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STAIR NOSING STRUCTURE

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Fig. 1.

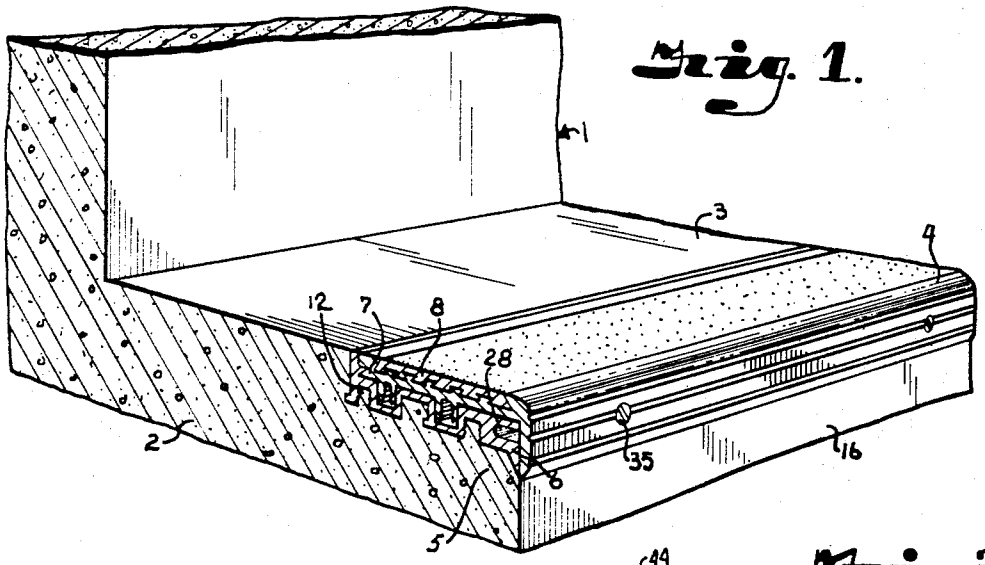


Fig. 2.

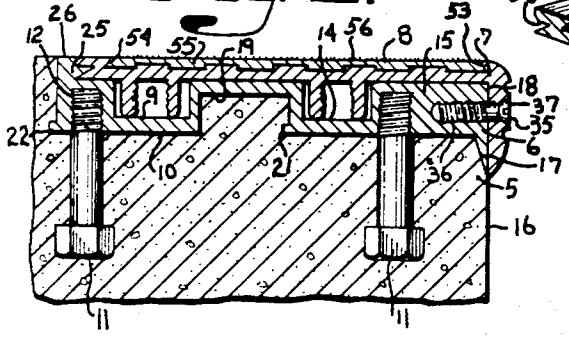


Fig. 3.

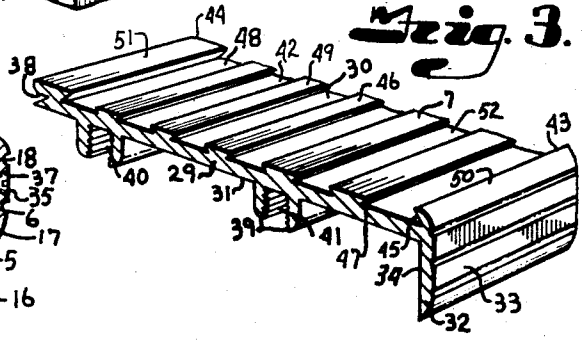


Fig. 4.

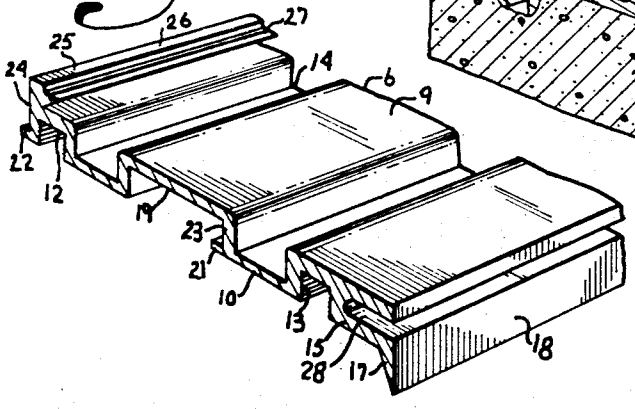
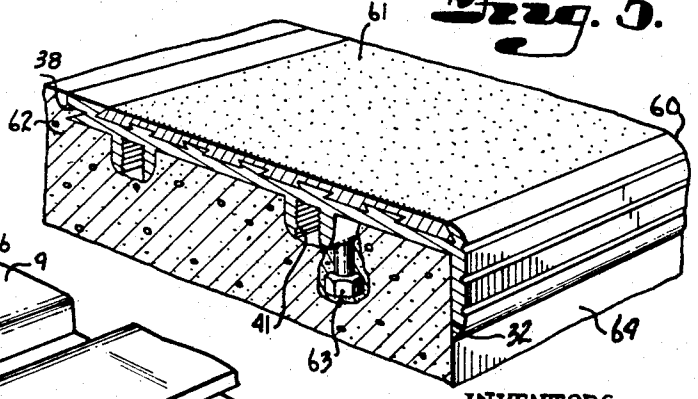


Fig. 5.



INVENTORS.
CLAUDE P. BALZER
ALMER A. REIFF
BY & EDWARD M. CORMAN
Fishburn and Gold
ATTORNEYS

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STAIR NOSING STRUCTURE

Claude P. Balzer, Edward M. Corman, and Almer A. Reiff, Wichita, Kans., assignors to Central Specialties Co., a corporation of Illinois

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Int. Cl. E04b *11/16*

ABSTRACT OF THE DISCLOSURE

A stair nosing structure consisting of a combination of members secured to a concrete, stone, or masonry stair and secured together into a co-acting rigid non-slip stair nosing forming a portion of the step tread surface, the structure having a plate member, and a removable abrasive cover strip member interlocked therewith. The anchoring of the plate member to the step also including a base plate having portions inter-engaging portions of the plate member to secure same together.

The principal objects of the present invention are to provide a member to be installed in the stair tread during early stages of construction, said member requiring a minimum of construction effort, a minimum of protection during subsequent construction operation and providing maximum protection to the upper forward edge of the stair tread; to provide anchoring means which may be adjusted as to location during construction; to provide a finished structure flush with the wearing surface of the stair tread; to provide an abrasive non-slip wearing surface; to provide an abrasive wearing surface which is replaceable when damaged or worn during usage; and to provide a stair nosing that is economical to manufacture and easily installed, forming an attractive long lasting structure.

Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings which are set forth by way of illustration and examples certain embodiments of this invention.

FIG. 1 is a partial perspective view of the stair nosing structure in place on a concrete stair tread with portions cut away to show the structure.

FIG. 2 is a sectional view through the stair tread and stair nosing structure taken on line 2—2, FIG. 1.

FIG. 3 is a partial perspective view of the stair nosing cover member.

FIG. 4 is a partial perspective view of the base member.

FIG. 5 is a partial perspective view of a modified form of the stair tread and stair nosing structure in place on a concrete stair tread with portions cut away to show the structure.

Referring more in detail to the drawings:

The reference numeral **1** generally designates a stair of concrete, stone, masonry, or other suitable material and having steps **2** with upper or tread surfaces **3**. A stair nosing structure **4** is applied to the stair on the upper forward edge portion **5** of each step **2**. The form of the invention shown in FIGS. 1 to 4, inclusive, includes a base member **6**, a cover member **7**, and surface cover strip **8** suitably connected together in an assembly on the stair. The nosing structure normally does not extend the full width of the stair being stopped a few inches short of each end, but may extend the full width or part thereof, as desired.

In the structure illustrated, the base member **6** is preferably of aluminum, bronze, or other material of uniform cross-section suitable for manufacture by extrusion. The base member **6** is mounted on the upper forward edge

portion **5** of the step and has an upper and lower surface **9** and **10**, respectively. The base member **6** is preferably secured to the stair by suitable fastening devices such as anchor bolts **11** spaced longitudinally along laterally spaced slots **12** in the base member which form the lower surface **10**. On each wall defining slots **12** there are continuous longitudinal ridges or small ribs **13** so shaped and spaced that the ribs **13** are complementary to and engage the threads of the anchor bolts **11**. In the upper surface **9** of the illustrated base mmeber **6** there are laterally spaced continuous longitudinal upwardly opening channels **14**. The base member **6** has a thickened forward portion **15** adapted to be positioned adjacent the forward face **16** of the step **2**, said portion **15** having a depending flange or leg **17** which is installed with the outer or forward face **18** thereof flush with the front face **16** of said step **2**. The base member **6** has a downwardly opening channel **19** whereby said member has rigidity and strength with lightness in weight. There are ribs or lips **21** and **22** which extend rearwardly from the forward leg **23** of the channel **19** and from a thickened rear portion **24** of the base plate, respectively. At the rear edge of the base plate **6** there is an upstanding leg or flange that extends from the upper face **9** to a suitable height whereby when the base plate **6** is installed in the step **2** the upper edge **26** of the upstanding flange **25** is flush with the surface tread **3**. The upstanding flange **25** has a longitudinally continuous forwardly projecting rib **27** for engaging a complementary groove in the cover member **7** as later to be described. In the thickened forward portion **15** of the base member **6** there is a longitudinally continuous slot **28** to receive screws as later described.

The cover member **7** consists of a plate member **29** with upper and lower surfaces **30** and **31**, respectively, and a depending flange **32** with an outer and inner faces **33** and **34**, respectively. The cover member **7** is suitably secured to the base member **6** in substantially overlying relation thereto. In the structure shown said cover member is secured to the base member **6** by longitudinally spaced fasteners such as self tapping screws **35**, the shanks **36** of which extend through countersunk holes **37** and are threaded into the opposed portions of the base member forming the slot **28**, and by engagement of the rib **27** in complementary continuous groove **38** in the rear edge of the plate member **29**. The inner face **34** of the depending flange **32** of cover member **7** overlies and preferably engages the outer face **18** of the depending flange **17** of the base member **6** with said surfaces flush with the front face **16** of the step **2**. Projecting from the lower surface **31** of the plate member **29** are preferably laterally spaced depending continuous longitudinal pairs of ribs **39** which loosely fit into the channels **14** of the base member **6**. Each pair of ribs **39** define a downwardly opening slot **40** and on adjacent faces of the ribs of a pair there are continuous longitudinal ridges or small ribs **41** that are complementary to anchor bolt threads to be received therein.

The plate member **29** has a longitudinally extending recessed portion **42** between thicker portions at the forward and rear edges forming upstanding longitudinally continuous ribs **43** and **44** with the forward adjacent faces thereof undercut as at **45** to cooperate with undercut faces or shoulders **45** of ribs **43** and **44** therebetween. There are preferably a plurality of upstanding longitudinally continuous ribs **46** with undercut shoulders **47**, said ribs **46** extending upwardly from the bottom **48** of the recessed portion **42** and having upper faces **49** at a level below the upper faces **50** and **51** of the ribs **43** and **44**, respectively, and ribs **46** being spaced apart and forming channel **52** therebetween.

The cover strip **8** has outwardly sloping edges **53** and **54**

on the front and rear edges respectively that are complementary to the undercut faces or shoulders of ribs **43** and **44** respectively of plate member **29**. The cover strip **8** has a plurality of depending longitudinally continuous portions or ribs **55** with undercut shoulders which are complementary to the channels **52** in the recessed portion of the plate member **29**. The cover strip **8** may be made separately and inserted endwise into the cover member **7** with the various complementary ribs and channels in a snug fit or the cover strip may be cast or otherwise formed in the recessed portion **42** of said cover member **7**.

In the illustrated structure, the elongate cover strip **8** has a non-slip surface **56** that is flush with the upper faces **50** and **51** of the plate member marginal ribs **43** and **44** and has grit or the like embedded therein. The strip **8** preferably has silica carbide or aluminum oxide grit embedded or cast therein and the strip may be aluminum or epoxy resin or other suitable material.

In applying a stair nosing constructed as described, the base member **6** is supported in a conventional manner relative to the usual forms with the anchor bolts **11** depending from the base member. The material such as concrete is then applied to the forms and is flowed in a conventional manner under the base member **6** surrounding the anchor bolts with the upper surfaces of the respective step smoothed to be flush with the upper surface **26** of the flange **25**. The strip **8** is applied or moved into engagement with the undercut shoulders of the cover member whereby the non-skid surface is flush with the upper surface of the cover member, then the assembly of the member **8** of the cover member **7** are moved into overlying relation to the base member, then the groove **38** aligned with the rib **27** and said cover member moved toward the flange to engage the groove and rib and at the same time the cover member is swung downwardly whereby the portions **39** move into the channels **14** and the flange **32** moves into engagement with the forward face **18** of the base member. Screws **35** are then inserted through the opening **37** and threaded into the groove **39** to anchor the cover member to the base plate. In the event the cover member **7** or the non-skid member **8** become worn or unsightly the cover member may be removed and the entire assembly replaced or the non-slip member may be removed from the cover member **7** and replaced with a new member **8** thereby facilitating maintenance of the structure.

In the form of the invention illustrated in FIG. 5 a cover member **60** and a non-slip surface member **61** are applied to and form the nosing of a stair step **62**. In the illustrated structure, the cover member **60** is substantially the same as the member **7**. Anchor bolts **63** are threaded into engagement with the ridges **41** whereby the anchor bolts depend from said cover member. The non-slip member in the illustrated form is substantially the same as the non-slip cover member **8** and would be applied to the cover member **60** in the same manner.

In using the structure, the cover member **60** and the cover plate are assembled, the anchor bolts threaded in the desired position longitudinally of the structure and then the assembly is suitably supported in the step forms, the concrete flowing around the anchor bolts and into the groove **38** at the rearward edge of the cover member **60**. Various parts of the cover member **60** and the non-slip member **61** are indicated by reference numerals that correspond with the reference numerals shown in the structure of FIGS. 1 to 4, inclusive, to indicate corresponding parts. The depending flange **32** is arranged whereby it engages and overlies the forward face **64** of the step. This structure is utilized where a more permanent nosing is desired.

It is believed obvious the stair nosing structure of our invention provides an improvement in stair nosing structures and provides an answer to the construction problem of reducing damage during construction and provides a replaceable non-skid surface cover strip for a wearing surface. Also, a large variety of anchorage systems and member configuration may be provided for various shaped steps and various slopes of the front face of said steps.

It is to be understood that while we have illustrated and described one form of our invention, it is not to be limited to the specific form or arrangement of parts herein described and shown except insofar as such limitations are included in the claims.

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

1. A stair nosing structure for a stair step having a tread surface and a forward facing comprising,

(a) an elongate relatively rigid plate member adapted to be mounted on a stair step adjacent the forward face thereof,

(b) laterally spaced longitudinally extending depending portions on said plate member with each of said portions having a longitudinally extending channel therein opening downwardly and defined by opposed faces,

(c) said opposed faces having a plurality of inwardly extending ridges,

(d) longitudinally spaced means engaged with said ridges of said downwardly opening channels and depending from said plate member for projecting into a step to anchor the plate to said step,

(e) a depending flange on said plate member and extending longitudinally of one edge thereof and overlying an upper portion of the forward face of said step,

(f) a plurality of upwardly opening longitudinally extending channels in said plate member,

(g) and a cover member overlying a portion of said plate member, said cover member and plate member having cooperating inter-engaging portions to retain said cover member on said plate member,

(h) said cover member having a non-skid upper surface substantially flush with the tread surface of the step.

2. A stair nosing structure as set forth in claim **1** wherein the means for securing the plate member relative to the stair step includes,

(a) an elongate relatively rigid base member adapted to be mounted on a stair step adjacent the forward edge thereof,

(b) said base member having a forward face substantially flush with the forward face of the step,

(c) said plate member substantially overlying said base member and engaging said upper face thereof with a depending flange on said plate member overlying the forward face of the base member,

(d) and means securing the plate member to said base member.

3. A stair nosing structure as set forth in claim **2** wherein said base member has a depending flange at its forward face interposed between the depending flange of the plate member and the forward face of the base member.

4. A stair nosing structure as set forth in claim **2** wherein the base member has an edge remote from the forward face of said base member and an upstanding flange along said edge with said flange terminating in an upper face flush with the tread surface of the step, and said means securing the plate member to the base member includes cooperating inter-engaging portions on the said flange and the edge of the plate member adjacent thereto.

5. A stair nosing structure as set forth in claim **2** wherein the means securing the plate member to the base member includes screws extending through the depending flange on the plate member and threaded into said base member.

6. A stair nosing structure as set forth in claim **4** wherein the base member has a forwardly opening groove extending longitudinally thereof at the forward portion whereby the depending flange on the plate overlies same, and the means securing the plate member to the base

member includes a screw extending through the flange and threaded into said groove.

7. A stair nosing structure as set forth in claim 6 wherein the base member has longitudinally extending upwardly opening laterally spaced channels and the plate member has laterally spaced longitudinally extending depending portions that extend into said channels.

8. A stair nosing structure as set forth in claim 4 wherein the cooperative engaging portions of the fastening means is a longitudinally extending forwardly projecting rib on said upstanding flange and a longitudinally extending groove in the plate member receiving said rib.

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FRANK L. ABBOTT, *Primary Examiner.*

CHARLES G. MUELLER, *Assistant Examiner.*