(No Model.)

A. J. SHAW.

RHEOSTAT.

No. 528,893. Patented Nov. 6, 1894.

Fig. 1.

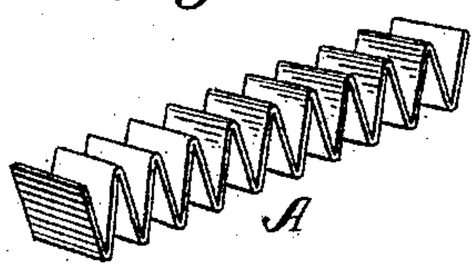

Fig. 2.

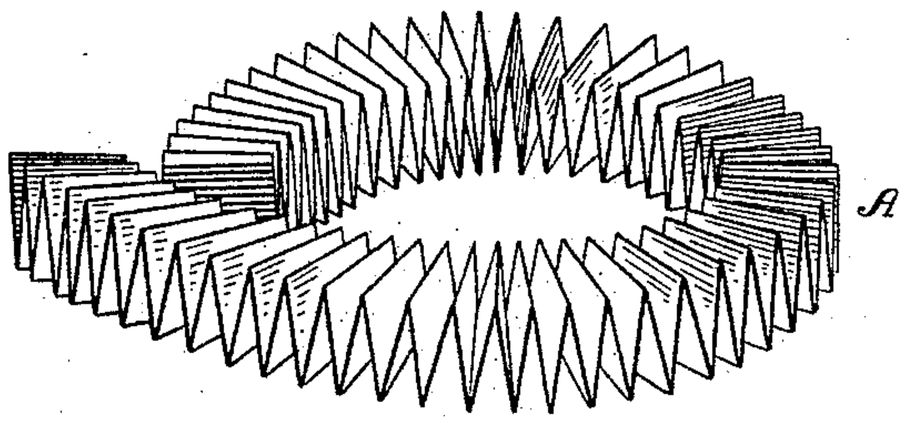

Fig. 3.

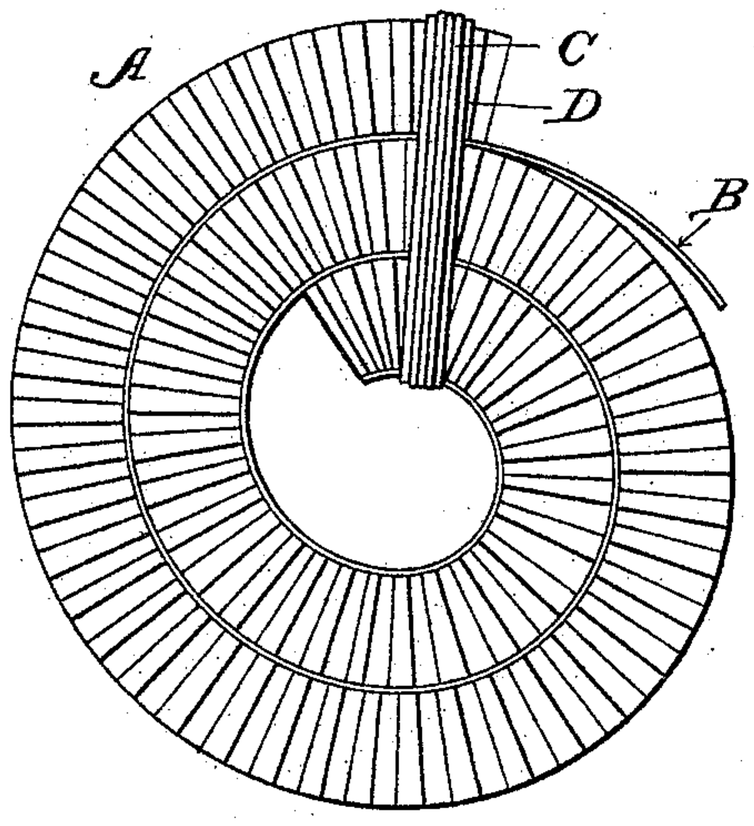

Fig. 4.

Witnesses
C. L. Burdett.
C. B. Bull.

Alton J. Shaw
Inventor
by Dodger Lone
Attorneys.

UNITED STATES PATENT OFFICE.

ALTON J. SHAW, OF MUSKEGON, MICHIGAN.

RHEOSTAT.

SPECIFICATION forming part of Letters Patent No. 528,893, dated November 6, 1894.

Application filed April 10, 1894. Serial No. 507,045. (No model.)

To all whom it may concern:

Be it known that I, ALTON J. SHAW, a citizen of the United States, residing at Muskegon, in the county of Muskegon and State of Michigan, have invented certain new and useful Improvements in Rheostats, of which the following is a specification.

My invention relates to electrical resistances, and consists essentially in a block, card or device formed by crimping or folding a metallic band or strip back and forth in short folds or bends, and then coiling the folded strip into a spiral or substantially spiral form, as hereinafter more fully explained.

In the drawings,—Figure 1 is a perspective view of a metallic strip, folded preparatory to coiling; Fig. 2, a perspective view of such a strip partially coiled; Fig. 3, a plan or face view of a card or section consisting of a length of the crimped or folded strip coiled into spiral form, with proper insulation between the coils; and Fig. 4 an edge view of the completed section or coil.

In the construction of resistance devices, rheostats, &c., it is desirable to combine cheapness, durability, compactness and efficiency, and to do this it is necessary to employ cheap materials, capable of safely carrying heavy currents without injury. Thorough ventilation, (and consequent dissipation of the heat occasioned by impedance of the current,) is an important factor in the problem, and this I secure, together with other desirable points, by the construction illustrated in the drawings, which will now be explained.

A indicates a strip, band or ribbon of any suitable material, metal, or alloy, iron being preferred for ordinary use because of its cheapness and general suitability. This strip or band is crimped, bent or folded as represented in Fig. 1, the folds being quite short,—advisably not over one or two inches and ordinarily one inch or less,—though I do not mean to restrict myself to any stated dimensions. After being thus crimped or folded, the band is coiled into spiral or analogous form, with the apices of the folds or bends radial to the center of the spiral or approximately so, as best indicated in Fig. 2. This mode of coiling the crimped band brings the edges of the band in one coil opposite to those of the next, and unless something be interposed to prevent, the coils will make actual contact. To prevent this I wind with the crimped band, a strip B of insulating material such as asbestos, micanite or the like, which serves the double purpose of separating and insulating the coils, and of affording a proper bearing for the thin edges of the metallic strip constituting said coils.

Figs. 3 and 4 represent the coil or block in its completed state, a suitable binding C of wire, properly covered, or separated from the metal by an insulating strip D, being employed to prevent uncoiling. If the coil be used within a retaining shell, spider, or casing, such binding will not be required.

The resistance block will be used in the ordinary way, connection being made with its ends, or at one end and at an intermediate point, or two or more may be connected in series and used with any ordinary contact device by which to introduce or remove resistance as required.

The crimping of the band A may be effected in any convenient manner, but most cheaply and expeditiously by passing it between rolls suitably ribbed or corrugated.

It will be seen that under this construction both faces of every portion of the band or strip are exposed to the atmosphere, and that consequently a large radiating surface is afforded. Hence any heat due to impedance of the current will be speedily dissipated, and injury of the conductor will be avoided.

The compactness of the device is manifest, and its economy is made apparent upon brief consideration of the relative lengths of conductor, coil, and insulating strip. Thus, assuming that a ribbon be used of No. 20 Birmingham wire gage, one half inch in width, and that the folds are one inch in length, and taking six inches as the mean diameter of the coils of the spiral, the diameter of the coil would be approximately eighteen inches,—the length of the insulating strip for such coil would be about nineteen inches, and the length of the conducting band or ribbon in the coil would be about seventeen feet.

If the band were wound facewise into a spiral, without being crimped, a length of insulating strip equal to the length of conductor

would be required, and there would be little or no ventilation.

Having thus described my invention, what I claim is—

1. A resistance device consisting of a band or ribbon of conducting material, crimped or folded facewise, and then coiled edgewise, substantially as shown and described.

2. The herein-described resistance block, consisting of a band or ribbon of conducting material crimped or folded facewise, and coiled edgewise upon itself, and a layer of insulating material interposed between successive folds.

3. The resistance device, consisting of crimped band A coiled edgewise upon itself, insulating strip B, and insulated binding C, all substantially as described and shown.

In witness whereof I hereunto set my hand in the presence of two witnesses.

ALTON J. SHAW.

Witnesses:

CHAS. L. GRIFFIN,

J. G. EMERY, Jr.