

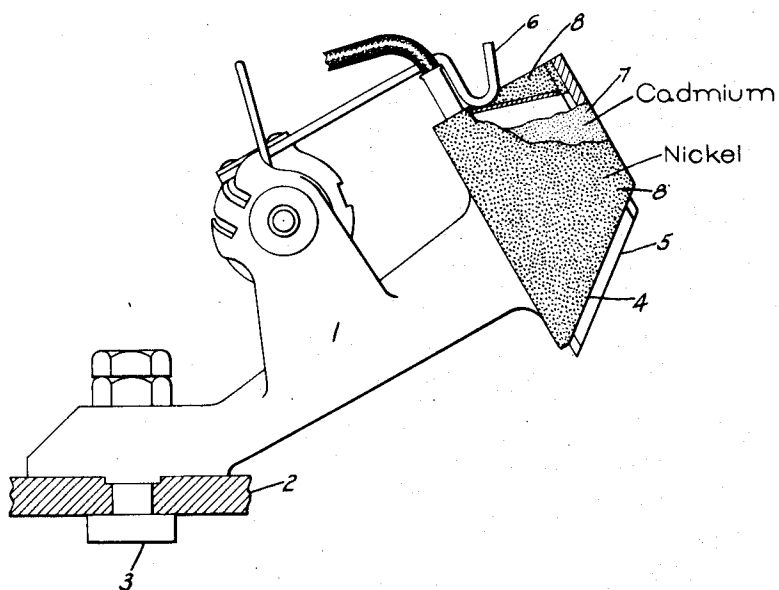
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1,615,662

R. L. TUTTLE

BRUSH HOLDER

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Inventor:
Robert L. Tuttle,

by

W. S. Lunt
His Attorney.

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UNITED STATES PATENT OFFICE.

ROBERT L. TUTTLE, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

BRUSH HOLDER.

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My present invention relates to brush holders and more particularly to means for providing a protective coating on brush holders constructed of magnesium or aluminum and their various alloys.

It is very desirable, owing to the low cost involved, to construct brush holders of metals which may be easily die cast. While metals such as aluminum and its alloys readily lend themselves to such an operation, it is found that there is a tendency on the part of such metals to corrode in a moist atmosphere and thereby prevent movement of the brush in the brush holder. This corrosion may be overcome in certain instances by applying a coating of cadmium to the aluminum or aluminum alloy, the cadmium forming an adherent protective coating which will not ordinarily peel or be forced off in the presence of a moist atmosphere. When the brush employed, however, is a carbon brush or a brush containing carbon, I have found that the cadmium coating on the aluminum is insufficient to protect the brush holder from corrosion at the point where the brush is in contact with the holder. As a result, when a carbon brush is inserted in a cadmium plated brush holder the brush box becomes corroded in a comparatively short time, when exposed to the action of a moist atmosphere, and very soon prevents any movement of the carbon brush therein unless extremely great force is employed.

It is one of the objects of my invention to provide a brush holder which may be easily die cast and which will not corrode in the presence of a brush containing carbon.

The novel features which I believe to be characteristic of my invention are set forth with particularity in the appended claims. My invention itself, however, will best be understood by reference to the following specification taken in connection with the accompanying drawing in which the single figure shows partly in section and partly in elevation a combined brush and brush holder embodying the features of my invention.

Referring to the drawing, I have indicated at 1 an aluminum or aluminum alloy brush holder rigidly mounted on a plate 2 by means of a bolt 3. The holder is supplied with the usual brush box 4 adapted to slidably accommodate a carbon brush 5. A spring 6 cooperates with the upper portion of the brush 5 and tends to urge the brush

into engagement with a contact member, not shown.

In carrying out my invention the brush holder 1 is first cleaned by cleaning methods so well understood that they require no description in the present case. The cleaned article is then coated with cadmium, as indicated at 7, in any suitable way, preferably by electroplating in an ordinary cadmium bath. For example, the brush holder may be made the cathode in an electroplating bath containing a cadmium compound such as the chloride, sulphate or hydroxide, and containing also potassium or sodium cyanide. The anode may consist of cadmium or carbon. I may use from 1 to 4 ounces of cadmium compound and 2 to 5 ounces of cyanide in a gallon of solution, and proceed by approved methods of electrolysis. It will be found that a period of fifteen minutes will ordinarily suffice to coat the brush holder with a suitable thickness of cadmium. The brush holder is now removed from the cadmium solution, dried and given a nickel coating 8 by placing in a standard nickel plating solution and plating for a period of approximately forty minutes.

In the interest of clearness, I have shown on the drawing a coating of cadmium and nickel only on the exterior and interior of the brush box 4. While it is primarily essential that those portions of the brush holder which actually contact with the carbon brush should be provided with both a cadmium and nickel coating, it will be usually found desirable and convenient to provide coatings of both metals on the entire surface of the brush holder. I have found that superimposed coatings of cadmium and nickel on aluminum are permanent and stable and not liable to peel, or be undermined and forced off by corrosion, and that an aluminum brush holder coated in this manner and cooperating with a carbon brush is highly resistant to corrosion in a moist atmosphere, and may even be subjected to a salt spray for relatively long periods of time without causing any appreciable corrosion of the holder.

While I have shown a certain type of brush holder on the drawing, it will be obvious that my invention is not restricted to any particular type of holder. Various forms of brush holders may be employed if desired. Changes also may be made in the

composition of the plating solutions used without departing from the scope of my invention as set forth in the appended claims.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. A brush holder comprising a non-ferrous metal base which may be readily die cast, said base having a coating of cadmium thereon and a coating of nickel on the cadmium.

2. A brush holder consisting largely of aluminum, a coating of cadmium on the aluminum, and a superimposed coating of nickel on the cadmium.

3. In combination, a metallic brush holder and a brush containing carbon, said holder comprising a non-ferrous metal base which may be readily die cast, a coating of cadmium on said base, and a coating of nickel on the cadmium.

4. In combination, a metallic brush holder and a brush containing carbon, said holder comprising a base consisting largely of aluminum, a coating of cadmium on the aluminum, and a coating of nickel on the cadmium.

5. In combination, a metallic brush holder and a brush containing carbon, said holder

comprising an alloy of aluminum provided with a coating of cadmium and a coating of nickel on the cadmium.

6. In combination, a brush holder and a brush containing carbon, said holder comprising a non-ferrous metal which may be readily die cast, said metal having a coating of cadmium thereon and a coating of nickel between said cadmium coating and the carbon brush.

7. In combination, a brush holder and a brush containing carbon, said brush being slidably mounted in the brush box of said holder, the holder comprising a non-ferrous metal which may be readily die cast, said metal having a coating of cadmium thereon, and means between the cadmium coating and the carbon brush for preventing corrosion of said brush box.

8. In combination a member containing carbon, a holder therefor, said holder comprising a non-ferrous metal base which may be readily die cast, a coating of cadmium on the base, and a coating of nickel on the cadmium.

In witness whereof, I have hereunto set my hand this 17th day of March, 1926.

ROBERT L. TUTTLE.