J. T. SIMPSON.

SAFETY TREAD.

APPLICATION FILED DEC. 24, 1908.

960,048. Patented May 31, 1910.

Fig. 1

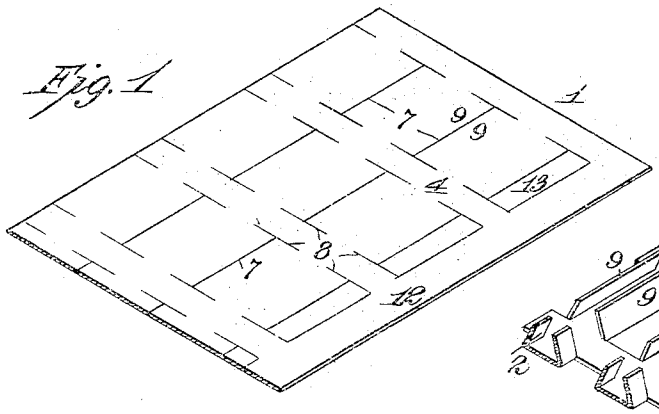



Fig. 2

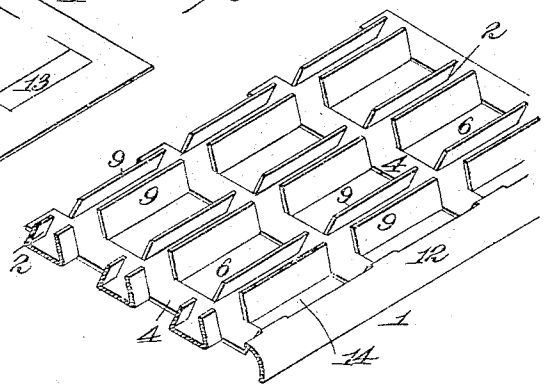



Fig. 3

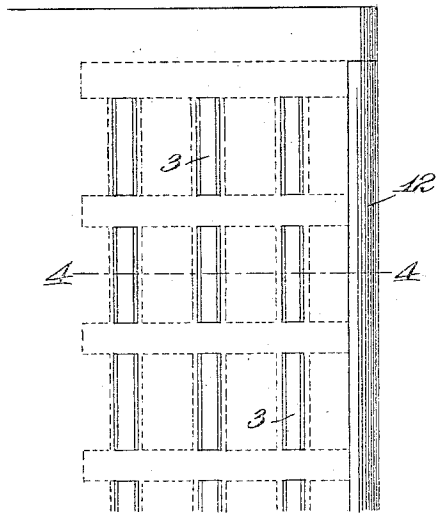



Fig. 5

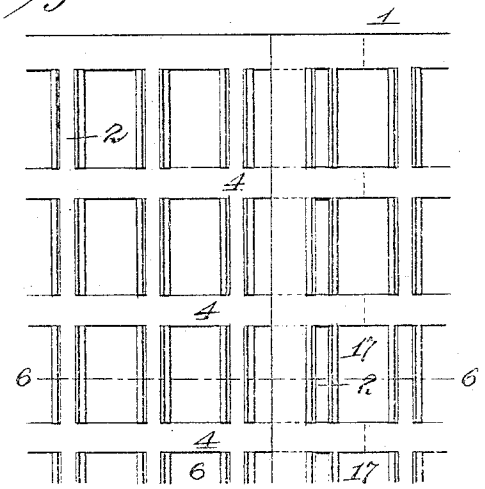



Fig. 4

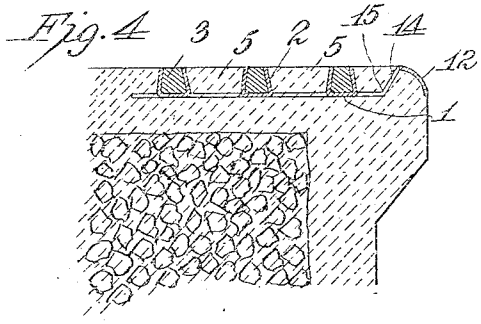



Fig. 6

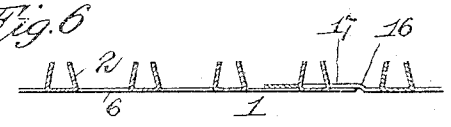
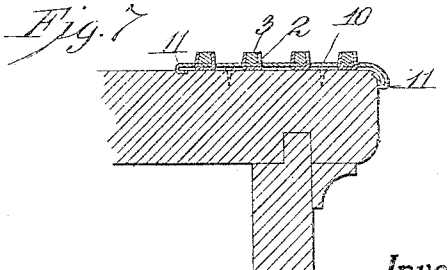



Fig. 7




Witnesses:

Jas. F. Coleman

John Roach

Inventor

John T. Simpson

By Dyer & Dyer

Attorneys.

# UNITED STATES PATENT OFFICE.

JOHN T. SIMPSON, OF NEWARK, NEW JERSEY, ASSIGNOR OF ONE-HALF TO JOHN B. WRIGHT, OF NEWARK, NEW JERSEY.

## SAFETY-TREAD.

960,048. Specification of Letters Patent. Patented May 31, 1910.

Application filed December 24, 1908. Serial No. 469,071.

*To all whom it may concern:*

Be it known that I, JOHN T. SIMPSON, a citizen of the United States, and a resident of the city of Newark, county of Essex, State of New Jersey, have invented a new and useful Safety-Tread, of which the following is a specification.

The object I have in view is the production of a safety tread for side walks, steps, floors and other surfaces which will be cheap to construct, cheap and simple to install, which may be used in connection with concrete or cement work, and when so used will be flush, leaving no recesses, grooves or pockets to accumulate dirt.

Further objects are to produce a safety tread, which, when applied to concrete work, will be efficiently and effectively anchored therein, and which will bind the concrete together and thereby reinforce it, preventing cracking and splitting.

Further objects are to produce a tread which may be applied to large areas and in connection with steps or curbs can be applied to the edge thereof.

These and further objects will appear from the following specification and accompanying drawings, considered together or separately.

In the drawings, Figure 1 represents a sheet properly cut, so as to form the foundation of one embodiment of my invention. Fig. 2 is a perspective view of the same, showing the fingers bent up to produce the pockets for holding the non-slipping material and the reinforcing edge member; Fig. 3 is a plan view of the edge and side of a step formed of concrete or cement, showing the invention applied thereto; Fig. 4 is a section on the line 4—4 of Fig. 3; Fig. 5 is a plan view of the foundation with the pockets for holding the non-slipping material, and illustrating a joint between the contiguous portions of the foundation; Fig. 6 is a section on the line 6—6 of Fig. 5; and Fig. 7 is a detail view of a modification.

In all the views like parts are designated by the same reference characters.

In carrying out my invention, I provide a foundation 1, which, as is shown, is made of sheet material,—preferably sheet metal. On this foundation are pockets 2 for holding the blocks 3 which form the wearing surfaces. The material of which the blocks are formed may be any suitable substance adaptable to the purpose, such as lead, carborundum or any other suitable non-slipping material. The upper surface of the blocks 3 is preferably flush with the upper edge of the pocket, as shown in Figs. 4 and 7. Between the pockets are strips 4, forming anchorages or foundation pieces. These strips form anchorages when the device is applied to cement or concrete work, and form foundation pieces when the device is not embedded in cement or concrete, but is applied to the surface of the support, as to the wooden steps, shown in Fig. 7. The strips 4 are shown as substantially upon the same plane as the bottom of the pockets 2. When the device is used upon concrete or cement work, as shown in Fig. 4, the concrete or cement 5 lying between the pockets unites with the supporting base of concrete or cement below the foundation 1, through openings 6, such openings lying between the pockets and also between the strips 4.

One way of making the foundation, together with the pockets and the strips, is by utilizing sheet metal, as shown in Fig. 1. This metal is formed with longitudinal slits 7 and transverse slits 8. These slits, as shown in Fig. 1, run in regular lines, the ends of the longitudinal slits intersecting the middles of the transverse slits, thus providing two flaps 9—9, one on each side of a longitudinal slit, the edges of the flaps being defined by the slits 7 and 8. These flaps 9 may then be bent upward beyond 90 deg., so as to produce the pockets 2. These pockets will therefore be formed a dove tail shape,—that is to say, their bases will be broader than their tops. This will retain the blocks 3 within the pockets and prevent their coming out in an upward direction. When the device is embedded in cement or concrete, the latter will retain the blocks against longitudinal movement.

The spaces between the bases of the flaps 9 are uncut so as to produce the strips 4, while the space formerly occupied by the material which provides the flap 9 will produce the opening 6. The foundation will be of the shape shown in Fig. 2, and the blocks 3 may be inserted either after or before the pockets 2 are bent to final form.

The foundation with the blocks upon it constitutes a complete article of manufacture, which may be vended in that condition. To apply it to concrete or cement work, the

latter is built up so as to form a support for the foundation 1, and the spaces 6 between the pockets are filled with cement or concrete uniting the base of concrete through the openings 6 with the cement or concrete above the foundation, and tying the entire concrete or cement structure together. This concrete or cement, passing through the openings 6, will thereby produce an effective anchorage for the foundation, and the latter being embedded in the concrete or cement, will reinforce it and thereby greatly strengthen it and reduce the liability of cracking and breaking. Another advantage of having the non-slipping material in short blocks is that, when embedded in the concrete or cement as shown, the cement or concrete on each side of a row of blocks will be joined together at short intervals, thus forming a connecting surface, equalizing strains and reducing cracking.

The tread may be applied to wooden or other surfaces, as shown in Fig. 7, by applying a plate 10 having openings corresponding to the pockets 2, such plate lying over the foundation 1 and resting against the latter, the pockets passing through the openings in the plate. Then this plate also engages with the ends of the blocks 3 and prevents longitudinal movement later. The edges of the plate may be lapped over the edges of the foundation 1, as shown in Fig. 7 at 11, thus uniting the foundation to the plate. The tread thus formed may be attached to its supporting foundation by means of nails, screws or other suitable fastenings.

Another feature of my invention consists in providing the tread with a member for reinforcing the edge of a stair, curb or similar structure. This member is shown at 12 and may be in the embodiment illustrated formed integrally with the foundation 1.

Fig. 1 illustrates one way of forming the member 12, pieces 13 being cut out forming openings 14. Those portions of the strips 4, connecting the member 12 with the rest of the foundation, will be no longer than those portions of the strip between the contiguous pockets, as they will be the length of the openings 14, plus the length of a flap 9, forming the row of pockets adjacent to the member 12. This portion 15 of the strip 4 is bent upward at an angle, so that the upper edge of the member 12 can be brought to the same plane as the upper edge of the pockets. The member 12 can be curved, as shown in Fig. 4, so as to form an ornamental protection for the upper edge of the stair, curb or other structure. The concrete or cement, which is necessary to fill the space under and behind the member 12, will enter through the opening 14, as well as through the openings 6.

Another feature of my invention consists in providing means for connecting together a number of foundation members, so that a surface of any desired extent may be produced. One way of attaining this object is shown in Figs. 5 and 6, which illustrate two foundation members overlapping one another and connected together. In order to secure sufficient locking connection, the overlapping portion of one foundation member is offset at 16 (Fig. 6) to an extent equal to the thickness of the material constituting the adjoining foundation member, and is provided with openings 17, which admit the pockets of such adjoining member. By passing the edge row of pockets in one of the members through the openings 17 in the other, the two members will be locked together. This idea may be applied in both directions, *i. e.*, either in the direction of the longitudinal axis of the blocks or at right angles thereto.

In accordance with the provisions of the patent statutes, I have described the principle of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the apparatus shown is merely illustrative and that the invention can be carried out in other ways.

Having now described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A safety tread, comprising a sheet foundation, flaps bent upward forming pockets between the flaps, blocks within the pockets, openings between the pockets in one direction and strips between the pockets in the other direction, such strips separating the openings, in combination with a cementitious supporting medium within which the sheet is buried, the said medium lying within the openings and also lying between the ends of the blocks.

2. A safety tread having a sheet foundation, rectangular flaps bent upward forming rectangular pockets between the flaps, oblong blocks within the pockets, rectangular openings between the pockets in one direction and rectangular strips between the pockets in the other direction, said strips separating the openings, in combination with a cementitious supporting medium within which the foundation is buried, the medium lying within the openings and also lying between the ends of the blocks.

3. A safety tread having a sheet foundation, rectangular flaps bent upward forming oblong pockets between the flaps, oblong blocks within the pockets, rectangular openings between the pockets lying adjacent to the long side of the blocks, and strips between the ends of the blocks and separating the openings, in combination with a cementitious supporting medium within which the foundation is buried, the medium lying

within the openings and also lying between the ends of the blocks.

4. A safety tread formed of a supporting foundation immersed in a cementitious supporting medium, the said foundation having pockets with a non-slipping surface supported thereby, said surface being in the form of strips of non-slipping material interrupted at short intervals, the cementitious material lying in the interruptions.

5. A safety tread formed of a cementitious support and a sheet foundation having pockets, the said foundation being embedded in the support, blocks of non-slipping material within the pockets, such blocks being arranged in rows and interrupted at short intervals, the place of interruption in the several rows being coincident, and the cementitious material lying within the places of interruption.

6. A safety tread formed of a sheet metal foundation with pockets therein extending upward therefrom, in combination with a second sheet connected to the same, the said second sheet having openings through which the pockets of the first sheet pass.

7. A safety tread formed of a sheet metal foundation, with pockets therein extending upward therefrom, in combination with a second sheet connected to the same, the second sheet being offset to the extent of the thickness of the material, and having openings through which a row of pockets of the first sheet passes.

8. A safety tread formed of a sheet metal foundation, formed with pockets therein extending upward therefrom, in combination with a second sheet overlapping the same, there being locking means for the two sheets, said locking means comprising an opening in the overlapping sheet into which a pocket in the overlapped sheet passes.

9. A safety tread formed of a sheet foundation, pockets on the foundation, blocks within the pockets and openings between the pockets, said blocks being interrupted at short intervals, in combination with a cementitious medium in which the foundation is buried, said medium lying within the openings and uniting on both sides of the intervals, and also extending within the intervals between the blocks.

This specification signed and witnessed this 23rd day of Dec., 1908.

JOHN T. SIMPSON.

Witnesses:

LEONARD H. DYER,

JOHN L. LOTSCH.