

No. 676,426.

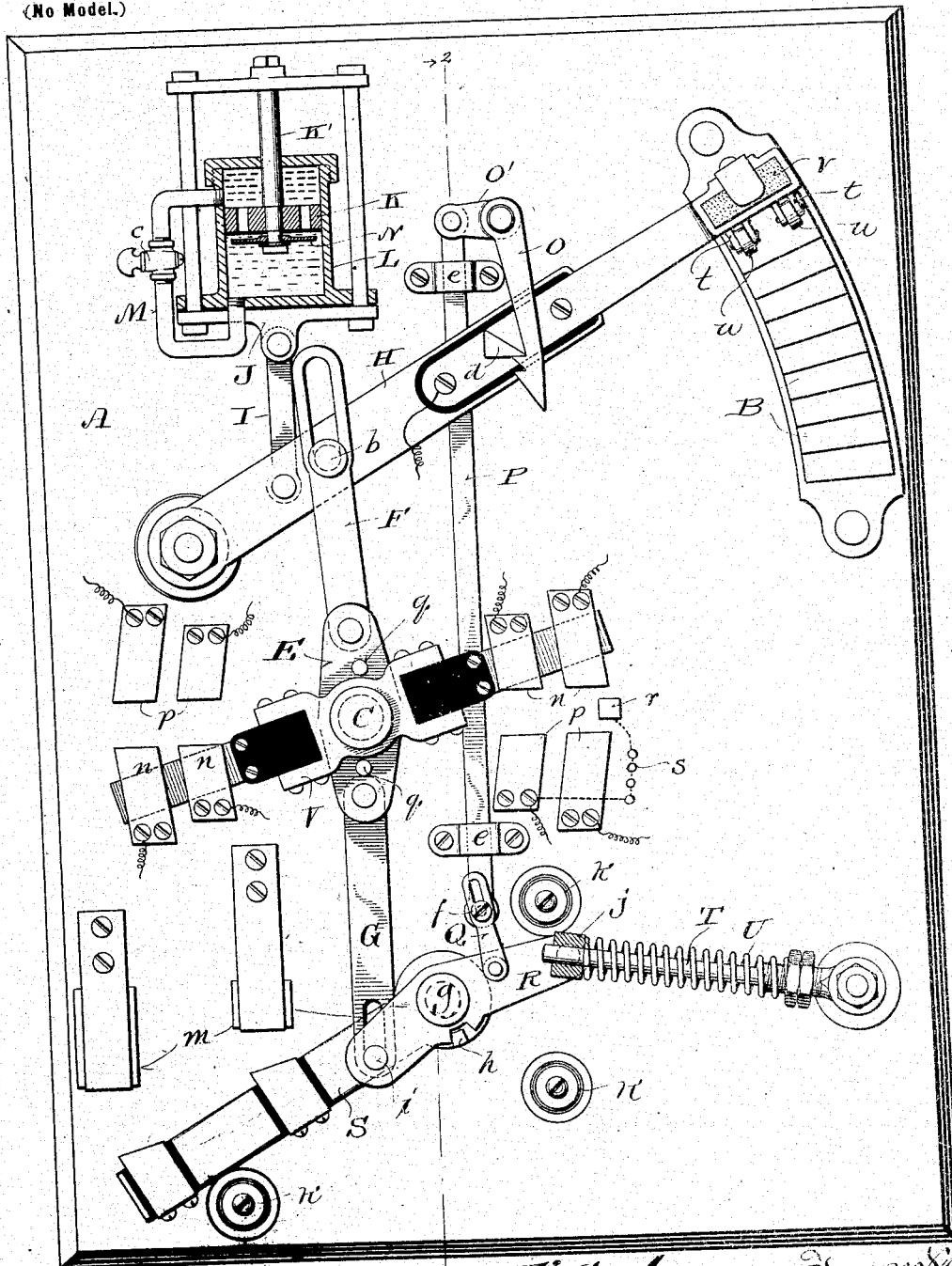
Patented June 18, 1901.

J. DILLON.  
RHEOSTAT CONTROLLER.

(Application filed Mar. 22, 1901.)

2 Sheets—Sheet 1.

(No Model.)



Witnesses:  
Geo. W. Young,  
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Fig. 1.

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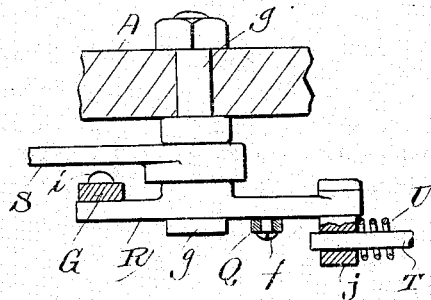
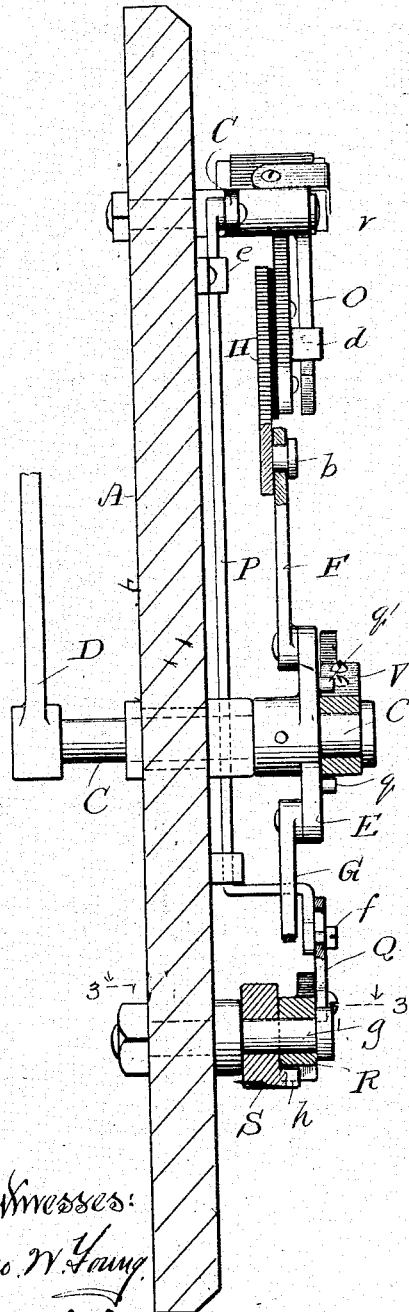
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2 Sheets—Sheet 2.

*Fig. 2.*



*Fig. 3.*

Witnesses:  
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# UNITED STATES PATENT OFFICE.

JOHN DILLON, OF MILWAUKEE, WISCONSIN.

## RHEOSTAT-CONTROLLER.

SPECIFICATION forming part of Letters Patent No. 676,426, dated June 18, 1901.

Application filed March 22, 1901. Serial No. 52,322. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN DILLON, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Rheostat-Controllers; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to simplify, and consequently cheapen, the manufacture of rheostat-controllers analogous to the one set forth in my Patent No. 657,159, issued September 4, 1900, said invention consisting in the peculiarities of construction and combination of parts hereinafter particularly described, with reference to the accompanying drawings, and subsequently claimed.

Figure 1 of the drawings represents a partly sectional front elevation of my improved rheostat-controller mechanism, the rheostat-arm being locked on full resistance and the electric circuit broken; Fig. 2, a sectional view of said mechanism, this view being indicated by lines 2-2 in Fig. 1; and Fig. 3, a detail plan view, partly in horizontal section, on lines 3-3 in Fig. 2.

Referring by letter to the drawings, A indicates a panel of suitable material upon which the mechanism is mounted. Arranged in series on an arc of a circle upon the panel are contact-terminals B of a corresponding series of resistance-coils (not shown up, but common in the art) to constitute the bridge of a rheostat that is put in circuit with a source of electrical energy.

The panel A is provided with bearings for a shaft C, and a crank D is rigid on one end of the shaft. In rigid connection with shaft C is the central hub of a plate E, and links F G have pivotal connection with the extremities of the plate, the ends of the links farthest from the plate being longitudinally slotted. The slot in link F is engaged by a lateral stud *h* of the rheostat-arm H, in pivotal connection with panel A, the general construction and wiring of said arm being such as may be most convenient or desirable.

A link I is shown connecting the rheostat-arm with a frame J, in connection with the rod K of a piston K, that reciprocates in a

cylinder L, containing a fluid, preferably oil, and having its heads connected by a pipe M, provided with a faucet *c*, by which to regulate the flow of the fluid from one side to the other of said piston, the latter being perforated and opposed by a valve-disk N, that plays on its rod. This dash-pot mechanism is similar to that set forth in my patent aforesaid, and it is practical to vary its construction, as described in said patent, or to substitute some other retarding mechanism in connection with the rheostat-arm.

A triangular lateral lug *d* of the rheostat-arm engages with a latch O, that constitutes one arm of a bell-crank in connection with the panel A, and the other arm O' of this crank is coupled to an extremity of a rod P, for which guides *e* are provided on said panel, and a stud *f* at the other end of the rod engages a longitudinal slot of a link Q in pivotal union with a lever R, having a hub intermediate of its extremities loose on a pivot *g* in connection with the aforesaid panel. Like in my former patent aforesaid the hub of the lever R is provided with a segmental notch engaged by a lateral lug *h* of a main switch-bar S, that is also loose on the pivot *g* supporting said lever. One end of lever R is provided with a lateral stud *i*, that engages the slot in link G, and the other end of said lever is provided with a swivel *j*, engaged by a rod T in pivotal connection with panel A, a spiral spring U being arranged on said rod under compression between the swivel and a tension-nut. The usual insulating-stops *k* are arranged on panel A in opposition to the swivel end of lever R and the main switch-bar.

The panel A is provided with contacts *m* for the main switch-bar, and said panel is also provided with contacts *n p* for a reversing switch-bar V, that has a central hub loose on shaft C, above specified, this reversing switch-bar being thus balanced.

The plate E is provided with lateral diametrically opposite lugs *q*, and by means of these lugs the reversing switch-bar is actuated to swing from contacts *n* to contacts *p*, as in the patent above noted.

Referring particularly to the movable parts of the assemblage, (best shown in Fig. 1,) if shaft C be partially rotated in the proper di-

rejection by means of its crank D the plate E will be swung to pull link F down and link G up, whereby there is initial swing of lever R to compress the spring U on rod T and bring a boundary of the segmental notch in the lever-hub in contact with the lug h of the main switch-bar S, while at the same time the link Q, in connection with said lever, moves down on the stud f of rod P, that is in connection with the bell-crank latch that for the time being supports the rheostat-arm. On the instant the lever R is moved far enough to have the swivel end thereof pass the line of center the main switch-bar will be automatically thrown into immediate engagement with its contacts by the expansive force of spring U operating on said lever, the slot in link G engaged by lever-stud i permitting this movement, and at the same time there is pull of link Q on rod P to swing the bell-crank latch clear of lug d on the rheostat-arm, whereby this arm is then free to automatically travel in the direction necessary to cut out resistance to electric current, whereby the motor put in circuit with the rheostat is eventually run at full speed, the descent of said rheostat-arm being retarded by means such as are herein specified. Now if plate E be swung to push link F up and link G down it is obvious that the rheostat-arm will be swung in the direction necessary to cut in all of the resistance, and at the same time the lever R will be actuated to snap the main switch-bar away from its contacts, as well as to cause a swing of the bell-crank latch in position to catch under the lug d of said rheostat-arm. If the plate E be operated to cause an exertion of force by its lugs q on balanced reversing switch-bar V to bring this bar away from contacts n to contacts p, this operation will take place in advance of the swing of the main switch-bar to close circuit. A return of plate E to the normal position herein shown will of course operate to again open the main switch, the reversing switch-bar being left on contacts p; but if the throw of said plate is continued said reversing switch-bar will be again brought on its contacts n after the opening of said main switch. Hence it will be understood (as in my former patent) that at any time the reversing-switch is thrown the operation takes place while the main circuit is open, the throw being either previous to closing of said circuit or subsequent to opening of same, according to the throw of plate E aforesaid.

There are times when the main switch-bar S is thrown from its contacts m and the motor left running under momentum. If at such a time reversing switch-bar V is thrown from one set to the other of its contacts n p, an electric arc will form and cause sparking detrimental to the switch unless some provision is had to overcome such a result. Hence I prefer to utilize a contact r, having electrical connection with an armature-contact of said switch and a high resistance s, the supplementary contact being arranged in the path

of an extremity of reversing switch-bar V, its length being such that said bar in its swing from one to another set of the former contacts in either direction of throw will for a timeshort-circuit the motor-armature through said resistance instead of momentarily opening the armature-circuit, as would be otherwise the case.

To insure continuous contact and prevent sparking between the rheostat-arm and bridge, said arm is provided with brackets t, in which bridge-abutting rollers u are hung, these brackets and rollers being of conductor material and utilized with or without brush v, herein shown. If the brush be omitted, there will be a corresponding reduction of friction. Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A pivotal rheostat-arm, a main switch-bar, a lever constituting part of spring-snap mechanism in conjunction with said switch-bar, latch mechanism for the rheostat-arm cooperative with the lever, a swing-plate, and links in connection with the plate having loose-play union with said rheostat-arm and lever.

2. A pivotal rheostat-arm, a main switch-bar, a lever constituting part of spring-snap mechanism in conjunction with said switch-bar, latch mechanism for the rheostat-arm cooperative with the lever, a swing-plate, links in connection with the plate having loose-play union with said rheostat-arm and lever, and a reversing switch-bar controlled by said plate.

3. A pivotal rheostat-arm provided with a lateral lug, a bell-crank one arm of which constitutes a latch engageable with said lug, a rod in connection with the other arm of the bell-crank, guides for the rod, a main switch-bar a lever constituting part of spring-snap mechanism in conjunction with the switch-bar, a link in connection with the lever having loose-play union with the aforesaid rod, a swing-plate, and links in connection with the plate having loose-play union with said rheostat-arm and lever.

4. A pivotal rheostat-arm having means in connection therewith to retard its free gravity swing, a main switch-bar, a lever constituting part of spring-snap mechanism in conjunction with said switch-bar, latch mechanism for the rheostat-arm cooperative with the lever, a swing-plate, and links in connection with the plate having loose-play union with said rheostat-arm and lever.

5. A pivotal-rheostat-arm having means in connection therewith to retard its free gravity swing, a main switch-bar, a lever constituting part of spring-snap mechanism in conjunction with said switch-bar, latch mechanism for the rheostat-arm cooperative with the lever, a swing-plate, links in connection with the plate having loose-play union with said rheostat-arm and lever, and a reversing switch-bar controlled by said plate.

6. A pivotal rheostat-arm, a main switch-

bar, means in connection with the arm and bar for operating the former, a balanced reversing switch-bar, means whereby the throw of the reversing switch-bar is had when main switch is open either previous to closing circuit or subsequent to opening of same, and means for preventing sparking when said reversing switch-bar is thrown from one to another set of contacts.

7. A pivotal rheostat-arm, a main switch-bar, means in connection with the arm and bar for operating the former, a balanced reversing switch-bar, means whereby the throw of the reversing switch-bar is had when main switch is open either previous to closing circuit or subsequent to opening of same, and a supplementary contact arranged in the path of an extremity of said reversing switch-bar and having electrical connection with high

resistance and an armature-contact of the reversing-switch. 20

8. A pivotal rheostat-arm provided with roller-contacts, a main switch-bar, a lever constituting part of a spring-snap mechanism in conjunction with said switch-bar, latch mechanism for the rheostat-arm co-operative with the lever, a swing-plate, and links in connection with the plate having loose-play union with said rheostat-arm and lever. 25

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses, 30

JNO. DILLON.

Witnesses:

N. E. OLIPHANT,  
B. C. ROLOFF.