

May 9, 1939.

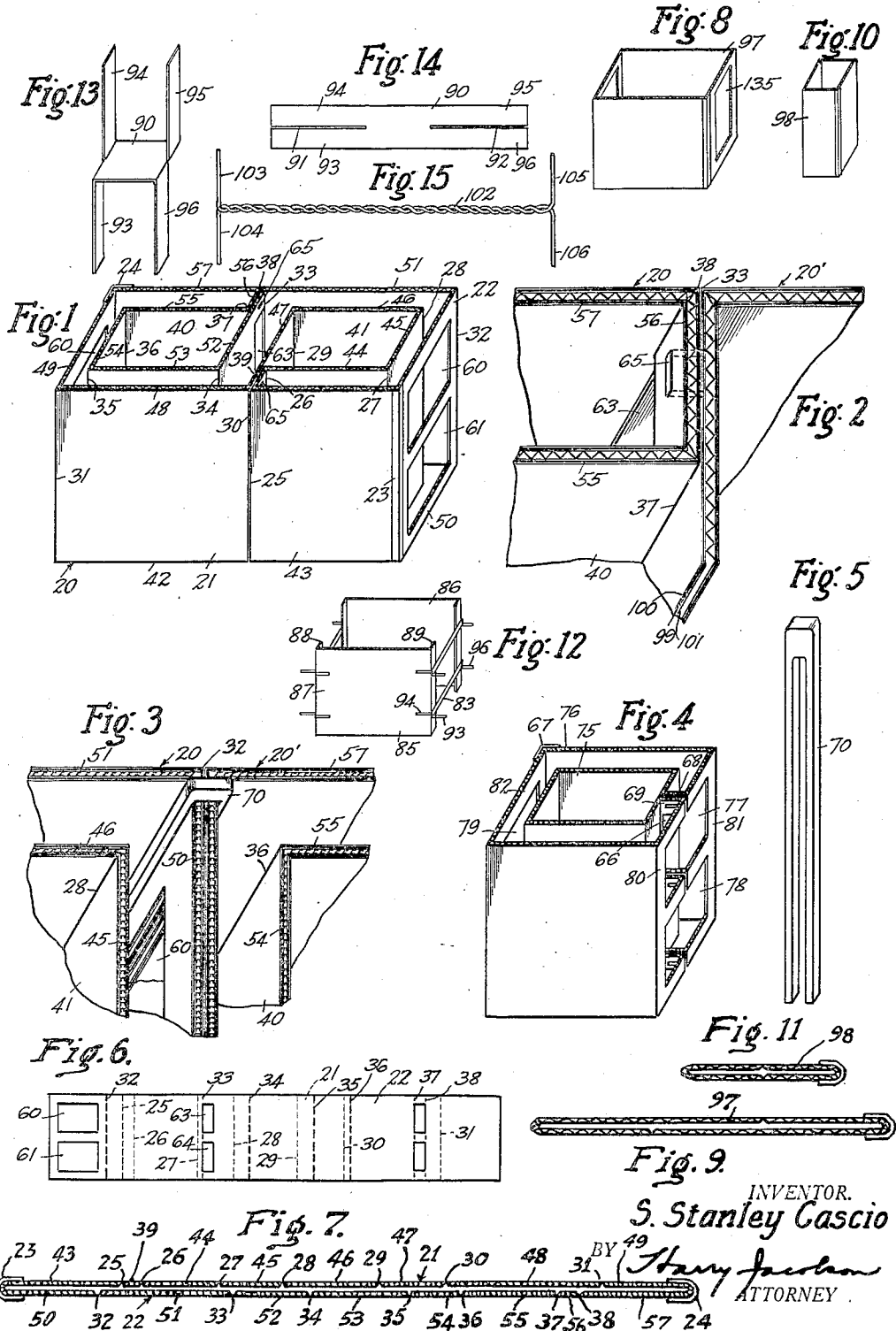
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2,157,688

FORM FOR CONCRETE AND THE LIKE WALLS AND METHOD

Filed May 23, 1936

2 Sheets-Sheet 1



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FORM FOR CONCRETE AND THE LIKE WALLS AND METHOD

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2 Sheets-Sheet 2

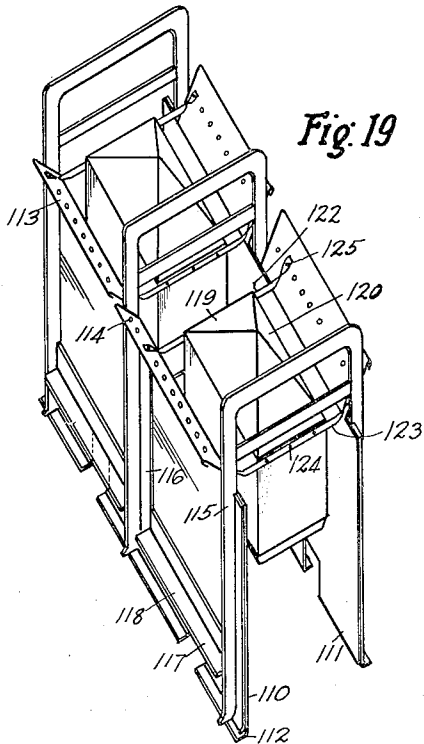


Fig. 19

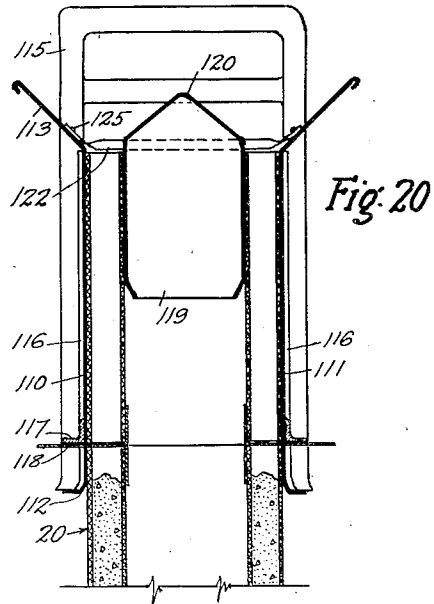


Fig. 20

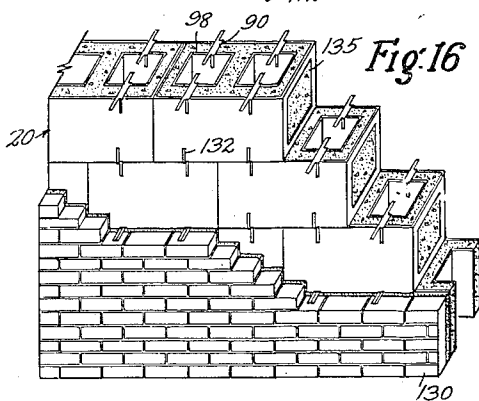


Fig. 16

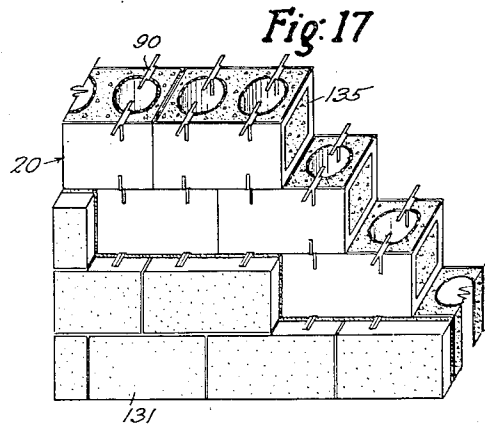


Fig. 17

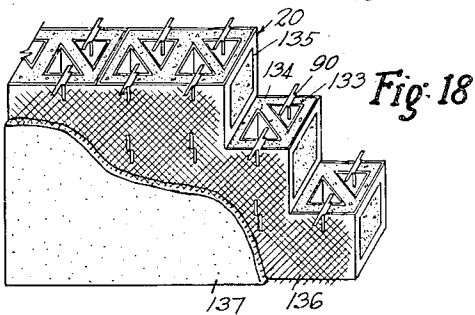


Fig. 18

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UNITED STATES PATENT OFFICE

2,157,688

FORM FOR CONCRETE AND THE LIKE
WALLS AND METHOD

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Application May 23, 1936, Serial No. 81,355

16 Claims. (Cl. 72-48)

This invention relates to concrete forms for walls, partitions and the like; to the method of making a monolithic wall, in which such forms are used and to the wall cast by such method.

5 My invention contemplates the provision of an inexpensive sheet adapted to be folded or collapsed during the shipping thereof and adapted to be opened out into a predetermined desired shape and size for use as a combined form and furring in the casting of concrete walls and the like.

10 My invention further contemplates the provision of a method for utilizing the sheets for the casting of monolithic concrete walls and the like and the simultaneous provision of a furring surface, the sheet being designed to remain in place to form part of the wall and forming an insulating, sound-proofing and water-proofing furring on both sides of the wall.

15 My invention further contemplates the provision of a partly hollow or solid and furred monolithic concrete wall which can be readily constructed as by means of my new method and at comparatively low cost, and both sides of which can be covered or finished with the usual finishing materials.

The various objects of my invention will be clear from the description which follows and from the drawings, in which:

20 Fig. 1 is a perspective view of my new collapsible form opened up into the position in which it is used for the pouring of part of a monolithic concrete wall.

25 Fig. 2 is a similar fragmentary view of a portion of the same showing particularly, the staple for holding adjacent contacting parts of the sheets together.

30 Fig. 3 is a similar view of a pair of such forms showing the clip for temporarily holding adjacent forms together.

35 Fig. 4 is a similar view of a modified embodiment of the concrete form, designed particularly for the pouring of parts of the monolithic wall in the form of single hollow sections without any bracing partition.

40 Fig. 5 is a perspective view of the removable clip for holding adjacent forms together.

45 Fig. 6 is an elevational view of the sheet shown in Fig. 1 as it appears in its collapsed or flat position.

50 Fig. 7 is a top plan view of the same.

Fig. 8 is a perspective view of a modified embodiment of a collapsible form.

55 Fig. 9 is a bottom plan view of the same as it appears in its collapsed position.

Fig. 10 is a view similar to Fig. 8 of an inner form in the shape of a prism designed to be inserted into the form of Figs. 8 and 12 or a similar form to provide a hollow space in the wall.

Fig. 11 is a bottom plan view of Fig. 10.

Fig. 12 is a perspective view of a modification of the concrete form wherein two similar sheets are suitably held in spaced relation and wherein the inner form of Fig. 10 may be inserted if 10 desired.

Fig. 13 is a perspective view of a bracing and spacer clip designed for holding the forms together and against bulging during the pouring of a wall, and also intended to be used as an 15 anchoring or binding member.

Fig. 14 is an elevational view of the strip or sheet from which the metallic clip of Fig. 13 is made.

Fig. 15 is a plan view of a modified form of the clip as it appears when made of wire. 20

Fig. 16 is a perspective view of a part of a monolithic concrete wall employing my new form and finished exteriorly with brick veneer.

Fig. 17 is a similar view of a modified form of the wall and of the hollow spaces therein, 25 showing a stone, terra cotta, or the like finish.

Fig. 18 is a similar view of a further modified form of the wall in which the hollow spaces are triangular and showing a stucco or the like finish. 30

Fig. 19 is a perspective view of the form holder and pouring funnel.

Fig. 20 is a vertical cross-section of the same.

In the practical embodiment of my invention which I have shown by way of example, and referring particularly to Figs. 1, 2, 3, 4, 6 and 7, I have disclosed a collapsible concrete form designed and intended to remain in place after it has been filled with concrete and forming a part of the wall. The form is collapsible into flat condition and to occupy a minimum space for shipping purposes. It may be made of a variety of materials, dependent upon the amount of money available for the structure of which the form becomes a part, and dependent also upon the size of the structure and the materials to be used on both sides of the wall to finish the wall. 40

In what follows, the term "concrete" will be used to designate any plastic building material capable of being poured into a form, such as stone or cinder concrete, mortar, plaster, clay, adobe or the like. 45

Regardless of the material of which the form is made, it is set up in place in the manner of a concrete block or brick for the pouring of con- 50

crete therinto to make a section of the wall. The form is suitably held in place to the already poured part of the wall or to a foundation by means of suitable clips or other means, and as many forms are set up and clipped together as may be found convenient. Where the form is used in an intermediate part of a wall, as distinguished from an end part, the side walls of the form are provided with openings through which the concrete poured therinto may flow and bond with the sides of the concrete block cast into the adjacent forms.

The form in any case is open at the top and bottom. The concrete is poured into the top and when it reaches the bottom of the form, it bonds with the concrete already poured into the lower form. There is no need to wait for the concrete in any of the forms to harden or set, since the construction of the wall may proceed in the same manner as with concrete block or brick construction. The empty form may be arranged in place above a filled form immediately after the concrete has been poured into the adjacent or lower form, the material of the form, while light and inexpensive, being sufficiently strong, owing to the construction of the form, to hold the concrete in its proper shape until the concrete sets.

Preferably, in low cost and moderate cost housing construction, the form 20, (Figs. 1, 2 and 3), is made of a suitable comparatively rigid, though light and inexpensive material, such as corrugated paper board. It will be understood that the board may be coated on either or both of its faces with a suitable water-proof bituminous product, or that a layer of such bituminous product may be sandwiched between sheets of paper, and that for the paper may be substituted a tar paper or asphaltic felt, and that such tar paper or asphaltic felt may be used with or without an adjacent paper sheet.

It will further be understood that for the corrugated board referred to may be substituted an artificial wood composition, laminated board, wood veneer, plaster board, or any composition or wall board of any of the types now in common use for walls and ceilings of building structures.

In the case where the form 20 is made of corrugated board, it may be made of two sheets as 21, 22 (Fig. 7) of such board. Said sheets may be bound together at the edges thereof by the hinging sheets 23, 24 of fabric, paper or the like, which while sufficiently flexible to permit the sheets constituting the form to be opened out into the shape shown in Fig. 1, are so secured by suitable cement or the like to the outer surfaces of said sheets as to firmly but hingedly secure the sheets together and to provide in effect a doubled integral sheet. The sheet 21 is provided with parallel transverse score lines or indentations as 25, 26, 27, 28, 29, 30 and 31 arranged in predetermined spaced relation, and indented into a selected one or other of the faces of the sheet.

The sheet may be readily folded about said score lines in one direction or the other to provide the various walls of the form. Similarly, the sheet 22 is provided with the score lines 32, 33, 34, 35, 36, 37 and 38. Both of the sheets may be substantially identical, but are secured together in relatively reversed end to end relation.

It will be understood that the sheets 21 and 22 are opened out and folded in the proper direction about the various score lines to provide the form shown in Fig. 1 in which there is pro-

vided a pair of open-ended prismatic inner forms 40, 41 arranged in spaced relation to each other and in spaced relation to the outer form 42, which encloses the inner forms. For example, the sheet 21 begins at the binding 23 and between said binding and the score line forming the edge 25 is provided with a surface which when the sheet is folded, constitutes the front outer wall part 43 of the form. A narrow wall 39 is bent at right angles to the wall 43 and between the score lines 25 and 26. A longer wall 44 is bent into a position parallel to the wall 43 from the material between the score lines 26 and 27 and constitutes one of the walls of the inner form 41. The next wall 45 between the score lines 27 and 28 is also a wall of the inner form 41 and is perpendicular to the wall 44. The wall 46 between the score lines 28 and 29 forms a third wall of the inner form 41, while the wall 47 between the score lines 29 and 30 forms the fourth wall of the inner form 41 and overlaps the narrow wall 39. The next wall 48 between the score lines 30 and 31 forms the remainder of the front wall of the form adjacent to and coplanar with the wall 43.

On the last side wall 49 between the score line 31 and the binding 24, are provided suitable openings later to be described, through which the concrete poured into the form may reach the interior of the adjacent form (Fig. 3) to bond the concrete wall sections together as has been hereinbefore indicated.

The sheet 22 is similarly folded, it being understood that each of said sheets is folded to provide corresponding parts comprising a complete inner form and part of an outer form. That is, beginning at the binding 23, the sheet 21 extends first rearwardly, to provide the side wall 50 between said binding and the score line 32. Said sheet is then folded to provide the rear outer wall 51 between the score lines 32 and 33 and then to provide the inner wall 52 of the inner form 40. The next wall 53 of the inner form is arranged between the score lines 34 and 35. Then follows the wall 54 between the score lines 35 and 36; then the wall 55 between the score lines 36 and 37; then the narrow wall 56 similar to the narrow wall 39 and overlapping the wall 52, and finally, the rear wall 57 extending from the score line 38 to the binding 24.

As has been indicated, in each of the side walls of a complete form 20 is provided a pair of comparatively large openings 60 and 61, though it will be understood that a single opening may replace the pair of openings (Figs. 8, 16, 17 and 18). Similarly, in the overlapping walls 39, 47 and 56, 52 are provided similar but narrower openings as 63, 64. Preferably, after the sheets 21 and 22 have been opened to their proper shapes, the walls 39 and 47 are secured together as by means of suitable staples 65 (Fig. 2) passing through said walls and suitably clinched.

The walls 52 and 56 are similarly secured together after the sheets comprising the form have been opened up into the position of Fig. 1.

It will be understood that the concrete is poured into the space between the inner forms 40 and 41 and the outer form 42, the concrete also passing through the openings 60, 61, 63, 64 into bonding contact with the concrete in the adjacent form. If the adjacent form is empty of concrete, the concrete will flow to a certain extent into the adjacent form but not sufficiently to fill said adjacent form.

Where the form 20 is to be used at the upright,

end edge of a wall, it will be understood that the openings 60, 61 are temporarily closed to prevent the concrete from leaving the form completely, or that a special form is provided with any openings in the outer side wall. Where, however, a continuous wall is to be poured, one of the forms 20 is arranged adjacent to the similar form 20' (Fig. 3) so that the concrete flowing through the openings 60, 61 in the form 20 bonds with the concrete already poured in the form 20'. The adjacent forms 20 and 20' may be temporarily held together by means of a suitable bifurcated clip 70 (Figs. 3 and 5), it being understood that said clip is removed after the pouring of the concrete into the form has been completed.

Referring to that modification of my invention shown in Fig. 4, a form for casting a wall section is there disclosed containing only one inner form 75 and an outer form 76.

In this embodiment of my invention, a single sheet of corrugated board or the like may be used for the form, said sheet being doubled on itself along any convenient score line and having the end edges thereof bound by suitable binding 67 similar to the binding 23, 24. The binding may be at any desired edge and the various score lines are made at the desired spaced intervals to provide walls of the desired size.

In this embodiment of my invention, the openings 77, 78, 79 are made in the side walls 80, 81, 82 and correspond to the openings 60 and 61. Since the sheet from which the form is folded up is similar to the sheets 21 and 22, further description and illustration of the form in its collapsed position is deemed unnecessary, except to say that registering openings as 66 are made in the narrow overlapping walls 68 and 69.

Referring now to Fig. 12, I have there shown a pair of U-shaped sheets 85, 86 suitably held together in spaced relation and adapted for the casting of sections of either a solid or a hollow wall. Each of the sheets comprises a comparatively large outer wall as 87 and narrower side walls 88, 89 hinged to and bent perpendicularly to the wall 87. For holding the sheets together, suitable elongated straps or clips 83 similar to but longer than the clips 90 (Figs. 12 and 14) are used. Each of said straps or clips is provided with a pair of longitudinal end slits as 91, 92 to provide bendable portions at the end parts of the clip. The portions 93, 94 on opposite sides of the slit 91 may be bent in opposite directions but at right angles to the body or unlitted portion of the clip, the portion 94 being bent into contact with the outer surface of the wall 87 and the portion 93 being arranged in position to engage the adjacent form.

Similarly, the clip portion 95 may be bent into contact with the outer surface of the sheet 86 while the clip portion 96 may be bent parallel to and extending in the same direction as the portion 93 to engage the next adjacent form. It will be understood that the body portion of the clip 83 is of sufficient length between the inner ends of the slits 91 and 92 to space the U-shaped sheets 85 and 86 the proper distance apart.

Instead of making the holding clip of sheet material, it may be made of a pair of lengths of wire twisted together as shown in Fig. 15. As there shown, two lengths of wire are twisted together as at 102 to form the body portion of the clip while the ends of the lengths extend in opposite directions to form extensions as 103,

104, 105, 106 corresponding to and serving the same function as the clip portion 93, 94, 95 and 96. Where the clip is to be used for holding the inner form 98 inside of the sheets 86, 87, or inside the form 97 (Fig. 8), or to hold adjacent forms together as shown for example, in Figs. 16, 17 and 18, then the body of the clip 90 may be considerably reduced to the required length as shown in Fig. 13, the clip portions 93, 94, 95 and 96 being bent in the proper directions to perform their holding functions.

It will be understood that the clips 90 may have the function of holding adjacent forms together, and also the additional function of serving as anchoring members to anchor brick, stone or terra cotta or the like veneer to the concrete wall.

The form shown in Fig. 12 may be used for the casting of solid wall sections as has been above indicated, or it may be used to cast hollow wall sections if desired. In the latter case, the open ended inner form 98 of Fig. 10 may be inserted into the forms of Fig. 8 or 12 and the concrete cast between said forms 98 and the form 97 or the sheets 85, 86, to form a hollow wall section. The inner form is tubular in shape and is constructed and collapsed like open-ended cartons.

The forms above described instead of being made of a single sheet, or of two or more sheets bound together, may be made of a multiplicity of sheets hinged together, each of said sheets providing one or more walls of the form. Where material which cannot be scored and bent is used, such as for example, wood veneer, wood, plaster board, artificial wood, wall board, composition board or other similar rigid building material, then each wall may be formed of a separate sheet and the various adjacent edges of the sheets may be hinged together by means of binders such as 23, 24 or the like made of fabric, paper or other suitable flexible material adapted to be suitably secured as by cement, staples or other securing means to the sheets.

It being understood that the form is used in the construction of part of a wall and is left in place and itself becomes part of the wall, it becomes desirable in certain cases to so construct the form that it makes the wall waterproof. In such cases, the form may be provided with a water-proofing bituminous layer as 99 between two layers of paper 100, 101 (Fig. 2). Or it may be made of tar paper, asphaltic felt, or combinations thereof with paper or wood or the other building materials above mentioned. A waterproof furring surface is thereby obtained on one or both sides of the wall as desired.

Where the board is covered with a sheet comprising a combination of metal foil and bituminous material, or where such layer is inserted between the layers of the paper or other material from which the form is made, a similar heat and water-proofing insulation is attained. In any case, it will be understood that the form, whether of paper or other materials, may be readily combined with suitable water-proofing, sound-proofing and heat-proofing insulation in the form of sheets so that after the wall has been completed, it is in condition to receive its final coat of finishing material, whether of paint or plaster on one side, or brick, stone, terra cotta or stucco on the other side.

In the use of my new forms during the pouring of a monolithic wall, I prefer to provide means for temporarily holding the form in place

and permitting concrete to be poured into the top thereof and between the inner and outer portions thereof. After concrete has been poured into the form, another form is at once set in place and the pouring of the concrete into said other form may proceed immediately without waiting for the concrete in the previous form to harden or set. Said means also serves to brace the form to permit tamping or vibration of the concrete therein to make the poured concrete dense and to raise the excess water to the surface in a well-known manner.

The means for permitting the pouring of concrete into each form without waste and quickly and easily, and for bracing the form, will now be described.

Referring particularly to Figs. 19 and 20, I have there shown a funnel device intended to rest on and to partly enclose the form while the concrete is being poured thereinto. Said device comprises a pair of parallel spaced similar sheets 110, 111, each terminating at its lower end preferably in an outwardly curved portion as 112 to permit the sheets and the device to be slipped over the form 20 into which the concrete is to be poured. At the upper end of each sheet is an outwardly and upwardly extending portion as 113 provided with a series of aligned spaced openings as 114. The sheets may be held together by means of the U-shaped handle members 115, each provided with a flange as 116 suitably secured to the outer face of the sheet by any suitable means as by welding, rivets, bolts or the like.

It will be understood that the U-shaped handle members 115 serve to brace the sheets against buckling, as well as securing the sheets together and providing handles for the manipulation of the funnel device. To further brace the sheets, the lower angle members 117 may have the upright flange thereof secured to the sheet, the lower flange 118 thereof being arranged in such position that it will rest on one of the extensions of the clip 90 to aid in supporting the device in its proper position. The inner funnel member 119 is suitably supported in position to enter one of the inner forms 40, 41, and is made of the proper cross-section shape to fit into an inner form. Since the inner form may take any shape (Figs. 16, 17, 18), the member 119 may also be made triangular, circular, square or the like. Said member 119 is closed at its upper end portion 120 which is preferably of pyramidal, conical or other tapered shape so that concrete poured thereupon will slide off the inclined sides thereof and into the space 121 between the inner and outer forms.

To hold the inner member 119 in its proper position, a pair of straps as 122, 123 are provided. Each of said straps is suitably secured to a side surface of the member 119 as at 124 and is also secured to the inclined portions 113 of the sheets at a selected opening 114 thereof as by means of the screws 125.

It will be seen that the entire device may be readily slipped over the form 20, being manipulated by means of the U-shaped handle members 115 and that when so arranged, the inner member 119 enters the inner form being of corresponding shape, while the sheets 110 and 111 become arranged outside of the outer form and help to brace said outer form against bulging under the weight of the concrete poured thereinto. The device slips down about the forms until the straps 124 rest on the upper edges of the form and the

angle members 118 rest on the extensions of the clips 90. The concrete is readily poured into the space 121 between the members 119 and the outer part of the form, the concrete being directed into the space by the tapered or inclined parts 120 and 113 to fill up the space between the inner and outer forms.

Since the forms are arranged in the position shown in Fig. 3, the concrete will flow through the openings 63 so as to become distributed between the two cells of each form. The concrete will also flow out through the openings 60 and 61 to bond with the concrete already poured into the next adjacent form (Figs. 16 and 17), or if said adjacent form is empty, the concrete will partly fill the adjacent form.

After the form has been filled, the concrete may be tamped down in the form, the sheets 110 and 111 bracing the form and preventing rupture thereof. Or, a suitable vibrator may be applied to the sheets 110 or 111 to settle the concrete. The entire funnel device is then lifted off the form and arranged on another empty form so that the operation may be repeated and the wall cast continuously in sections without waiting for the concrete to harden or set.

It will be understood that where a separate inner form as 98 is used, said inner form may be held in place by the clips 99 (Fig. 16). It will also be understood that the adjacent forms before and during filling, may be temporarily held together by means of the bifurcated clips 79, said clips being removed after the concrete has been poured into the form.

It will further be understood that the clips 90 may project outwardly beyond the form and beyond both faces thereof to serve as anchoring members and to anchor the brick veneer as 130, or terra cotta or stone blocks as 131, to the concrete wall. When the ends of the clips are bent as shown at 132 (Fig. 16), they serve to brace the forms and to prevent bulging thereof while the concrete inside of the form hardens.

As shown in Figs. 17 and 18, the inner form may be so shaped as to produce a hollow space of any desired shape. For example, in Fig. 17, I have shown cylindrical inner forms held together by the clips 90. In Fig. 18, I have shown triangular inner forms 133, 134 also similarly held in place by the clips 90. In any case, where suitable openings are provided in the side surfaces of the forms, the concrete flowing through said openings bonds with the concrete in the adjacent form to provide a monolithic wall structure as distinguished from a block structure.

It will also be understood that when the inner form is omitted, the wall may be cast in solid sections, separated at intervals only by the thin material of the forms themselves. In Figs. 8, 16, 17 and 18, the openings 60 and 61 have been connected to provide a single comparatively large opening as 135 through each end of the form and thereby to provide a greater bonding effect. In any case, the wall thus produced is provided with a continuous furring surface both on its inner and outer faces, adapted to receive paint directly, if desired, or to be coated with plaster or with any desired finishing material. Where the form itself is made of such finishing material such as plaster board, wall board, wood veneer or similar material, then the resulting surface requires little or no finishing and the wall itself may be complete. The furring adheres permanently to the concrete without the need for any adhesive, nails, screws or the like fastening means.

Where, however, it is desired to finish the wall in stucco on either its inner or its outer face, suitable chicken wire, wire lath, wire mesh or the like as 136 (Fig. 18) may be secured in place by the passage of the clip ends therethrough, said clip ends being thereafter bent into place, and the stucco 137 applied to the material 136.

It will thus be seen that I have provided an inexpensive combined concrete form and wall finishing or furring material, and a method of using such forms in the economical construction of a furred monolithic wall in sections, and that the wall so made may be finished economically and rapidly and may be made water-proof, sound-proof and heat-insulating simultaneously with its erection by the proper construction of the form, since the form becomes part of the wall.

While I have shown and described certain specific embodiments of my invention, I do not wish to be understood as limiting myself thereto but desire to claim my invention as broadly as may be permitted by the state of the prior art and the scope of the appended claims.

I claim:

1. A collapsible non-metallic concrete form adapted to have concrete poured therein and to adhere permanently to the outer surface of said concrete and providing a furring surface backed by said concrete, said form having openings at selected points thereof, each of said openings being of sufficient size to permit the stone in the concrete to pass readily therethrough, said openings communicating with corresponding openings in a similar form arranged adjacent thereto and thereby permitting said concrete to flow into said similar form.

2. A combination concrete form and wall furring comprising a flat sheet of two separable thicknesses of non-metallic material provided with a plurality of sections hinged together along parallel lines and adapted to be opened into an open-ended tubular prism, each of said thicknesses comprising a pair of spaced sheets and a corrugated sheet between and joining the spaced sheets, said form becoming a permanent part of a wall when set into position and concrete is poured therein, and providing a furring surface on both of the outermost surfaces of said wall backed by the concrete between said surfaces, said form being the sole means for forming said wall.

3. A combined concrete form and wall furring article comprising a sheet collapsible into a flat position and adapted to be opened into a prism of predetermined size and shape, said sheet being provided with spaced parallel hinges, the material of the sheet between selected adjacent pair of said hinges forming a wall portion of the form when the sheet is opened, said sheet having openings therein between a selected pair of said hinges to provide openings in the side wall portions of the form of sufficient size to permit the free flow of the stone in the concrete therethrough, whereby concrete poured into the form may pass through said openings and bond with the concrete poured into a similar adjacent form, said form comprising the sole means for determining the shape of the concrete poured therein.

4. A combined collapsible concrete form and wall furring for use in pouring a monolithic concrete wall in sections of predetermined size and shape bonded together comprising a sheet having a plurality of portions hinged together along parallel lines and adapted to be opened into at least part of the predetermined shape, said sheet

being made of nailable material suitable for furring and being provided with openings at selected areas thereof, said openings being of sufficient area to permit the free flow therethrough of the stone in the concrete poured into the interior of said form, and said form comprising the sole means for determining the shape of said sections.

5. A combined collapsible concrete form and wall furring for use in pouring a monolithic concrete wall in mutually bonded sections of predetermined size and shape comprising a sheet of double thickness having a plurality of wall-forming portions hinged together along parallel lines and adapted to be opened into tubular form, said sheet being made of paper material suitable for furring, said sheet including waterproof material, said sheet forming the exterior faces of said concrete wall when concrete is poured therein and constituting the sole means for that purpose.

6. The combination with a corrugated paper board form adapted to be collapsed into a flat state and adapted to be opened out into a prismatic shape and to receive concrete poured therein and to adhere to said concrete, of a bendable metallic clip for securing said form to a similar form whereby the form may be arranged in position to have a section of a monolithic wall poured therein and its exterior faces shaped thereby, said clip having means thereon for engaging and aligning corresponding parts of said forms, and said form constituting the sole means for forming said monolithic wall.

7. A combined concrete form and wall furring comprising a pair of similar sheets arranged in face to face and in reverse relation, a binding member secured to and hingedly connecting the adjacent ends of said first mentioned sheets together, and a series of parallel score lines in each of the sheets determining the lines about which each of the sheets is folded, the spacing between said score lines being identical in each of the sheets, whereby each of the sheets forms half of the form when the sheets are opened up.

8. In a combined concrete form and wall furring, a corrugated paper board sheet divided by parallel score lines into a plurality of wall-forming portions, one of said portions being comparatively narrow and being provided with an opening therein, another of said portions being comparatively wide and constituting the side wall portion of the form when the sheet is opened and being provided with an opening therein, a second similar sheet having similar score lines arranged in reverse relation to the score lines of the first mentioned sheet and having openings in the corresponding portions thereof, said sheets being arranged in face to face and reverse relation, and means for hingedly securing the adjacent ends of said sheets together whereby said sheets may be opened into the form of a rectangular prism inside of which two similar but smaller rectangular prisms are arranged in spaced relation to each other and to the first mentioned prism.

9. A form for use in pouring and shaping concrete to form a hollow wall section comprising a sheet of corrugated paper board having a plurality of parallel transverse score lines therein and provided with concrete discharge openings at selected points thereof, said sheet when opened providing walls of an outer form and also providing walls of an inner form in inwardly spaced relation to the outer form, the space between said forms being adapted to receive the concrete, a

plurality of said forms constituting the sole means for forming a monolithic wall.

10. A form for use in the pouring of sections of a concrete or the like wall comprising a sheet of non-metallic material collapsible into flat form, predetermined sections of said sheet forming walls and partitions being arranged in hinged relation to each other whereby said sheet may be opened into a predetermined shape for the pouring of concrete thereinto, said sheet being provided with selected points thereof to permit concrete poured thereinto to bond with the concrete flowing out of the corresponding openings of a similar sheet and to pass through said partitions, said form comprising the sole means for forming said wall.

11. A concrete form comprising a pair of U-shaped sheets of non-metallic material and means for holding said sheets in predetermined spaced relation to permit the pouring of concrete between said sheets comprising a clip having a body portion engaging the opposed legs of the U-shaped sheets and having terminal portions bendable on to a face of said sheets, said sheets comprising the sole means for shaping the concrete poured therebetween.

12. A combined concrete form and wall furring comprising a paper sheet having a plurality of substantially parallel score lines therein extending from one of the edges thereof to the other, said score lines determining the lines about which the sheet is to be folded and determining the width of the walls of said form, said score lines being sufficient in number to provide at least one outer face-forming wall and one outer side wall on the form, and at least four inner walls on the form in inward spaced relation to the outer walls and a pair of partition walls between and connecting an outer wall and the inner walls, said partition walls having openings therein and the outer side wall also having openings therein, said openings being of sufficient area to permit the flow therethrough of concrete poured into the form between the outer and inner walls thereof.

13. A concrete form comprising a collapsible

sheet of non-metallic material provided with parallel score lines and openable to form at least one hollow prism provided with face walls and side walls, the side walls having openings therein of sufficient area to permit the free flow therethrough of concrete poured into said form and interiorly of said walls.

14. A concrete form comprising a sheet of non-metallic material having score lines extending transversely from one edge to the other edge thereof and dividing the sheet into at least eight walls, at least four of said walls comprising an inner form and the remaining walls comprising an outer form adapted to be arranged in outward spaced relation to the inner form, and partition walls joining said inner and outer forms, said partition walls having openings therein whereby concrete poured between said inner and outer forms passes through said openings to form a complete hollow wall section.

15. A form for concrete collapsible into a flat state and comprising a plurality of sheets of non-metallic material arranged in superimposed relation and provided with parallel score lines defining at least eight walls, and means for hingedly securing the corresponding superimposed edges of said sheets together, said form when opened into its operative position providing spaced parallel outer and inner walls adapted to receive plastic material therebetween, the form constituting the sole means for determining the shape of the concrete poured thereinto.

16. The method of making a monolithic concrete wall in sections having parallel front and rear faces and side faces joining the front and rear faces, comprising pouring a section of the wall while confining said section at the front and rear faces and at only part of its side faces, and before said section has set pouring a similar adjacent second section, to commingle the side faces of the unset concrete of said second section with part of the side faces of the first-mentioned section while similarly confining said second section.

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