No. 855,249. PATENTED MAY 28, 1907.

M. JURUICK.

SELF WINDING ELECTRIC CLOCK.

APPLICATION FILED DEC. 10, 1906.

FIG. 1.

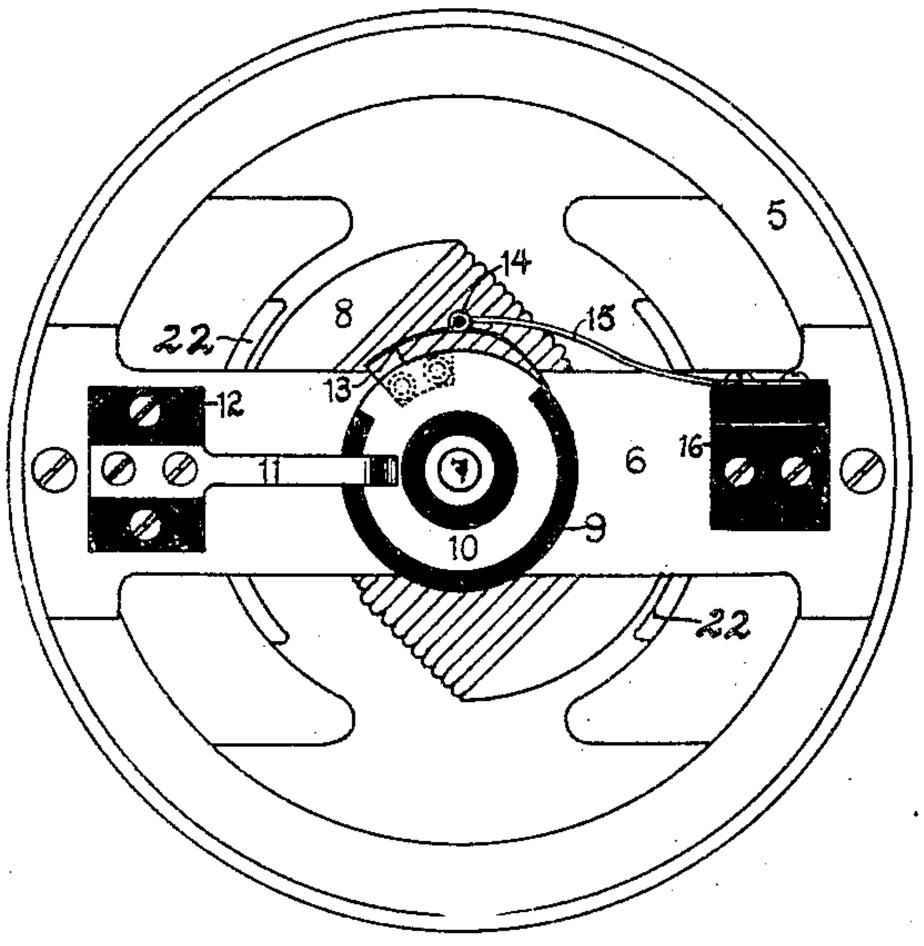


FIG. 2.

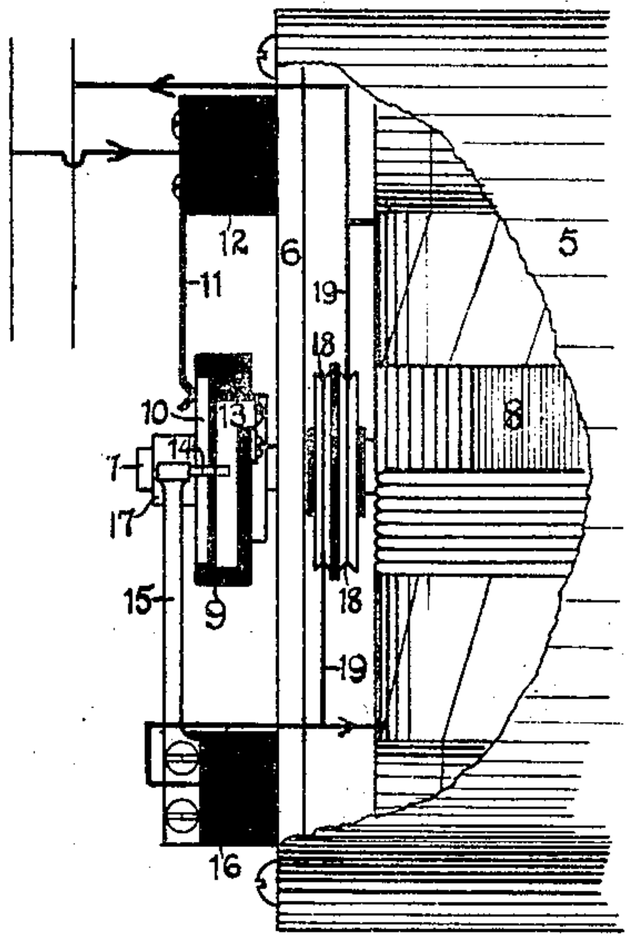


FIG. 3.

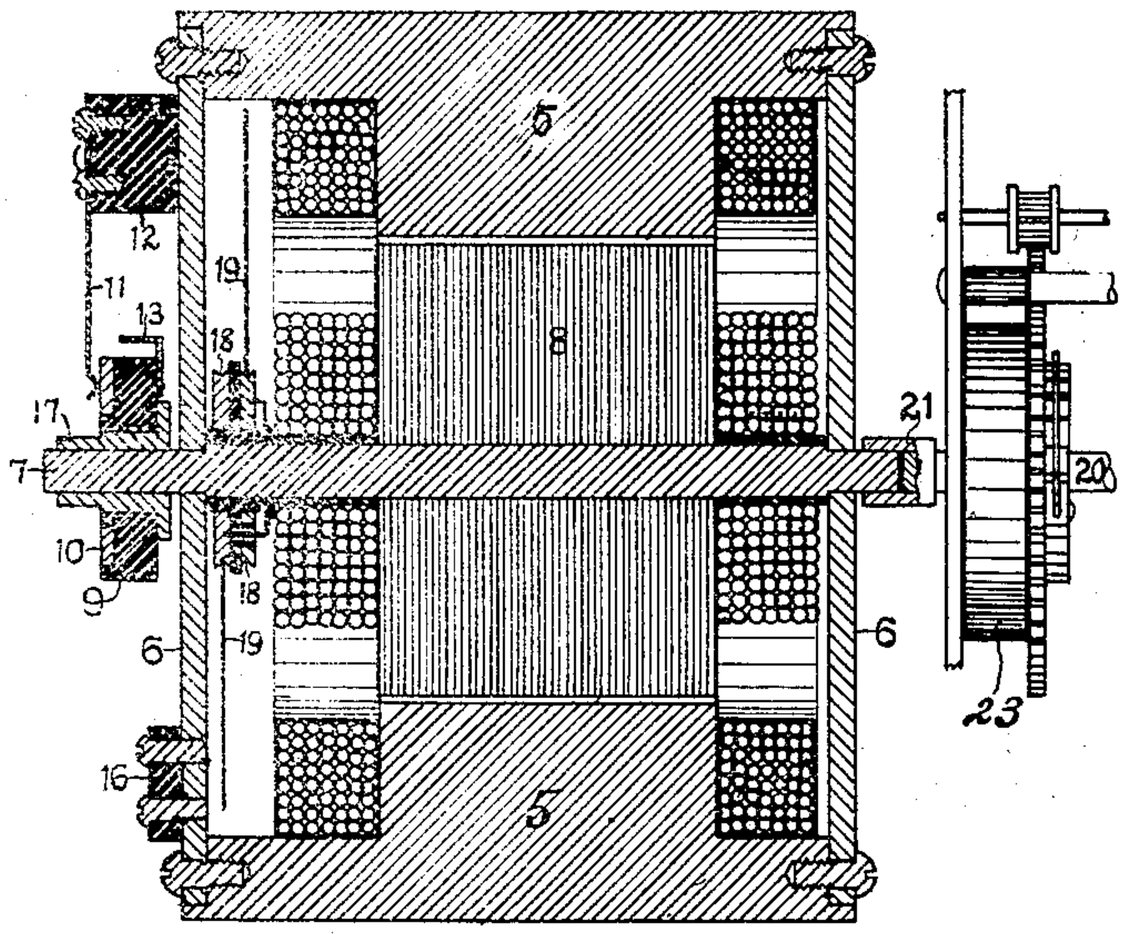
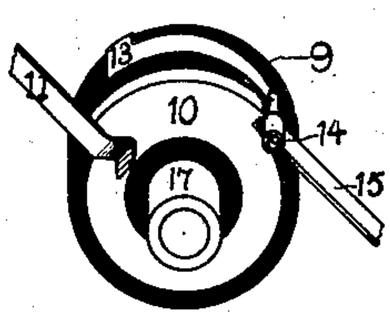


FIG. 4.



WITNESSES:

James A. Goggin

Catherine L. Manning.

INVENTOR

Maximilian Juruick

BY L. K. Böhm,

his ATTORNEY.

UNITED STATES PATENT OFFICE.

MAXIMILIAN JURUICK, OF NEW YORK, N. Y.

SELF-WINDING ELECTRIC CLOCK.

No. 855,249. Specification of Letters Patent. Patented May 28, 1907.

Application filed December 10, 1906. Serial No. 347,050.

To all whom it may concern:

Be it known that I, MAXIMILIAN JURUICK, a citizen of the United States of America, and a resident of New York, in the county and State of New York, have invented certain new and useful Improvements in Self-Winding Electric Clocks, of which the following is a specification.

This invention has reference to electric clocks in which the clock spring is effective all the time with nearly the same tension because only part of a circle or turn of the spring unwinds during a certain interval of time while the clock is going. Such part or turn of the clock spring is rewound by the action of an electro magnet located within the clock casing and made effective by any suitable source of electrical energy preferably one or more dry batteries which are also concealed within the clock casing.

It is the special object of this invention to produce an electric clock in which a rotary circuit breaker with sliding contact is used for closing the circuit at certain intervals of time.

The invention further consists in the construction and arrangement of the various details and it has been sought to reduce the cost of construction to a minimum.

The invention is illustrated in the accompanying drawing in which:

Figure 1 represents in rear elevation a device which embodies in desirable form and arrangement the present improvements. Fig. 2 is a top plan view of same partly broken away. Fig. 3 is a cross section on the horizontal center plane of the device, and Fig. 4 illustrates in perspective view the circuit breaker.

Similar characters of reference denote like parts in all the figures.

By the use of an arrangement which permits that the clock spring is unwound but very little and rewound again the time keeping qualities of the clock are greatly improved because the clock spring is of uniform and practically the same tension or strength all the time.

It is not necessary for the purpose of this invention to illustrate the clock casing and clock train save that the clock spring is shown to be coupled to the shaft of the armature of the electro magnet.

In the drawing 5 represents the electro magnet frame to which the bearings 6, 6 are secured. The electro magnet frame is circular in shape and reduced at its inner ends to receive there the usual windings. The magnet poles 22 are arc shaped and form part of a circle as indicated in Fig. 1. The armature 8 is mounted on the armature shaft 7. Its peripheral parts are enlarged and are shaped in conformity with the shape of the magnet poles so that its peripheral surface is in close proximity to the arc shaped magnet poles. The reduced inner part of the armature is preferably provided with windings as shown in Figs. 1 and 3 for purposes to be explained farther down. The clock spring shaft 20 being coupled by means of a coupling 21 to the armature shaft 7 brings forth that the armature moves when the clock spring 23 unwinds while the clock is going.

The rotary circuit breaker is mounted on one end of the armature shaft. In the drawing it is shown to be mounted on the rear end of said shaft outside of the rear bearing 6. The rotary circuit breaker is of peculiar construction, it is shown in perspective view in detail in Fig. 4. Near the rear end of the armature shaft a bushing 17 is secured. Said bushing supports an insulated disk 9 which is permanently attached thereto and cut out as shown on the drawing for the purpose of receiving a contact plate 10. On the rear side of the insulating disk 9 a bridge 13 is secured see Figs. 1 and 3. This bridge is a spring having a rear downward flange by means of which it is secured to the rear part of the said disk 9, as shown in Figs. 1 and 3. Here, that is at the left the bridge is above the disk 9 while its right end rests on the periphery of same, as shown in Figs. 1 and 4. The rear bearing 6 has attached thereto two insulating blocks one designated by the number 12 is shown in Fig. 1 on the left side of the bearing and the other designated by the number 16 on the right side of same. The block 12 carries a contact spring 11 which is riveted thereto and in constant contact with the plate 10 of the rotary circuit breaker. The insulating block 16 supports a spring 15 on the front end of which is provided a contact pin 14. Against the contact pin 14 slides the bridge 13 during the unwinding of the clock spring while the clock is going until the rear end of said bridge is reached when the pin drops off onto the contact plate 10 whereby the circuit is closed. The electro magnet and armature being then energized the magnet poles return the armature to its normal position. During this time the plate

10 below the bridge slides against the pin 14 because the circuit breaker moves with the armature. There is room for the pin underneath the bridge as may be seen from Fig. 3. When the armature has completed its quarter turn or circle the pin has raised the right end of the bridge which is a spring and rests on the disk 9. When the spring snaps back the pin passes onto said disk whereby the circuit is broken. Now the unwinding of the clock-spring begins again whereby the pin is again brought on the bridge 13.

In order to make contact with the winding of the armature two rings 18 are mounted on the armature shaft between the rear bearing 6 and the armature which rings form the terminals of the armature winding. On each of the contact rings 18 is a sliding contact 19 to complete the circuit.

The clock embodying the present improvements is preferably so constructed that the armature travels about one quarter of a circle or turn of the clock spring before contact is made whereby it is returned to its normal position and the clock spring rewound.

Assuming that the clock spring which actuates the clock train has been wound up the clock is going whereby the clock spring gradually unwinds. By the unwinding of the clock spring the armature of the electro magnet is moved away from the poles of same because it is rigidly mounted on the armature shaft which is coupled to the shaft of the clock spring. Likewise the circuit breaker on said armature shaft moves along and the bridge 13 slides along on the contact pin 14. No current flows through the electro magnet and armature until the clock has been going for about an hour when the clock spring has been unwound about a quarter of a circle or turn whereby the armature and circuit breaker have accordingly been turned about a quarter of a circle. The armature is now away from the magnet poles and the contact pin 14 at the end of the bridge 13. At this moment the pin 14 drops down on the contact plate 10 thereby closing the circuit. The current flows through the contact spring 11, and the contact plate 10, the contact pin 14 and the spring 15, into the magnet coils and back to the source of electrical energy. For closing the circuit of the armature winding connection is made with the contact rings 18 by means of the sliding contacts 19, said rings 18 being the terminals of the armature winding. When contact is made the magnet and armature are energized and the magnet poles draw the armature back to its normal position about one quarter of a circle whereby the clock spring is rewound. Simultaneously the circuit breaker being rigidly connected to the armature shaft has been returned to its normal position and the contact pin 14 passed onto the insulating disk 9 and from there again on the bridge 13. The clock spring thus has regained its original tension and power and the whole operation is continuously repeated until the source of electrical energy is exhausted. When the armature is provided with a winding its strength is increased as well as the attraction and repulsion by the magnet poles. A steel armature without winding will answer the same purpose but it is not so effective.

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

1. In an electric clock a rotary circuit breaker with sliding contact consisting of an insulated disk cut out in the front, a contact plate in said cut out portion having but part of its circumference extending to the peripheral surface of the disk, a bridge secured to the rear part of said disk, a contact spring resting constantly on the contact plate and a contact pin on which said bridge slides during the movement of the circuit breaker so arranged that the contact pin drops from the end of the said bridge onto the contact plate whereby the circuit is closed.

2. In an electric clock an electro magnet, an armature mounted on a shaft, a clock spring with a shaft coupled to the armature shaft and a rotary circuit breaker with sliding contact secured to said armature shaft and consisting of an insulated disk cut out in the front, a contact plate in said cut out portion having but part of its circumference extending to the peripheral surface of the disk, a bridge secured to the rear part of said disk, a contact spring resting constantly on the contact plate and a contact pin on which said bridge slides during the movement of the circuit breaker so arranged that the armature is moved away from the magnet poles during the unwinding of the clock spring whereby the rotary circuit breaker is turned and the contact pin drops from the bridge onto the contact plate closing the circuit and upon the return of the armature to its normal position by the magnet poles said pin will pass onto the insulating disk and from there again on the bridge whereby the circuit is opened.

3. In an electric clock an electro magnet, an armature mounted on a shaft and having a winding, means on said shaft to connect the armature winding in the circuit, a clock spring with a shaft coupled to the armature shaft and a rotary circuit breaker with sliding contact secured to said armature shaft and consisting of an insulated disk cut out in the front, a contact plate in said cut out portion having but part of its circumference extending to the peripheral surface of the disk, a bridge secured to the rear part of said disk, a contact spring resting constantly on the contact plate and a contact pin on which said bridge during the movement of the circuit

breaker so arranged that the armature is moved away from the magnet poles during the unwinding of the clock spring whereby the rotary circuit breaker is turned and the contact pin drops from the bridge onto the contact plate closing the circuit and upon the return of the armature to its normal position by the magnet poles said pin will pass onto the insulating disk and from there again on the bridge whereby the circuit is opened.

Signed at New York, N. Y., this 6th day of December, 1906.

MAXIMILIAN JURUICK.

Witnesses:

LUDWIG K. BÖHM,

CATHERINE M. MANNING.