United States Patent

Merrill

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[54] FORM FOR A CONCRETE WALL STRUCTURE

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[52] **U.S. Cl.** **52/359**, 52/376, 52/648

[51] **Int. Cl.** **E04b 5/52**

[58] **Field of Search** 52/344, 376, 378, 648, 357–360, 52/422, 650, 292, 293, 274, 272, 349

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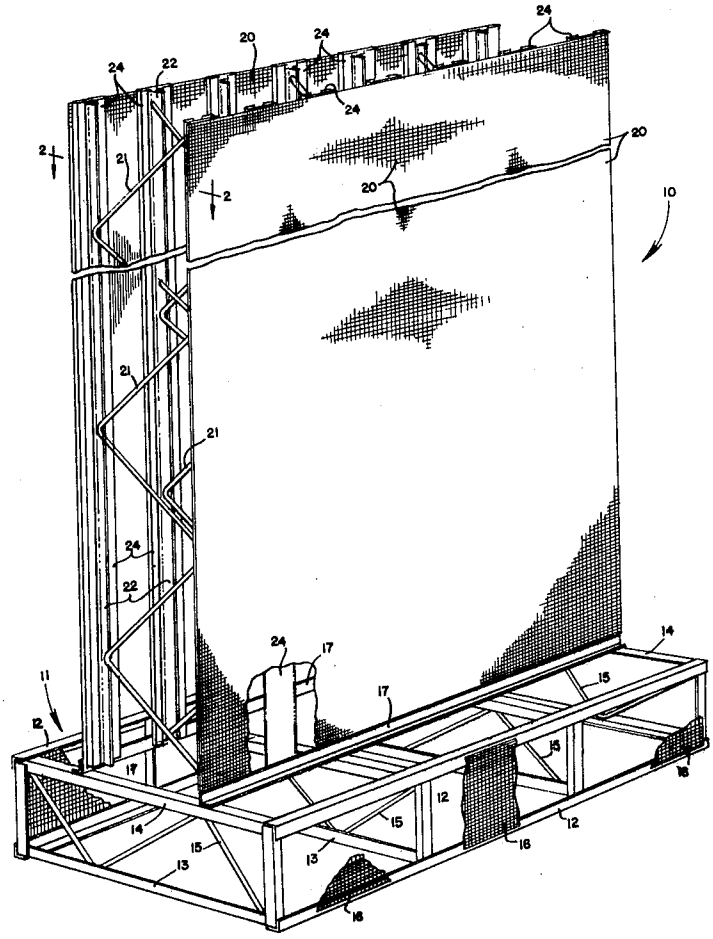
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[57] **ABSTRACT**

A permanent wall form for construction of a concrete wall including expanded metal lath side members tied in spaced-apart relationship by wire truss members in place intermediate the metal laths. Channels on the lath receive the inserted truss members for secure assembly of the lath side members. The lath permits migration of the concrete therethrough for subsequent smooth finishing by troweling. Provision is made for the including of insulative strips on one side of the form prior to concrete pouring.

2 Claims, 8 Drawing Figures



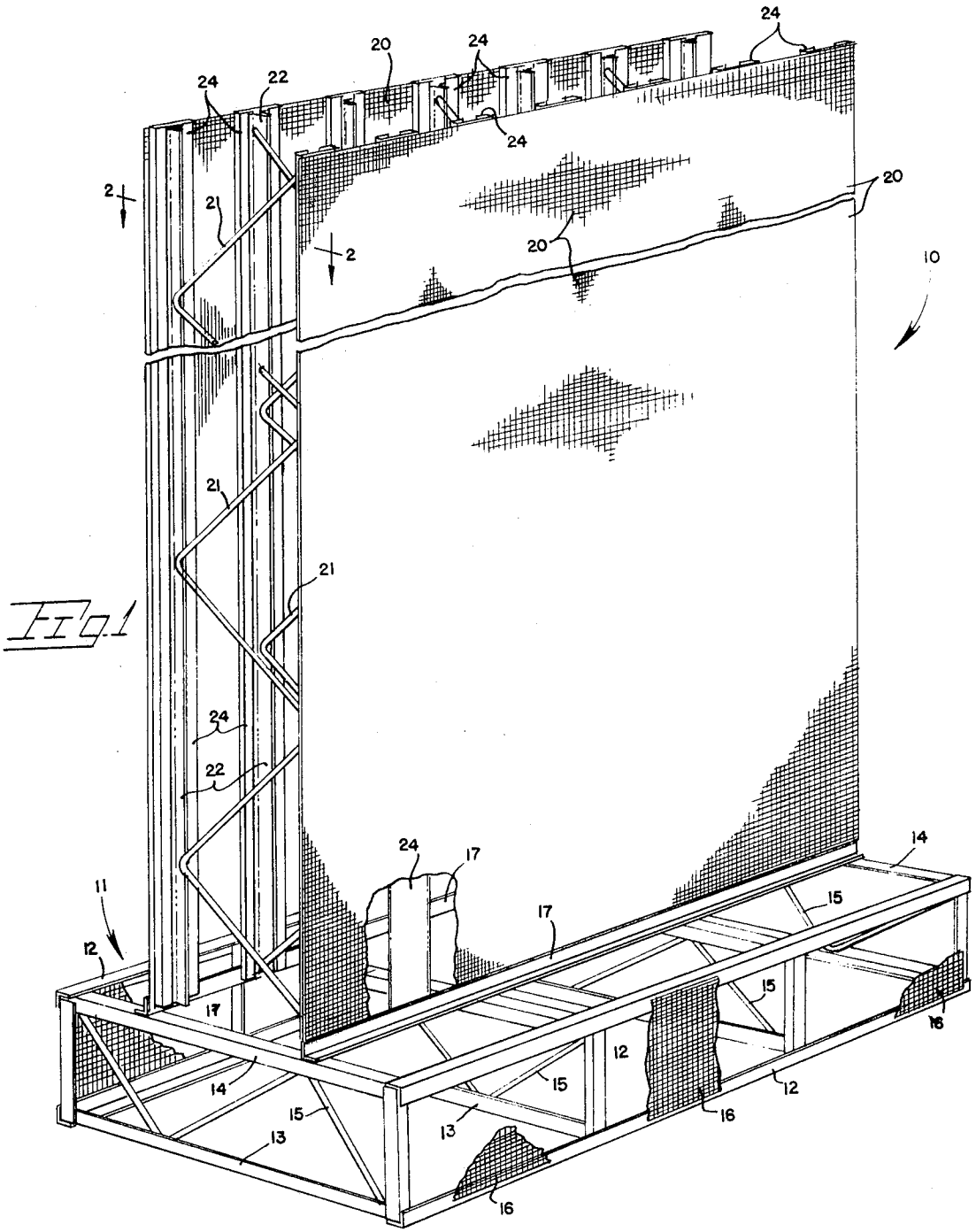


Fig. 1

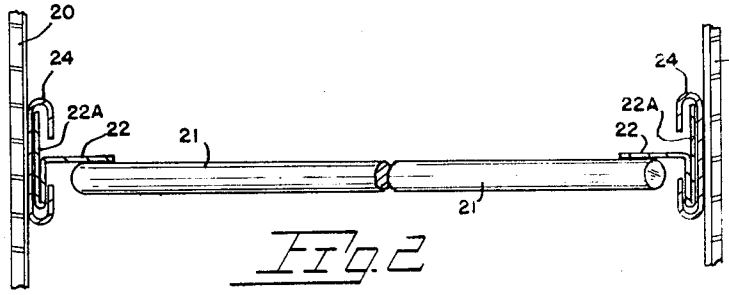


Fig. 2

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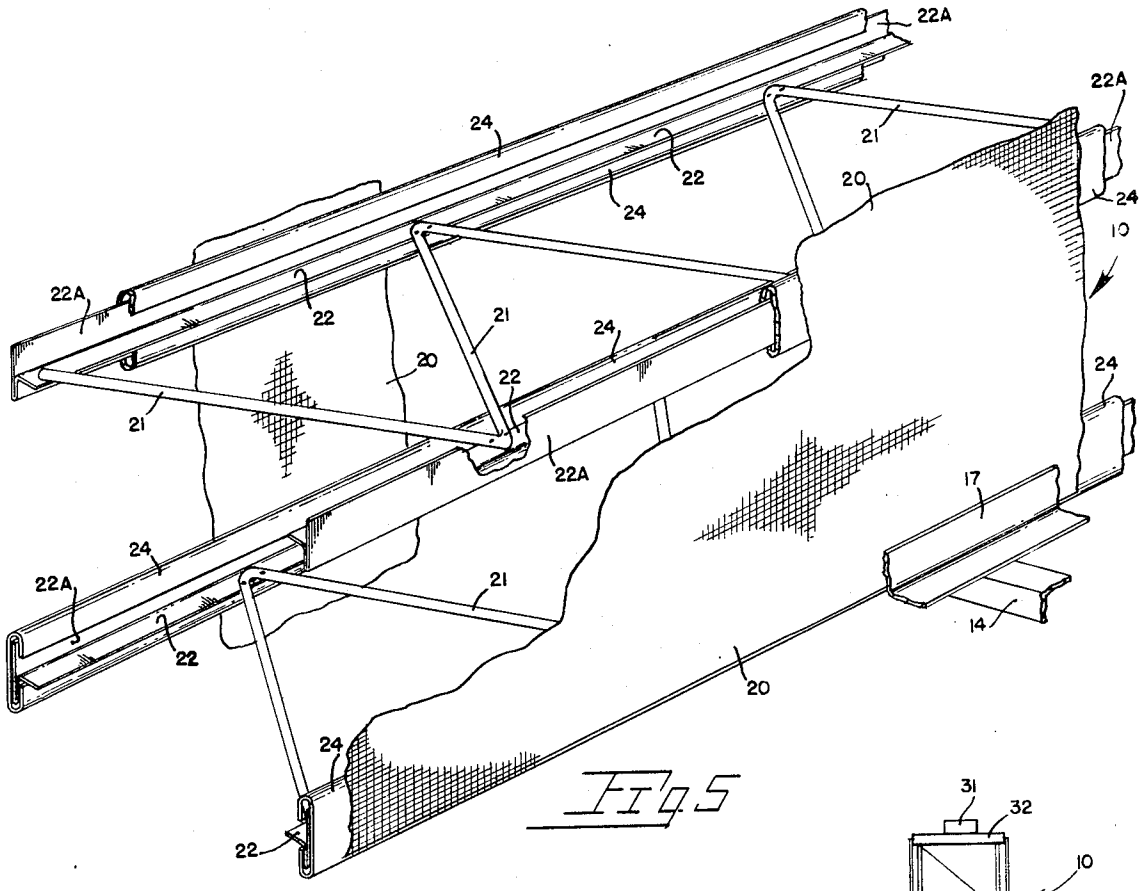


Fig. 5

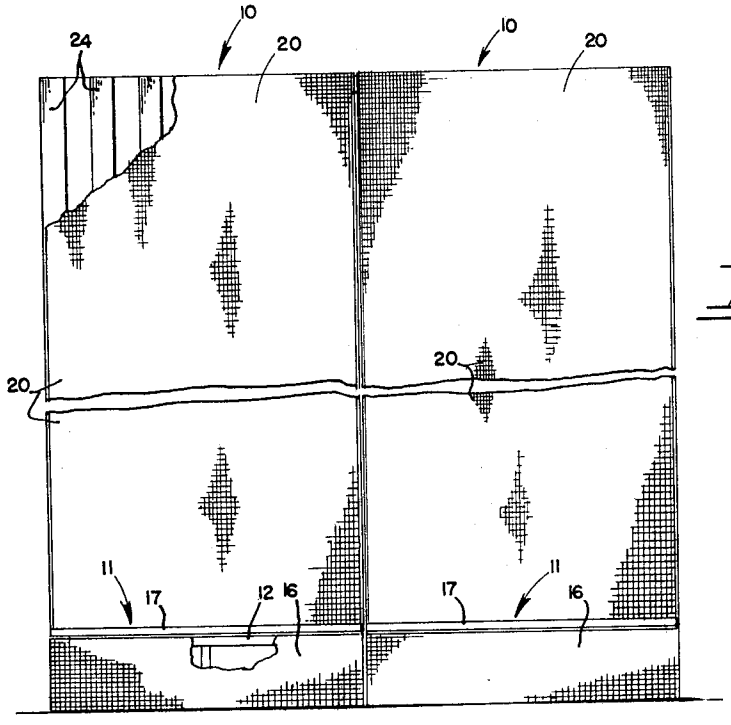


Fig. 3

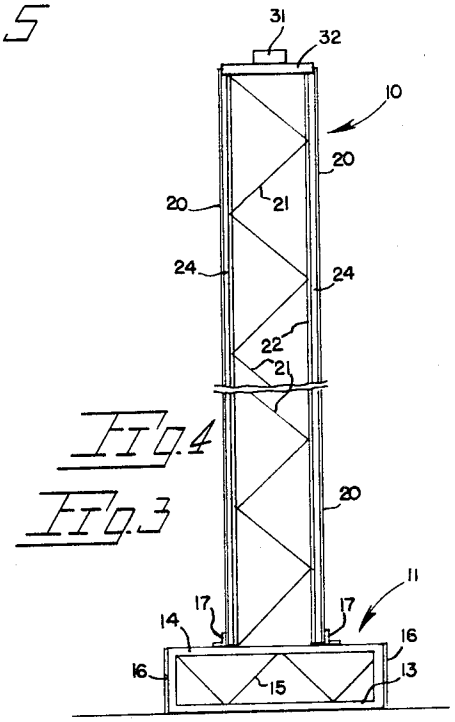


Fig. 4

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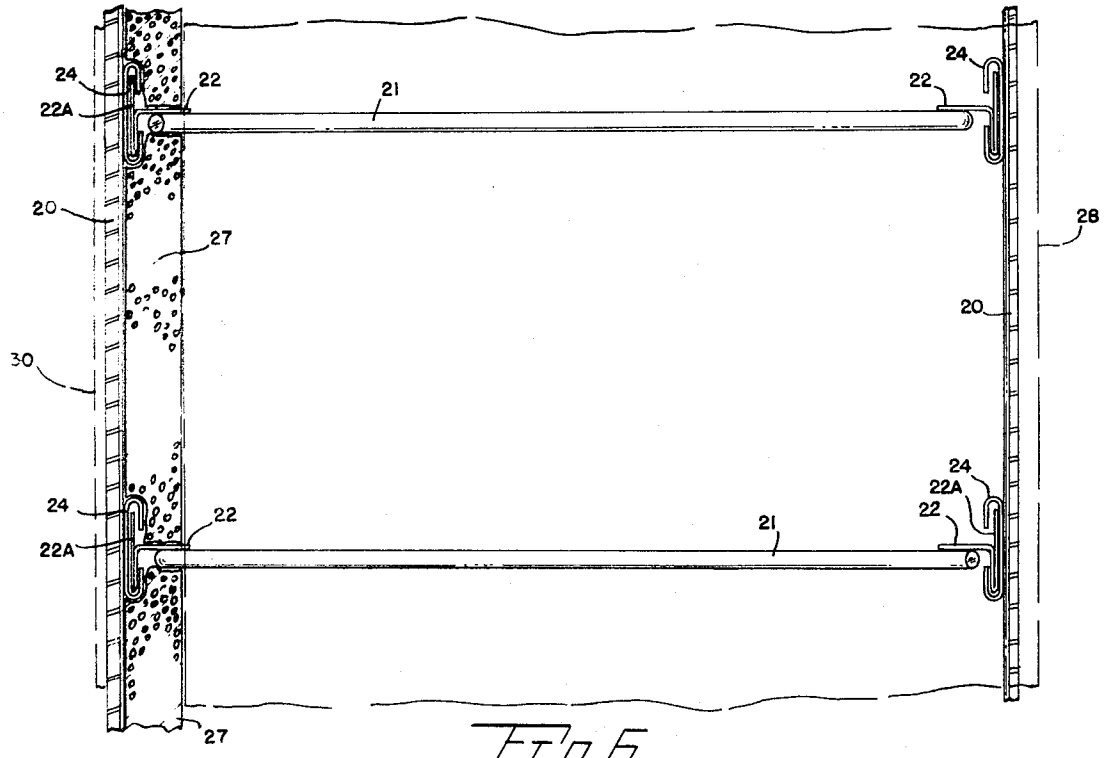


Fig. 6

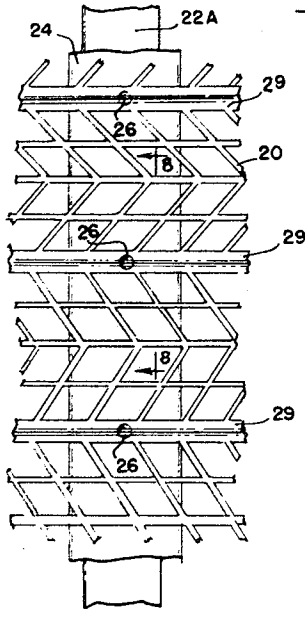


Fig. 7

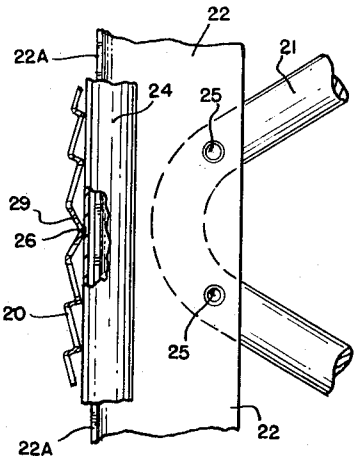


Fig. 8

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FORM FOR A CONCRETE WALL STRUCTURE

BACKGROUND OF THE INVENTION

The present invention relates generally to a form having a foundation section and a superimposed wall section for use in the construction of a concrete wall structure and more particularly to a concrete wall form which remains in place and becomes a component of the wall.

In the present invention metal mesh or expanded metal lath as it is more commonly termed is used to substantially confine the poured concrete. Desirable features of the wire mesh concrete form are described in my U.S. Pat. No. 3,461,369. For present purposes the advantages may be summarized as follows. Concrete forms of expanded metal lath for wall construction incur construction and erection costs significantly lower than with conventional wooden forms. Further, the pouring of a wall may be accomplished in one step without the usual delay incurred in conventional concrete wall construction wherein a foundation section must set prior to pouring of the wall section. A further important advantage of wire mesh forms is the feature of the concrete migrating to a limited extent through the expanded metal lath whereupon a workman may finish the wall surface by simply troweling same to a smooth finish.

SUMMARY OF THE INVENTION

The present wall form comprises side members between which the fluid concrete is poured and which side members become a part of the finished concrete wall. The side members of the form may be joined at a desired spaced-apart distance by truss members insertable into engagement with channels on the side members. The components of the present wall form section lend themselves to automatic, continuous fabrication from rolls of sheet and wire stock resulting in low production costs. A truss member is insertable intermediate the side members of the form, such assembly being conveniently accomplished at a work site without special tools.

A further important object of the present invention is to provide for the incorporation of insulation material into the wall form section for later and permanent inclusion into the poured concrete wall. An insulated wall surface may then be finished by application of plaster or the like.

A further feature embodied in the invention is the provision of form side members incorporating elongate channellike structures which contribute to the rigidity of the side members both before and after said side members are interconnected by truss members. Such channellike structures receive the inserted truss members.

The concrete wall form section of the present invention may be manufactured in a continuous section to the length required for the particular wall being built, hence the aligning of adjacent form sections may be dispensed with.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings:

FIG. 1 is a perspective view of the present wall form in place upon a foundation section of the form,

FIG. 2 is a sectional view taken downwardly approximately along line 2—2 of FIG. 1,

FIG. 3 is a side elevational view of a pair of juxtaposed form sections,

FIG. 4 is an end elevational view of the left-hand end of FIG. 3,

FIG. 5 is a perspective view of a fragment of the present wall form wherein the channellike structures are horizontally disposed and vertically spaced.

FIG. 6 is a top plan view of a segment of the present concrete wall form similar to that shown in FIG. 1 with insulation material added to the form,

FIG. 7 is an enlarged detailed view of a fragment of wire mesh in spotwelded securement to an underlying channel member, and

FIG. 8 is an enlarged sectional view of the mesh and channel member taken along line 8—8 of FIG. 7.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

With continuing reference to the drawings wherein applied reference numerals indicate parts similarly identified in the following specifications, the reference numeral 10 indicates generally a wall form section in place upon a welded angle iron framework constituting a foundation section indicated generally at 11. The sections as shown may be considered typical as adapted for the construction of a concrete building wall for a dwelling with the section 11 being located subjacent the ground surface at completion.

With continuing reference to the foundation section 11 the same may be conveniently preassembled of lengthwise angle iron sections 12 spot welded at end intersections and at intervals with crosswise angles 13 and upper angles 14. Truss rods at 15 of angular extension are located crosswise of the foundation section intermediate angles 13 and 14 and are welded at their bends and ends to the adjacent angles 13 and 14. Affixed, as by spot welding, to the vertical sides of the section 11 are rectangularly shaped strips 16 of expanded metal lath which lath substantially confines the poured concrete. As will be hereinafter apparent, the pouring of the foundation and wall sections is done in a simultaneous manner.

Extending lengthwise along the top of the foundation section 11 are retention means 17 for securing the lower end of the wall section 10 in the form of angle irons secured in a parallel spaced-apart manner to the crosswise angles 14 which securement may be by spot welding. The foundation section 11 so constructed serves to receive the wall section 10 of the form which is set in place between the angle irons 17 at the work site.

With continuing reference to FIG. 1, form side members are indicated at 20 and comprise sheets of interstitial material such as expanded metal lath. Such lath is commonly used in conventional wall construction to provide a supporting surface for plaster. Such lath is commercially available and is formed by slitting and expanding sheets of metal to provide diamond-shaped interstices. In the form of the invention disclosed in FIG. 1 the lath 20 functions to confine substantially all of the poured concrete.

In vertical disposition intermediate the side members 20 are truss assemblies each including an angularly extending truss rod 21 secured at its corners or apices to coterminous elongate Tees at 22. As best shown in FIG. 2, the rods 21 are secured by spot welding at 25 (FIG. 8) to the Tees 22. Each truss assembly comprises the rod 21 and parallel Tees 22 and is adapted for lengthwise inserted engagement with the metal lath by means of the latter being provided with integral channel members 24 for receiving and retaining the inserted right angular crosshead portion 22A of the Tee. Pairs of channel members 24 are oppositely located at spaced-apart intervals on opposed laths 20 by spot welds 26 (FIG. 7) in a corresponding manner in order to receive one inserted truss assembly. The truss assemblies in combination with channels 24 prevent outward displacement of the opposed metal laths under a head of fluid concrete. The thickness of the wall being constructed is determined by the truss assembly width which of course may be easily varied during truss manufacture. The wall thickness will be substantially that of the horizontal distance between the head portions 22A of the Tees 22 of a truss assembly. For a range of wall thicknesses from approximately 4 through 12 inches it has been determined satisfactory to secure the channel members 24 on 4-inch centers along with lath 20. Again by way of example only, each channel member is approximately of 1-inch width for such wall construction.

Attachment of the truss rod 21 by welds 25 at its apices to the Tee 22 along one of the rods sides has proven satisfactory when made at intervals of a foot or so achieved by varying the angularity of the rod 21 during truss manufacture. It is believed apparent that both thickness and height of the wall under construction will influence the spacing of the channel members 24 and the interval between the welds 25. Further, the gauge of the expanded metal lath may also be varied.

With attention to FIGS. 7 and 8 the attachment of the channel member to the lath is conveniently achieved by means of the spot welds 26 which is most conveniently accomplished by automatic equipment. The expanded metal lath has ribs 29 of continuous metal which lend themselves to spot welding to the channels 24.

FIG. 6 is a plan view of the present form structure including insulation material 27. The material 27 is of strip form and of a rigid, cellular nature such as Styrofoam. Each strip of insulation 27 is placed on the inner side of the lath 20 closely fitted intermediate the Tees of the truss assemblies, which lath will form the inside surface of an outer wall of a building. Upon the deposit of the concrete downwardly of the open top end of the form the weight thereof will urge each strip 27 firmly against its adjacent lath. The application of insulation will be to only those walls known as outside walls in the building art. The opposite lath 20 will permit a limited migration of concrete therethrough, the outer surface of which is to be troweled to provide a smooth uniform outer wall surface indicated at 28. The finishing of the insulated or inner side of the building wall will require the application of an amount of plaster or other finishing material the outer surface of which is indicated at 30.

In the form of the present invention, as first described, the concrete when deposited within the form will envelope the mesh side members 20 to the extent that the thin layer of cement which has passed through the mesh may be spread and smoothed to provide a finished wall surface.

In setting up of the forms and prior to concrete pouring external bracing may be required depending on wall height, such bracing typically will include vertically spaced wooden stringers retained in place against the side members by diagonally extending braces terminating downwardly in ground contact. As shown in FIG. 4, prior to the concrete pouring, wooden header forms 31 are centrally attached on crossties 32 intermediate the upper ends of the form which header forms become a part of the wall and serve to mount building components subjacent the roof structure.

Having thus described the invention what I desire to secure under a Letters Patent is:

1. A form comprised of two sections for the construction of a concrete wall and foundation, said form for assembly at the construction site and comprising in combination,

a foundation section comprising an angle iron framework and having expanded metal laths extending lengthwise thereof to generally define the sidewalls of the concrete foundation to be poured,

a wall form section for placement upon said foundation section and having form side members of expanded metal lath disposed in upright spaced-apart relationship, channel members secured in an opposed manner to the opposing inner surfaces of said form side members, said wall form section further including wire truss assemblies slidably engaged with said channel members interconnected the side members of the wall form, said truss assembly including longitudinally extending Tees having a right angular portion inserted into the channel members, and

retention means secured to said foundation section and comprising a pair of opposed angle irons secured lengthwise of said foundation section and transversely spaced thereon receiving in an inserted manner the lower terminus of said wall form section therebetween to facilitate joining of said sections at the work site.

2. The form as claimed in claim 1 wherein said wall form section includes strips of rigid cellular insulation material with each strip in facial contact against the inner metal lath surface of one of said wall form side members and fully occupying an area intermediate consecutive channel members thereon and the elongate Tees of consecutive truss assemblies.

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