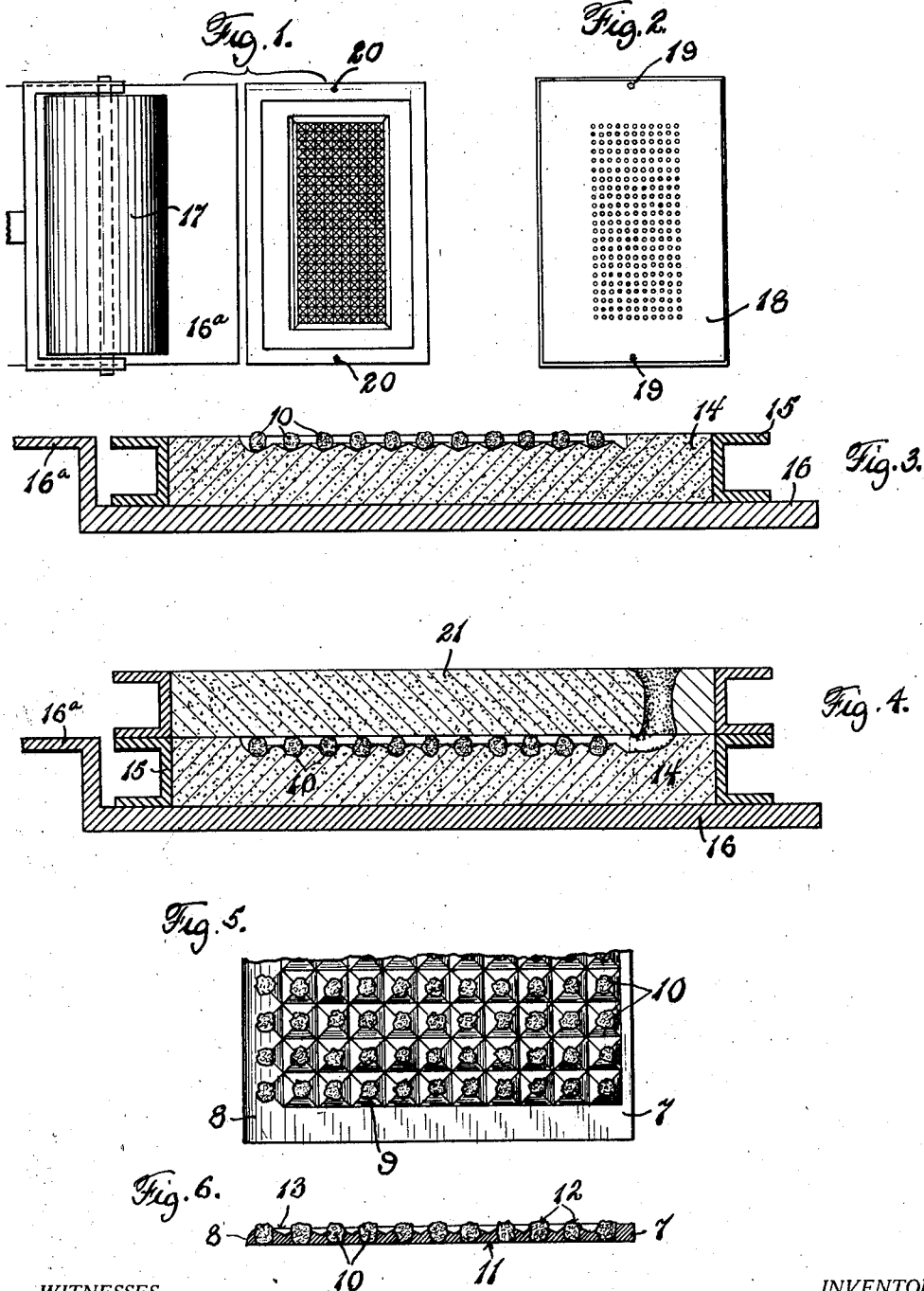


H. P. MACDONALD.
METHOD OF CASTING TREAD SURFACES.
APPLICATION FILED AUG. 13, 1912.

1,057,069.

Patented Mar. 25, 1913.



WITNESSES:

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METHOD OF CASTING TREAD-SURFACES.

1,057,069.

Specification of Letters Patent.

Patented Mar. 25, 1913.

Application filed August 13, 1912. Serial No. 714,857.

To all whom it may concern:

Be it known that I, HARRY P. MACDONALD, a citizen of the United States, residing at Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Methods of Casting Tread-Surfaces, of which the following is a specification.

This invention relates to a method of casting tread surfaces for stairs, pavements, and the like, and it has for its primary objects; the provision of an improved method whereby uniformity and symmetry of the product is obtained, and the provision of a simple and expeditious method of casting tread surfaces of the character described, whereby the cost of production is lessened. These, together with such other objects as may hereinafter appear, I attain by means of a method the steps of which are illustrated in the accompanying drawings, in which—

Fig. 1 illustrates a half mold in condition to receive the abrasive or non-slipping material. Fig. 2 is a plan of a device for applying the abrasive, Fig. 3 is a section through a drag portion of the mold after the application of the abrasive but before the latter is pressed into position; Fig. 4 is a sectional view through a completed mold, and Figs. 5 and 6 are respectively a plan view and section of the tread.

In carrying out my invention, I propose to cast the body of the tread or tread platform and embed therein lumps of abrasive material which are relatively harder than the body of the tread and which are slightly greater in their least dimension than the thickness of the tread. I preferably employ cast iron for the body of the tread and alundum, carborundum and like materials for the abrasive or non-slipping elements, such material being considerably harder than iron and capable of standing a high degree of heat. In the drawings I have shown my invention applied to a metal tread for stairways, but it will be readily apparent that it can be applied equally well to treads of other forms.

The tread, as shown in Figs. 5 and 6, comprises a body portion 7 of cast iron provided with a curved front edge or nosing 8 and having its upper surface provided with checkers 9 of pyramidal shape. Throughout the body of the tread are lumps 10 of alundum or other abrasive material

having similar characteristics, the lumps being preferably of parti-cubical or parti-spherical shape with their least dimension slightly greater than that of the body portion 7. The lumps are graded or selected to a substantially uniform size and are preferably so positioned that their bottom portions are practically flush with the lower surface 11 of the tread and their top portions 12 project through the apexes of the checkers slightly above the top surface 13 of the tread, as clearly appears in Fig. 6. This form of construction gives great durability to the tread and increases its life. The metal wears more rapidly than the abrasive material and a non-slipping surface is thus always assured. A further advantage of having the lumps extend practically through the body of the tread is that the body of metal forming the tread cools uniformly and warping is prevented. It will be apparent that the tread may be readily cleaned.

Referring now to Figs. 1 to 4 inclusive, the method I employ in making treads embodying my invention will now be described. A drag portion 14 of the mold is formed from a suitably designed pattern and the flask 15 is supported on a table or platform 16 which is preferably provided with a raised portion 16^a adapted to support a roller 17 on substantially the same level as the top of the flask. After the formation of the mold, a shallow pan 18 having a perforated bottom and provided with dowel pins 19 is placed in position over the flask, the dowel pins engaging the holes 20 of the flask and serving to position the pan so that the perforations will align with the apexes of the checkers of the tread. The pan is supplied with lumps of abrasive of the desired size and the abrasive brushed across the perforated bottom so that one lump will fall through each perforation and rest upon the sand and prevent the falling through of the other lumps as they are brushed to one side of the pan. The pan is then removed, leaving the mold in the condition indicated in Fig. 3, from inspection of which it will be seen that the lumps of abrasive project slightly above the top of the mold. Abrasive for the nosing of the tread may be positioned by hand. The roller 17 is now advanced over the flask and depresses the lumps until their top edges are on a level

with the top of the mold and their bottom edges slightly driven into the apexes of the checkers, as shown in Fig. 4. The cope 21 is then placed in position and the mold is
5 ready for casting. It is to be noted that the lumps of abrasive are slightly embedded in the drag and touch the cope of the mold and are thus maintained in proper position and cannot be washed to one side when the metal
10 is being poured. It will be apparent that my improved method is simple and effective and produces uniformity of product.

Having thus described my invention and illustrated its use, what I claim as new and
15 desire to secure by Letters Patent is the following:

1. The herein described process of casting non-slipping treads which consists in forming the halves of the mold, in placing
20 lumps of abrasive of greater thickness than the mold in the drag portion of the mold, in depressing the lumps until the top edges thereof are substantially flush with the top of the drag, in placing the cope on the drag
25 and in pouring the mold.

2. The herein described process of casting non-slipping treads which consists in forming the halves of the mold, in placing lumps of abrasive of slightly greater thickness than
30 the mold in the drag in predetermined order by brushing the abrasive across a perforated guide plate, in depressing the lumps until their top edges are substantially flush with the top of the drag, in placing the cope on
35 the drag, and then in pouring the mold.

3. The herein described process of casting non-slipping treads in sand molds which consists in forming the halves of the mold, in placing lumps of abrasive in a half mold

the lumps being of greater thickness than
40 the thinnest part of the mold, then in bringing the halves of the mold together, and then in pouring the mold.

4. The herein described process of casting non-slipping treads in molds made of yielding
45 material, which consists in forming the halves of the mold, in placing lumps of abrasive in a half mold the lumps being of greater thickness than the thinnest part of the mold and then in bringing together the
50 halves of the mold, and then in pouring the mold.

5. The herein described process of casting non-slipping treads which consists in forming the halves of the mold, in placing lumps
55 of abrasive of greater thickness than the thinnest part of the mold in the drag portion of the mold, in depressing the lumps until the bottom edges thereof project into the sand, in placing the cope on the drag
60 and in pouring the mold.

6. The herein described process of casting non-slipping treads in sand molds which consists in forming the halves of the mold,
65 in placing lumps of abrasive in a half mold the lumps being of a greater thickness than the distance between points in the planes of the mold closest together, then in bringing the halves of the mold together and then in
70 pouring the mold.

In testimony whereof I have hereunto signed my name in the presence of the two subscribed witnesses.

HARRY P. MACDONALD.

Witnesses:

J. F. ARNOLD,

C. C. GREENLEE, Jr.