Jan. 24, 1928.

1,657,446

H. NAGIN ET AL.

ANTISLIP TREAD AND METHOD OF MAKING THE SAME

Filed Dec. 29, 1926

Fig. 1

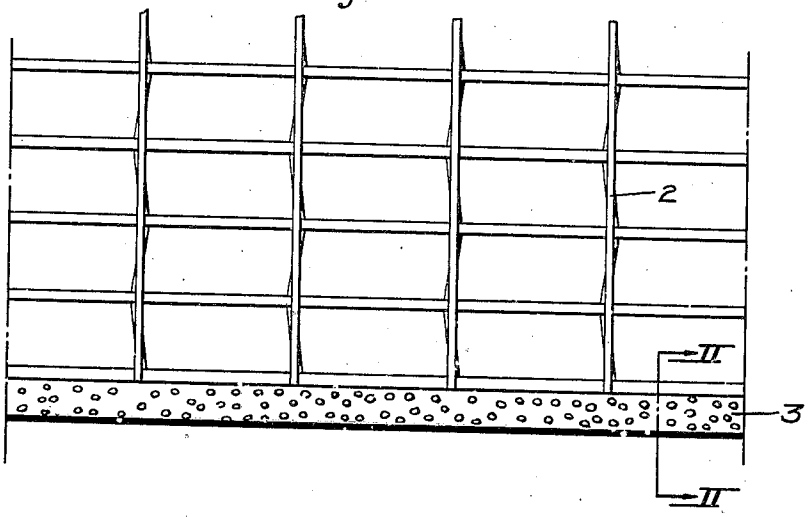


Fig. 2

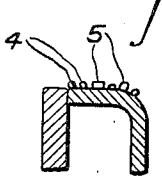


Fig. 3

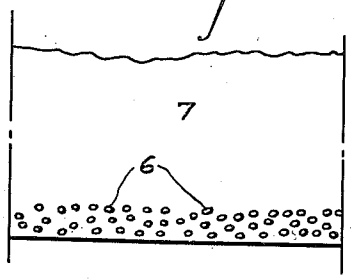


Fig. 4

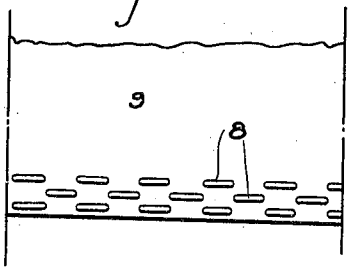
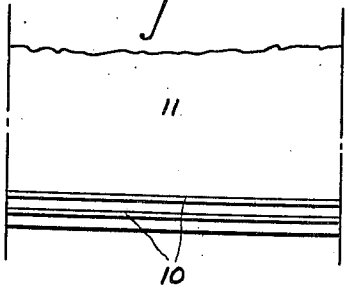


Fig. 5



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by their attys.

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UNITED STATES PATENT OFFICE.

HARRY NAGIN AND WILLIAM H. VAN ORDEN, OF PITTSBURGH, PENNSYLVANIA, ASSIGNORS TO THE TRI-LOK COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

ANTISLIP TREAD AND METHOD OF MAKING THE SAME.

Application filed December 29, 1926. Serial No. 157,807.

This invention relates to an article of manufacture and method of making the same, and it is particularly useful in the manufacture of anti-slip structures such as floor members, stairway treads or the like. It will be described as applied to such structures, although it has other applications.

Various anti-slip surfaces have been proposed, but most of them have been unsatisfactory for several reasons. They are generally difficult to manufacture, and frequently comprise numerous parts which may be broken off or may, by their very nature, become worn smooth and lose their effectiveness.

We provide for permanently securing to the surface of a metal base member a separate metal portion which forms an anti-slip structure. More specifically, we apply a metal in such manner that it becomes welded to the base member and forms upstanding ridges or projections such as small metal droplets.

The upstanding portions thus formed may be reshaped, as by grinding or filing, so as to provide relatively sharp edges, and then, if desired, a protective coating may be applied, as by galvanizing.

In the accompanying drawings which illustrate more or less diagrammatically the present preferred embodiment of our invention and certain modifications thereof,

Figure 1 is a top plan view of a stair tread with a nosing having our invention applied thereto,

Figure 2 is a section to enlarged scale taken on the line II—II of Figure 1,

Figure 3 is a plan view of a portion of a metal plate having metal droplets applied to part of the surface thereof so as to form an anti-slip structure, and

Figures 4 and 5 are similar views showing modified forms of the invention.

Referring first to Figures 1 and 2, there is shown a stairway tread formed principally from a grating indicated generally by the reference character 2. A nosing 3 is secured to the face of the stair tread. This structure is more fully described, and is claimed, in the copending application of Harry Nagin, Serial No. 130,139, filed August 19th, 1926.

The top surface of the nosing 3 is covered with a large number of closely spaced metal droplets 4. These droplets are formed on the surface by heating either the base material, that is to say the nosing itself, or the material which is formed into the droplets, and then applying this last mentioned material to the base material. If desired, both materials may be heated. We have found in practice that a convenient and very satisfactory way of forming the structure is to heat the base material and then to use an ordinary welding stick and touch it to the base material while applying an acetylene flame. The metal from the welding stick falls in small drops on the base material, and these drops become permanently welded thereto. Workmen may quickly cover a large surface in this manner.

We prefer to immerse the structure in a quenching bath as soon as the droplets are applied, as this tends to harden the anti-slip surface and is thus conducive to longer life.

If desired, part or all of the metal droplets may be reshaped, as by filing or grinding. This is indicated at 5 in Figure 2. This step not only reduces all of the droplets more nearly to a general level, but also forms sharp edges on the droplets and improves the anti-slip surface of the product.

Figure 3 shows droplets 6 applied to an edge of a metal plate 7. It will be understood that if desired, the entire surface of the plate may be so treated, or any portion thereof may be specially treated. For instance, it may be desirable to spell out trade names or the like on such surfaces.

Figure 4 shows a slightly modified form of the invention wherein elongated droplets 8 are applied to a plate 9. This is readily done by "dragging" the welding stick along the surface of the plate while maintaining the materials under welding conditions. The same result might also be obtained by laying wires along the surface and applying heat thereto.

Figure 5 shows a form of the invention where continuous upstanding strips 10 are applied to a plate 11. It will be understood that the upstanding portions of Figures 4 and 5 may be reshaped similarly to the manner in which the upstanding portions in Figures 1 and 3 are reshaped.

While we have found by test that the upstanding particles are so strongly welded to the base member that it is practically impossible to remove them without cutting tools

such as chisels, we prefer to apply a protective coating, as for example, by galvanizing, so as to eliminate any possibility of rust commencing at the junction of the base and the upstanding particles.

Where the invention is applied to articles other than plates, as for example, the nosing shown in Figures 1 and 2, we prefer to preshape the base member before forming the anti-slip surface thereon, as the roughened surface makes it difficult to work the metal in its final condition.

We have used welding sticks such as are employed for the welding of steel, and have thus formed anti-slip surfaces on steel bodies. However, it is not essential that the same material be employed for the base and the applied material. Other materials, such as lead, silicon carbide or aluminum oxide may be employed.

It is not essential that the material be applied in stick form. For example, filings, metal turnings or shavings or material otherwise reduced to particle form may be applied to the surface of the base member so as to form the upstanding particles thereon.

An advantage of our invention lies in the fact that the anti-slip portions present a sharp edge in spite of continuous wear. It will be seen from Figure 2 that the upstanding portions are relatively narrow at the base. Where droplets are employed they are initially of generally spherical shape. Both the droplets of Figures 1 to 3, and the elongated upstanding portions of Figures 4 and 5 are initially of generally circular cross- section.

This invention may be readily applied to existing floor plates, metal stair treads, metal edges in concrete stairways, or to other structures.

When the upstanding portions are finally worn down they may be readily renewed without disturbing the base member to which they are applied.

We have illustrated and described a preferred embodiment of our invention and certain modifications thereof. It will be understood, however, that it is not thus limited, as it may be otherwise embodied or practiced within the scope of the following claims:—

We claim:—

1. As a new article of manufacture, a metal base member having a separate upstanding metal portion permanently fused to a surface thereof, so as to form an anti-slip structure.

2. As a new article of manufacture, a metal base member having a separate upstanding metal portion welded to a surface thereof, so as to form an anti-slip structure.

3. As a new article of manufacture, a metal base member having a plurality of closely spaced upstanding separate metal portions permanently fused to a surface thereof so as to form an anti-slip structure.

4. As a new article of manufacture, a base member having at least a portion of its surface covered with upstanding metal droplets fused thereto.

5. As a new articles of manufacture, a base member having at least a portion of its surface covered with upstanding metal droplets bonded thereto, at least some of the droplets being reshaped.

6. As a new article of manufacture, a base member having bonded to at least a portion of its surface upstanding irregular metal droplets, the base member and droplets having a protective coating.

7. The method of forming an article having a rough tread surface, which comprises applying metal particles to the surface of a metal base while at least one of the metals is hot to fuse said particles thereto, so as to form an anti-slip structure.

8. The method of forming an article, which comprises fusing metal particles to the surface of a metal base while at least one of the metals is hot to weld said particles thereto, so as to form an anti-slip structure, and reshaping at least some of the applied particles.

9. The method of forming an article, which comprises applying metal particles to the surface of a metal base while at least one of the metals is hot to weld said particles thereto, so as to form an anti-slip structure, and applying a protective coating to the structure.

10. The method of forming an article from a metal base material and metal particles applied thereto, which comprises applying the particles to a surface of the base material while at least one of the materials is hot to weld said particles thereto, and then quenching the structure.

In testimony whereof we have hereunto set our hands.

HARRY NAGIN.
WILLIAM H. VAN ORDEN.