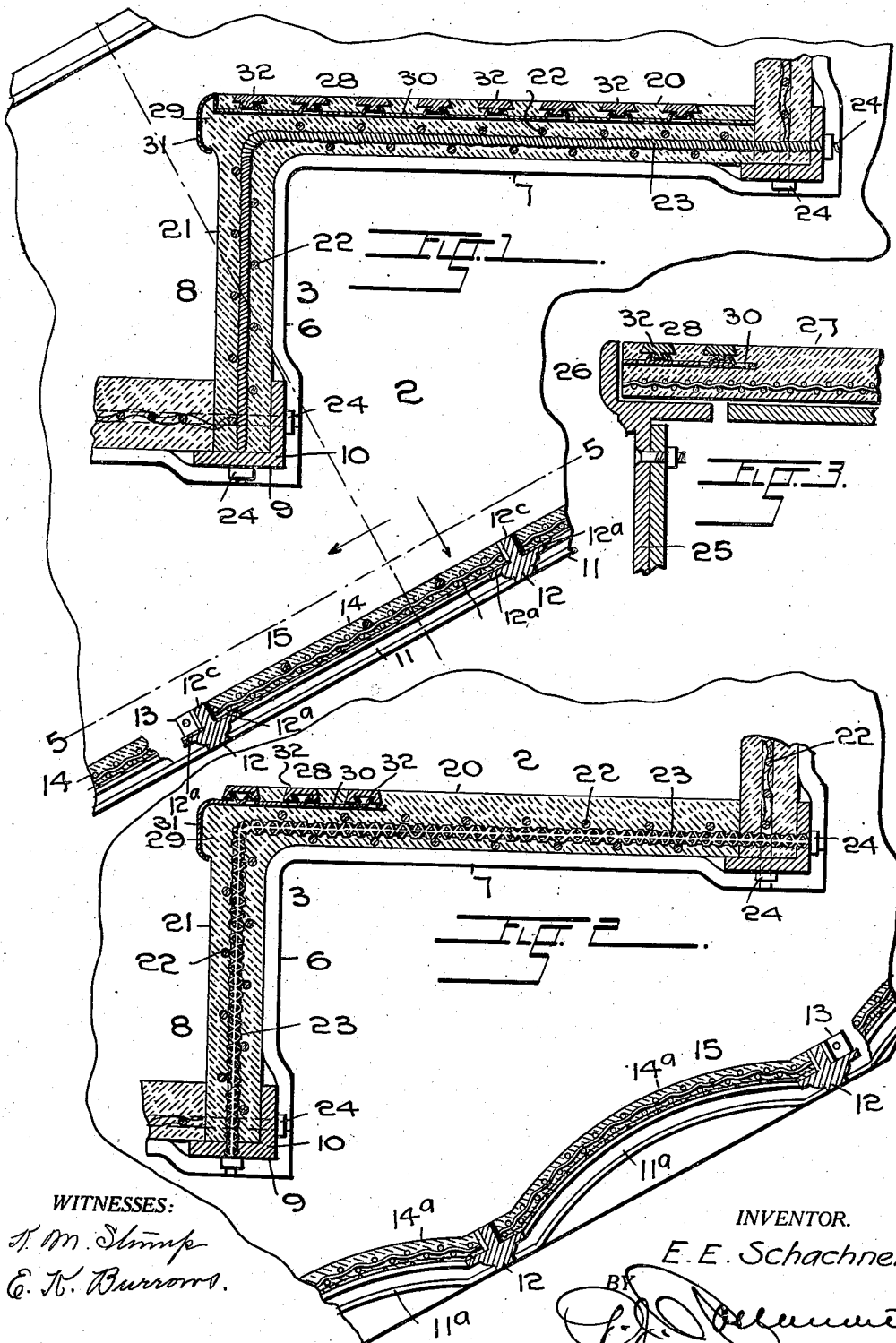


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E. E. SCHACHNER. PATENTED JULY 14, 1908.
NON-SLIPPING TREAD.
APPLICATION FILED JUNE 17, 1907.

4 SHEETS—SHEET 1.



WITNESSES:

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E. H. Burrows.

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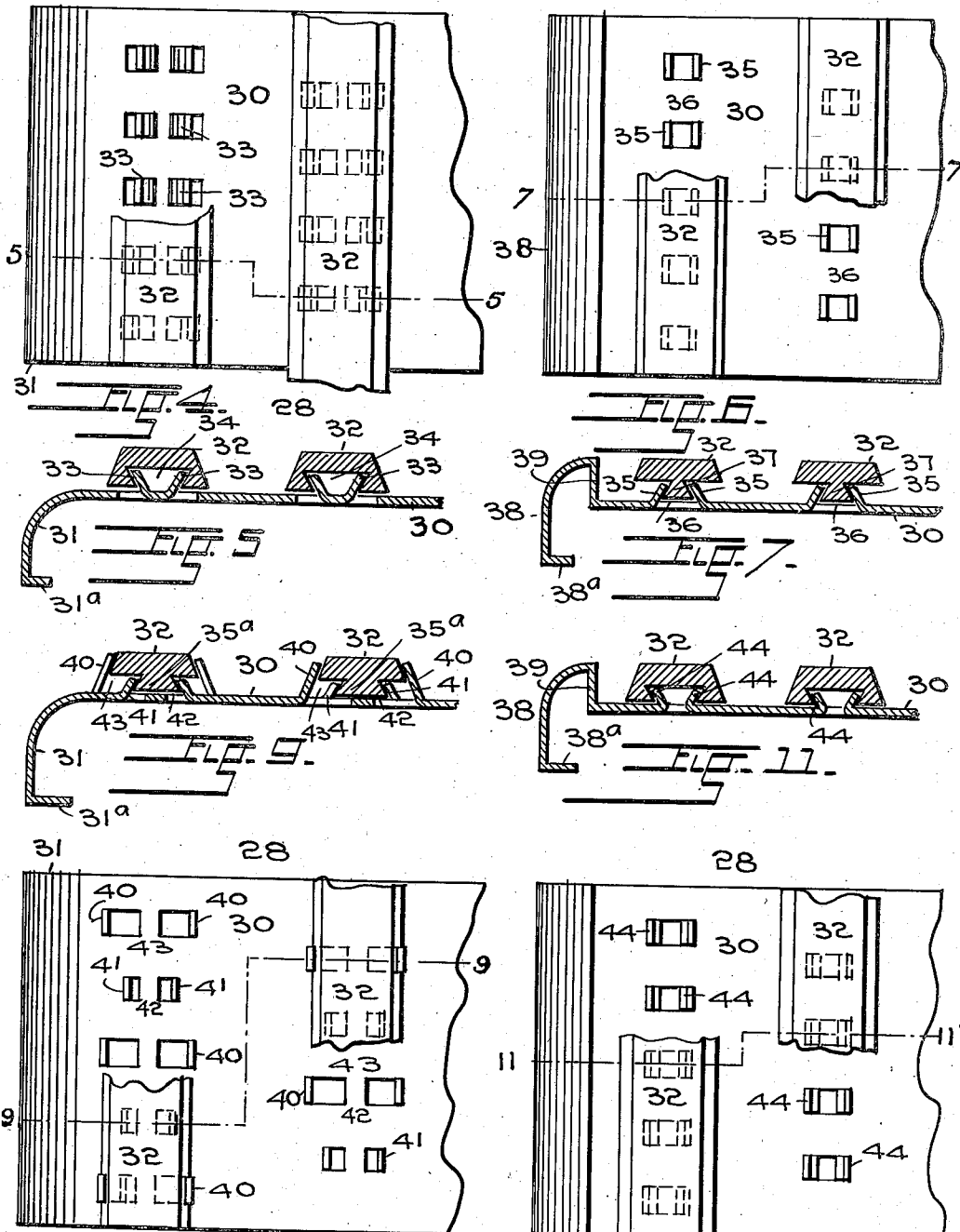
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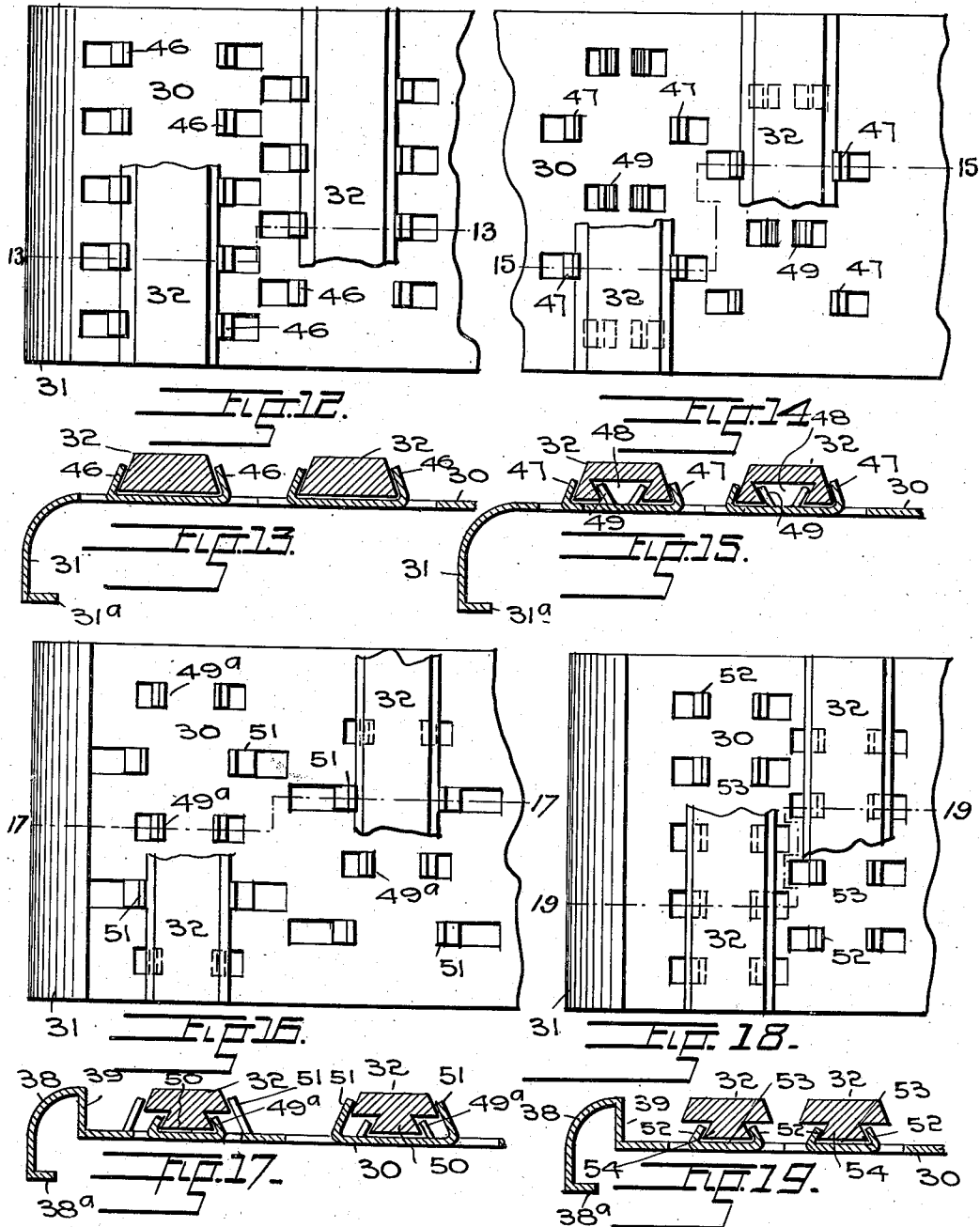
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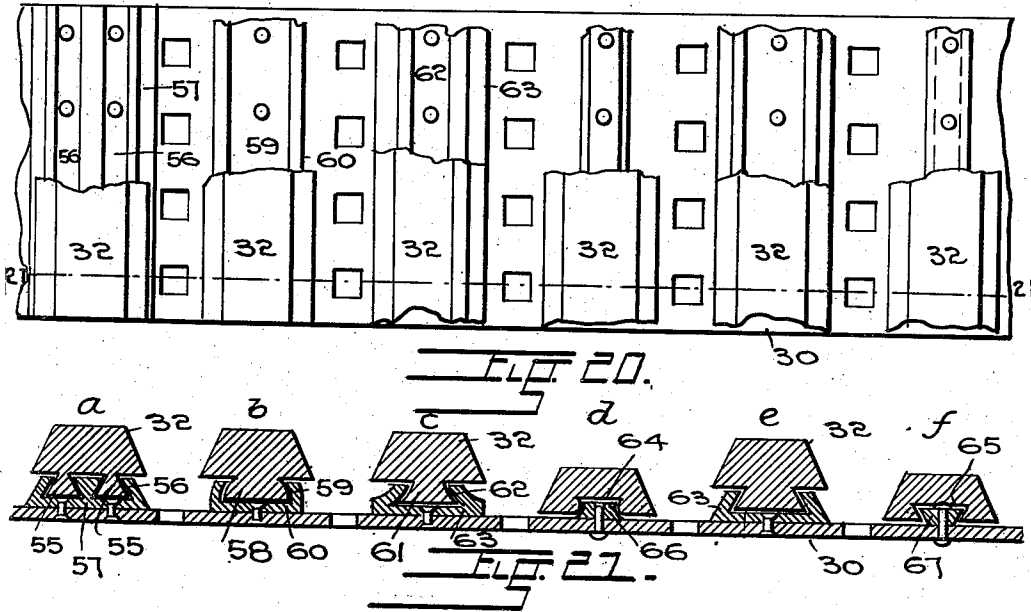
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UNITED STATES PATENT OFFICE.

EDWARD EDMUND SCHACHNER, OF DENVER, COLORADO.

NON-SLIPPING TREAD.

No. 893,198.

Specification of Letters Patent.

Patented July 14, 1908.

Application filed June 17, 1907. Serial No. 379,504.

To all whom it may concern:

Be it known that I, EDWARD E. SCHACHNER, a citizen of the United States of America, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Non-Slipping Treads, of which the following is a specification.

My invention relates to new and useful improvements in non-slipping treads and its object is to provide a safety tread which may readily be applied to the treads of the steps in a stair structure irrespective of the material of which they are made, which including a plurality of members supported upon an independent base, may readily be removed or renewed in case of wear or breakage and which by reason of the adhesiveness of the material of which they are composed, will effectively prevent slipping of persons engaging stairs or other surface to which they are applied. I attain this object by the mechanism illustrated in the accompanying drawings in the various views of which like parts are similarly designated and in which

Figure 1—represents a fragmentary sectional elevation of a stair case provided with my improved tread, Fig. 2—a similar view showing modified forms of safety tread, soffit and reinforcement, Fig. 3—a fragmentary view of a metallic riser supporting the improved tread, Figs. 4, 6, 8 and 10, fragmentary plan views of the detached safety tread showing different manners of securing the superposed members to the base, Fig. 5—a cross section taken along a line 5—5, Fig. 4, Fig. 7—a transverse section taken along a line 7—7, Fig. 6, Fig. 9—a section along a line 9—9, Fig. 8, Fig. 11—a cross section taken along a line 11—11, Fig. 10, Figs. 12, 14, 16 and 18—fragmentary plan views of the detached safety treads showing the various manners of securing the superposed members to the base, the latter being provided with perforations, intermediate the said members, Fig. 13—a transverse section taken along a line 13—13, Fig. 12, Fig. 15—a section along a line 15—15, Fig. 14, Fig. 17—a cross section taken along a line 17—17, Fig. 16, Fig. 19—a transverse section along the line 19—19, Fig. 18, Fig. 20—a fragmentary plan view of the detached safety tread illustrating various methods of securing the members upon the base, through instrumentality

of interposed shoes and ridges, and Fig. 21—a section through the tread shown in the preceding figure taken along a line 21—21—Fig. 20.

Referring to the drawings, the reference numeral 2 designates the parallel stringers between which the stairs are supported and which are provided upon their inner surface with inwardly ranging, stepped flanges 3, the alternate vertical and horizontal parts 6 and 7 of which are arranged in conformity with the stairs 8.

The members 6 and 7 of the flanges 3 are at the junction of the lower portion of the vertical parts with the adjacent horizontal parts, offset to form angular seats 9, adapted to receive the extremities of angle bars 10, which being arranged transversely between the two stringers, afford a firm support for the stairs 8, the ends of which abut the vertical surfaces of the latter. The stringers 2 are furthermore provided with inwardly extending flanges 11, which being disposed longitudinally along their lower edges, form seats for the extremities of transverse, equidistantly arranged T bars 12 which may be secured to the stringers by means of angles 13.

The upper surfaces of the flanges 11 and of the wings 12^a of the T connections, extending in one plane, form a series of supporting frames for the soffit 15 which is composed of a plurality of adjoining sections 14, transversely separated by the upwardly extending parts 12^c of the T bars.

The integral treads 20 and risers 21, in the constructions shown in Figs. 1 and 2 of the drawings, are produced by molding a plastic substance such as a mixture of cement and sand, gravel or other substances in a suitably constructed matrix and are reinforced by embedding a continuous sheet of wire netting 22 intermediate their upper and lower surfaces.

Rods 23, the surface of which is roughened by twisting, are bent in conformity with the body 8 and embedded in the tread and riser comprised therein, their threaded extremities extending beyond the latter's outer edges, to provide means for fastening the stairs to the connecting angle bars 10, by the use of nuts 24.

By interweaving the rods 23 with the wire netting 22, the parts are permanently held in their relative positions while the rough-

ened surface of the rods still further secure them in cohesion with the plastic substance in which they are embedded.

If so desired, the treads of the various stairs comprised in the structure, may be made separate from the risers, in which case the latter are made preferably of metal, as shown in Fig. 3, in which the reference numeral 25 designates the metallic riser having an integral nosing 26, and 27 the reinforced concrete tread supported thereon.

To increase the wearing qualities of the treads and to guard against slipping of and consequent injury to persons mounting or descending the stairs, I provide non-slipping or safety treads 28 which being embedded in or otherwise secured to the material of which the steps are composed, present a series of spaced adhesive surfaces to be engaged by the feet of the user and which incidentally protect the nosings 29 intermediate the treads and the risers.

The safety treads may extend from the nosing 29 along the entire width of the tread as shown in Fig. 1 or they may be disposed as shown in Fig. 2 at the fore portion thereof, which during ordinary usage is most frequently engaged by the feet of ascending or descending persons.

The appliance 28 is composed of a base plate 30, curved and flanged at one of its edges to form a shield 31 for the nosing 29 of the stair upon which it is fastened, and provided with a plurality of detachably secured, superposed bars or strips 32 made of lead or other soft metallic substance or composition.

The shape of the strips 32, as well as the manner in which they are applied to and held upon the metallic base, may vary to suit different requirements and conditions, as is shown in the drawings, the several figures of which, illustrating the safety tread in detail, will now be described in the order in which they are presented.

In Figs. 4 and 5 the metallic sheet 30 is punched at regular intervals along double lines, parallel with its outer edge, with a preferably rectangular U-shaped die, the open end of which leaves a connection between the punched out portion and the main body of the sheet along which the former is subsequently bent to form an upwardly ranging prong or horn 33.

The rectangular perforations produced by the stamping process being arranged along the two juxtaposed lines in opposite and reverse relation, will thus produce two rows of diverging projections or prongs which collectively form a longitudinal dovetail key or tenon by means of which the soft metal strips 32 are detachably secured upon the plate.

The strips 32 which, as hereinbefore explained, may be composed of any metallic

substance or composition adapted to present an adhesive surface to the tread, are preferably made trapezoidal in cross section and are provided along their under side with a longitudinal key way or mortise 34, shaped in conformity with the tenon produced by the series of prongs upon the plate 30 by which in practice it is occupied. The strips 32 are thus held upon the plate against lateral displacement and may readily be removed in case of wear or breakage.

The base 30 is, in the above described manner, provided with as many double rows of prongs as are needed to secure the required number of strips, and in order to promote the strength of the plate the perforations and intermediate spaces in adjoining series are placed alternately in relation to each other.

In the hereinafter to be described modified forms of the safety tread, the angular perforations punched into the plates are substantially alike differing only in the length of their parallel portions and their arrangement in relation to each other.

In Figs. 6 and 7, the opposite perforations in the double lines are arranged in reversed order from those in the preceding figures and the prongs 35 produced by the punched out portions converge to form collectively, a dovetail key way 36 for a correspondingly formed tenon 37 longitudinally disposed on the underside of the lead strips 32.

The nose shield 38, shown in Figs. 9 and 10, differs from that illustrated in the preceding figures in that its upper edge is brought by an intermediate upright portion 39 in a plane with the upper surface of the lead strips 32 instead of curving downwardly from the upper surface of the base plate.

Both shields 31 and 38 are provided at their lower edges with inwardly turned flanges 31^a and 38^a which, in practice, protect the under surface of the nose of the tread to which they are applied.

The strips 32 employed in the form illustrated in Figs. 8 and 9 are identical with those shown in the preceding figures and the perforations are arranged in relation to each other in a manner similar to that shown in Figs. 4 and 5. In this case, however, the alternate angular slits of each series have been prolonged outwardly and the prongs 40 and 41 are bent in converging relation to produce collectively two means for securing the soft metal strips, viz:—a keyway 42, similar to that shown in Figs. 6 and 7, to admit the dovetail tenon 35^a on the bar 32^a and a wider keyway 43, the prongs in which are arranged to engage the flaring sides of the said bars.

In the form illustrated in Figs. 10 and 11, the slits produced by the punching process, are placed in relation to each other similar to the arrangement shown in Figs. 6 and 7, but the prongs 44 are bent upwardly in a di-

verging instead of a converging position, so they may collectively form a key or tenon similar to the one illustrated in Figs. 4 and 5, the strips employed in the two forms being identical.

Before proceeding with the description of the forms illustrated in the other figures, I wish it observed that the openings produced by the upturned prongs in the various plates hereinbefore described, are located below the soft metal strips whereas those in the plates hereinafter to be explained are intermediate the bars. The difference between these two classes resides chiefly in the manner in which the plates are applied upon the treads of the stairs, those hereinbefore described being adapted to be secured by screws or other means upon any tread irrespective of the material of which it is composed, be it concrete, wood or iron, while the other apertured plates are especially adapted to be embedded in treads made of plastic material, the portions of which above and below the plate, unite into one connected mass by the intermediate portions extending through the openings formed by the upturned prongs.

The first form in the last named class of safety treads is illustrated in Figs. 12 and 13, in which the strips 32 are made without a key way or a tenon and the prongs 46 produced by the punched out portions of the plate 30 are arranged in a manner similar to that shown in Figs. 4 and 5 with the difference that the distance between the opposite prongs of each series has been made larger and the latter are bent upwardly in converging relation, so as to engage the flaring sides of the strips.

The alternate prongs 47 of each double row in the plate illustrated in Figs. 14 and 15 are, in arrangement, similar to those shown in the preceding figures, while the intermediate ones 49 are brought closer together and diverge like those shown in Figs. 4 and 5. The strips employed are identical to those used in the last named form, the key ways 48 being adapted to admit the series of diverging inner prongs, while the outer converging ones engage their flaring sides.

The plate shown in Figs. 16 and 17 is similar to the one illustrated in the preceding figures, the only difference being that the innermost prongs 49^a converge to collectively form a key way for a dove tail tenon 50 on the strip 32. The outer prongs 51 engage the sides of the strip as in the other form.

The strips in the structure illustrated in Figs. 18 and 19 are identical to those in Figs. 16 and 17, and the plate is also similar with the exception that the opposite prongs 52 in each series are equidistantly disposed along parallel lines to collectively form the key way 53 for the tenon 54 of the strip.

In Figs. 20 and 21 are illustrated various

modes of securing the strips upon their base through instrumentality of interposed agents which riveted or otherwise fastened upon the plate, take the place of the punched out prongs of the preceding structures.

In the figures, the reference character *a* designates a form in which the strips have two parallel dovetail tenons 55 disposed in corresponding grooves 56 in a shoe 57 secured upon the plate; *b* shows a structure in which the strip has but one tenon 58 the sides of which are convex and which engages a correspondingly shaped way 59 in a shoe 60; in *c* the corresponding sides of the tenon 61 and the way 62 in the shoe 63 are respectively concave and convex while in *e* they are flat. The forms shown at *d* and *f* include strips having longitudinal key ways 64 and 65 cut in their under sides and respectively having flaring and curved sides. The means employed to secure the bars upon the plate consist, in this case, of strips or keys 66 and 67, shaped in conformity with the ways in the bars they occupy.

The safety treads may, as hereinbefore explained, be secured upon the steps by screws or similar fastening means or they may be embedded in the concrete or other plastic substance of which the steps are formed and the upper surfaces of their soft metal members may be left in separated condition or they may be connected by means of interposed plastic material.

Having thus described my invention what I claim is:—

1. As a new article of manufacture, a non-slipping tread comprising a plate adapted to be secured upon a stair tread and having a nosing shield comprising a downwardly extending portion terminating in an intumed flange and an upright connection intermediate the said portion and the plate, and spaced bodies of soft metal held upon the said plate.

2. As a new article of manufacture, a non-slipping tread comprising a plate having a plurality of keys upon its upper surface and bars of soft metal having in their under surface longitudinal ways adapted to admit the said keys.

3. As a new article of manufacture, a non-slipping tread comprising a plate having a plurality of dove-tail ridges upon its upper surface and bars of soft metal having in their under surfaces correspondingly shaped grooves adapted to admit the said ridges.

4. As a new article of manufacture, a non-slipping tread comprising a plate having one or more series of punched out prongs, arranged to collectively form a key or tenon and bodies of soft metal having in their under sides ways adapted to admit the said key.

5. As a new article of manufacture, a non-slipping tread comprising a plate having one or more series of punched out prongs arranged to collectively form a dove-tail key

or tenon and bodies of soft metal having in their under sides, dovetail-formed grooves adapted to admit the said key.

6. As a new article of manufacture, a non-slipping tread comprising a plate having one or more series of prongs arranged to collectively form dovetailed ridges and bodies of soft metal adapted to interlock with the said ridges against lateral and vertical displacement.

7. As a new article of manufacture, a non-slipping tread comprising a plate having series of upturned prongs each series comprising four rows, the inner ones of which form collectively a key or tenon and the outer ones collectively a way, both of dove tail form and bodies of soft metal within the said way, their flaring sides being engaged by the

prongs comprised therein, the said bodies having key ways arranged to simultaneously receive the said key or tenon.

8. As a new article of manufacture a non-slipping tread comprising a plate having one or more series of upturned prongs each series comprising four rows arranged to collectively form dovetailed ridges and bodies of soft metal adapted to interlock with the said ridges against vertical and lateral displacement.

In testimony whereof I have affixed my signature in presence of two witnesses.

EDWARD EDMUND SCHACHNER.

Witnesses:

G. J. ROLLANDET,
K. M. STUMP.