May 27, 1930. C. S. HAWLEY 1,760,057

ELECTRIC RESISTANCE

Filed Feb. 26, 1927

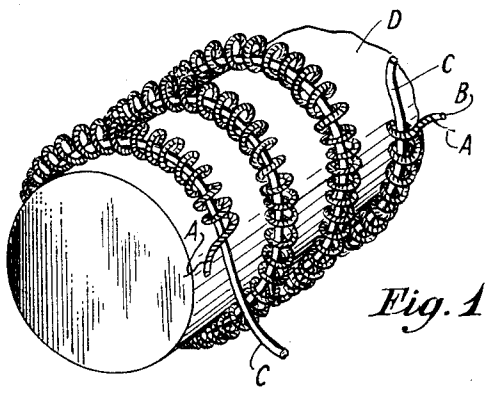


Fig. 1

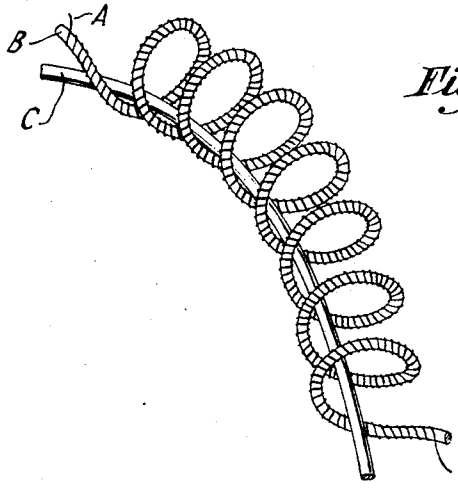


Fig. 2

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Patented May 27, 1930 1,760,057

UNITED STATES PATENT OFFICE

CORNELL S. HAWLEY, OF ALBANY, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CONSOLIDATED CAR-HEATING COMPANY, INC., OF ALBANY, NEW YORK, A CORPORATION OF NEW YORK

ELECTRIC RESISTANCE

Application filed February 26, 1927. Serial No. 171,235.

For a detailed description of the present form of my invention, reference may be had to the following specification and to the accompanying drawing forming a part thereof, wherein

Fig. 1 shows my resistance in perspective and

Fig. 2 shows a section thereof in enlarged detail.

My invention relates to an electrical resistance and is particularly designed as an improvement on the resistance shown in the United States patent of Claude C. Nuckols and Frederic Pruyn, No. 1,019,075, dated March 5, 1912, which has been heretofore used. My invention is directed to an electrical resistance in which—as in the patent referred to—an extremely fine wire is employed, such as is necessary for signalling and other apparatus used on electric railway vehicles where the voltage is high and the amount of energy needed for the apparatus is comparatively small. In resistances of this kind the fine wire is difficult to insulate and support by reason of its minute diameter and lack of mechanical strength, while it is also difficult to handle it without breaking it.

This difficulty was met in the Nuckols and Pruyn patent by winding the bare fine wire helically on a stiff insulated wire which was itself in the form of a helix helically wound on a grooved porcelain core. This wire was in the nature of a mechanical self-sustaining support for the non-self-supporting fine wire, and was insulated therefrom usually by some plastic coating baked hard on the supporting wire.

While the Nuckols and Pruyn resistance has been successfully used, it has developed objectionable qualities which I have overcome by the following means: Instead of the supporting wire which serves as the core on which the bare fine wire is wound, I employ a comparatively soft cord which is itself of insulating material. By virtue of the fine wire wound on the outside of this cord it becomes sufficiently stiff to hold its shape when wound into a helix of small diameter. This helix can then be coiled on a porcelain core and secured thereon, preferably by means of an uncoiled insulating cord threaded through it axially.

Thus in the accompanying drawing, A represents the fine bare wire, devoid of any insulating coating but wound on an insulating cord B which is itself soft and limp as contrasted with the support-wire of Nuckols and Pruyn, but is externally stiffened to a degree by the fine wire wound around it. The cord B with the wire A thereon can then be coiled into a helix of rather small diameter which will hold its shape and a binding cord C of insulating material passed axially through it. After the helix is seated on the porcelain core D the binding cord is drawn taut and secured at its ends to the core. By this means the cord B becomes sufficiently stiff to stand up and carry the bare fine wire A. One advantage of my arrangement is that there is no metal in the supporting cord, so that the danger encountered in the Nuckols and Pruyn structure, of the enamel stripping off from the supporting helix with consequent loss of insulation, is avoided. It is also cheaper and simpler in addition to its greater reliability.

What I claim as new and desire to secure by Letters Patent is:—

1. An electrical resistance comprising a refractory core, a coreless insulating cord, a bare resistance wire approximately incapable of self-support helically wound upon the insulating cord so as to stiffen the cord and support the wire, said stiffened wire-supporting cord being formed into helical coils and mounted helically on said refractory core.

2. An electrical resistance comprising a refractory core, a coreless insulating cord, a bare resistance wire approximately incapable

of self-support helically wound upon the insulating cord so as to stiffen the cord and support the wire, said stiffened wire-supporting cord being formed into helical coils and mounted helically on said refractory core, and a binding cord of insulating material passed axially through the helical coils of the stiffened wire-supporting cord to retain it in position on said refractory core.

Signed at Albany, county of Albany, State of New York, this 27th day of January, 1927.

CORNELL S. HAWLEY.