July 7, 1931. L. T. WARD 1,813,475

SCREEN AND LIKE DEVICE

Filed Feb. 24, 1931

Fig. 1.

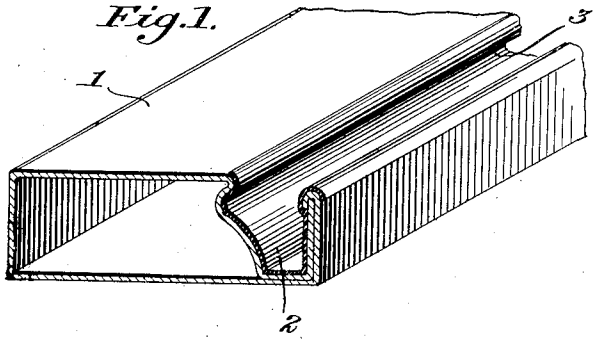


Fig. 2.

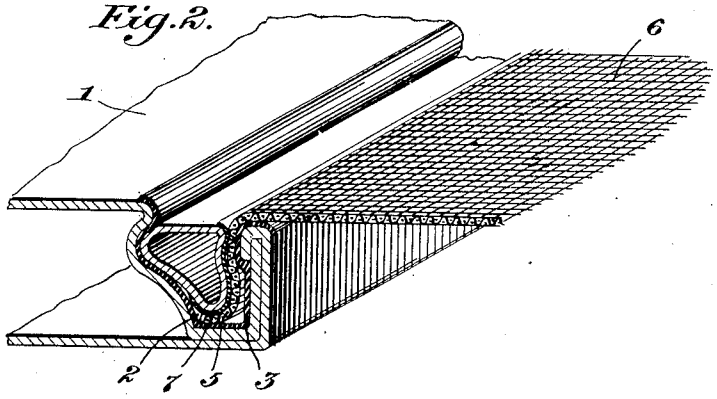
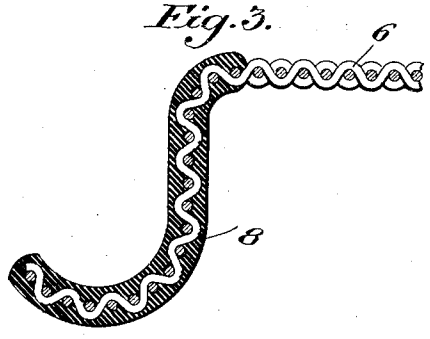


Fig. 3.



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UNITED STATES PATENT OFFICE

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SCREEN AND LIKE DEVICE

Application filed February 24, 1931. Serial No. 517,947.

My invention relates to screens and like devices, and has particular reference to a novel method and means for preventing corrosion of screen parts due to electrolytic action set up between contacting sections of screens that are formed from dissimilar metals.

The principal object of my invention is to provide an insulating coating on a face portion of a metallic screen section that is in contact, when assembled, with an adjacent metallic section, whereby any electromotive force that may be present due to the use of dissimilar metals is ineffective to cause electrolytic corrosion of either metallic part.

Another object resides in the method employed in arranging and applying electrically insulating coatings to the several contacting faces of assembled metallic screen sections, for the purpose set forth.

Other objects will appear from a study of the accompanying specification and drawings.

According to the present practice in the screen art, the use of aluminum and aluminum alloys in forming stiles and rails of screen frames has become very extensive and has been accepted by the trade as a marked advance in the art. While many advantages result from the use of aluminum in screen frames, I have found that its use as now practiced has a distinct disadvantage. From the standpoint of depreciation and effective period of service, one, at present, is limited in the choice of screen fabric to copper, bronze, or aluminum, or to various alloys of copper or aluminum. It is generally accepted, however, that copper or bronze fabric is more desirable and practical in screens than all other forms of fabric.

I have found, however, that copper or bronze fabric when mounted on aluminum frames gives a shorter life than is obtained by using an aluminum fabric on an aluminum frame. By means of a series of tests and observations, I have found that the chief source of trouble in this relation arises from the fact that a rapid corrosion of the copper fabric occurs at the points of contact between the copper fabric and the aluminum stiles, rails and splines. The degree of corrosion is found to vary widely under varying conditions of climate and geographical locations. For example, a very rapid corrosion occurs near bodies of salt water or in localities where metallic salts or the like are suspended in the air in appreciable amounts. I have found that this corrosion is substantially entirely electrolytic and results from the existence of an appreciable electromotive force and resulting galvanic action set up between the copper and aluminum, and which becomes effective to cause a current flow particularly when any foreign material is present that will act as an electrolyte and permit electrolysis.

Such electrolytes as salt water and alkali, when present, cause a maximum of such corrosion. The degree of corrosion varies with the quantity of moisture present in the electrolyte in contact with the metals. A study of the tables or scales of values of electrolytic potentials for various elements has shown me that copper and aluminum are widely separated on the scale. Aluminum is positioned near the positive end of the scale, while copper is positioned near the negative end of the scale. According to the electrolyte present, the difference in voltage between the copper and aluminum may vary from 0.5 to 1.20 volts. The resulting current due to electrolysis causes a concentration of corrosion at the points of contact of the individual copper strands and aluminum which results in a complete failure in the fabric at this point in a short time which, in extreme cases, may occur in a few months.

I have discovered that corrosion due to electrolysis may be substantially, if not entirely, eliminated by applying a coating of insulating paint or material to either the aluminum or the copper, preferably only at the points of contact thereof. I find also that, owing to the high pressure contact between the fabric and stiles, the use of a hard brittle coating must be avoided and I prefer to use a quick setting, elastic coating such as asphalt paint or the like. A preferred manner of applying my invention to an assembled screen is shown in the accompanying drawings wherein,—

Figure 1 shows an aluminum stile coated

according to my invention and ready for assembly;

Fig. 2 is a fragmentary view showing the relative positions of parts; and

Fig. 3 shows a modification.

In practicing my invention, I employ a stile or similar frame member 1 which has been performed in any desired manner to produce the usual spline groove 2. I apply one or more coats of insulating material 3 preferably to the spline groove only. The usual spline member 4 is adapted to engage within the spline groove 2 to securely grip the edges 5 of the screen fabric 6 which, in the present case, is woven from copper or bronze strands. The spline member 4, previous to its assembly, is also coated on its screen engaging face with a desired thickness of insulating material 7. The spline 4 may be applied to the groove 2 in the usual manner after the insulating coatings have been permitted to set or harden to the desired degree. It will be noted in Fig. 2 that the copper fabric 6 at no point is in contact with aluminum and is completely separated therefrom by a layer of insulating material.

As a modification, a coating 8 of electrically insulating material may be applied only to the edges of the copper or bronze fabric 6 as shown in Fig. 3, in which case, the spaces between the adjacent copper strands are completely filled with the material. If desired, a coating may be applied both to the aluminum and to the fabric edges.

The use of an insulating coating as described offers an additional advantage to the screen art, in that the presence of a more or less flexible layer between the fabric and spline groove affords a more effective gripping action upon the free edges of the screen fabric. I find also, that the use of such coatings permits an easier withdrawal of the spline from its groove when necessary and, after such withdrawal, the grooves and splines may be readily cleaned for the purpose of re-assembly.

I prefer to employ as an insulating coating an asphalt paint which has a high electrical insulating value and which retains some flexibility for long periods after its initial setting. My invention contemplates, in its broader aspect, the use of other and more or less effective insulating coatings. While I have shown and described a preferred form of practicing my invention, I do not limit its application to the embodiment described. Modifications and equivalents are contemplated such as may be embraced within the scope of my claims which follow.

What I claim is:

1. In a screen comprising metallic frame members and metallic screen fabric, means for securing said fabric to the frame members and insulating means interposed between the overlapping portions of said fabric and frame.

2. In a screen, a metallic frame, a metallic screen fabric secured to said frame in overlapping relation, said frame and fabric being formed from dissimilar metals, and electrical insulating means interposed between the overlapping portions of said frame and fabric.

3. In a screen, an aluminum frame member, a screen fabric formed from copper strands and connected to said frame member in overlapping relation, and means for electrically insulating the adjacent overlapping portions of said fabric and frame whereby to prevent electrolytic corrosion of said fabric adjacent to said frame.

4. In a screen, a frame member formed from a metal containing aluminum, a screen fabric formed from a metal containing copper, means for connecting said fabric and frame in overlapping relation, the overlapping adjacent faces of the fabric and frame being electrically separated by a coating of asphalt paint whereby to prevent electroyltic corrosion of said fabric when exposed to the weather.

5. In a screen, a frame member, a screen fabric connected to said frame member in overlapping relation, said frame being formed from a metal containing aluminum and said fabric being formed from a metal containing copper, said frame member being provided with a groove, an electrically insulating coating arranged in contact with the walls of said groove, and means for retaining an edge portion of said fabric within said groove in contact with said coating.

6. In a screen, a frame formed from aluminum, a screen fabric formed from a metal containing copper, said frame being provided with a spline groove, a spline associated with said groove, the adjacent faces of said groove and spline being coated with an electrolytic corrosion resistant material, the edge portions of said fabric being engaged between said groove and said spline and separated electrically from the adjacent face portions thereof by said coating.

In testimony whereof I affix my signature.

LAWRENCE THOMAS WARD.