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[54] **MARK CARRYING MEMBER AFFIXED ON A ROUGH SURFACE ARTICLE**

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[52] **U.S. Cl.** ..... **40/2 R,** 40/2.2, 40/135, 248/205 A, 248/358 R, 161/104, 161/105, 161/167, 84/192

[51] **Int. Cl.** **G09f 3/02,** B32b 25/20

[58] **Field of Search** ..... 84/192; 161/104, 102, 105, 161/167; 40/138, 137, 125 A, 135, 2 R, 2.2; 156/71; 287/189, 365; 248/358 R, 350, 205 A

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[57] **ABSTRACT**

A mark carrying plate of metal or plastic material is bonded on the rough surface of an article such as a piano frame of cast metal, with an elastic substance interposed between the plate and the article. The mark carrying plate may be provided with a recess which receives the elastic substance so as to conceal the elastic substance therein. Interposition of the elastic substance between the plate and the article enhances the bonding strength therebetween and serves to absorb shock vibrations transmitted from the article to the plate.

5 Claims, 3 Drawing Figures

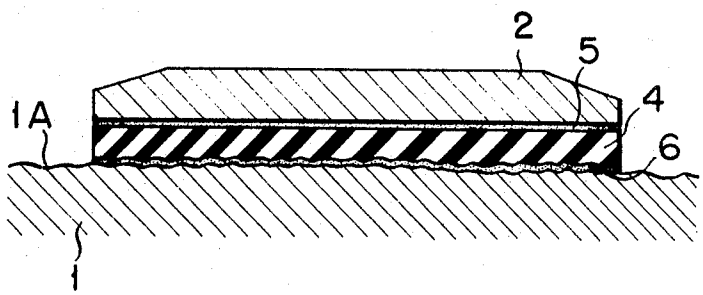


FIG. 1

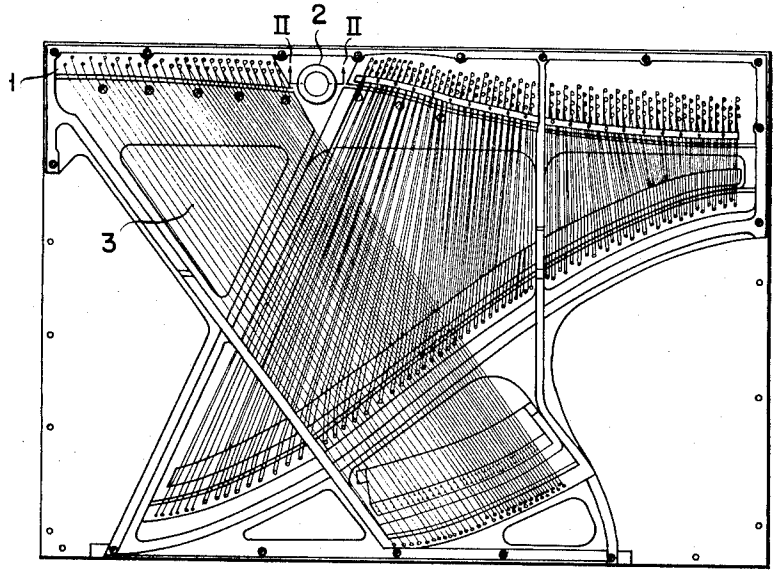


FIG. 2

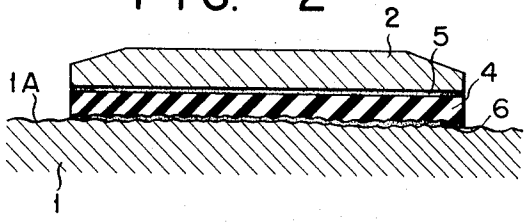
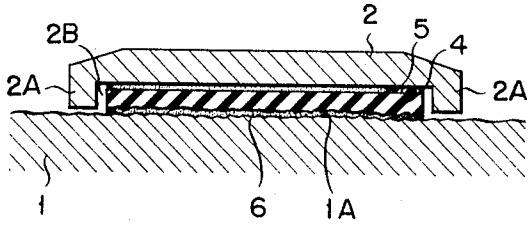


FIG. 3



MARK CARRYING MEMBER AFFIXED ON A ROUGH SURFACE ARTICLE

BACKGROUND OF THE INVENTION

The present invention relates to a method of affixing a mark carrying plate or member denoting, for example, the trade mark of manufacturer to a proper place on a commercial article, and a structure obtained by the same method, and more particularly to a method and a structure adapted to attach the mark carrying member to a rough surface of the article and having resistivity to external impacts.

With commercial articles, it is general practice to affix to a proper place thereon a mark carrying plate of plastic or metal material including letters or patterns for displaying the trade mark of manufacturer. With a piano, for example, there is attached a mark carrying plate to a frame of cast material over which strings are stretched.

The conventional method of affixing the mark carrying plate has consisted of coating adhesive of epoxy resin (suitable for bonding metals) on the underside of the plate and the surface of an article to which the plate is to be affixed, and pressing it against the surface of the article. With the prior art method, however, where an article to be fitted with a mark carrying plate had a rough surface like that presented by a piano frame of cast material, it was difficult to obtain a satisfactory adhesive strength between the article and the plate. Accordingly, the mark carrying plate attached to the surface of an article such as a piano frame, subjected to impacts or vibrations, was often likely to come off therefrom due to the break of the adhesive layer during the use of the article.

SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is to provide an improved method and structure for affixing a mark carrying member to a rough surface article in a stable condition and with a satisfactory bonding strength. Another object of the invention is to provide an improved method and structure for affixing a mark carrying member to a rough surface article, which absorb shock vibrations transmitted from the article to the mark carrying member.

According to an aspect of the present invention, there is provided a method of affixing a mark carrying member on an article which comprises the steps of interposing an elastic substance between the article and the mark carrying member, applying an adhesive between the elastic substance and the mark carrying member and between the elastic substance and the article, and pressing the mark carrying member toward the article, so that the mark carrying member is firmly bonded to the article with the elastic substance interposed therebetween.

BRIEF EXPLANATION OF THE DRAWING

FIG. 1 is an elevation of a piano frame to which there is affixed a mark carrying member;

FIG. 2 is a sectional view on line II—II of FIG. 1, showing a mark carrying member affixing structure according to an example of the present invention; and

FIG. 3 is a similar sectional view to FIG. 2 indicating another example of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG. 1, there is indicated a piano frame 1 of cast metal as an example of an article to be affixed with a mark carrying plate or member 2. The piano frame 1 has a large number of strings 3 stretched thereover. The mark carrying member 2 is usually made of metal such as aluminum, hard plastic or wood and includes letters or patterns indicating the trade mark of the piano manufacturer. The mark carrying member 2 may, of course, denote other signs or symbols. Such letters or patterns may be cut or printed directly on the mark carrying member 2, or another paper or sheet having such letters or patterns printed thereon may be separately attached to the mark carrying member or mark body 2.

The piano frame 1 is generally made of casting and has a rough surface 1A as illustrated in FIG. 2. The structure for affixing a mark carrying member according to an example of the present invention presents, as shown in FIG. 2, a sandwich construction in which there is interposed an elastic substance 4 coated on both sides with adhesive layers 5 and 6 between the mark carrying member 2 and the surface 1A of the piano frame 1. Namely, the mark carrying member 2 is pressed against the surface 1A of the frame 1 through the elastic substance 4 like silicon rubber coated on both sides with an adhesive of, for example, epoxy resin.

In this case, the elastic substance 4 is pressed against the surface 1A of the frame 1 while being compressed and spreads itself outward. Upon hardening of the adhesive, the elastic substance 4 is relieved of a compressive force and the edges thereof which come out to the outside of the mark carrying member 2 are knifed off to complete the mark affixing operation.

As mentioned above, the insertion under pressure of the elastic substance between the mark carrying member of mark body 2 and the surface of the article 1 causes the elastic substance to display good fit with irregularities on the rough surface and to provide a broader area of adhesion to realize greater adhesivity. According to the present invention, when a mark carrying member is affixed to an object like a piano frame which is subjected to the vibrations of the strings or other impacts, the elastic substance absorbs the vibrations or impacts transmitted from the object to the member, thereby fully to protect the hardened adhesive layer therefrom.

According to the structure of FIG. 2, hardening of the adhesive layers 5 and 6 causes the peripheral edge of the elastic substance 4 to be curved inward with the resultant loss of visual appeal. Further, it is necessary, as described above, to knife off the protruding edge of the elastic substance 4. If in this case, an object to which a mark carrying member is to be affixed consists of metal like a piano frame, the knife edge is likely to be damaged. In view of this fact, the present invention may be developed into the example shown in FIG. 3.

According to this example, the entire periphery of the disk-shaped mark carrying member 2 is provided with a circular projection 2A so as to define a recess 2B on the lower surface thereof which faces the surface 1A of the piano frame 1. In the recess 2B is placed a disk-shaped elastic substance 4 coated with adhesive layers 5 and 6 on both sides. That is, the elastic substance 4

is interposed between the mark carrying member 2 and the piano frame 1, and an adhesive is applied between the elastic substance 4 and the member 2 and between the elastic substance 4 and the piano frame 1. It is preferred that the diameter of the elastic substance 4 be smaller than that of the recess 2B and that its thickness be slightly larger than the depth of the recess 2B. For example, such dimensions will be set as follows: diameter of the circular recess is 65 mm; diameter of the elastic substance, 48 mm; depth of the recess, 0.6 mm; and thickness of the elastic substance, 1 mm. Under this condition, the mark carrying member 2 is pressed against the surface 1A of the piano frame 1. At this time, the circumferential edge of the elastic substance 4 protrudes outward due to compression. Since, however, there is allowed in advance a clearance between the circumferential edge of the elastic substance 4 and the circular projection 2A of the mark carrying member 2, the edge of the substance 4 is forced out into the clearance. When the member 2 is released from compression, it is affixed to the surface of the piano frame 1 with a minute clearance left between the lower end of the projection 2A and the surface 1A of the piano frame 1. Under such construction, the elastic substance does not protrude to the outside of the mark carrying member 2, eliminating the operation of knifing off the edge of the substance 4. Further, the projection 2A of the member 2 conceals the elastic substance 4, providing a better visual appeal.

In the example shown in FIG. 3, the recess 2B is formed in the mark carrying member 2, but this is not restricted to this example alone. According to still another example, the recess may be formed in the article 1 itself if the article has a sufficient thickness. In this case, the elastic substance 4 is placed in the recess formed in the article 1. Further, such recesses may be formed in both the mark carrying member and the article so that the elastic substance is enclosed in the recesses.

What we claim is:

1. In a piano or the like, a mark affixing structure for affixing a free, unrestrained mark carrying member to a rough-surfaced frame which is subjected to impacts and/or vibrations, said mark affixing structure comprising:

a free, unrestrained mark carrying member;

silicon rubber material interposed between said rough-surfaced frame and said mark carrying member with a surface of said silicon rubber material conforming in shape to the surface of said rough-surfaced frame; and

an epoxy resin adhesive bonding a surface of said silicon rubber material to said rough-surfaced frame and another surface of said silicon rubber material to said mark carrying member.

2. The structure according to claim 1 wherein said silicon rubber material is substantially non-porous.

3. In a piano or the like, a mark affixing structure for affixing a free, unrestrained mark carrying member to a rough-surfaced frame which is subjected to impacts and/or vibrations, said mark affixing structure comprising:

a free, unrestrained mark carrying member;

a recess formed in at least one of said mark carrying member and said frame;

silicon rubber material located within the boundaries of said recess and interposed between said frame and said mark carrying member with a surface of said silicon rubber material substantially conforming in shape to the surface of said frame, the thickness of said silicon rubber material in the direction of the depth of said recess being greater than the depth of said recess; and

an epoxy resin adhesive bonding a surface of said silicon rubber material to said frame and another surface of said silicon rubber material to said mark carrying member.

4. The structure according to claim 3 wherein said recess is formed in said mark carrying member.

5. The structure according to claim 4 wherein said mark carrying member has a peripheral projection directed toward said frame and defining said recess, a clearance being defined between said silicon rubber material and said peripheral projection.

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