(No Model.)

F. E. POOL.

RHEOSTAT.

No. 601,588. Patented Mar. 29, 1898.

Fig. I.

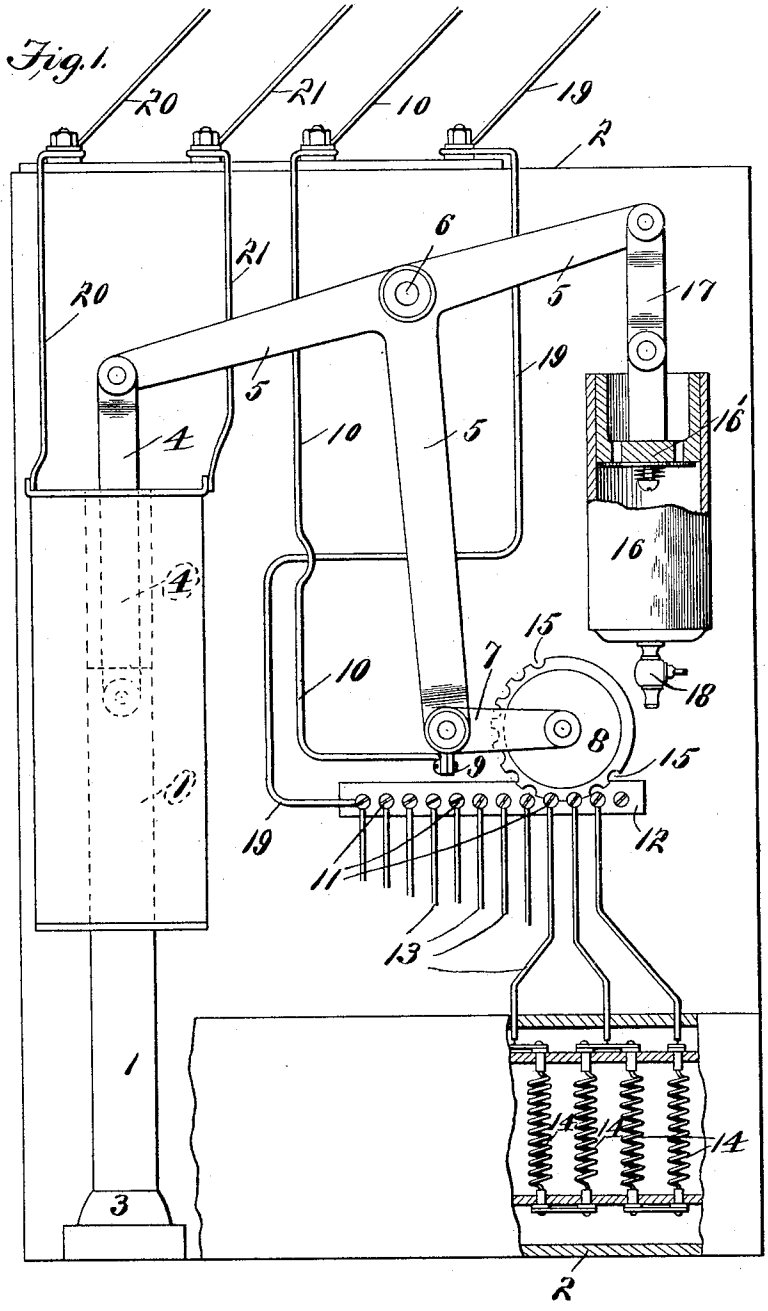


Fig. II.

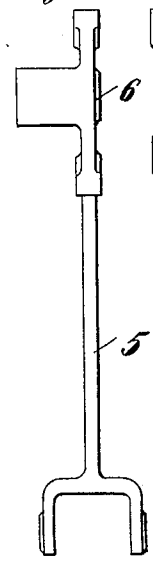


Fig. III.

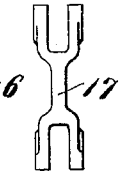
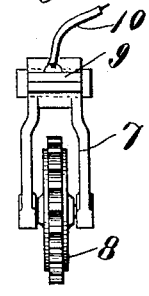


Fig. IV.



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UNITED STATES PATENT OFFICE.

FRANK E. POOL, OF QUINCY, ILLINOIS, ASSIGNOR TO THE SMITH-HILL ELEVATOR COMPANY, OF SAME PLACE.

RHEOSTAT.

SPECIFICATION forming part of Letters Patent No. 601,588, dated March 29, 1898.

Application filed January 31, 1898. Serial No. 668,603. (No model.)

To all whom it may concern:

Be it known that I, FRANK E. POOL, a citizen of the United States, residing at Quincy, in the county of Adams and State of Illinois, have invented certain new and useful Improvements in Rheostats, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an automatic rheostat, and is particularly designed for use in connection with reversible motors for electric-elevator service.

It has for its object the furnishing of a device of simple construction which will secure perfect contact at all times, prevent sparking, and reduce the consumption of the electric current to a minimum. It possesses features of novelty herein fully described, and specifically pointed out in the claims.

Referring to the drawings, Figure I shows in side elevation a plan view of my improvement, parts thereof being broken away. Fig. II shows an edge view of the three-arm lever. Fig. III shows an edge view of the link connection between one arm of the said lever and the dash-pot. Fig. IV shows an edge view of the roller-wheel, through which contact is made between the flexible cable carrying the feed-wire and the resistance-coils.

1 represents the solenoid, suitably supported in a casing 2, but insulated therefrom by the rubber insulation 3. A link 4 connects the solenoid with the three-arm lever 5, pivoted to the stationary casing 2 at 6. To the lower arm of this lever, but insulated therefrom, is pivoted a yoke 7, which embraces a rolling wheel 8. At the connection between this yoke and the arm is a binding-post 9, which secures the end of a flexible cable 10, completing the armature-circuit to the motor.

11 are a series of pins secured to the plate 12. Each pin is connected to a wire 13, which in turn lead to a resistance-coil 14.

The wheel 8 is toothed, so as to bring the cut-out portions coincident with the pins 11. As it rolls over the pins 11 the resistance-coils 14 are in succession cut out. By this means I provide a rolling metal contact, dispensing with the sliding brush. The contact is maintained by the mere weight of the wheel 8, thus dispensing with the necessity of any tension-spring. There are always two of the pins 11 in contact with the wheel 8, and as the part 15 leaves the pin quickly the sparking or burning is reduced to a minimum.

16 is a dash-pot whose plunger 16′ is connected by a link 17 to the three-arm lever 5, which cushions the pressure on the opposite end connected with the solenoid.

18 is a regulating-cock.

19 is the wire leading from the resistance-coils, completing with the wire 10 the armature-circuit to the motor. 20 and 21 complete the field-circuit through the solenoid to the motor.

In operating the device a current is passed through the solenoid 1 by means of the wires 20 21 and the lever 5 swung as desired. The dash-pot 16 serves to cushion the pressure. The lever 5, by means of the yoke 7, carries the wheel 8 backward or forward over the pins 11 and carries the armature-current over the wires 10 19 to the motor.

A particular advantage possessed by constructing a rheostat as I have described is that I do away entirely with the usual flat plates of copper and the sliding carbon brush. The slow motion required in the automatic rheostat causes the said carbon brush to leave the edge of the contact-plate so slowly that sparking takes place and causes burning thereof. Such plates, consequently, become rough and wear the brush rapidly. I am also able to dispense with any spring adjustment, which has heretofore been necessary. Moreover, the rolling wheel which I have provided gives a new surface of contact with each tooth, and thus averts the danger of heating so liable with a sliding brush in constant contact.

What I claim as new, and desire to secure by Letters Patent of the United States, is, in an improved automatic rheostat—

1. The combination of a feed-wire terminal, a pivoted lever having one end in engagement with said terminal, stationary contact-pins, and a roller linked to said lever and terminal, and adapted to rest on said contact-pins, substantially as described.

2. The combination of a roller, a solenoid, a dash-pot, a three-arm lever in connection with said roller, solenoid and dash-pot, and

fixed contact-pins over which said roller is adapted to pass, substantially as described.

3. The combination, with electrical resistance-coils, of a plurality of fixed contact-pins, a roller in gravitation contact with said pins and adapted to bring successive pairs in circuit, and a lever adapted to control said roller, substantially as described.

4. The combination, with the electrical resistance-coils, of a feed-wire terminal, and connection between said terminal and said resistance-coils consisting of a pivoted lever having one end in engagement with said terminal, a plurality of contact-pins connected with said resistance-coils, and a roller connected with said terminal and adapted to come in contact with said pins, substantially as described.

FRANK E. POOL.

Witnesses:
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