

No. 717,310.

Patented Dec. 30, 1902.

G. P. WISDOM.
RHEOSTAT OR ELECTRIC HEATER.

(Application filed Aug. 6, 1901.)

(No Model.)

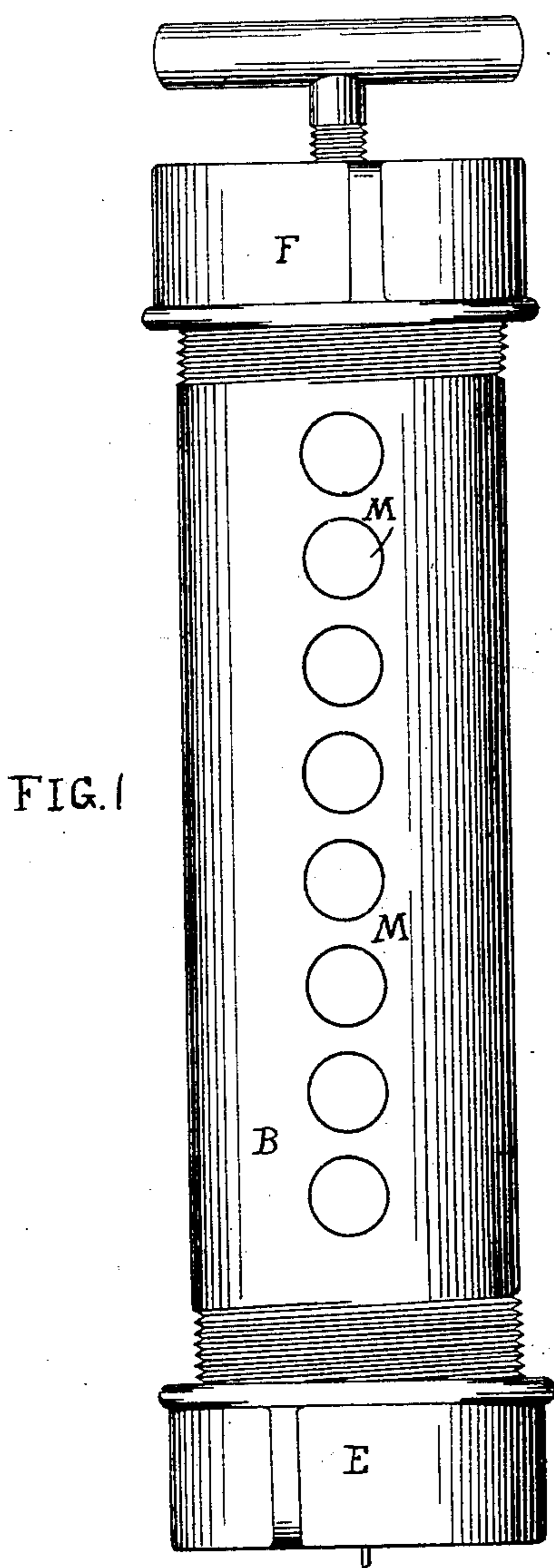


FIG. 1

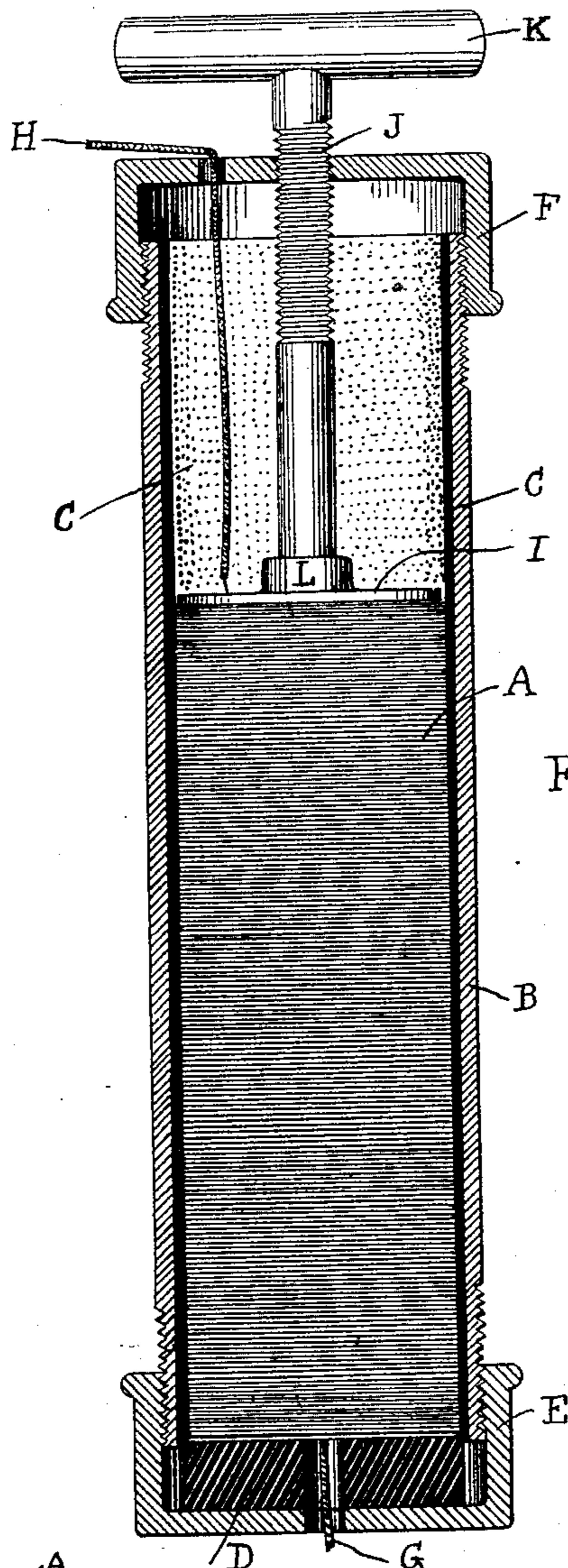


FIG. 2

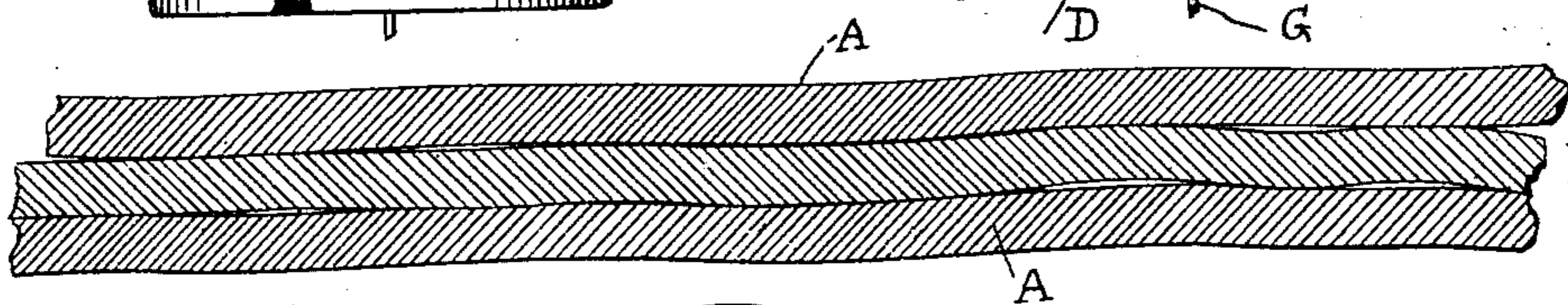


FIG. 4

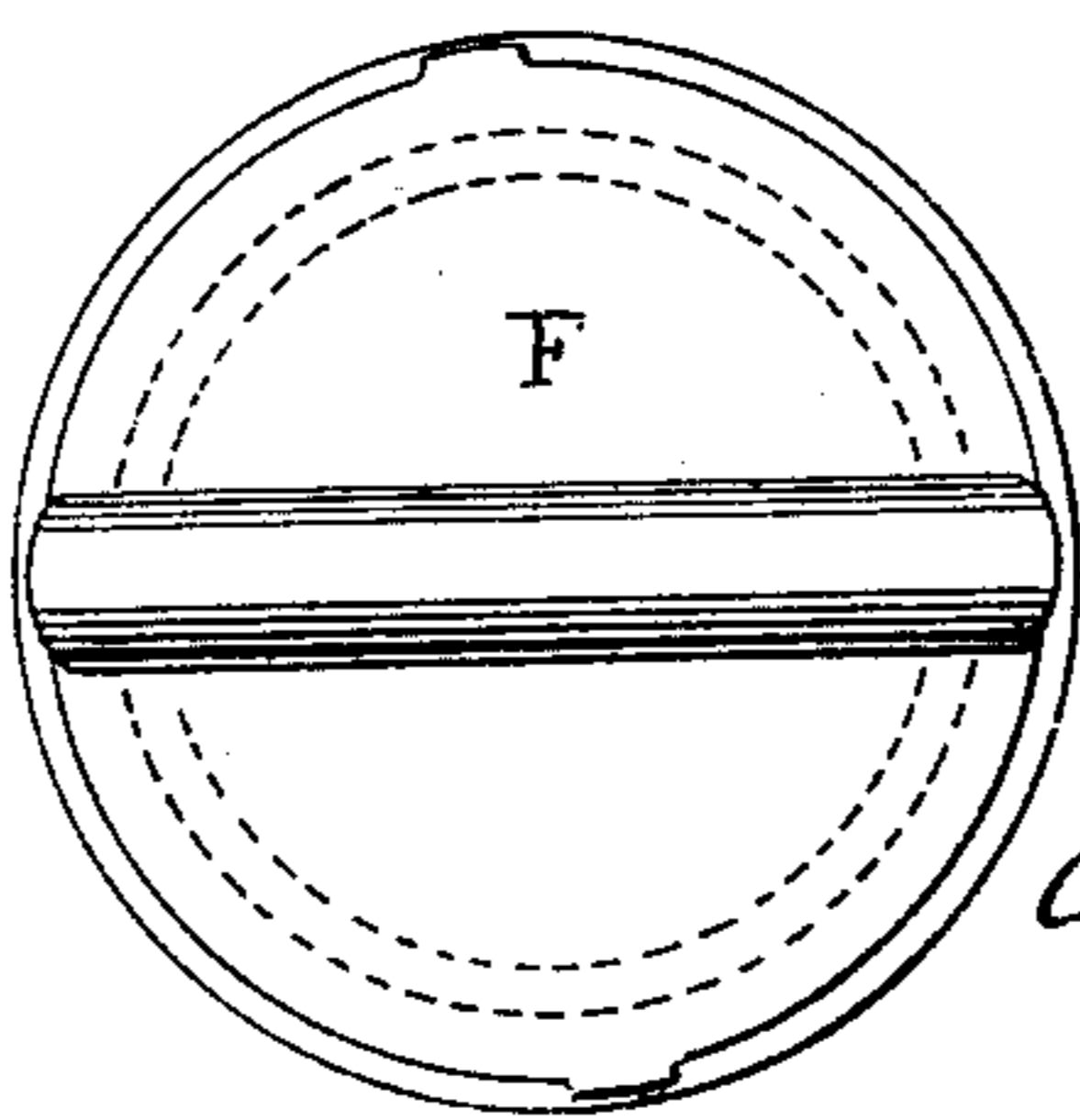


FIG. 3

WITNESSES:

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RHEOSTAT OR ELECTRIC HEATER.

SPECIFICATION forming part of Letters Patent No. 717,310, dated December 30, 1902.

Application filed August 6, 1901. Serial No. 71,049. (No model.)

To all whom it may concern:

Be it known that I, GEORGE P. WISDOM, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Rheostats or Electric Heaters, of which the following is a specification.

This invention relates to a device for introducing into an electric circuit a resistance which may be varied between predetermined limits for the purpose of an electric heater or rheostat.

The organization comprising my invention consists of a large number of flexible metallic sheets, preferably of iron, superposed and having their contact-surfaces relatively irregularly undulating, electric conductors connected to the end sheets, and means for gradually increasing and decreasing the area of contact-surfaces of said sheets.

Figure 1 is a front elevation of the complete device. The internal elements are omitted. Fig. 2 is an elevation, mostly in section, of the same device, including internal elements. Fig. 3 is a plan of the same device. Fig. 4 is a greatly-enlarged view in section of the metallic sheets.

A represents an assemblage of hundreds of very thin circular sheet-iron plates or sheets bearing against each other loosely in their normal positions with their faces in contact with one another and centrally located in and held in position by a tube B, lined with an insulating substance C, preferably enamel, to maintain the sheets out of contact with the metallic tube B. At the lower end the sheets A rest upon an insulating-block D, while the ends of the tubes are covered with caps E and F. Through the lower cap passes an insulated electric conductor G to the lowest sheet, and through the upper one passes an insulated electric conductor H to the top plate I, which is preferably much thicker than the sheets. Of course the device may be vertical or horizontal or otherwise located. A screw J passes through the cover or cap F and bears in a socket L on the plate I. When said screw is turned by the handle K, it compresses the sheets A into a smaller column

or mass, and thereby increases the amount of surfaces in contact with one another.

When the handle K is turned backward, the plate I will rise by the elasticity of the sheets A, and said sheets will follow the handle upward without losing contact with each other or with said plate I. The current passing through the sheets will be gradually diminished and will be increased again very gradually by depressing the plate I by turning the handle K, and so on indefinitely.

For the best effects care should be taken that the sheets should not be plane on their faces. The correct condition of the sheets follows simply by stamping them from sheet-iron and then using them without any grinding of the surfaces or hammering them or treating them in any way, or the irregular surfaces may be obtained by any other means.

It would appear from Fig. 2 that the sheets have plane faces; but this is only because their irregular surfaces cannot be represented on such a small scale. In Fig. 4, however, the construction is approximately represented, showing that even at a rather high pressure the faces are not entirely in contact with one another throughout. The sheets come from the punching-machine in a kind of warped condition and when superposed touch one another at comparatively few points. As the pressure is increased by the pressure of the plate I the number of points of contact gradually increases, and therefore the electrical resistance of the mass of sheets is reduced.

In order that the device may serve as a heater, the tube B or retaining-wall should have as many openings as possible to permit the air to become heated by circulation between the sheets. Some of these holes are shown at M; but it is evident that any engineer can modify the tube B so as to form an open-work about the sheets A, and yet so as to maintain said sheets in the proper relative positions.

I claim as my invention—

1. A rheostat consisting of the combination of a pile of slightly-curved metallic sheets, sufficiently yielding to be flattened into plane sheets, and sufficiently elastic to regain their curved shape, and means for compressing said

sheets together gradually from a curved condition to sheets having approximately plane surfaces in contact with one another.

2. A rheostat consisting of the combination
5 of a pile of thin and slightly-curved pieces of sheet metal, normally in contact at only enough points to cause a predetermined high electrical resistance, and a compressing device for gradually causing an increase of the
10 number of points of contact to substantially all of the points of the surfaces of said pieces

of sheet metal, said pieces being adapted after compression by said device, to spring back to their normally curved form in the normal condition of said device.

In testimony whereof I hereunto sign my name and affix my seal this 25th day of July, 1901.

GEORGE P. WISDOM. [L. S.]

Witnesses:

L. E. HICKS,

ANNA R. MCCOLE.