

No. 680,808.

T. S. PERKINS.
RHEOSTAT.

Patented Aug. 20, 1901.

(Application filed Sept. 28, 1898.)

(No Model.)

Fig. 1.

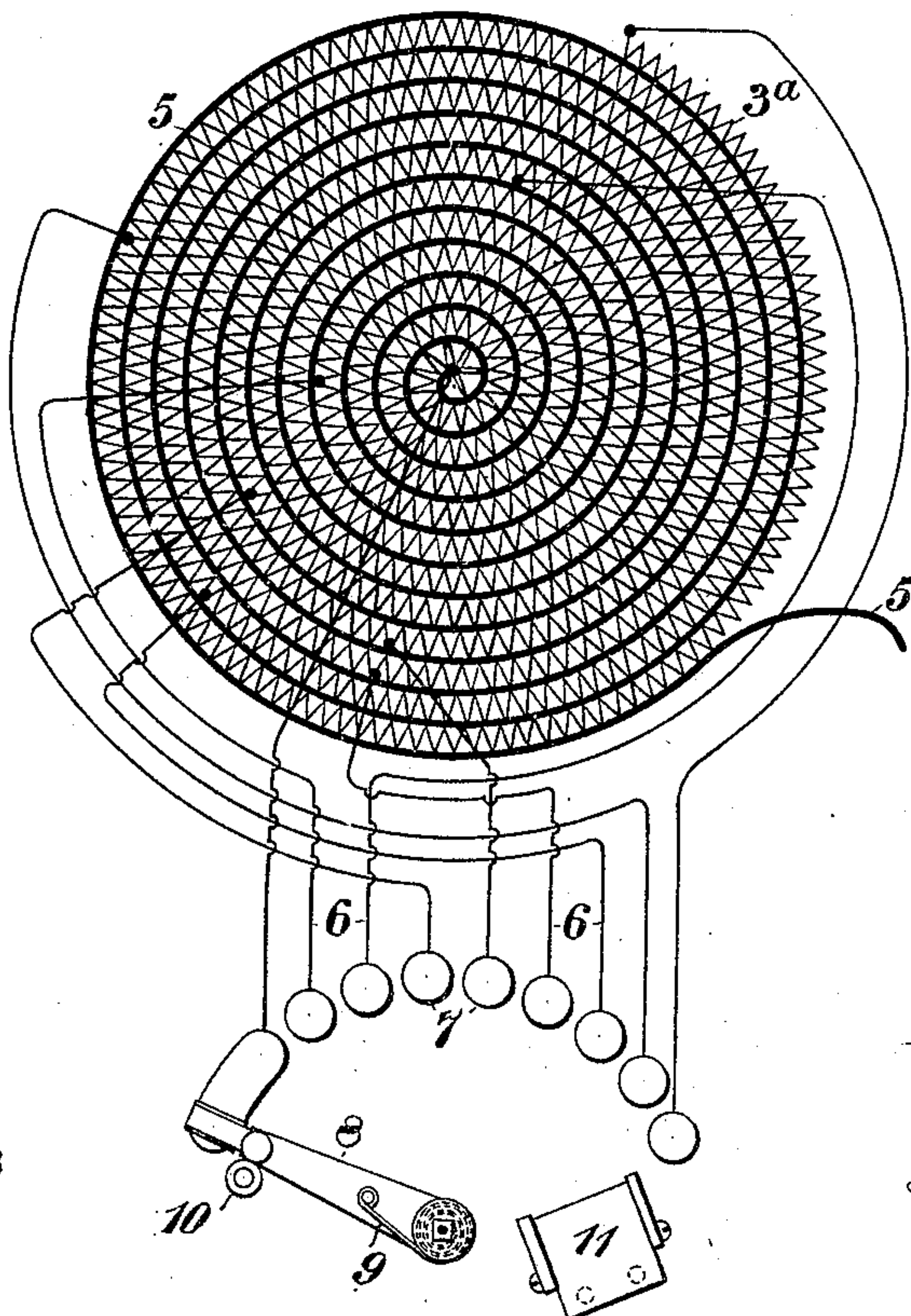


Fig. 3.

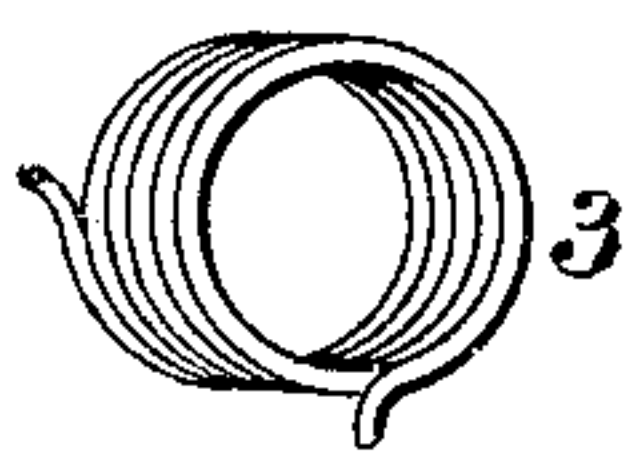


Fig. 4.

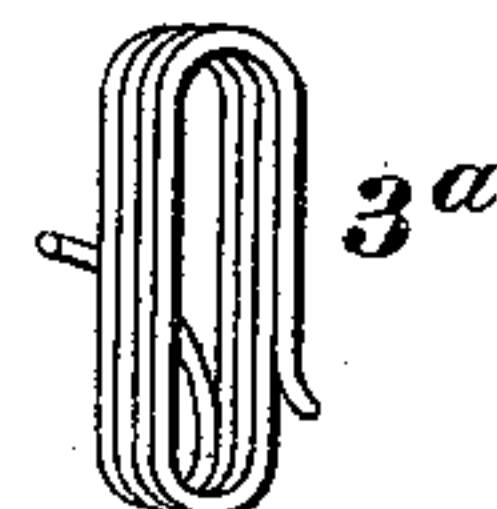
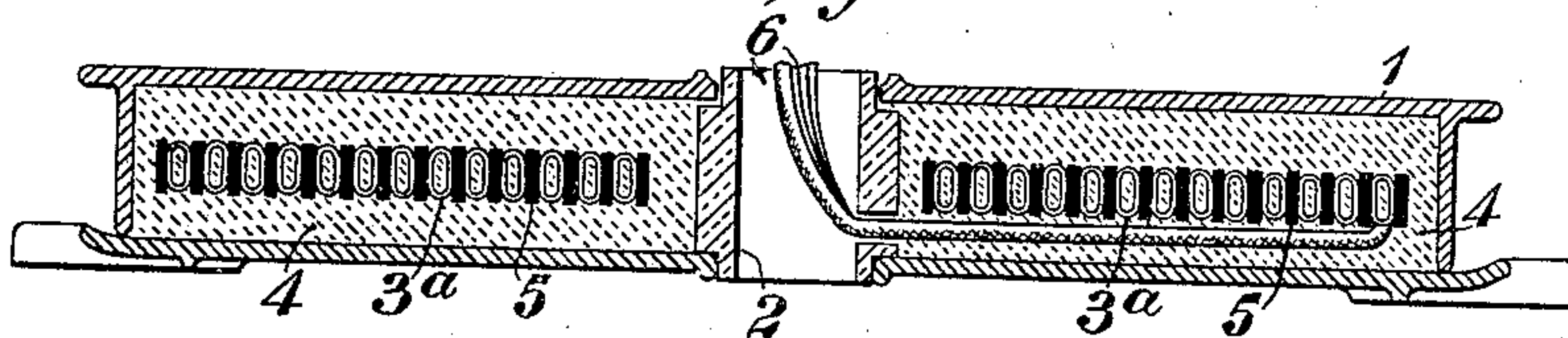


Fig. 2.



WITNESSES:

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RHEOSTAT.

SPECIFICATION forming part of Letters Patent No. 680,808, dated August 20, 1901.

Application filed September 28, 1898. Serial No. 692,065. (No model.)

To all whom it may concern:

Be it known that I, THOMAS S. PERKINS, a citizen of the United States, residing in Idlewood, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Rheostats, (Case No. 790,) of which the following is a specification.

My invention relates to rheostatic devices employed in electric circuits for regulating or controlling the operation of the machines from or to which current is supplied.

The object of my invention is to provide a resistance medium which shall occupy a minimum amount of space consistent with the satisfactory performance of its functions and which may be durable and cheaply manufactured.

In the accompanying drawings, Figure 1 is a diagrammatic plan view of a rheostat constructed in accordance with my invention. Fig. 2 is a sectional view of a rheostat. Fig. 3 is a detail perspective view of a portion of a helically-wound resistance-coil, and Fig. 4 is a similar view of a portion of a coil constructed in accordance with my invention.

The rheostat shown in the drawings comprises a metal box 1, that is provided with a central tube or bushing 2, of porcelain or other suitable insulating material, and contains the resistance-coil 3^a and a body of cement 4, in which the coil is embedded. This insulating-cement 4 may be of any character known in the art and suitable for this purpose. I have found that a mixture of Portland cement and sand is satisfactory for this purpose. The wire of which the resistance-coil 3^a is formed may be of German silver or any other metal which has the desired degree of resistance and is otherwise suitable for the purpose intended. This wire is first wound in a helical coil 3, annular in cross-section, so that adjacent convolutions shall be out of contact with each other, the length of coil being determined by the particular degree of resistance desired. A section of the coil thus wound is shown in Fig. 3. This helical coil is then subjected to sufficient lateral pressure to flatten it into substantially the form indicated in Fig. 4. It may then be coiled in spiral form, as indicated in Fig. 1, a strip 5 of asbestos or other suitable insu-

lating and heat-resisting material being coiled therewith, so as to separate adjacent convolutions. External connection is made by suitable leads 6 to proper points in the length of this spirally-coiled resistance, so that it may be progressively cut into and out of circuit. It will be readily seen that a resistance-coil thus constructed occupies a minimum amount of space for a given degree of resistance and that it is also well adapted for dissipation of the heat generated in it and avoids any possibility of short circuits between any portions thereof. The coil thus formed is placed in the box or receptacle 1, and cement 4 of the character and quantity desired is filled into the box around the coil and allowed to set. The leads 6 from the several divisions of the coil extend out through the insulating-bushing 2 and may be connected to the stationary contact pieces or buttons 7.

A pivoted switch-arm 8 may be provided to cooperate with the contact-pieces 7 for the purpose of progressively cutting the resistance-coil into or out of the circuit in connection with which the rheostat is used. I have shown a spring 9 for throwing the switch-arm in one direction and a stop 10 for limiting its movement in that direction. An electromagnet 11 may be employed for holding the arm in its other extreme position for a purpose and in a manner well known in the art.

It will be understood that the form of resistance-coil shown and described may be utilized wherever ohmic resistance is necessary for regulating or controlling electric circuits or machines operated in connection therewith.

I claim as my invention—

1. A rheostat comprising a helical, flattened coil of wire disposed in spiral form and a spirally-disposed strip of insulating material interposed between adjacent convolutions of the wire helix.

2. A rheostat comprising a spirally-disposed, flattened, helical coil of wire, a spirally-disposed strip of insulating material between adjacent convolutions of the resistance-spiral and a body of cement in which said spirals are embedded.

3. The combination with a helical, flat-

tened coil of wire intercoiled with a strip of insulating material in spiral form and embedded in cement, of a series of contact-pieces connected to said coil at intervals and
5 a movable switch-arm making engagement with said contact-pieces, substantially as described.

4. The combination with a flattened-wire helix intercoiled in spiral form with a strip
10 of insulating fabric and embedded in cement, of a series of contact-pieces severally con-

nected to different points in said coil, a switch-arm coöperating with said contacts and means for controlling said arm, substantially as described.

In testimony whereof I have hereunto subscribed my name this 27th day of September, 1898.

THOMAS S. PERKINS.

Witnesses:

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H. C. TENER.