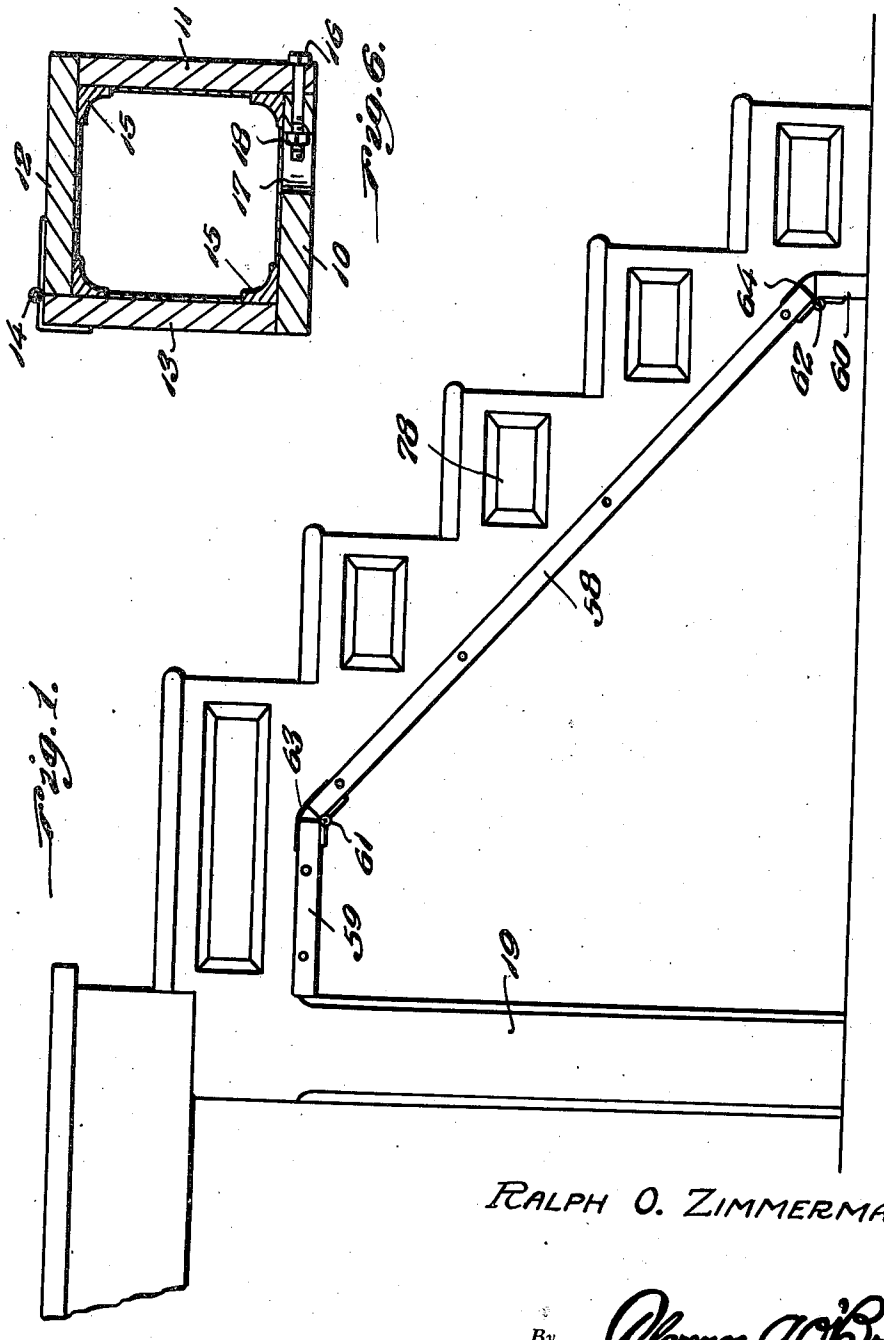
Nov. 20, 1945. R. O. ZIMMERMAN 2,389,397

FORM FOR CONSTRUCTING STEPS

Filed June 9, 1944 5 Sheets-Sheet 1



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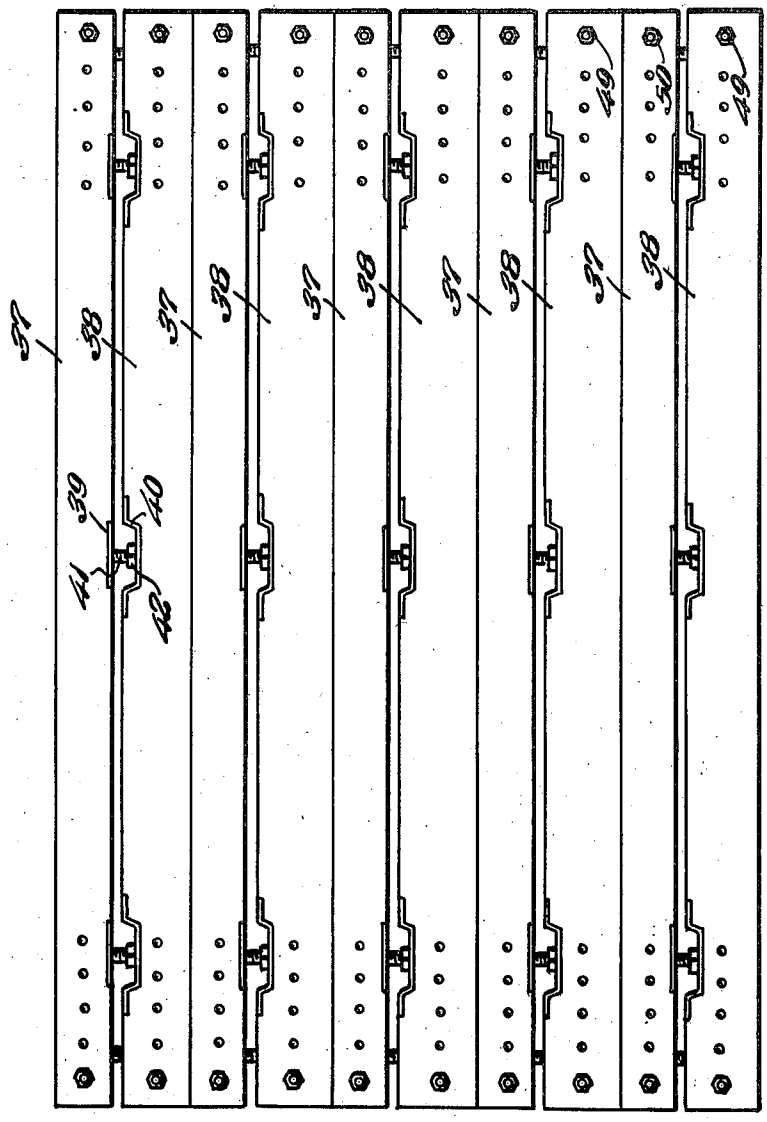
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FORM FOR CONSTRUCTING STEPS

Filed June 9, 1944 5 Sheets-Sheet 2



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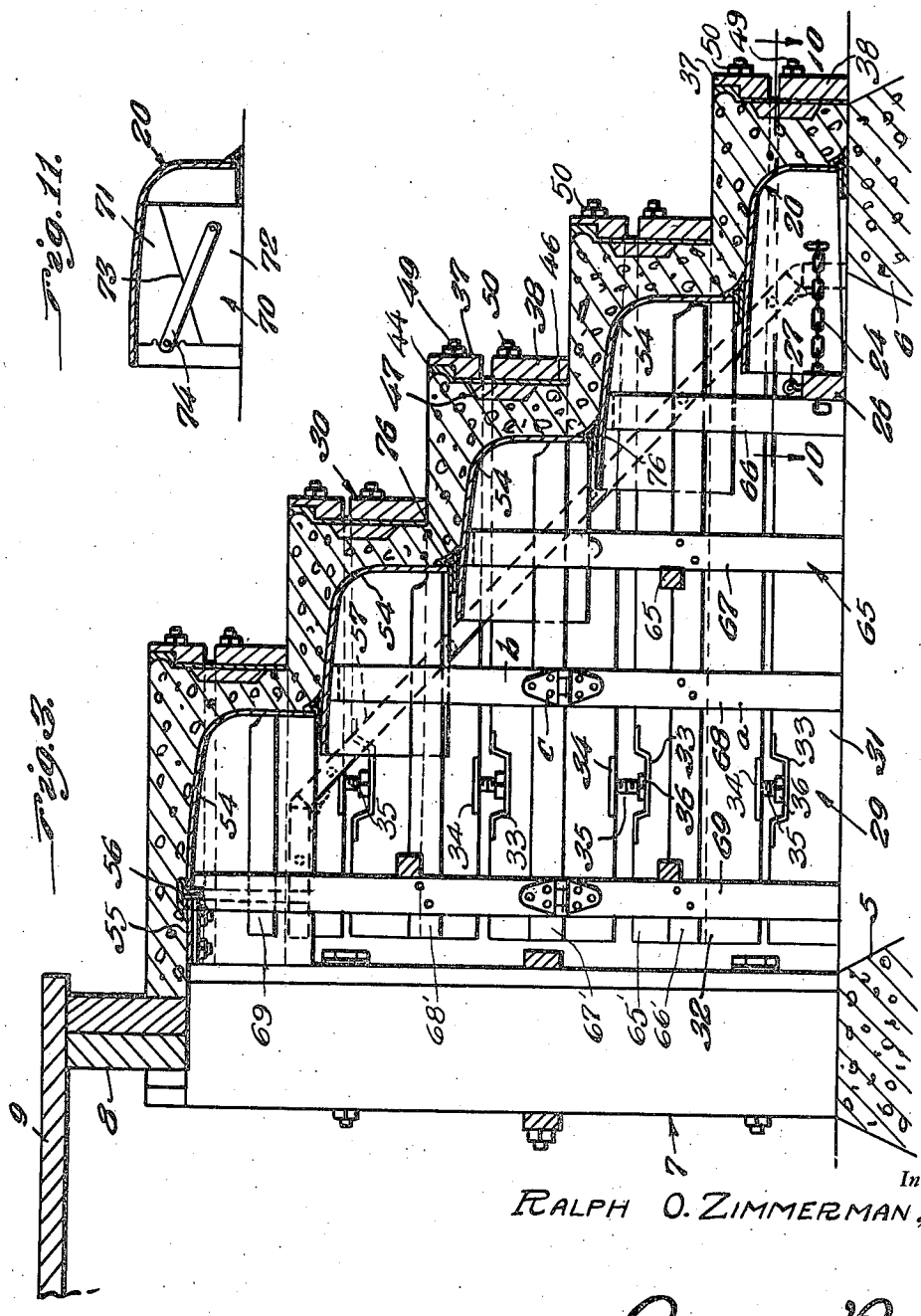
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FORM FOR CONSTRUCTING STEPS

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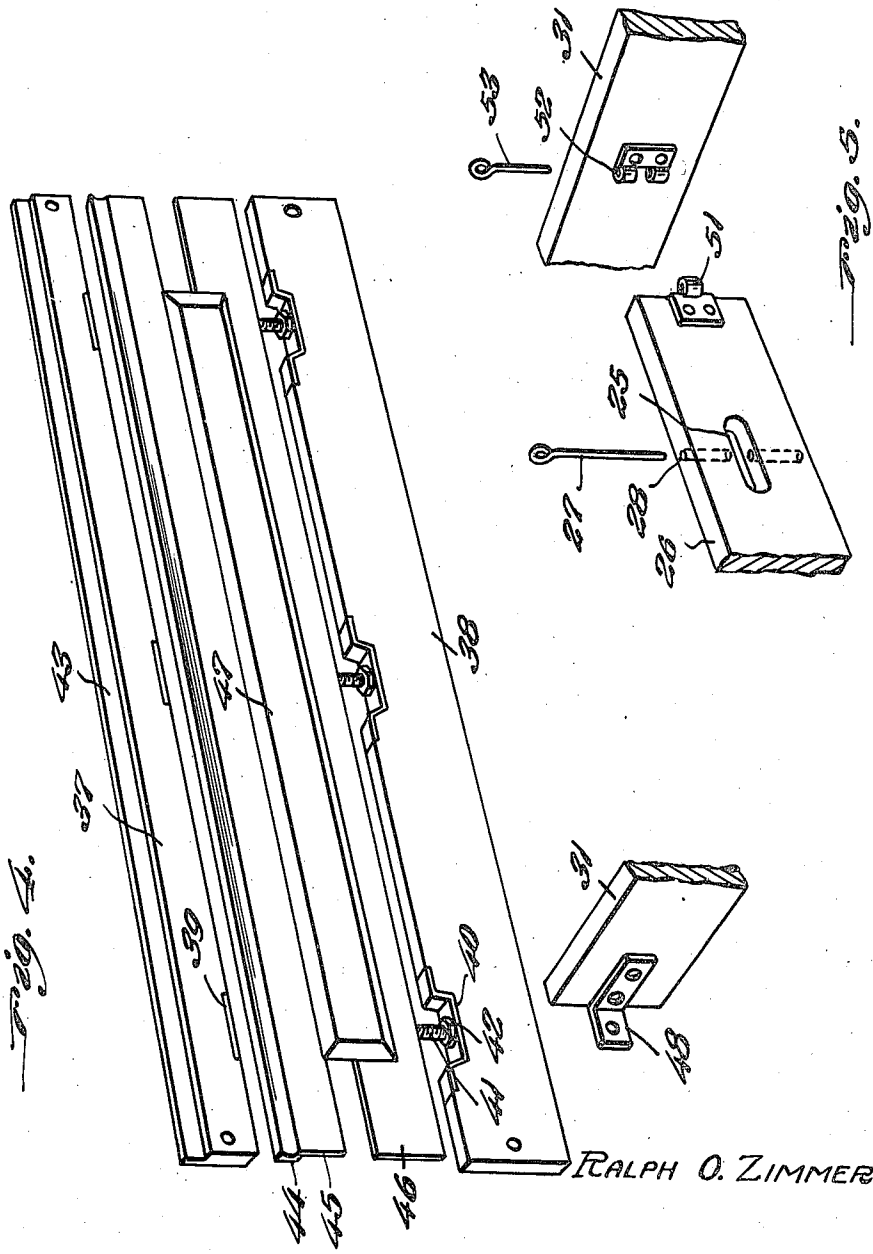


Fig. 5.

Fig. 4.

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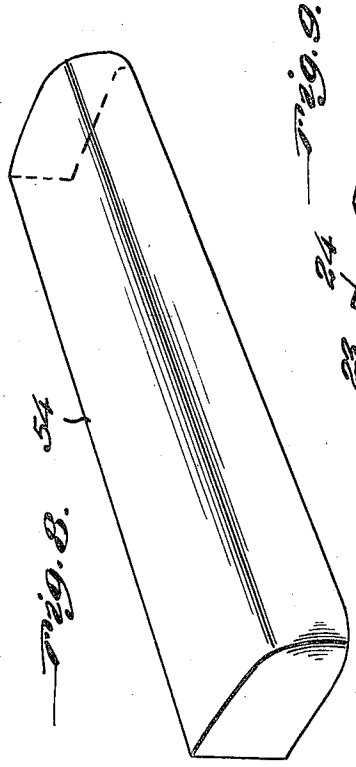


Fig. 8.

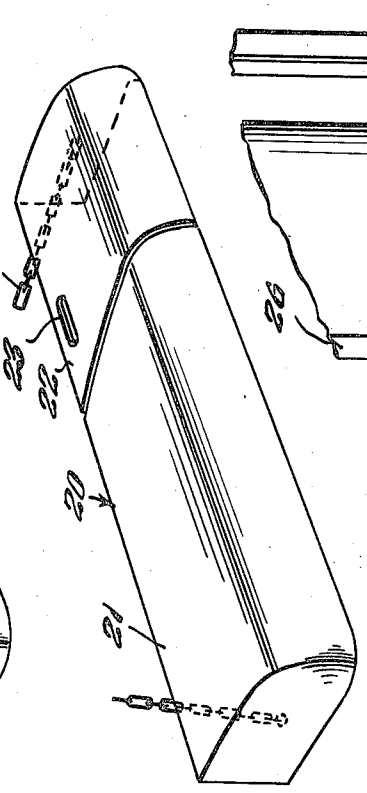


Fig. 9.

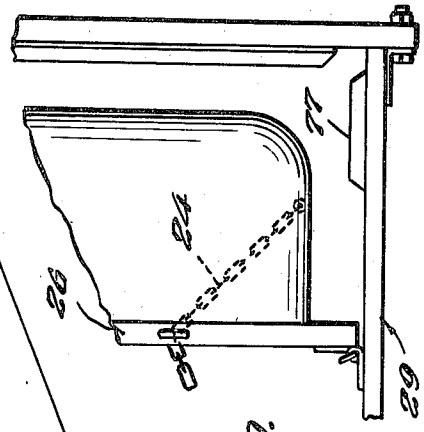


Fig. 10.

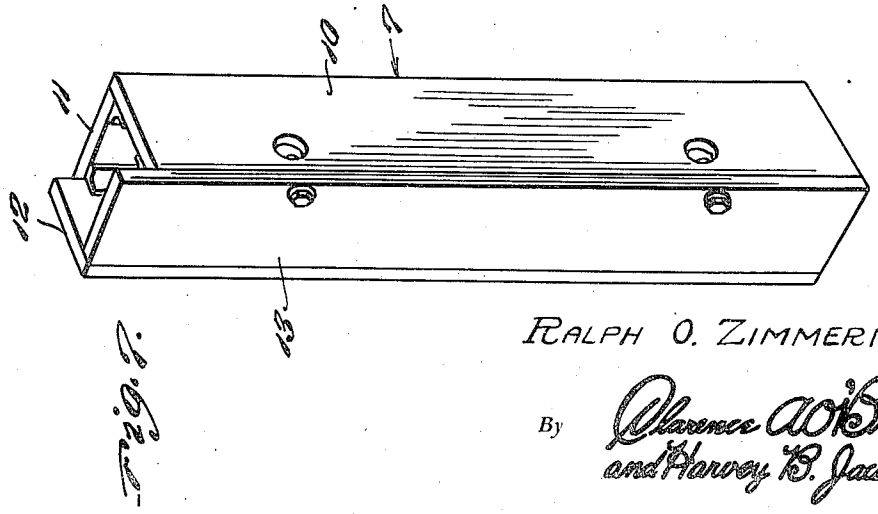


Fig. 7.

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2,389,397

FORM FOR CONSTRUCTING STEPS

Ralph O. Zimmerman, Des Plaines, Ill.

Application June 9, 1944, Serial No. 539,539

3 Claims. (Cl. 25—118)

This invention relates to new and useful improvements in building construction forms and more particularly to a form for use in constructing steps.

The principal object of the present invention is to provide a form capable of being readily assembled and just as quickly knocked down when concrete steps have been formed thereby.

Another important object of the invention is to provide a knock down concrete stair form wherein the parts are capable of being quickly connected and disconnected for the purpose of quickly setting up the form for use, and quickly making repairs to the same in the event of damage and quickly permitting the removal of the form from the work after the work has been allowed to set.

Another important object of the invention is to provide for constructing concrete steps capable of being adjusted to construct steps of various sizes.

These and other important objects and advantages of the invention will become apparent to the reader of the following description.

In the drawings:

Figure 1 represents a side elevational view of the finished stairway with the hinged stringers remaining in place.

Figure 2 is a front elevational view of the stair form, the same serving to show the construction and arrangement of the riser form.

Figure 3 is a longitudinal vertical sectional view through the form and a stairway after the concrete has been poured.

Figure 4 is a perspective exploded view of one of the riser forms.

Figure 5 is an exploded fragmentary perspective view showing a connection between one end of the cross piece and the side-supporting structure.

Figure 6 is a horizontal sectional view through one of the pillar forms.

Figure 7 is a perspective view of one of the pillar forms.

Figure 8 is a perspective view of one of the inside step forms.

Figure 9 is a perspective view of the lowermost inside step form.

Figure 10 is a fragmentary top plan view of the starting structure for the lower step.

Figure 11 is a fragmentary cross sectional view showing the lower inside mold in conjunction with one of the leg structures.

Referring to the drawings wherein like numerals designate like parts, it can be seen that in the construction of a concrete stairway footings 5 and 6 are provided for the upper and lower ends of the stairway.

Pillar forms generally referred to by numeral 7 are employed for constructing pillars upon which joists or the like 8 can rest, the joists 8, in turn, serving to support a porch floor 9 or the like and acting as the riser of the uppermost step leading onto the porch floor 9.

Each pillar form 7 consists of four sides 10, 11, 12 and 13. As shown in Figure 6, the sides 12 and 13 are hinged together as at 14. Cleats 15 are provided at the inside of certain of these sides for the other sides to abut to form a box-like structure shown in Figure 6. Bolts 16 are provided for securing the remaining sides of the form together as suggested in Figure 6, the side 10 having openings 17 therein through which access can be had to the nuts 18 on the bolts 16. Obviously, this construction of pillar form permits the form to be readily set up and just as readily knocked down after the pillar has been formed on the corresponding footing 5. Figure 1 shows a pillar 19 after it has been formed.

In starting to set up the stairway form, a starter inside step mold generally referred to by numeral 20 is employed. This mold being in two sections 21, 22, the section 22 overlapping the inner end of the section 21 with its edge portion cut off substantially on a diagonal. The section 22 has a hand receiving opening 23 and each section has a chain link 24 which extends to pass through a corresponding opening 25 and a cross bar 26, the cross bar 26 having pins 27 disposed downwardly through openings 28 in the bar. The openings 28 extend to merge with the corresponding opening 25 and the pin 27 is adapted to be disposed downwardly and through a link of the corresponding chain links 24 as suggested in Figure 10.

The form includes side supporting structures generally referred to by numeral 29, an important function of which is to properly support riser forms generally referred to by numeral 30.

The side support consists of a unit of construction for each riser form 30, each of these units of construction consisting of an elongated panel 31 supporting an overlying similarly constructed panel 32. The panels 31 and 32 have opposed plates 33, 34 at certain intervals along their lengths thereof and between which adjusting screws 35 are interposed, each adjusting screw being provided with an adjusting nut 36 which can be set to vary the spaced relation between the panels 31, 32. It will also be observed that the plate 33 has a depressed portion so that

access can be obtained to the adjacent nut 36.

The riser forms 30 are connected to the front ends of the side supporting structures 31, each consisting of an upper bar 37 and a lower bar 38, the bars 37 and 38 having opposed plates 39, 40 with screws 41 interposed between the same. Each screw has an adjusting nut 42 so that the height of the riser form can be readily adjusted.

The inner side of the upper edge portion of the bar 37 is channeled as at 43 to receive the nose former strip 44 at the upper edge of a backing plate 45 which cooperates with a backing plate 46 in back of which a valley form 47 is disposed (see Figure 4). As can be seen in Figure 4, the side panels 31 connect by brackets 48 to the bars 38 by way of bolts 49 while the upper panels 32 connect to the bars 37 by bolts 50.

Referring back to the cross bar 26 shown in Figures 5 and 10, it will be observed that this cross bar 26 has apertured knuckles 51 at the ends thereof for disposition through corresponding apertured ears 52 on the lowermost panels 31 so that the removable pins 53 can be disposed therethrough to hold this cross bar in proper position.

The form is further made up of a plurality of secondary inside step molds 54 which are arranged upwardly and stepped backwardly from the first mold 20.

The uppermost secondary inside step mold 54 is connected to an extension or bridge 55 by a filler form 56 which serves to fill the gap between the uppermost form 54 and the extension 55.

Runners 57 extend between the ends of the inside step forms and the side supporting structures 29 to prevent concrete from dropping from the assembled form, these runners each consisting of an elongated member 58 having upper and lower hinged members 59, 60, the upper member 59 being horizontally disposed and hingedly connected as at 61 to the upper end of the elongated member while the lower member 60 is hingedly secured as at 62 to the elongated intermediate member and serves to form a supporting leg.

Covers 63, 64 are provided for the hinged connections 61 and 62 so that concrete cannot get therein.

Supporting legs generally referred to by numeral 65 and varying in length according to the position used are employed. The lowermost leg 66 need not be constructed in hinged sections, but legs 67, 68 and 69 and longer legs than these if used, would be constructed in sections, such as the sections *a*, *b* hingedly connected together as at *c*.

Obviously, the legs are bolted in place as clearly suggested in Figure 3 to horizontal cross bars 66', 67', 68', 69'. The legs 66, 67, 68, 69 extend into the inside step molds 54 and support the same at opposite ends thereof, and the cross bars 66', 67', 68', 69' extend forwardly into said molds 54 against the fronts thereof and prevent said molds from shifting rearwardly out of place. Horizontal cross bars 65' may be used to connect the legs 66, 67, 68, 69 at opposite sides of the structure in pairs.

It is preferable that a leg structure generally referred to by numeral 70 be used for the lowermost inside step form 20, this leg structure consisting of upper and lower blocks 71, 72 having inclined resting surfaces 73 to permit vertical adjustment, and a connecting strap 74 between the blocks 71, 72.

Suitable space filler strips 76 are provided between the inside step forms.

Valley forms 77 are provided on the side supporting structures 29 as suggested in Figure 10 for forming valleys 78 in the finished stair construction (see Figure 1).

Obviously, with the form set up as shown in Figure 3, the concrete is poured and assumes the position shown in Figure 3. The top surface of the concrete, that is the tread surfaces can be troweled off as soon as the concrete has sufficiently hardened.

In the use of this form, it is possible to remove the riser forms 30 and complete the front top surfaces of the stairway, that is, wherever any finishing touches are necessary before the inside mold forms are removed.

When it is desired to take care of the structure, the side supporting structures 29 are first disassembled, subsequent to the removal of the riser forms 30, the pillar forms 7 may now be removed and this leaves for removal the inside step forms 20, 54. These forms are simply removed by displacing the pins 27 from the cross bar 26, releasing the chains 24, which can be pulled for releasing and displacing the lowermost inside step form 20. As soon as this form has been removed, the other forms will pull out, if not fall out, very easily.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

Having described the invention, what is claimed as new is:

1. A concrete stairway form comprising riser forms, side supporting structures for the riser forms and inside step forms supported by the said side supporting structures, said side supporting structures each including a plurality of props each constructed of hinged knock down sections.

2. A concrete stairway form comprising riser forms, side supporting structures for the riser forms and inside step forms supported by the said side supporting structures, the lowermost inside step form being of telescopic construction and pull members whereby the lowermost form cam be removed, a cross member between the side supporting structures, said pull members consisting of elongated yieldable elements disposed through openings in the cross member, and pins disposed through the cross member and through the yieldable elements.

3. A concrete stairway form comprising riser forms, side-supporting structures for the riser forms, and hollow inside step forms opening downwardly and rearwardly, said side-supporting structure comprising legs extending upwardly into said inside forms to support the same, and horizontal cross bars attached to said legs and extending into said inside forms to prevent the same from shifting rearwardly.

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