C. J. & F. G. MARIUS.

COMPOSITION OF MATTER.

APPLICATION FILED MAY 11, 1906.

934,412. Patented Sept. 14, 1909.

Fig. 1.

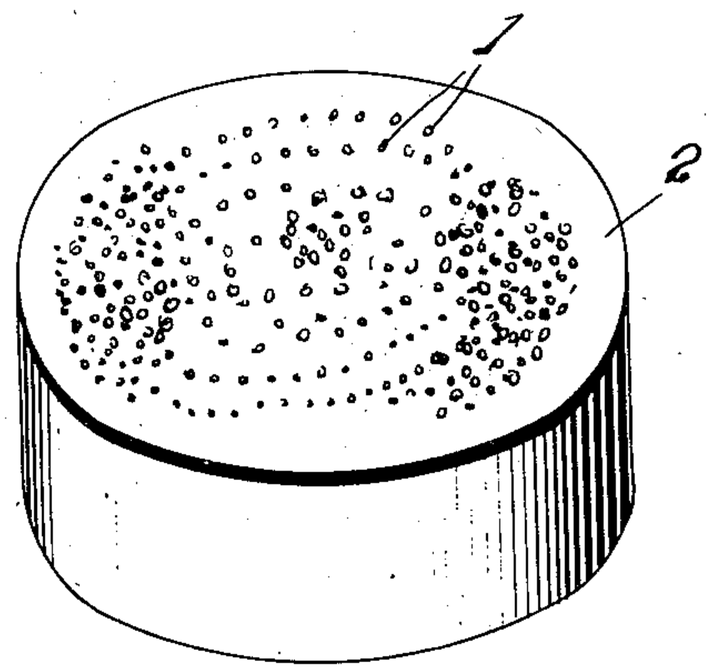


Fig. 2.

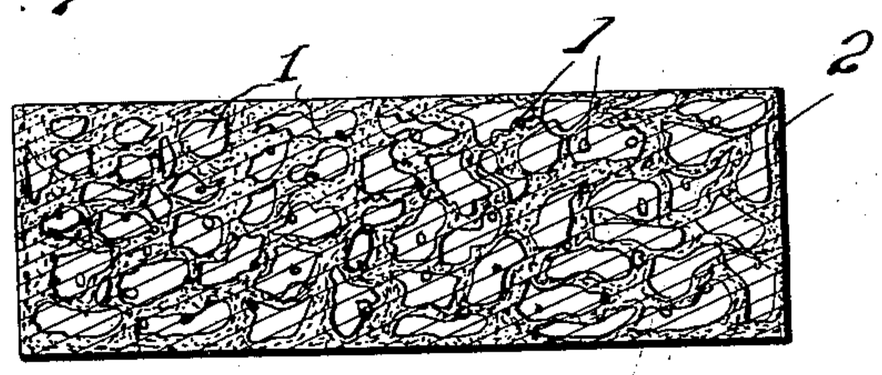
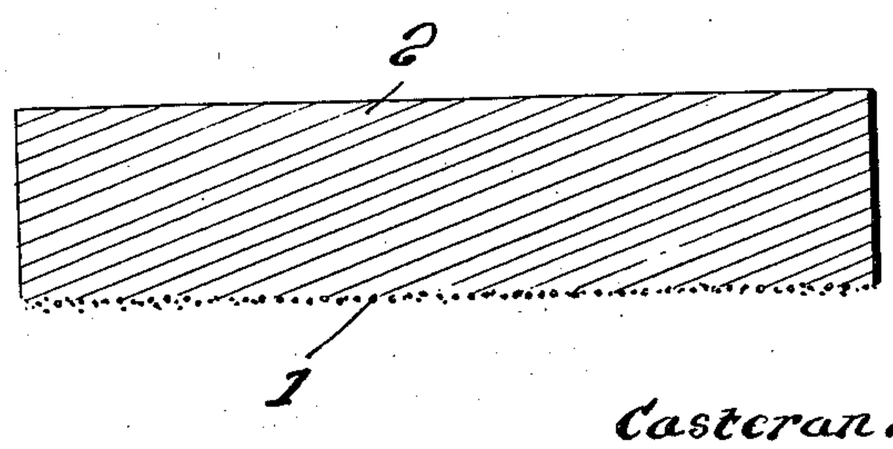


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

CASTERAN J. MARIUS AND FRANCES G. MARIUS, OF WEST HOBOKEN, NEW JERSEY.

COMPOSITION OF MATTER.

934,412.

Specification of Letters Patent. Patented Sept. 14, 1909.

Original application filed November 27, 1905, Serial No. 289,301. Divided and this application filed May 11, 1906. Serial No. 316,349.

To all whom it may concern:

Be it known that we, CASTERAN J. MARIUS and FRANCES G. MARIUS, citizens of the United States of America, and residents of West Hoboken, in the county of Hudson, State of New Jersey, have invented a certain new Composition of Matter for Abrading, Grinding, Cutting, or Polishing or Antislipping Devices, of which the following is a specification.

Our invention relates to certain new and useful improvements in compositions of matter and the object of our invention is to produce a composition which consists of an abrading, grinding, cutting or polishing substance embedded in a metallic matrix which is adapted to firmly hold the substances. The composition of matter thus produced is adapted for various uses, as for instance, cutting, abrading or polishing tools or for antislipping devices which may be set in a sidewalk or other suitable place to prevent the slipping of the foot on concrete, metal or a glass pavement, or other floors, or a combination of these. We may also employ the same as an anti-slipping device in combination with such materials as rubber or linoleum or the like, vulcanized fiber, or other materials of a kindred nature, by setting buttons or knobs of the same into the tread, or they may be used for any other purpose for which we may apply the same, such for instance as automobile tires, horseshoes, horseshoe pads, or any movable objects where it is desired to prevent slipping, or the composition may be used for any other purpose for which it may be found desirable.

With these objects in view our invention consists of a new article of manufacture in which particles of abrading material are embraced in a metallic matrix at approximately predetermined positions.

This application is a division of our application Serial No. 289,301, filed November 27, 1905.

Referring to the drawings, wherein the same part is designated by the same reference numeral wherever it occurs, Figure 1 is a perspective view of a disk or button made in accordance with our invention and adapted to be used in connection with a concrete pavement or vault light, to prevent slipping. Fig. 2 is a central section of the same. Fig. 3 is a section of a button similar to that shown in Fig. 1, showing, however, the abrading material as all on the surface of the button.

The process of forming these articles of manufacture is fully disclosed in our application above referred to, and we will only briefly refer to the same herein, in order that the invention covered by this application may be understood. Briefly, the process is as follows: An abrading material, such as carborundum, suitably divided into particles of the proper size or mesh required for the purpose for which the ultimate product is to be used is placed in the bottom of the mold. On top of this layer of abrading material is placed a layer of finely divided metal, such for instance, as steel having a weight greater than the abrading material and being more finely divided. The metallic paritcles sift down through the interstices of the particles of the abrading material until the interstices are wholly or partially filled. These metallic particles then serve to hold the abrading material firmly in position. Over this we pour molten metal, or permit the same to flow, such for instance, as zinc or other compound or composite metal. The result of this is that the zinc will flow through the interstices of the abrading material and the metallic particles and will entirely embrace all the particles, the weight of the metallic strata being sufficient to hold the abrading material in its position during the period of casting. By this process, the form of the article shown in Fig. 3 will be produced in which all the abrading material is at the surface. If desired, instead of using metallic particles finer than the abrading particles, they may be the same size as or coarser than the metallic particles. They will, however, act in the same way to hold the abrading particles in their predetermined position while the matrix is being cast around them. If it is desired to have the abrading material all through the matrix, finely divided metallic particles, such as steel, are coated with a suitable adhesive substance then mixed with the particles of finely divided abrading material. The result of this will be that the steel particles will become coated with the particles of abrading material. When, now, a suitable molten metal is poured over the mixture, it will pass through the interstices of the mixture and

will produce a product such as shown in Fig. 2.

Referring specially to the figures, 1 designates the abrading particles which may be carborundum, diamond dust, corundum, emery, or other equivalents, such as electrically manufactured grit, and 2 designates the metal matrix which may be formed of any suitable material.

While we have described what we believe to be the preferred form of our invention, we desire to have it understood that many changes can be made within the scope of our claims without departing from our invention.

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

1. A new article of manufacture, consisting of a metallic matrix and particles of abrading material embraced therein, such particles being distributed uniformly in the matrix at the surface thereof.

2. A new article of manufacture, consisting of a metallic matrix and particles of abrading material and metal therein, such particles being distributed uniformly in the matrix at the surface thereof.

3. A new article of manufacture, consisting of a metallic matrix, particles of abrading material therein, heavier particles disposed in the interstices between the abrading particles, such particles being distributed uniformly in the matrix at the surface thereof.

4. A new article of manufacture, consisting of a matrix, particles of abrading material therein, heavier particles disposed in the interstices between the abrading particles, said abrading particles being uniformly spaced from each other at distances determined by the size of the heavier particles.

5. A new article of manufacture, consisting of a matrix embracing particles of abrading material, and more finely divided particles in the interstices between said abrading particles, said abrading particles being uniformly spaced from each other.

6. A new article of manufacture consisting of a matrix embracing particles of abrading material and more finely divided particles of greater specific gravity in the interstices between said abrading particles, said abrading particles being uniformly spaced from each other.

7. A new article of manufacture, consisting of a matrix embracing particles of abrading material and more finely divided particles of greater specific gravity between the abrading particles in positions assumed by virtue of their weight.

8. A new article of manufacture, consisting of a metallic matrix and particles of abrading material embraced therein, such particles being distributed uniformly in the matrix at the surface thereof, the matrix material being of less resistant nature than the abrading material so as to be worn away more readily than the latter whereby the abrading material is constantly presented for wear above the surface of the matrix.

Signed by us at West Hoboken, in the county of Hudson, State of N. J., this 3rd day of May, 1906.

CASTERAN J. MARIUS.
FRANCES G. MARIUS.

Witnesses:
JOHN SINGER, Jr.,
MORRIS EICHMANN.