole of the permanent magnet and presenting such a large surface to the influence of the magnetic field as to admit of the use of a very small electromagnet, and a connection between the armature and anchor adapted to oscillate the latter, substantially as set forth.

2. In a reversible-current subordinate clock, the combination with the escapement-wheel and its anchor; of an electromagnet, a right-angular permanent magnet having one of its poles 4′ arranged to polarize the electromagnet-cores and its opposite pole 4 extended beyond said cores and between them, a pivotally-mounted armature having a right-angular extension parallel with and proximate to the extended pole of the permanent

magnet, and a resilient connection between the armature and anchor adapted to oscillate the latter, for the purpose set forth.

3. In reversible-current subordinate clocks, the combination with an escapement-wheel and its anchor, an electromagnet and its armature provided with an extension, an arm on said armature, a spring on the arm, one end of which spring is connected with said arm at a point close to the axis of rotation of the anchor and having its opposite end connected to the anchor at a point distant from said axis of rotation; of a permanent magnet arranged with one of its poles parallel to the armature extension and a spacing device between the two, for the purpose set forth.

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

MARTIN FISCHER.

Witnesses:
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