W. E. FICKLEN.

METALLIC EDGE PROTECTOR AND THE LIKE.

APPLICATION FILED NOV. 27, 1912. RENEWED JAN. 15, 1916.

1,310,331. Patented July 15, 1919.

Fig. 1

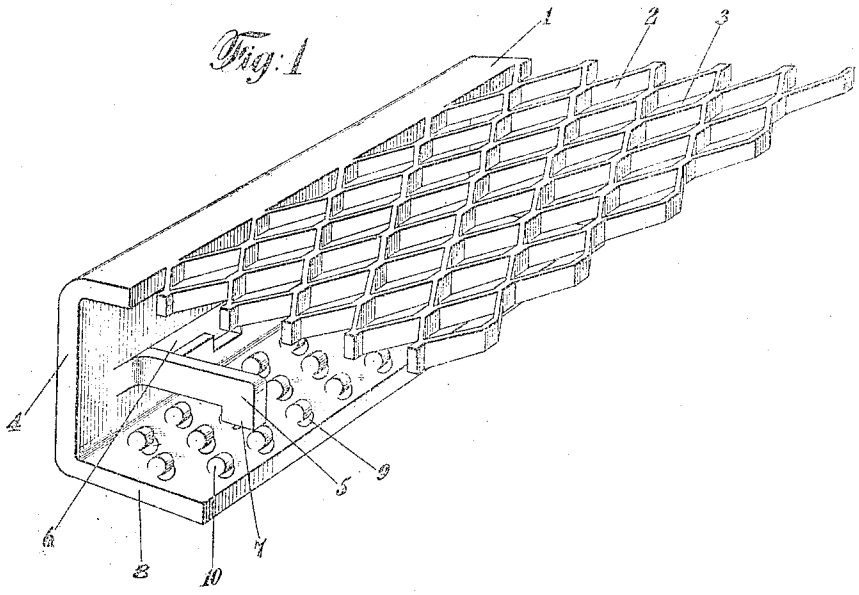
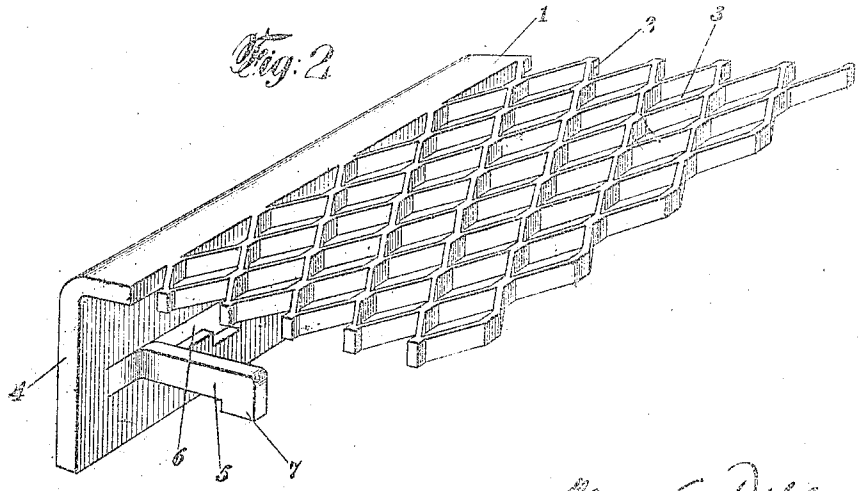


Fig. 2



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METALLIC EDGE-PROTECTOR AND THE LIKE.

1,310,331. Specification of Letters Patent. **Patented July 15, 1919.**

Application filed November 27, 1912, Serial No. 733,860. Renewed January 15, 1916. Serial No. 72,370.

To all whom it may concern:

Be it known that I, WILLIAM E. FICKLEN, a citizen of the United States, residing in the borough of Brooklyn, city of New York, county and State of New York, have invented certain new and useful Improvements in Metallic Edge-Protectors and the like, of which the following is a specification.

The present invention relates to metallic treads or edgings for stairs, curbs, gutters, pavements at trolley tracks and other joints, and for other structures of concrete or artificial conglomerate, such as are exposed to traffic, or to very rough or heavy wear when in use. More particularly the invention has reference to edgings or treads which are designed and especially adapted to be positioned in the concrete or other structural material while the latter is unset or unhardened, and which, when the material has hardened, can not be displaced either by constant wear or by the severest impacts. The invention is especially designed to protect the overhanging edges of stairs, and the like, and to this end is of such construction as to relieve the overhang of all strains and wear. One object of the invention is to provide deep and effective anchorage for the protector in more than one plane, so that there can be no tendency to rock or jolt the same loose; also, so to arrange the anchorage that positive resistance is offered to displacement whatever the direction of the strain. In the preferred embodiments of the invention, a shell of comparatively thick metal is expanded in one or more planes; so that a large area of complete interlockment with the concrete is provided, though the protector itself be light, and consequently cheap.

In its preferred form, the protector is shown substantially as of U, or channel-iron, shape. In position, one of the parallel members of the protector, and the cross or connecting member thereof, lie flush respectively with the exposed concrete surfaces, and cover the angle or edge formed by the latter. The other of the parallel members projects directly in the concrete. To protect an overhang, the latter member would be wide enough not only to cover the under surface of the overhang, but to project well into the concrete of the body of the step. One or both of the parallel members may be expanded; or, in some instances, instead of expanding the metal, anchoring strips may be turned out of the same. Both of these features may be embodied in the same device.

The above and other features of the invention will more fully appear upon reference to the accompanying drawings, in which—

Figure 1 is a perspective view of a form of fabricated channel-bar protector, with one of the parallel members considerably expanded.

Fig. 2 is a perspective view of a protector embodying a modified form of the invention, the distinction being that the protector of Fig. 2 is a fabricated angle bar.

In the structure shown in Fig. 1, one wing, 1, of the thick U-shaped iron is expanded, as indicated at 2. This wing is preferably, though not necessarily, the tread surface. It provides an admirable wearing surface for factory stairs and the like. The outside surface of the wing 1, will lie flush with the surface of the concrete, so that the concrete fills the apertures 3, to provide a non-slipping foothold, besides an interlockment with the concrete over a considerable area to assist in anchoring the protector. The expansion is effected, in a well understood manner, by slitting the member 1 vertically on parallel lines and then drawing upon the same in the direction of its plane. It will be noted that this drawing action necessarily stretches or elongates the parts between adjacent slits, as will be apparent on inspecting the figures. The stretching or elongating is facilitated by making the space between adjacent slits less than the thickness of the metal. The tread or protector is not shortened in any part. The cross or connecting member 4 ordinarily covers or lies flush with the vertical edge of the stair or curb. If the stair has an overhang, the member 4 will be preferably of a width just to cover it. It is shown as having anchoring strips or tongues 5 turned out of longitudinal cuts 6. The cuts 6 are made longitudinal so that great depth of anchorage may be provided by the strips 5. The latter are also preferably hooked at their ends, as at 7. The lower wing 8 of the bar is shown as having a multitude of small perforations 9 from which small pieces 10 are turned out. The upper wing being expanded, and the lower wing being perforated, the bar as a whole may be readily bent, as at a street corner. The numerous

projections 10 effectively assist in the anchoring of the bar, since, when the wing 1 is at the surface, the wing 8 lies within the concrete. The concrete, by filling the holes 9, is well interlocked with the part 8 of the bar. Where the protector is applied to the overhanging edge of a step, it should be of width enough not only to cover the under side of the overhang, but to project well with the concrete behind the same. By reason of the anchoring means in several planes, there is no axis around which there can be any tendency to rock, and thus loosen the bar. In certain constructions, it may be desirable to reverse the position of the bar in the concrete, so the wing 8 will be at the surface, and the wing 1 be embedded in the concrete. If desired, the wing 8 may be expanded in the same manner as the wing 1.

The form of the invention shown in Fig. 2 is made from an angle bar instead of from a channel iron. It resembles the structure shown in Fig. 1 in all respects except that the member 8 is lacking. The remaining parts have the functions of the similar parts in Fig. 1, and are indicated by the same reference numerals.

I give to the word "vertical" (and other words) in the description, a broad and general directional meaning.

Within the scope of the invention, the structures shown in the drawings may be variously modified, and one or more of the features of each combined in a single bar.

I claim:

1. A concrete protector and tread bent on a longitudinal line, one of the wings so formed being sheared into narrow vertical strips and expanded so as to form an open mesh adapted to form a part of the tread.

2. A metallic edging, substantially of U-shape cross section with one of its sides vertically cut on longitudinal lines, at distances apart which are less than the thickness of the metal, and expanded transversely to the direction of said cuts, so as to present an open-work to be filled with concrete, or other material, the upper surface of which forms the tread.

3. A metallic edging bent on a longitudinal line, one of the wings so formed being expanded to present an open work to be filled with concrete, or other material and forming the tread surface, the open work being thicker than the width of the sides bounding the openings, and the other wing having rigid extensions for anchoring the device.

4. A metallic edging bent on a longitudinal line, one of the wings so formed being expanded to present an open work to be filled with concrete, or other material, the width of the metal strips surrounding the opening being less than the depth thereof, and the other wing having rigid extensions for anchoring the device, said anchors being bent-out portions of the wing to which they are connected.

5. A metallic edging, substantially of U shape cross section, one wing being expanded to present an open work to be filled with concrete or other material and forming the tread surface, the sides of the openings being perpendicular and of greater depth than width, and the other two sides having rigid lateral projections to anchor the device.

6. A metallic edging bent on a longitudinal line, and having a wing thereof cut into narrow vertical strips on longitudinal lines at distances apart and expanded transversely to the direction of said cuts to present an open work for interlockment with concrete or other material, the upper surface of which expanded wing forms the tread.

7. A metallic edging bent on a longitudinal line, and having a wing thereof cut on longitudinal lines at distances apart and expanded transversely to the direction of said cuts to present an open work for interlockment with concrete or other material, the upper surface of which expanded wing forms the tread, and another wing of which edging has portions thereof turned out at an angle to the plane of said other wing for interlockment with the concrete or other material in which the edging is mounted.

8. A metallic edging bent on a longitudinal line, and having a wing thereof cut on longitudinal lines at distances apart and expanded transversely to the direction of said cuts to present an open work for interlockment with concrete or other material, and another wing of which edging has portions thereof turned out at an angle to the plane of said other wing for interlockment with the concrete or other material in which the edging is mounted.

9. A metallic edging substantially of U shape cross section, one side being expanded in the plane thereof, and the other side having portions thereof turned out at an angle thereto to form means for anchoring the edging in the concrete or other material in which it is mounted.

10. An edge protector for steps and the like, provided with one or more wings, said protector being slit at a number of places and the parts between the slits stretched, whereby the part or parts is expanded to form a reinforce for a stair tread, or other edges, the upper face of the reinforce adapted to form part of the tread.

11. An edge protector composed of a strip of metal, bent longitudinally to form wings, one of the bent portions being slitted longitudinally and stretched between the slits, whereby said portion becomes adapted to constitute a reinforcement for a stair tread, the other portion being provided with anchoring means sheared therefrom, and

leaving openings into which concrete may work.

12. A U-shape edge protector for steps and the like, said U-shape being provided with members sheared therefrom in the central part by longitudinally extending slits, and said part or parts being bent inward with respect to the U-shape, so that when the U-shape is used as an edge reinforce for concrete, the bent portion may anchor the U-shape to the concrete and concrete may enter and be made by said bent portion to interlock the concrete to the U-shape.

13. An edge protector for concrete street structures, provided with a body, a web extending therefrom, said web being sheared into narrow vertical strips, and said strips being separated from each other and from adjacent parts, throughout the plane of the web.

14. A protector for pavement structures, having a body provided with a web extending therefrom, said web having been sheared into narrow vertical strips and expanded in the plane of the web by stretching said strips.

Signed by me at New York city, N. Y., this 22nd day of November, 1912.

WM. E. FICKLEN.

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