G. H. WHITTINGHAM.

RHEOSTAT.

APPLICATION FILED MAR. 19, 1909.

1,008,000. Patented Nov. 7, 1911

Fig. 1.

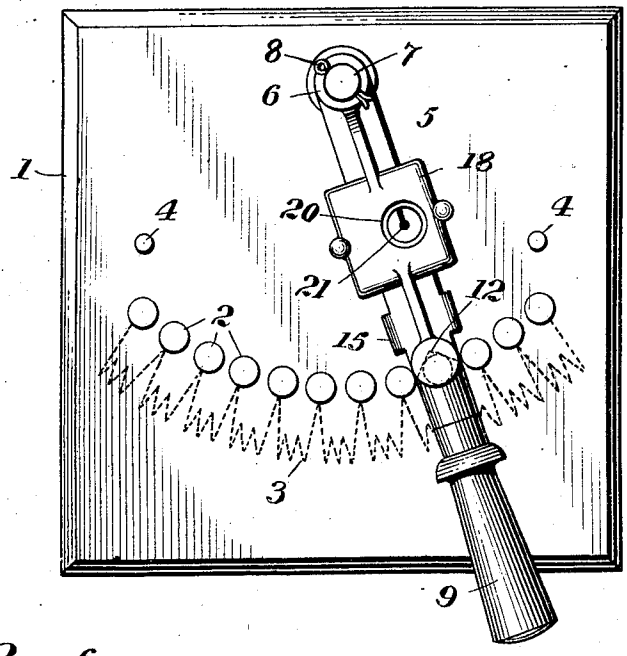


Fig. 2.

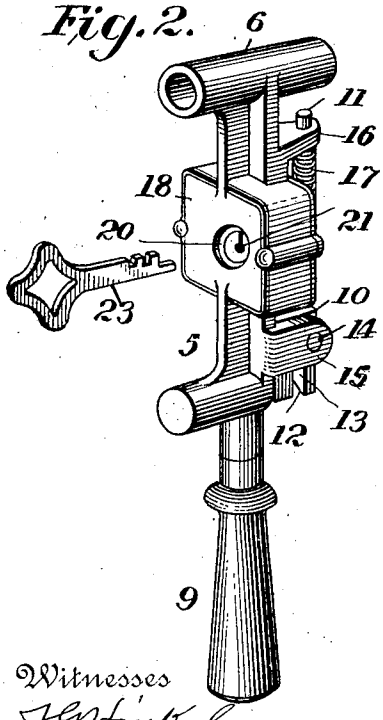


Fig. 4.

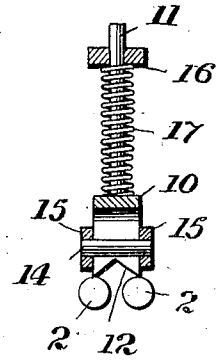
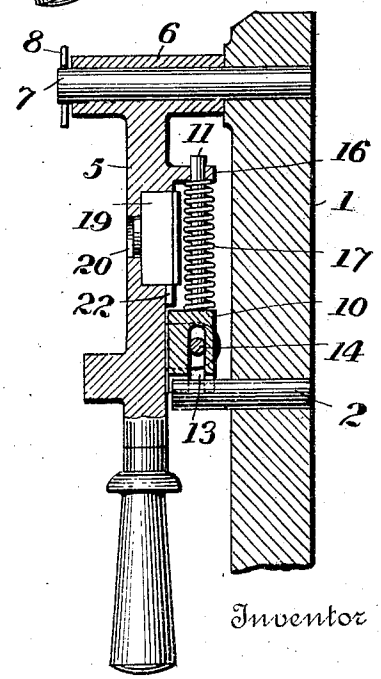


Fig. 3.



Witnesses

J. G. Finkel

Newton P. Willis.

Inventor

George H. Whittingham,

by Watson & Boyden,

Attorneys

UNITED STATES PATENT OFFICE.

GEORGE H. WHITTINGHAM, OF BALTIMORE, MARYLAND, ASSIGNOR TO MONITOR MANUFACTURING COMPANY OF BALTIMORE CITY, A CORPORATION OF MARYLAND.

RHEOSTAT.

1,008,000. Specification of Letters Patent. Patented Nov. 7, 1911.

Application filed March 19, 1909. Serial No. 484,567.

To all whom it may concern:

Be it known that I, GEORGE H. WHITTINGHAM, a citizen of the United States, residing at Baltimore, State of Maryland, have invented certain new and useful Improvements in Rheostats, of which the following is a specification.

My invention relates to controlling devices for electric circuits, and more particularly to a device in the nature of a manually operated rheostat.

In the control of electric motors, it is the common practice to insert a variable resistance or rheostat in the field or armature circuits, or both, so that, by properly manipulating such rheostats, any desired speed of the motor may be obtained. As usually constructed, such rheostats comprise a suitable panel, into which are set a series of pins or buttons, between which the coils of resistance wire or ribbon are connected, and a sweep arm pivotally mounted on said panel, and adapted to make contact with any one of said series of buttons, whereby more or less of the resistance may be included in the circuit. In certain classes of motor-driven apparatus, as, for example, printing presses, and some types of machine tools, it is highly desirable that the motor maintain a constant speed throughout the performance of any given piece of work, notwithstanding the fact that, during the required run, it may be necessary to frequently start and stop the motor. Since, where but a single rheostat is employed, a careless operator may fail to set the arm to the same point each time the motor is started, it has heretofore been proposed to employ two separate rheostats in connection with such motors, one being employed as a "starting resistance," and the other, as a "regulating resistance." With such an arrangement, the shop foreman may set the regulating rheostat to the desired point for the run, and the operator may then manipulate the other rheostat for staring and stopping the motor, but without being able to affect its speed when running. Trouble has been experienced, however, owing to the fact that unauthorized persons will frequently change the position of the regulating rheostat, after it has been properly set by the foreman, and thus deleteriously affect the quality of the work turned out.

It is the primary object of the present invention, therefore, to provide a rheostat having an arm which may be positively locked in any desired position, whereby the shifting of such arm by unauthorized persons, may be effectively prevented.

A further object of the invention is to provide a rheostat of this character which shall be simple in design, efficient in action, and easy to produce and operate.

With the above objects in view, and to improve generally upon the details of such apparatus, my invention consists in the construction and arrangement of parts hereinafter described, and illustrated in the accompanying drawings, in which—

Figure 1 is a front view of my improved rheostat complete; Fig. 2 is a perspective view of the controlling arm; Fig. 3 is a central section through the controlling arm and part of the panel; and, Fig. 4 is a sectional view of the spring latch.

Referring to the drawings in detail, 1 designates the usual panel, which may be made of slate or other insulating material. In this panel is set an arc-shaped series of contact pins or buttons 2, between which are connected the resistance coils 3, conventionally shown in dotted lines in Fig. 1. At each side of the contact buttons is also mounted a stop pin 4, to limit the movement of the arm. The controlling arm itself comprises a frame or body portion 5, having at one end a journal 6, adapted to coöperate with a pin 7, set into the panel 1. The arm may be retained in position on the pin 7 as by means of a cotter pin 8 or other suitable fastening device. At the other end of the arm is the usual operating handle 9.

Carried by the arm is a latch comprising a head 10, and a shank 11, as clearly shown in Figs. 3 and 4. The outer end of the latch is V-shaped, as shown in Figs. 1 and 4, and is adapted to engage any one of the pins 2. The head 10 of the latch is divided by a horizontally extending slot 13, in which works a pin 14, supported in a pair of brackets 15, projecting downwardly from the body of the arm. The lugs 15 are spaced apart a distance equal to the width of the latch head, and are of a length approximately the same as the thickness of the head 10. A third lug 16, arranged near the inner end of the arm on the under side thereof, is provided with an opening adapted to receive the end of the shank 11. A

coil spring 17 surrounds the shank 11, and in confined between the head 10 and the lug 16. It will thus be seen that this spring serves to maintain the latch in the position shown in Fig. 3, with the beveled face 12 thereof in contact with one of the pins 2. It will, therefore, be observed that, in operation, the current passes from the pin 7, through the body of the arm to the latch head 10, and thence by way of the V-shaped faces 12 of the latch, into the sides of the pins 2. Where the current is heavy, a flexible cable (not shown) may be soldered or otherwise secured to the arm and the latch, so as to form a low resistance connection.

With the arrangement so far described, it will be seen, that as the arm is moved about the pivot pin 7, the beveled faces 12 of the latch will ride up the side of one pin and down the side of the next, thus snapping from pin to pin as the arm is moved, and always held in close engagement with the pins by means of the spring 17. It will be observed that when the V-shaped end of the latch is in engagement with any pin, as shown in Fig. 1, the arm will be resiliently held in position so that it is not likely to become accidentally displaced.

Carried by the arm 5, and preferably formed integral therewith, is a casing 18 adapted to receive a lock of any suitable type. This lock is clearly shown at 19, in Fig. 3, and is provided with a key-hole 21, which is accessible through an opening 20 formed in the front of the casing 18. The lock 19 may conveniently be of the type usually employed by cabinet makers, and is provided with a reciprocating bolt 22. As shown in Fig. 3, the bolt 22 is projected to its fullest extent, and, when retracted, it retreats entirely into the lock casing 19, so that its end is flush with the sides thereof. From a further inspection of Fig. 3, it will be evident that when the bolt is projected, as shown, it lies directly in the path of the latch head 10, and consequently when the bolt is in this position, the latch will be prevented from moving inwardly away from the pins 2. If, therefore, when the arm is in some such position as indicated in Fig. 1, the bolt 22 be projected by turning the key 23 in the lock, the latch 10 will be rigidly locked in position and, owing to the engagement of the V-shaped latch end with the pin 2, it will be impossible to move the arm 5 in either direction. When, on the other hand, the bolt is retracted, an ample space will be provided in which the latch head 10 may freely reciprocate, and hence the cam faces 12 may readily be forced to rise over the pins, as above described, and the arm moved to any desired position.

It will, therefore, be apparent, that by means of the above construction, a shop foreman, for example, may set his regulating rheostat at any point which he may desire and, having set it in the proper position, may positively lock the arm in such position. He may then withdraw the key from the lock, and consequently, during his absence, it will be impossible for any unauthorized person to shift the rheostat arm and thereby vary the speed of the motor.

It will thus be seen that I have provided simple but effective means for positively locking a rheostat arm in any desired position, and it is thought that the numerous advantages of my invention will be readily appreciated by those skilled in the art.

What I claim is:—

1. In a rheostat, a panel having a series of projections thereon, a contact member mounted on the panel and movable parallel with the surface thereof, a spring-pressed latch on said member adapted to engage said projections successively as the member is moved, and locking means, including a removable key, for locking said latch in engagement with any desired projection of the series.

2. In a rheostat, an arm therefor, a series of buttons with which said arm is adapted to contact, and means for rigidly locking said arm in contact with any desired button, such locking means engaging the button itself.

3. In a rheostat, an arm therefor, a series of contact buttons coöperating therewith, a spring latch carried by said arm and adapted to snap from one button to another as the arm is moved, and means for locking said latch against movement.

4. In a rheostat, an arc-shaped series of contact pins, an arm concentrically mounted with respect thereto, and a lock carried by said arm and co-acting with the sides of said pins and serving, when operated, to rigidly hold said arm in any desired position.

5. In a rheostat, an arc-shaped series of contact pins, an arm concentrically mounted with respect thereto, and a spring latch carried by said arm and adapted to engage the sides of said pins, said latch snapping from one pin to the next as the arm is moved, and serving to yieldingly maintain said arm in position.

6. In a rheostat, an arc-shaped series of contact pins, an arm concentrically mounted in respect thereto, and a spring-pressed latch carried by said arm and adapted to engage the sides of said pins, said latch snapping from one pin to the next as the arm is moved, and means for locking said latch against movement when desired, whereby said arm is rigidly held in position.

7. In a rheostat, an arc-shaped series of contact pins, an arm concentrically mounted with respect thereto, a latch carried by said arm and having a V-shaped end adapted to engage said pins, means for resiliently hold-

ing said latch in contact with one of said pins, and means for rigidly locking said latch against movement away from said pin, when desired, whereby movement of the arm is prevented.

8. In a rheostat, a pivoted arm therefor, an arc-shaped series of projections, a lock coöperating with said projections to hold the arm in any desired position, and a removable key for said lock.

9. In a rheostat, a pivoted arm therefor, an arc-shaped series of projections, a spring-latch adapted to engage said projections and snap from one to the other as the arm is moved, and a lock for preventing movement of said latch when desired.

In testimony whereof I affix my signature, in presence of two witnesses.

GEORGE H. WHITTINGHAM.

Witnesses:

FELIX R. SULLIVAN,

A. V. JARIUS.