

H. L. VAN VALKENBURG.
RHEOSTAT.

APPLICATION FILED JUNE 6, 1904.

2 SHEETS—SHEET 1.

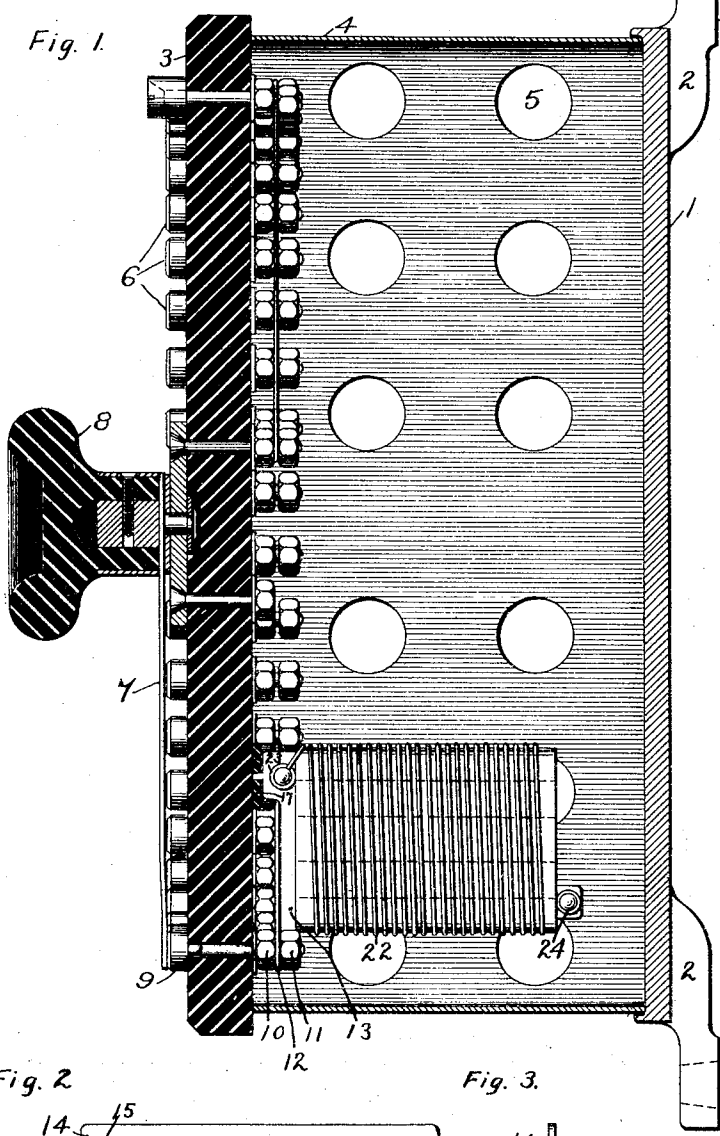
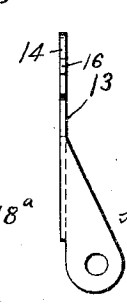
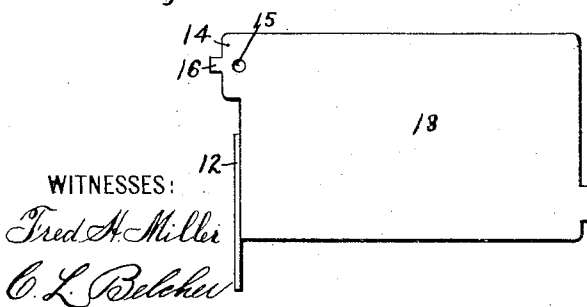


Fig. 2

Fig. 3



WITNESSES:

Fred A. Miller
C. L. Belcher

INVENTOR

Harmon L. Van Valkenburg

BY

W. H. Clear
ATTORNEY

H. L. VAN VALKENBURG.

RHEOSTAT.

APPLICATION FILED JUNE 6, 1904.

2 SHEETS—SHEET 2.

Fig. 4.

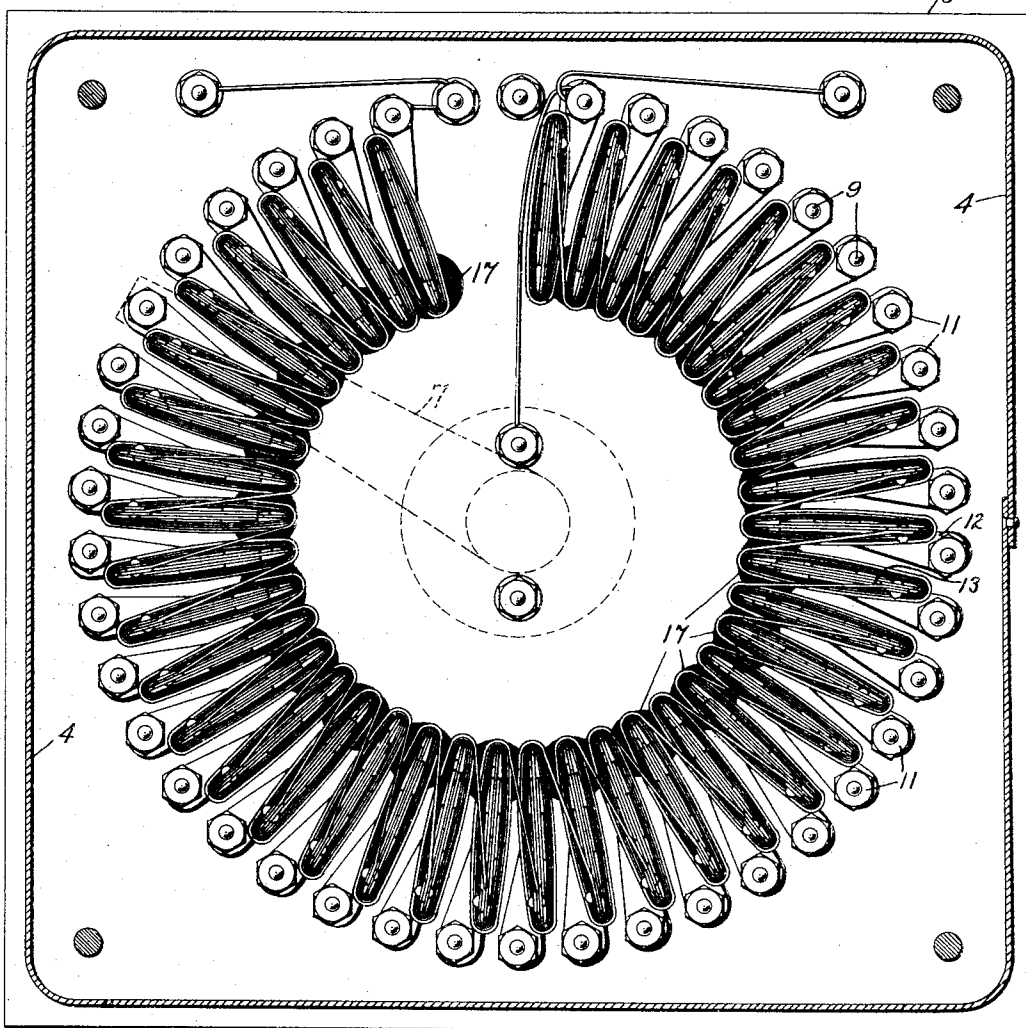
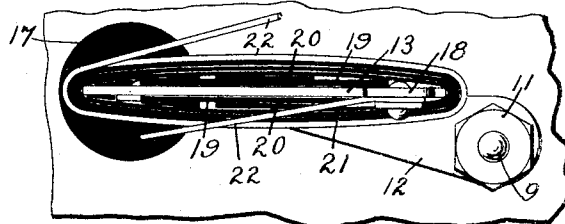


Fig. 5.



WITNESSES:

Fred. H. Miller

C. L. Balcher

INVENTOR

Herman L. Van Valkenburg

BY

Wesley C. Carr
ATTORNEY

UNITED STATES PATENT OFFICE.

HERMON L. VAN VALKENBURG, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR
TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A COR-
PORATION OF PENNSYLVANIA.

RHEOSTAT.

SPECIFICATION forming part of Letters Patent No. 782,887, dated February 21, 1905.

Application filed June 6, 1904. Serial No. 211,417.

To all whom it may concern:

Be it known that I, HERMON L. VAN VALKENBURG, a citizen of the United States, and a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Rheostats, of which the following is a specification.

My invention relates to rheostats or resistance-boxes; and it has for its object to provide a device of this character which shall be simple, compact, and relatively inexpensive in construction and the resistance elements of which shall be so constructed and mounted as to be durable and thoroughly insulated and at the same time be so exposed to the air as to be effectively ventilated.

In the accompanying drawings, Figure 1 is a sectional view of a rheostat constructed in accordance with my invention. Fig. 2 is a side elevation of a portion of one of the resistance elements, and Fig. 3 is a plan view of the part shown in Fig. 2. Fig. 4 is an inverted plan view of the instrument shown in Fig. 1; and Fig. 5 is a detail view, on a larger scale, of one of the rheostat elements.

The apparatus here illustrated is provided with a base-plate 1, having legs 2, by means of which it may be attached to a suitable switchboard-panel or other support, a front or top plate 3 of suitable non-conducting material, and a sheet-metal shell 4, provided with ventilating-openings 5 and suitably fastened to the parts 1 and 3. The plate 3 is provided with an annular set of contact-terminals 6 and a movable arm 7, that is turned, by means of a handle 8, to make successive contact with the terminals 6. Each of the contact-terminals 6 constitutes the head of a bolt 9, that projects through the plate 3 and the inner end of which is provided with two nuts 10 and 11, between which is clamped a flange 12 of a sheet-metal plate 13, this flange being preferably an integral part of the plate 13 and being bent into a plane substantially at right angles thereto, so that the plate 13 is supported by the plate 3 and projects into the casing 4 substantially at right angles to it.

The plate 13 may be of any suitable metal or composition which is a conductor of electricity; but it will generally be found most convenient and desirable to utilize sheet-iron for this purpose.

Each plate 13 is formed with a projection 14 at one corner, in which is a hole 15 and which is also provided with a smaller projection 16, that fits into a recess in an insulating-disk 17. The disks 17 are employed for the purpose of avoiding possible short-circuiting contact between adjacent resistance units in case any of the nuts 11 become loosened sufficiently to permit movement of the corresponding unit or units and also for the purpose of facilitating proper assembling of the units. The corner of the plate 13 diagonally opposite that having the projection 14 is provided with a projection 18, having a hole 18^a. Upon each side of the resistance-plate 13 is a sheet 19 of suitable non-conducting material—such, for example, as asbestos—that is of substantially the same length, but of less width, than the plate 13, and on the outer side of each of the sheets 19 is placed a strip 20 of similar material, the length of which is substantially equal to that of the plate 13 and sheet 19, but the width of which is considerably less than that of the sheets 19.

Surrounding the parts 13, 19, and 20 is a sheet or envelop 21 of suitable non-conducting and heat-resisting material, such as asbestos, comprising one or more layers, and on this sheet or envelop is wound a coil 22 of wire of such composition as will provide the desired resistance without material deterioration in service—such, for example, as the German-silver wire that is ordinarily employed for resistance purposes. One end of this coil 22 is fastened to the projection 14 of the plate 13, which supports it, by means of a suitable rivet or binding-post 23, which is inserted in the opening 15. The other end of the coil is fastened to the projection 18 of the next adjacent plate 13 of the set by means of a rivet or binding-post 24, which is inserted in the opening 18^a of that plate. It will be seen, therefore, that the resistance-plates 13

and the coils 22 are connected in series with each other to constitute the resistance member of the rheostat and that the amount of this resistance which is connected in the circuit with which the rheostat is employed is varied by means of the contact-terminal 6 and the contact-arm 7 in the usual manner.

The form and dimensions of the several parts may obviously be varied somewhat from what is shown, and I therefore desire to include within the scope of my invention all variations which will not change the mode of operation and the result.

I claim as my invention—

1. A rheostat element comprising a sheet-metal base, a wire coil mounted thereon and connected in series therewith and insulating material between said base and said coil.

2. A rheostat element comprising a sheet-metal base provided with a non-conducting sheath or covering and a wire coil surrounding said sheath or covering and connected at one end to the corresponding end of the sheet-metal base.

3. A rheostat element comprising a sheet-metal base, a non-conducting, heat-resisting sheath therefor and a coil of wire wound upon said sheath and connected at one end to the corresponding end of the sheet-metal base.

4. A rheostat element comprising a sheet-metal base having an integral supporting-flange at one end, a non-conducting, heat-resisting sheath and a coil of wire wound upon said sheath and connected to the base at the end having the supporting-flange.

5. In a rheostat, the combination with a supporting-plate having a series of contact-terminals and a movable contact-terminal adapted to cooperate therewith, of a series of resistance elements severally comprising a sheet-metal base, an insulating-sheath and a coil of wire wound upon said sheath and having one end connected to the corresponding end of the

said sheet-metal base and its opposite end connected to one end of the next sheet-metal base in the series.

6. In a rheostat, the combination with a series of stationary contact-terminals and a movable arm adapted to make engagement therewith, of a series of resistance elements each of which comprises a sheet-metal base fastened at one end to a corresponding stationary contact-terminal, a non-conducting, heat-resisting sheath and a coil of wire mounted on said sheath and connected at one end to the corresponding end of the said sheet-metal base and at its other end to the next sheet-metal base in the series.

7. In a rheostat, the combination with a casing having a front plate provided with stationary contact-terminals and a movable contact-terminal adapted to engage therewith, of a series of resistance elements severally supported by said stationary contact-terminals and each of which comprises a sheet-metal base, a non-conducting sheath therefor and a coil of wire wound upon said sheath, the coils and sheet-metal bases being connected in series to constitute the resistance-circuit of the rheostat.

8. In a rheostat, the combination with a non-conducting support, of a series of resistance units severally comprising a sheet-metal base having corner projections, an insulating-sheath and a coil of wire surrounding the sheath and connected at one end to one corner projection of its base and at its other end to the opposite projection of an adjacent base-plate, and a series of non-conducting disks between the support and the base-plates.

In testimony whereof I have hereunto subscribed my name this 3d day of June, 1904.

HERMON L. VAN VALKENBURG.

Witnesses:

C. L. BELCHER,
BIRNEY HINES.