Aug. 23, 1960 E. R. KATZMAREK 2,949,703

PREFABRICATED STEP UNIT

Filed Nov. 12, 1957

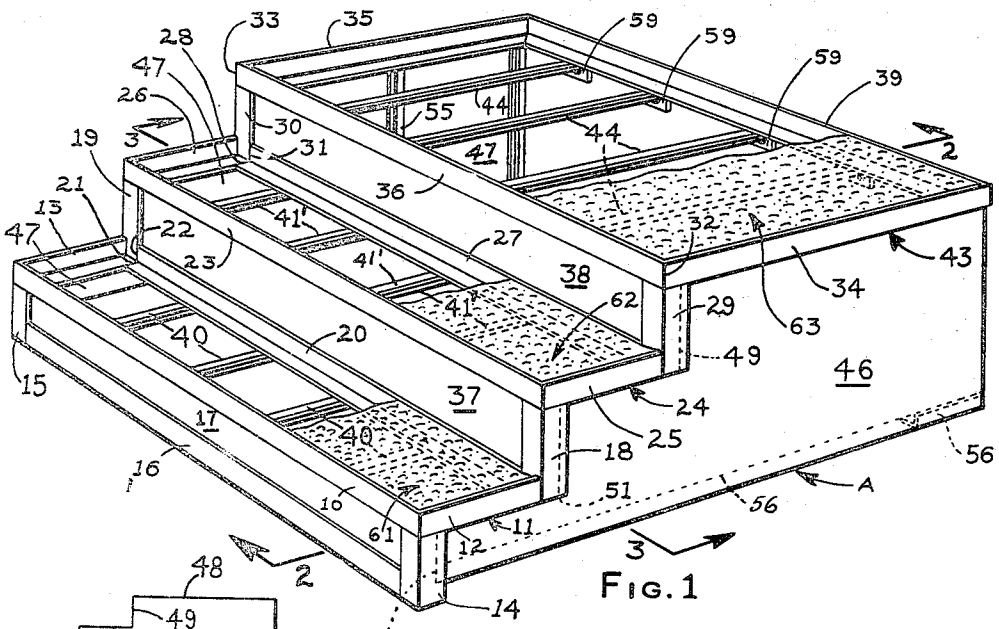


FIG. 1

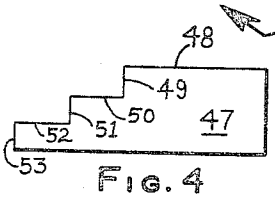


FIG. 4

FIG. 2

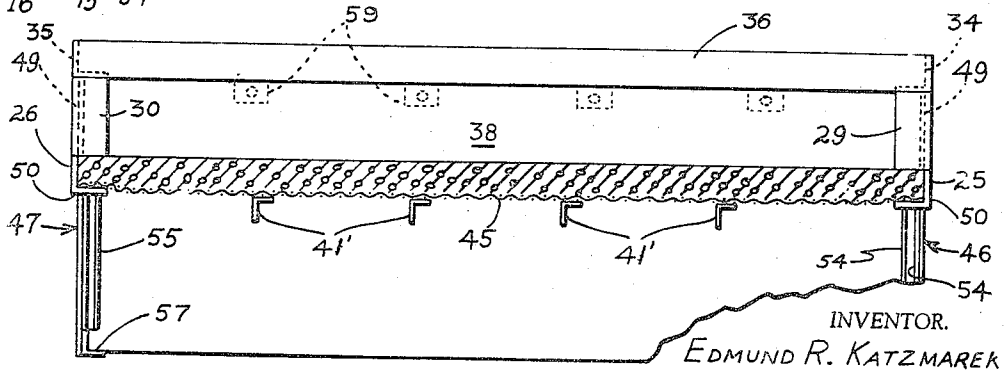


FIG. 3

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PREFABRICATED STEP UNIT

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1 Claim. (Cl. 50—107)

My invention relates to an improvement in step construction and more particularly to a prefabricated step unit.

It is an object of my invention to provide a prefabricated step unit or stoop which may be attached to a structure, the same simply resting on the ground with no footings necessary and which will not fracture due to frost heaves in the ground although the step includes concrete as a part of the body thereof.

It is also an object of my invention to provide new and novel means for forming and supporting the concrete tread portions as an integral part of the unit.

It is a further object to provide a step unit having concrete tread portions which, in effect, float within the tread frame. If the step unit should settle or heave at one portion or another the frame twists and takes up the movement but the concrete tread portions stay relatively level moving only slightly within the tread frames with no fracture thereof. Also with my unit there is no breaking off of concrete tread corner portions, and although I provide concrete treads, there are no forms to remove.

It is still a further object to provide a step having concrete treads with a minimum of cement mixture used.

It is an additional object to provide a step unit having frame means which may be easily transported to the place of installation where the tread portions are formed of concrete thereby completing the unit or the unit may be completed at the place of manufacture. It is a still further object to provide a step unit which can be easily installed without damage to the ground on which it is placed and which can be easily removed. It is also an object to provide a step unit which may be easily and economically constructed.

I shall not here attempt to set forth and indicate all of the various objects and advantages incident to my invention, but other objects and advantages will be referred to in or else will become apparent from that which follows.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawings, showing by way of example a preferred embodiment of the inventive idea wherein like numerals indicate like parts throughout.

In the drawings forming part of this application:

Figure 1 is a perspective view of my step unit with a portion of the concrete treads and platform tread broken away.

Figure 2 is a sectional view on the line 2—2 of Figure 1.

Figure 3 is a sectional view on the line 3—3 of Figure 1 showing the full concrete intermediate tread.

Figure 4 is a side elevational view of one of the two identical side plate members in reduced size removed from the unit.

Referring to the drawings in detail, my step unit A includes the front transverse nosing portion 10 of the lower step 11, the portion 10 being formed of an elongated section of angle iron. Welded to each end of the nosing portion 10 and at a right angle thereto are the longitudinal end portions 12 and 13 also formed of angle iron. Secured to the juncture of the end members 12 and 13 with the nosing 10 are the depending corner riser angle iron members 14 and 15 which are connected at the lower ends thereof by the base angle member 16.

The numeral 17 designates a riser plate member which is welded along the lower edge thereof to the inner surface of the vertical portion of the base angle member 16, the upper edge of the plate 17 being welded to the under surface of the horizontal portion of the transverse nosing angle member 10 inset from the upright surface of the angle 10 to the extent of the thickness of angle member 16. The ends of the plate 17 are welded to the inside surfaces of the front portion or leg of the corner riser angle members 14 and 15.

The rear ends of the longitudinal end angle portions 12 and 13 are welded to the lower ends of the riser end angle portions 18 and 19 respectively and also welded to the outer ends of the horizontal portion of the transverse inner angle member 20 as at 21. The transverse nosing angle portion 10, the longitudinal end angle members 12 and 13 and the angle member 20 constitute a tread frame for the concrete portion hereinafter mentioned of the step 11. The lower ends of the riser angle members 18 and 19 are also welded to vertical portion of the angle member 20 as at 22. Further included is the transverse nosing portion 23 of the intermediate step portion 24. The nosing portion 23 is also formed of angle iron, and the ends thereof are welded to the longitudinal end angle portions 25 and 26. The rear ends of the end portions 25 and 26 are welded to ends of the horizontal portion of the angle member 27 as at 28. The members 23, 25, 26 and 27 also constitute a tread frame. The lower ends of the riser angle members 29 and 30 are welded to the vertical portion of the inner transverse angle member 27 as at 31.

The upper ends of the riser angle members 29 and 30 are welded to the junctures 32 and 33 of the top platform side longitudinal angle members 34 and 35 with the transverse nosing angle member 36. The riser plate member 37 is welded along the lower edge thereof to the inner surface of the vertical portion of the inner transverse angle member 20, the upper edge of the riser plate 37 being welded to the under surface of the nosing angle member 23 inset from the upright surface of the angle 23 to the extent of the thickness of the angle member 23. Further provided is the riser plate member 38 which is welded along the lower edge thereof to the inner surface of the vertical portion of the inner transverse angle member 27, the upper edge of the riser plate being welded to the under surface of the transverse nosing angle member 36 inset from the upright surface of the angle 36 to the extent of the thickness of the angle member 36.

Welded to the rear ends of the side angle members 34 and 35 is the rear transverse angle member 39. The members 34, 35, 36 and 39 constitute the uppermost platform tread frame. The numeral 40 indicates cross bar members welded at the ends to the undersides of the nosing angle member 10 and the angle member 20. The bars 40 aid in supporting the wire mesh member 41 which is also supported by the horizontal portions of the angle members 10, 12, 13 and 20 for the lower step 11. Further provided are the cross bars 41' welded at the ends to the underside of the nosing angle member 23 and the angle member 27. The bars 41' aid in supporting the wire mesh 42 in addition to the horizontal portions of the angle members 23, 25, 26 and 27 for the intermediate step 24. Also provided for the step platform 43 are the support cross bars 44 welded at the ends to the underside of the nosing angle member 36 and the angle member 39

which, together with the horizontal portions of the angles **34**, **35**, **36** and **39**, support the wire mesh **45** for the platform step **43**.

I further provide the one piece side plates **46** and **47** each formed with the upper edge **48**, the upper riser edge **49**, the intermediate step edge **50**, the intermediate riser edge **51**, the lower step edge **52**, and the lower riser edge **53**. The edges **49**, **50**, **51** and **52** form notches for abutting connection with the riser angle members and end angle members. The upper edges **48** of the side plates **46** and **47** are welded to the underside of the horizontal portions of the side angle members **34** and **35** respectively with the upper riser edges **49** of the plates **46** and **47** welded to the inside surfaces of the riser angle members **29** and **30** respectively.

The intermediate step edges **50** of the plates **46** and **47** are welded to the underside of the horizontal portions of the end angle portions **25** and **26** respectively, and the intermediate riser edges **51** of the plates **46** and **47** are welded to the inside surface of the riser angle members **18** and **19** respectively. The lower step edges **52** of the plates **46** and **47** are welded to the underside of the horizontal portions of the end angle portions **12** and **13** respectively with the lower riser edges **53** of the plates **46** and **47** welded to the inner surface of sides of the corner angle members **14** and **15** respectively.

The side plates **46** and **47** are strengthened substantially centrally by means of the vertical bars **54** and **55** respectively which are welded to the plates **46** and **47**. The lower ends of the bars **54** and **55** are welded to the horizontal bars **56** and **57** respectively which are welded along the bottom edge of the side plates **46** and **47** respectively. The bars **54** and **55** strengthen the plates **46** and **47** respectively. The unit A is further strengthened by means of the bar members **58** secured to the plates **46** and **47** at the rear ends thereof.

Further provided are the short angle members **59** which are secured to the under surface of the horizontal portion of the angle member **39** in spaced relationship. The depending portion of each of the angle members **59** is formed with a hole through which the screw member **60** extends. The screw member **60** is secured into a portion of a structure to thereby position the unit for use. In position, the unit A may be caused to move up or down due to heaving of the ground due to freezing, but due to my construction and mounting, the frame or the concrete treads **61**, **62** or **63** will not fracture.

The concrete treads **61**, **62** and **63** are formed in a similar maneer, and for purposes of illustration, the formation of tread **61** only will be explained. In forming the tread **61**, the wire mesh **42** is placed upon the bars **40** and the horizontal portions of the angle members **10**, **12**, **13** and **20**. A concrete mixture is then poured upon the mesh **42** and levelled flush with the top edges of the angle members **10**, **12**, **13** and **20** and allowed to set. Some of the concrete may extend through the screen of the mesh **42** but to no great extent. After the concrete has set the step tread **61** is complete.

My step unt A may be brought to the structure on which it is to be mounted without the concrete tread portion **61–63** formed, the unit secured to the structure, and then the treads formed as set forth. As a result of my construction, the unit, minus the treads, may be carried to the point of instllation by a minimum of personnel and the treads poured when the frame itself is in position. A further advantage of my step unit is that the same may be easily removed from the structure to which it is connected by simply knocking away a portion of the platform tread **63** so as to allow access to the screws **60** for removal of the same. The concrete tread portion removed can then be easily replaced by fresh concrete.

I have thus provided a step unit as set forth which can be simply and economically made, which will not fracture due to frost heaves, which may be easily transported in a semi-finished condition and which may be easily removed from a structure and simply set up again.

The invention is not to be understood as restricted to the details set forth since these may be modified within the scope of the appended claim without departing from the spirit and scope of the invention.

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

In a step unit, a series of steps each including a frame comprising longitudinal end angle members, a transverse inner angle member and a transverse nose angle member, a concrete body member formed and supported within the confines of the angle members of said frame, vertically disposed riser angle members connected to said inner and end angle members of one step and the nose and end angle members of the step above the denoted step, side plates connected to the inside surface of said angle riser members and the under surface of said end angle members, and riser plates connected to the inner transverse angle member of one step, to the riser angle members for said step and to the nose angle member for the step above.

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