Sept. 9, 1941. A. W. CONNOR ET AL 2,255,480

FORM FOR CONCRETE STEPS

Filed Aug. 22, 1938 2 Sheets-Sheet 1

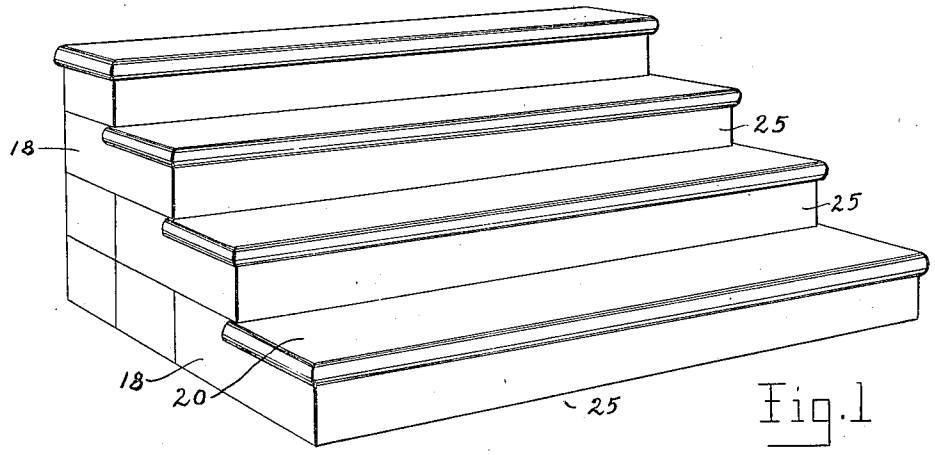


Fig. 1

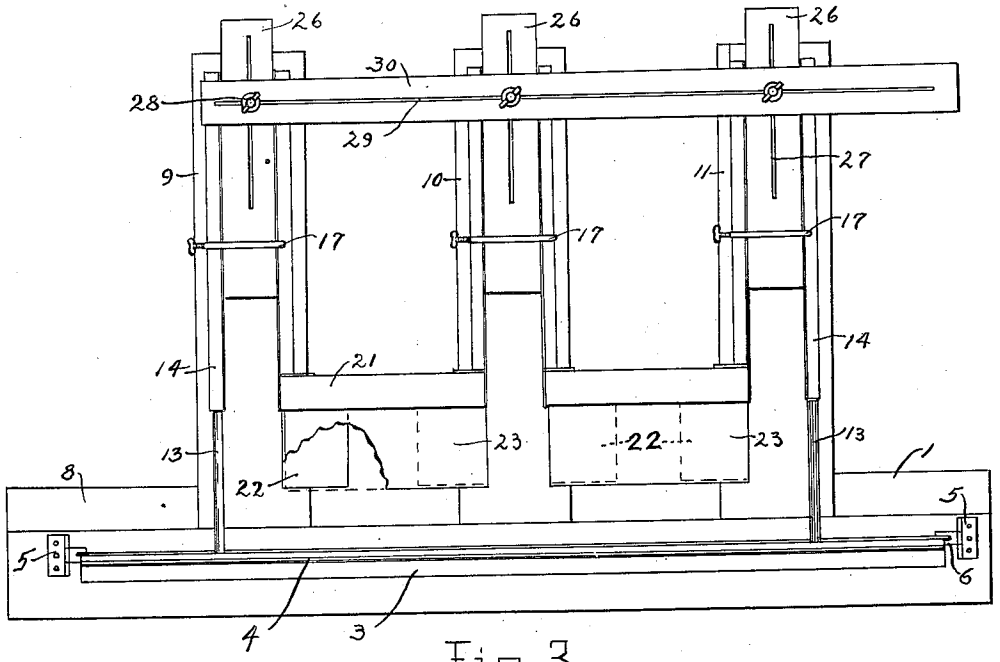


Fig. 3

Inventors

Anthony W. Connor

and Colquit Peterson

By Arthur Minnick Attorney

Sept. 9, 1941. A. W. CONNOR ET AL 2,255,480

FORM FOR CONCRETE STEPS

Filed Aug. 22, 1938 2 Sheets-Sheet 2

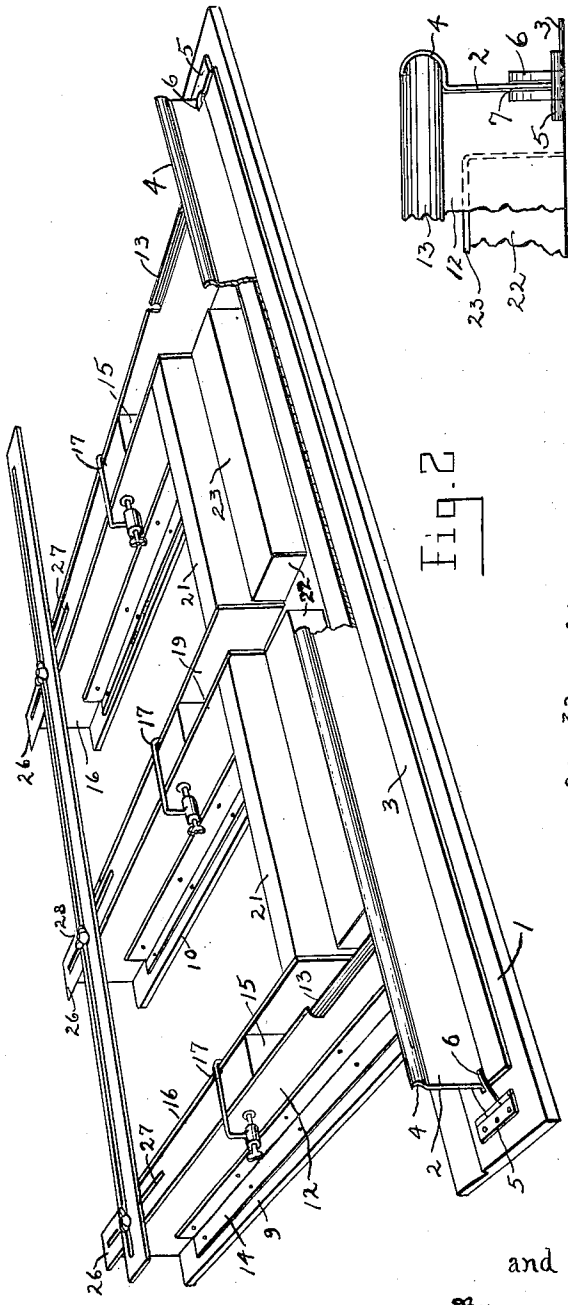


Fig. 2

Fig. 4

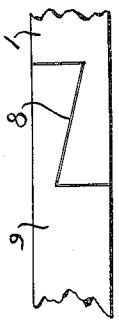


Fig. 5

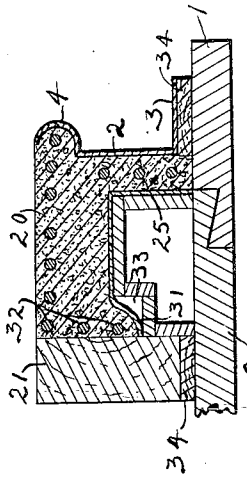


Fig. 6

Inventors
Anthony W. Connor
and
Colquit Peterson
By
Arthur Minnick
Attorney

Patented Sept. 9, 1941 2,255,480

UNITED STATES PATENT OFFICE

2,255,480

FORM FOR CONCRETE STEPS

Anthony W. Connor, Tampa, and Colquit Peterson, Sulphur Springs, Fla.

Application August 22, 1938, Serial No. 226,122

3 Claims. (Cl. 25—118)

This invention relates to improvements in concrete steps and particularly to an improved adjustable mold or form which may readily be assembled to make an integral step and riser of any desired length, height, and width.

A primary object of the invention is the provision of adjustable and removable elements of inexpensive material and construction which can easily be set up and taken apart by a single workman and having a relatively wide range of adjustment, whereby long and short steps may be made by the use of the same mold.

A further object of the invention is the provision of readily removable cores enabling the workman to construct hollow blocks having any desired number of transverse partitions within the length of the step.

In the drawings illustrating a preferred embodiment of the invention, Figure 1 is a perspective view of a flight of steps of the type for which the present mold is especially adapted; Fig. 2 is a perspective view of the mold assembled for the construction of a step having rearwardly projecting bars for the support of a superposed step; Fig. 3 is a plan view of the same mold; Fig. 4 is a fragmentary end elevation of the front member and a side elevation of an end portion of a side member, showing the manner in which the two nosing strips are interfitted; Fig. 5 is a fragmentary side elevation of the joint between the base for the front mold element and the front end of one of the bases for a side or intermediate mold element; and Fig. 6 is a vertical section through a step and its core member showing a modification of the sheet metal plate to provide for greater reinforcement and showing the spacing strips to provide for additional height of the risers.

In Patent No. 1,963,866, June 19, 1934, to Colquit Peterson, a form of construction for reinforced concrete steps is disclosed in which the riser and tread of each of the lower steps is made integral with rearwardly projecting supporting bars which receive the next step above and in which the tread is of less thickness than the height of the riser, leaving a hollow space beneath each step. Such monolithic steps are constructed at a workshop and are transported from the shop to the point where they are assembled to form a flight. There is such great diversity in the lengths and heights of steps at different houses that it is very desirable to provide for adjustability of the mold, so that there will not need to be a separate or different mold for each length, or height, or width.

The form of mold illustrated in Figs. 2 and 3 may be used for the construction of every length of step from the shortest that will ever be used to the longest step or step section that is desirable as a portable unit. Beyond a certain length, the danger of cracking and the difficulty of handling a molded strip of concrete of great weight, even when reinforced, renders the use of a unitary structure undesirable. Long steps are preferably made in sections.

The mold is intended for use upon a smooth floor or base of proper size, and the various units are therefore mounted on wooden planks which can be laid in place at the desired distances apart and held in position as described later.

Upon the plank 1 is mounted the front plate 2, which is preferably of heavy sheet metal having a base flange 3 and a nosing groove 4 which runs for the whole length of the strip. As a means for securing the plate upon the plank for ready removal, two pivoted clamps are mounted on the plank adjacent to the ends of the plate, each clamp having a leaf 5 secured to the plank, and a leaf 6 pivoted to the leaf 5 and bifurcated by a central slot 7 for engagement with opposite faces of the plate to prevent sidewise movement. This simple form of fastening has been found to be sufficient to hold the plate securely in place while the concrete is being poured and when the pivoted leaves 6 are swung away to release the plate, the nosing groove is easily lifted away from the step to expose it for finishing without disturbing the other members of the mold.

The plank 1 is preferably provided with a longitudinal rabbet 8 having its bottom surface sloping downward and inward to receive and hold the correspondingly rabbeted ends of the planks 9, 10, and 11 which are placed at right angles to the edge of the plank 1 as best shown in Fig. 3. Each outer plank, 9 or 11, has an outer wall member 12, provided at its forward end adjacent to the plate 2 with a nosing groove 13 which matches with the groove 4 in the plate 2, the groove wall of the member 12 projecting forward and being rounded to fit within the groove 4 as best shown in Fig. 4.

The wall member 12 is preferably made of sheet metal but may of course be made of wood as is true of all the other members. The metal member illustrated is secured to the plank 9 or 11 by a base flange 14. Spaced from the member 12 by a block 15 is a wall member 16 which may be clamped to the block 15 and the member 12 by a C clamp 17. The block 15 forms the rear wall of the mold portion which shapes the rear-

wardly extending supporting bars 18 which bear the weight of the next step above when assembled as shown in Fig. 1. It is evident that the location of the block 15 determines the length of the bar 18, and it is also evident that this length will vary with the width of the tread to be supported.

A single central supporting bar will usually provide ample strength in a reinforced step of any ordinary length, and only one bar mold portion is shown in Figs. 2 and 3 at a point midway between the outer wall members 12, though it will be understood that as many may be used as is necessary or desirable without departure from the principle of construction disclosed.

The plank 10 is shown as having spaced wall members 19 which are shorter than the member 12 or are spaced from the plate 2 by the full width desired for the tread 20 including a sufficient excess width to receive the bottom of the riser of the step next above. The adjustment of the positions of these members 19 and of the members 16 with respect to the plate 2 will vary, of course, in accordance with the widths of different treads. The block 15 between the members 19 will ordinarily be in line with the blocks 15 between the members 16 and 12 to provide rearwardly extending bars of equal lengths. In the spaces between the front ends of the members 19 and the members 16, blocks 21 will be mounted with their front faces substantially flush with the front ends of the members 16 and 19, to form the rear wall of the tread portions that lie between the supporting bars 18. As a means for forming hollow spaces in the lower part of the tread, box-like core members 22 are set upon the planks 1, 9, 10, and 11 against the blocks 21, to receive sheet metal plates having a flat top 23 and a flat vertical web 24 which is spaced from the vertical plate 2 by a distance to provide a sufficient thickness for the front riser 25. It will be evident that the top 23 does not need to be of the full length to cover the members 22 completely but merely needs to have sufficient length to rest upon both to cover the space between them.

Secured to the tops of the blocks 15 or formed integral therewith is a rearwardly extending plate 26 having a slot 27 to receive a bolt 28 which extends also through the slot 29 in a longitudinal brace bar 30. This bar 30 holds the rear ends of the bar mold portions properly spaced and rigid, and provides easy adjustment of the elements.

When special reinforcement of the rear edge of the tread portion seems desirable, as in steps of considerable length, the rear edge of the plate top 23 may be curved downward as shown at 31 in Fig. 6, to provide additional space for reinforcing bars 32, and the core members 22 will be formed with a notch 33 in the rear upper edge to admit the downwardly curved rear edge of the top plate.

In this modification, strips 34 are shown as set beneath the block 21 and beneath the flange 3 as a means for increasing the height of the riser. The width of the tread is shown as relatively narrow in this Fig. 6, but as previously explained, it may readily be increased by adjusting the blocks 21 and the members 16 and 19.

The mold is thus seen to be adjustable for any reasonable variations in length, height, or width, and the adjustments may be made with great precision when the steps are to be used between fixed abutments. A single workman can handle the mold when assembling the members into position, and the parts are easily removable from the completed step after the concrete has become hard.

It will be evident that many changes in form, size, material, and in the construction and arrangement of parts may be made without departure from the invention as claimed.

We claim:

1. An adjustable mold for monolithic portable steps having a tread, a riser, and rearwardly extending supporting bar portions, comprising a front member having a vertical portion forming the front wall of the tread and riser portion of the mold, end members mounted substantially at right angles to the front member and adjustable longitudinally thereof to determine the length of the step, a wall member connected with each of the end members and separated therefrom by a spacing member adjustable lengthwise of the end and wall members to provide relatively narrow mold portions for the supporting bars of the step, said end and wall members being adjustable transversely as a unit, and a rear wall member between the end wall members.

2. An adjustable mold for monolithic portable steps having rearwardly extending supporting bar portions, comprising a front wall member, end members adjustable longitudinally of the front wall member, intermediate wall members adjustable toward and from the front wall member, spacing members between the end members and the wall members and adjustable toward and from the front wall member, said end and wall members being adjustable transversely as a unit, rear wall members adjustable toward and from the front wall member, and means for holding the members in adjusted positions.

3. An adjustable mold for a monolithic concrete step, comprising a front wall member, end wall members, a rear wall member, and a core member consisting of two supporting members arranged to move toward and away from each other forming the ends of the core and a portion of the top thereof and a top and front sheet member adapted to rest upon the supporting members and to close the top and front of the space between them.

ANTHONY W. CONNOR.
COLQUIT PETERSON.