

Aug. 11, 1936.

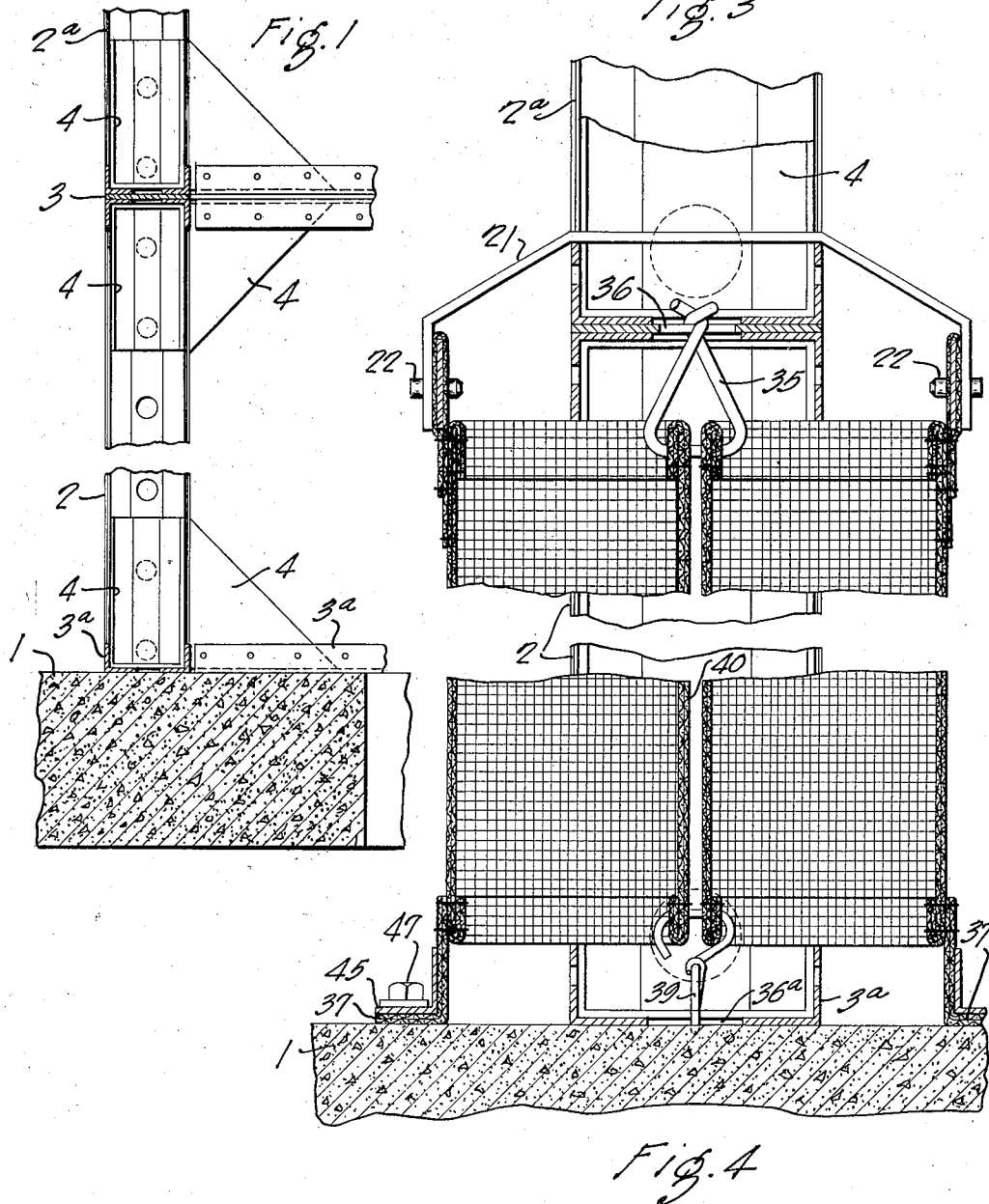
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2,050,256

BUILDING CONSTRUCTION

Filed April 25, 1933

6 Sheets-Sheet 1



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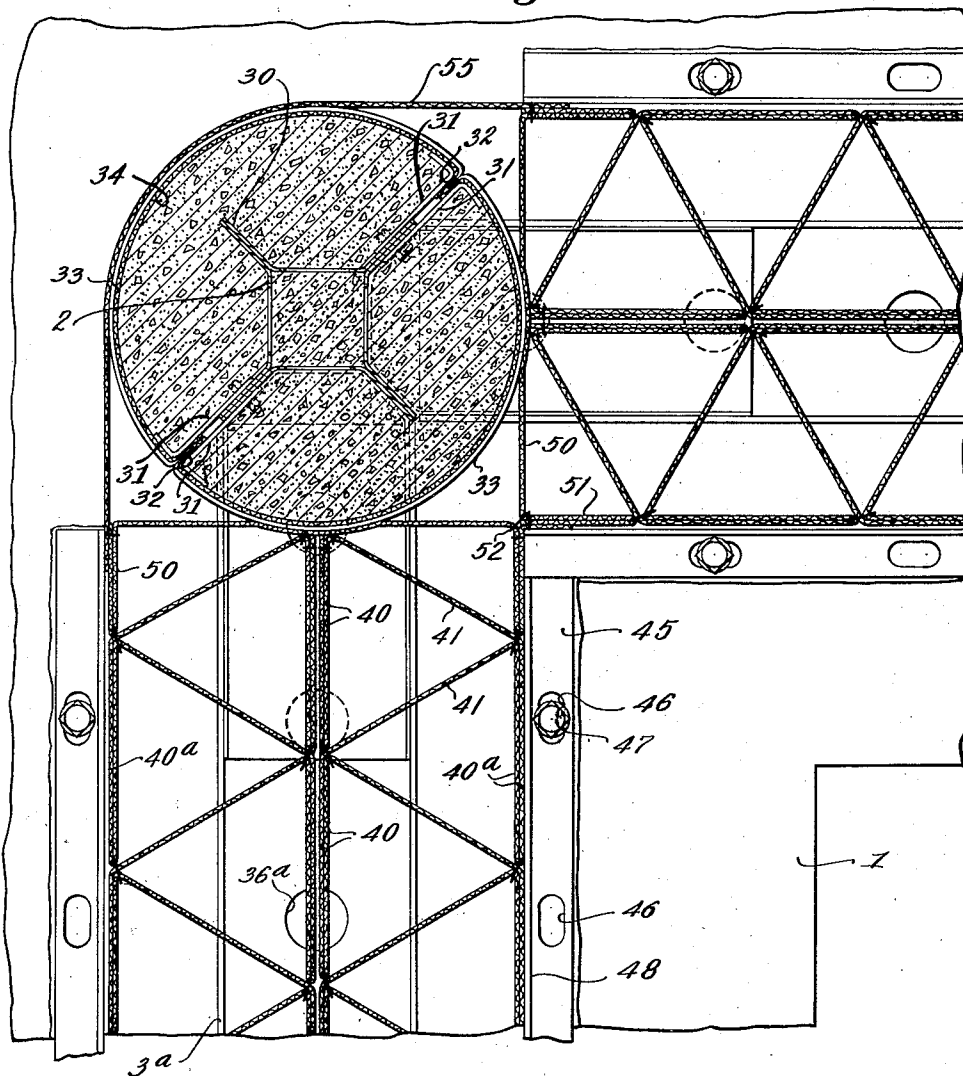
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6 Sheets-Sheet 2

Fig. 2.



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6 Sheets-Sheet 3

Fig. 5. $\leftarrow + 6$

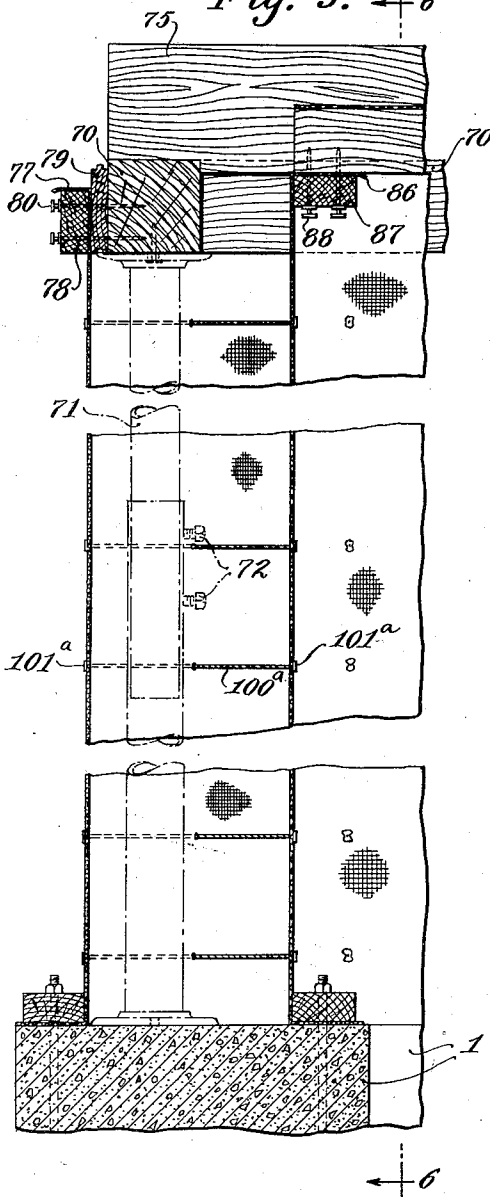
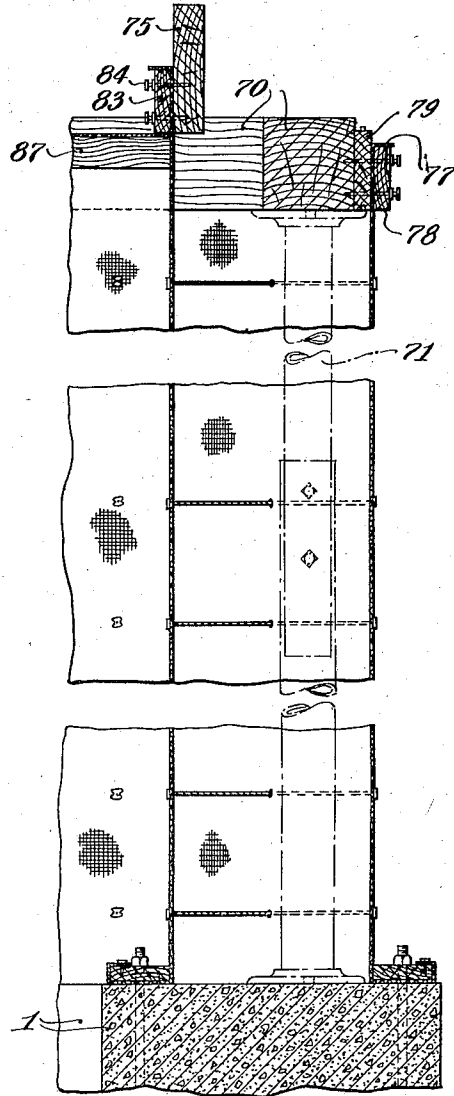


Fig. 6.



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6 Sheets-Sheet 4

Fig. 7.

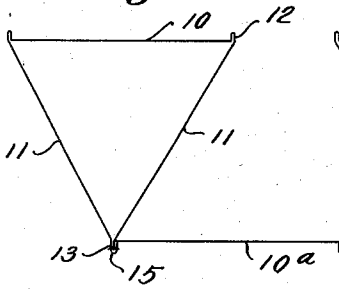


Fig. 8.

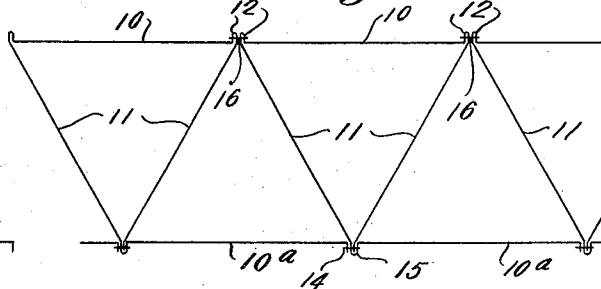


Fig. 9.

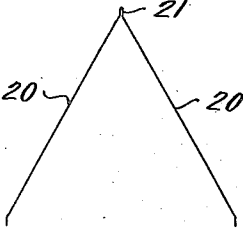


Fig. 10.

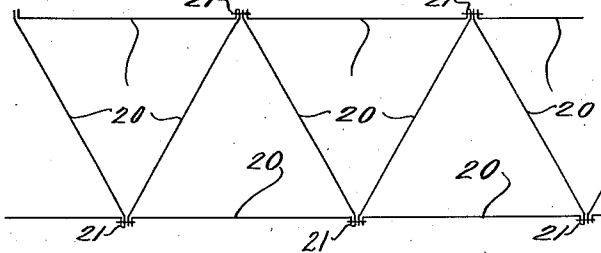
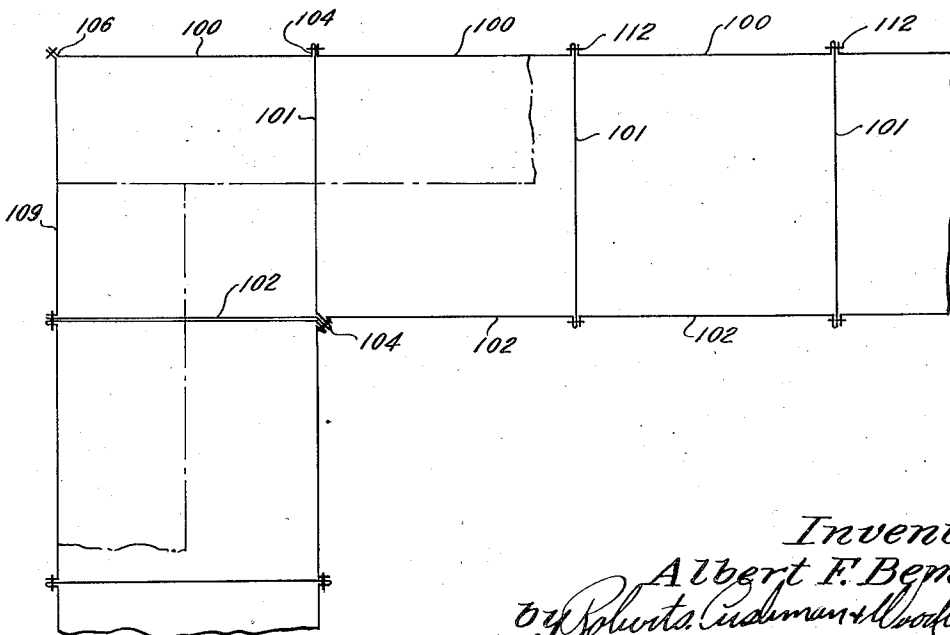


Fig. 12.



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Filed April 25, 1933

6 Sheets-Sheet 5

Fig. 11.

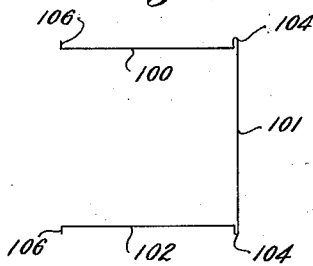


Fig. 13.

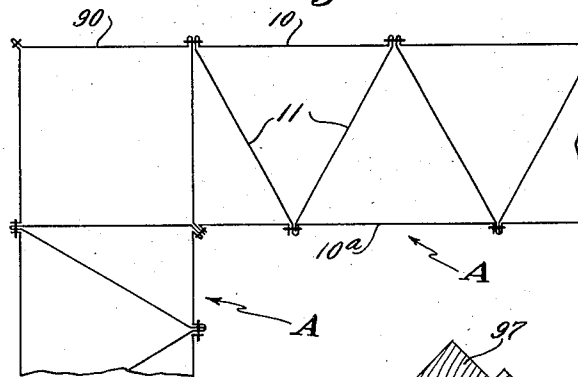
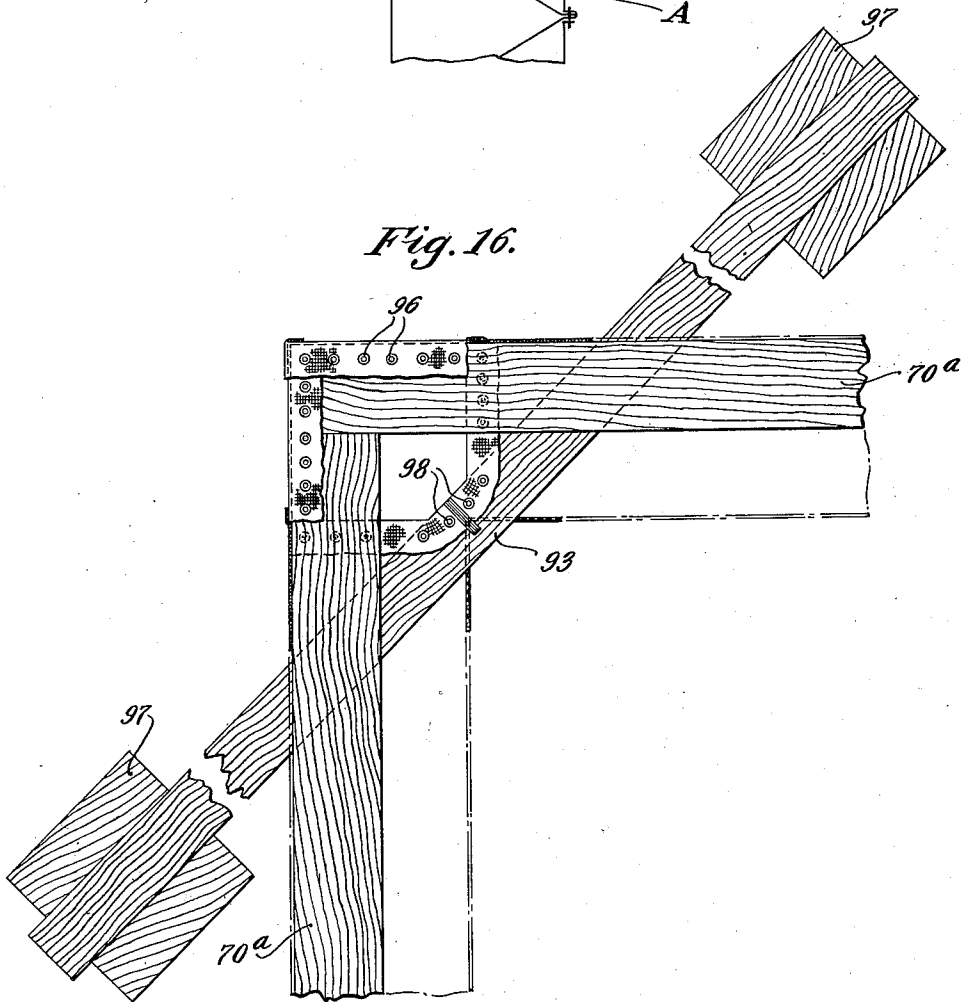


Fig. 16.



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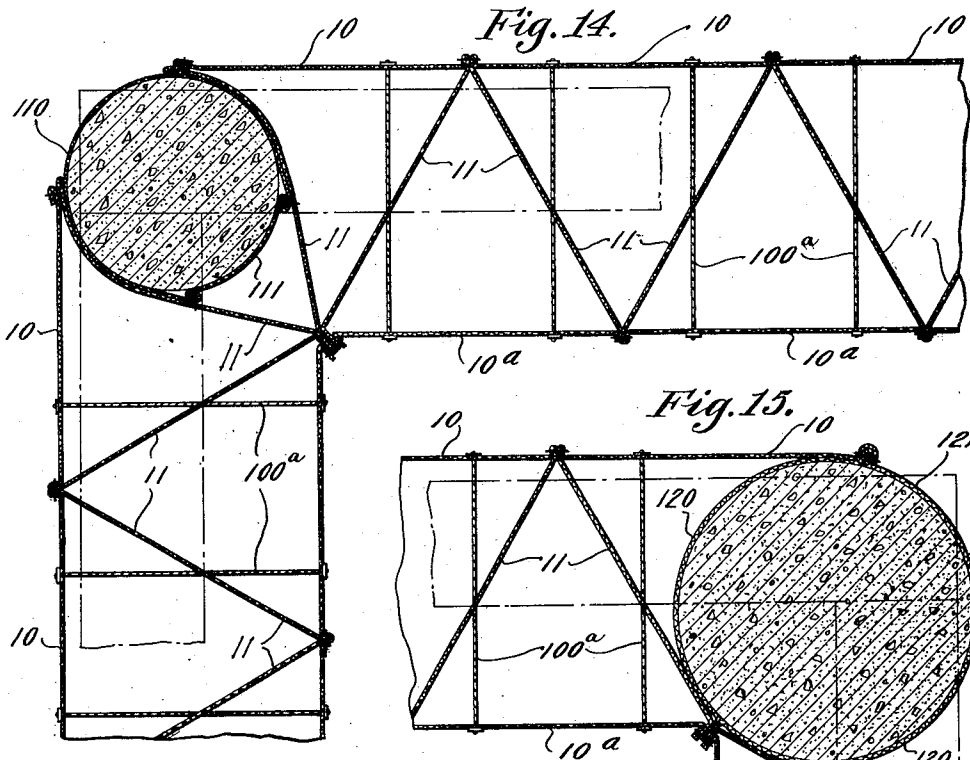
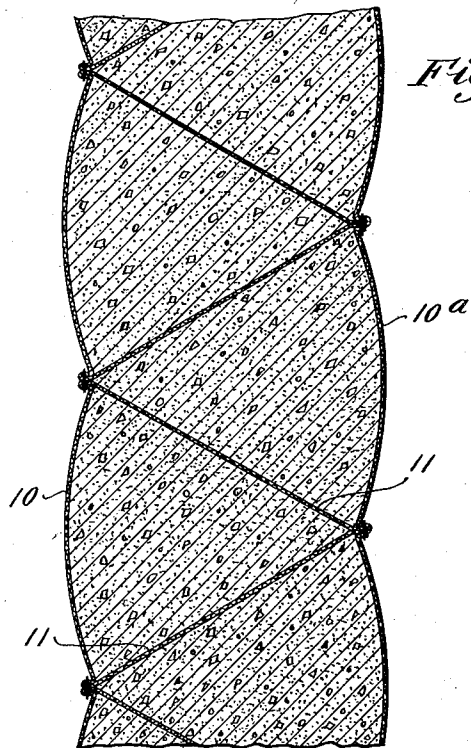
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BUILDING CONSTRUCTION

Filed April 25, 1933

6 Sheets-Sheet 6



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UNITED STATES PATENT OFFICE

2,050,256

BUILDING CONSTRUCTION

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Application April 25, 1933, Serial No. 667,846

13 Claims. (Cl. 72—30)

This invention relates to an improved method of forming walls of cementitious material and to walls which are produced as a result of the method as well as to form elements employed for this purpose. Heretofore it has been customary in the erection of walls of cementitious material, such as concrete walls, to assemble forms including temporary boarding and suitable uprights to support the boarding and then to pour cement into the forms. The erection of the temporary forms and the stripping of the same from the set cement has been troublesome and relatively expensive. The present invention avoids these features of concrete construction and employs sheet material properly supported to act as a form for the poured concrete or the like.

In some respects the present invention comprises a further development of and improvement upon the method and construction disclosed in my copending application Serial No. 648,407, filed December 22, 1932. Further developments of this invention are also disclosed in my copending applications Serial Nos. 735,809 and 735,810, filed July 13, 1934. The present invention may be employed in various environments but is particularly suitable for the erection of concrete foundations or cellar walls upon a suitable footing, a framework first being erected to support the sheet material which acts as the actual form. Thus, for example, in the case of a house being constructed with a metal frame, the main corner posts, i. e., posts at the intersections of the walls, may first be erected on the footing and connected by suitable sill members which are employed to support the sheet material comprising the concrete form. In practice I prefer first to support a sheet element to provide a form about each of these corner posts and then to pour cementitious material into this form, thus in effect affording a metal reinforced concrete post at each wall intersection. Thereupon the sheet material for the wall portions extending between the posts may be connected to the envelopes surrounding the concrete of the latter and to the sills extending between the posts.

In the case of other walls, as for example in buildings being erected with a conventional wooden framework, sills may first be disposed on temporary posts of adjustable height, and the concrete may be poured into envelopes of sheet material or fabric between these posts, thus to provide supporting means to hold the sills in place when the temporary posts are removed. Thereafter the spaces previously occupied by the posts may similarly receive form elements of sheet material into which concrete is then poured. In certain cases the temporary posts may remain in place and be embedded in the poured concrete, if desired.

One aspect of the invention relates to the pro-

vision of sheet material in suitable arrangements to provide forms for relatively long concrete walls with posts at their ends, the sheet material being arranged with numerous web portions extending between opposite face portions that are to define the faces of the wall, thus providing means for holding the face portions in position and preventing undue bulging under the hydrostatic pressure of the poured cementitious material. Thus in practice the sheet material may be formed into a plurality of cell-like chambers with a vertical extent substantially corresponding to the height of the wall to be poured, and each having a triangular cross section. In other developments of the invention the sheet material may be similarly formed into cells or chambers of square or rectangular cross section. While a variety of sheet materials may be employed for this purpose, I prefer burlap or similar coarse fabric due to its low cost and high strength.

Further features of the invention relate to the provision of temporary fastening means, brackets, and the like for connection of the sheet elements to the supporting framework, such as studs, sills, and floor joists; the latter in certain cases may be secured to the sills before the wall is erected.

In the accompanying drawings:

Fig. 1 is a view partly in section and partly in elevation of a corner portion of a typical metal framework to which my improved form arrangement may be applied;

Fig. 2 is a horizontal section of such a corner portion with the forms applied thereto;

Fig. 3 is a vertical section of a sill or first floor girt with a form connected thereto;

Fig. 4 is a vertical section of the bottom of a frame and the adjoining footing showing a form associated therewith;

Fig. 5 is a vertical section showing the application of a form arrangement to a wooden framework;

Fig. 6 is a sectional view on line 6—6 of Fig. 5; Fig. 7 is a diagrammatic top view of a typical unit which may be assembled with similar units to afford a form;

Fig. 8 is a diagrammatic top view of such an assembly of units;

Figs. 9 and 10 are top views corresponding to Figs. 7 and 8, but showing optional forms of units;

Fig. 11 is a view similar to Figs. 7 and 9 but showing an optional form of burlap unit;

Fig. 12 is a diagrammatic view of a corner assembly including units of the type illustrated in Fig. 11;

Fig. 13 is a similar view showing the unit of Fig. 11 combined with units of the type illustrated in Fig. 7;

Figs. 14 and 15 are horizontal sectional views

of wall assemblies showing the posts of poured cement with sheet form units connected thereto ready for the reception of cementitious material;

Fig. 16 is a top plan view of a corner arrangement showing the manner in which the corner of a floor frame may be temporarily supported to hold sheet form members in place; and

Fig. 17 is a horizontal section of a typical wall constructed in accordance with this invention.

Referring first to Fig. 1 of the accompanying drawings, the numeral 1 designates a suitable footing of concrete which may be formed in the conventional manner. Mounted upon this footing are the corner posts or posts at the intersections of exterior and interior walls or between exterior walls. One of the latter is designated by the numeral 2 and is connected to the first floor girts 3, which may comprise horizontal web plates with pairs of angles secured to the outer margins of the upper and lower faces of these plates, suitable reinforcing brackets 4 connecting the ends of the sills to the lower post 2 and the post 2^a, which is disposed thereabove for the first story of the building. Upon the footing, sills 3^a in the form of channels may be connected to the lower ends of the uprights 2 by brackets 4. The framework just described is merely selected by way of example of any typical framework wherein the main posts may extend downwardly to the footing. A concrete wall may be erected between the sills 3 and the footing 1 by the employment of suitable fabric form units in combination to define a wall form.

Now referring to Figs. 7 and 8, it may be seen that a sheet of fabric such as burlap may be provided to define a substantially equilateral triangle having a sheet portion 10 to define a portion of the outer face of a wall, and having similar sheet portions 11 to comprise tension elements. One of the elements 11 may be extended to provide an outer face sheet portion 10^a, i. e. to cooperate with the adjoining portion 11 of this unit and one of the portions 11 of a similar section in defining another chamber or cell of triangular cross section. Between the face sheet portion 10 and the tension portions 11 of the unit, the fabric may be folded upon itself and stitched, as indicated, to provide outstanding ribs 12. Similarly where the elements 11 meet each other and a face sheet portion 10^a, the fabric connecting portion 10^a with the adjoining integral section 11 is folded back on itself in the form of a rib 15 to receive the free edge of the other tension element or section 11, which is secured thereto by stitching 13. Sheet units of this type may be secured to each other in the manner illustrated in Fig. 8 to afford a form assembly of any desired length. For this purpose the free edge 10^a of one unit is secured by stitching 14 to the adjoining rib 15 of the next unit, while the juxtaposed ribs 12 of the units at the opposite face of the assembly are secured together by stitching 16.

Figs. 9 and 10 illustrate different sheet units which may be combined to afford an assembly of the same general shape as illustrated in Fig. 8. Such units may comprise sheets of fabric folded to provide diverging portions 20 of similar size at an angle of substantially 60° to each other, these portions being connected by a flange 21 formed by folding the fabric back on itself, the flange portion 21 of each unit being connected to the free edges of elements 20 of two adjoining units, said elements extending at 60° to each other and 60° to the adjoining wall 20 of the first unit. Thus an assembly is again provided hav-

ing a plurality of cells of triangular cross section.

Sheet assemblies of the type illustrated in either Figs. 8 or 10 may be supported from the girts 3 of a frame such as illustrated in Fig. 1 to comprise forms for the pouring of cementitious material. In many cases it is desirable to provide a relatively thick wall and for this purpose I may arrange two of the assemblies of the general type illustrated in Figs. 8 and 10, with their face sheets in juxtaposition to provide a wall of double thickness. Fig. 2 illustrates such an arrangement, the fabric forming the triangular cells in this illustration of the invention being arranged, however, in a slightly different manner, which will be described.

It is advantageous in employing such a method of wall erection first to form concrete posts at the corners of walls or at wall intersections by employing suitable fabric envelopes and to connect the fabric forms of the straight wall portions with these envelopes. My copending application Serial No. 648,407, filed December 22, 1932, discloses more particularly the manner in which such posts may be formed about an inner metal reinforcement. Thus, referring to Fig. 2, the post 2 may be provided with an inner portion of substantially square cross section and with outstanding flanges or ribs 30 which may support vertically spaced clips 31 receiving intumed flanges 32 upon semi-circular hoop elements 33. A burlap envelope 34 of substantially cylindrical form may be formed by stitching two burlap sheets together, the margins of the sheets adjoining the lines of stitching being disposed between the intumed flanges of the hoop elements 33, as shown in Fig. 2. This envelope then receives poured cementitious material which distends the envelope so that it occupies a substantially cylindrical space. After the envelope has thus been distended in this manner, and preferably after the cementitious material therein has been allowed at least initially to set, the fabric forms may be suspended from the sills 3 between the posts. These forms may be connected to the sills 3 in any suitable manner, for example, by brackets 21 (Fig. 3) having pins 22 passing through openings in their outer portions and preferably extending through hems disposed along the upper edges of the outer face sheets of the form. If it is desired to erect a wall of double thickness, as is often the case, the adjoining face sheets of the form assemblies may be connected by twisted wire ties 35 to the web plates of the sills 3, suitable openings 36 being provided in these plates to facilitate such a connection. The lower end of the form may be connected to the footing in any suitable manner; for example, the outer face sheets may have outturned flanges or extensions 37 (Fig. 4) secured by nails, angles or the like to the footing. As shown in Figs. 2 and 4, angles 45 may be provided with horizontal flanges having slots or openings 46 to receive hold-down screws 47.

The lower ends of the inner face sheet portions 40 of the sheet units may be connected by wire clips or hooks 39 to the sill 3^a, suitable openings 36^a being provided in the bight portion of this member to receive the members 39.

Fig. 2 illustrates triangular assemblies of the same general character as shown in Figs. 8 and 10 but which are formed in a slightly different manner from a continuous sheet of burlap or the like. Thus the burlap may be first folded back upon itself to provide an inner face section of

one of the form assemblies, as designated by numeral 40, then may be extended in a single thickness or tension element 41 to an opposite face portion, designated by the numeral 40^a, and may then be extended inwardly to afford another tension portion 41, of a second inner face section defined by succeeding portions folded back upon themselves and designated by the numeral 40.

Thus Fig. 2 illustrates an arrangement wherein a continuous sheet which has a width at least equal to the height of the wall which is to be erected may be folded back upon itself to provide a form with face sheets of double thickness and diagonal tension sections of single thickness therebetween. Obviously the portions of this assembly are secured to each other by stitching at the corners of the triangular cells thus provided.

Any suitable arrangement may be employed for arranging fabric between the ends of the wall assembly and the cylindrical envelope 34 of the post. Thus, as shown in Fig. 2, the fabric units 50 may have their intermediate portions extending transversely of the end of the wall form and may have their ends comprising portions doubled back to provide a flange of double thickness in the plane of the wall face, designated by numeral 51, the outer end of each flange being connected to the end of the wall sheet portion of the main wall assembly. The inner ends of these flanges upon the outer faces of the wall may be connected to a fabric sheet 55 extending from the outer face of one of the units 50 to the outer face of the other and curved about the outer surface of the envelope 34 of the post. At the inside of the corner, the units 50 may be connected to each other adjoining the junctures of their body portions and flanges 51 by means of stitching 52. Thus spaces to be poured are provided between the post and the main wall forms. As previously explained, the sills are provided with suitable openings 36 which permit the pouring of cement into the triangular spaces of the fabric assembly, while in the case of a wall of double thickness the cement may be poured at either side of the sills. The arrangement of the tension elements such as elements 41 permits the face sheets strongly to resist bulging so that there is only a slight localized bulging between adjoining seams or ribs at the outer face of the wall. The arrangement of two sets of units such as shown in Fig. 2 affords a relatively strong reinforcing web in the center of the poured wall. The burlap employed for this purpose preferably has a sufficiently coarse mesh, so that it permits the intrusion of the poured cement to some extent between its strands, thus affording numerous integral bridges or connections between concrete bodies poured at opposite sides of a tension sheet section 41 and affording an interlocking of the concrete with the burlap face sheets. When face sheets of double thickness are provided, as shown at Fig. 2, adequate fabric is provided to receive a coating of waterproofing material such as an asphalt or tar composition.

When sheet form assemblies of the general type already described are to be employed for erecting a form without metal reinforcements or posts extending upwardly from the footing, temporary uprights may be employed for supporting frame members or sills from which the form assemblies are suspended. Figs. 5 and 6 are illus-

trative of such an arrangement. Sills 70 are arranged adjoining the top of the wall to be formed and may have their ends connected to each other in the conventional manner. These sills are supported at the corners of the floor frame, thus provided by temporary uprights 71 which may comprise telescoping tubular members which are adjustably clamped in place by set screws 72 to afford the desired height for the upright. These temporary uprights may be provided with annular flanges at their upper and lower ends which may be secured to the footing 1 and to the sills 70 by removable fastening means such as nails, screws or the like. Floor joists 75 may be secured to the sills 70 in the usual manner before the concrete walls are formed beneath these sills.

Sheet form assemblies of the general character illustrated in Figs. 8 and 10 may then be fastened to the wooden floor framework which is afforded by the sills 70 and joists 75. For this purpose the outer faces of the sheet form assemblies may have upwardly extending portions designated by numeral 77 which are secured against spacer strips or boards 79 by retaining strips 78, suitable nails 80 preferably being driven through the strips 78, extensions 77 and spacers 79 to secure these parts to the sills 70. The inner face of a form assembly which extends transversely of floor joists 75 (Fig. 5) may be provided with an end portion 86 turned over to lie in a substantially horizontal plane, which is held in place by a retaining strip 87 that is secured by nails 88 to the lower portions of the floor joists. The inner face portions of the form assemblies may be secured to joists 75 which are parallel to and adjoining a sill 70 (Fig. 6) by means of a retaining strip 83 secured in place by nails 84 which are driven through the strip 83 and an upwardly extending continuation of the inner face of the sheet form assembly as well as into the joists 75. This arrangement permits the provision of forms disposed between the temporary uprights 71. The inner faces of these forms are adequately spaced from the adjoining sills 70 to afford suitable openings for the pouring of cementitious material. When concrete or the like has thus been poured into the spaces afforded by the forms, it is allowed to set to afford supporting means upon which the sills 70 may rest. Thereupon the set screws 72 of the temporary upright 71 may be released so that the uprights may be removed from their positions in engagement with the lower faces of the sills. Suitable sheet forms of sheet material may then be supported in the spaces previously occupied by the temporary uprights and these forms may then be filled with cementitious material filling the spaces between the concrete walls beneath the sills.

If desired, the temporary uprights 71, rather than being located at the corners of the framework, may be located under the sills adjoining but spaced from the corners, and temporary forms may be arranged so as to permit the pouring of the corner posts, after which the temporary uprights may be removed and the straight wall forms suspended from the sills and poured.

Figs. 11 and 12 illustrate a sheet form unit which may comprise panel portions 100, 101 and 102 enclosing three sides of a square, as viewed in horizontal section, flanges 104 being provided by folding the fabric between the sections 100 and 101, and sections 101 and 102 respectively. Similarly the outer edges of sections 100 and 102 may be folded to provide flanges 106. Units of this type may be connected to each other by

stitching 112, as shown in Fig. 12, to define a straight wall section with the panels 101 forming tension members and the panels 100 and 102 defining the opposite faces of the wall to be poured. Such a unit may define a square corner post by the application of a filler panel 109 connected to the outer edges of sections 100 and 102, as illustrated in Fig. 12; this same arrangement may be employed at the corners between the ends of wall assemblies of the type illustrated in Figs. 5 and 6. A unit of this character may also be combined with a unit made up of a plurality of triangular elements, such as are shown in Fig. 7. Thus Fig. 13 illustrates the arrangement of triangular elements with their sides 10, 11 and 10^a defining straight wall sections and with one of the units illustrated in Fig. 11 disposed at wall intersections.

Fig. 16 illustrates a typical arrangement which may be employed when permanent posts are not to be embedded in the concrete wall. For this purpose blocks 97 may be disposed upon the ground adjoining the excavation for the footing, and a diagonal member 93 may extend between the uprights and be arranged to support the ends of sills 73^a which are connected to each other in the conventional manner. The diagonal member 93 may cooperate with the outer edges of the sills 73^a in receiving the intumed upper marginal portions of the portion of a burlap form defining a substantially square post, for example, a form of the general character illustrated in Fig. 13, intumed margins of the burlap being secured, for example, to the wooden members by nails or brads 96. The outer face of the elongated form assembly may be secured to the outer face of each of the sill elements, while the end of its inner face may be connected to the diagonal member 93 as well as to the fabric envelope for the corner post. With this form of the invention the post is first poured and the concrete allowed initially to set so that the ends of the sills are supported on concrete corner posts. Thereupon the uprights 71, blocks 97 and diagonal member 93 may be removed and the fabric forms for the straight sections of the wall may be arranged in any suitable manner; for example, they may be supported in the general manner illustrated in Figs. 5 and 6.

Figs. 5 and 6 also illustrate the provision of ties 109^a which may be employed with fabric form assemblies of the type illustrated herein. These tie members may be extended between opposite face sheet portions of the assemblies being provided with heads 101^a upon the outer faces of these face sheets and, as illustrated, the intermediate portions of these ties may conveniently extend through small openings in the tension sections of the form assemblies. The ties 109^a preferably may be of the well known type employed in mattress making.

Fig. 14 illustrates a typical wall assembly made up in the general manner which is diagrammatically illustrated in Figs. 7 and 8 and provided with ties 109^a. At the corner provided by intersecting walls of this type, a slightly different type of fabric form may be employed to define a substantially circular corner post assembly. This fabric may be suspended from the sill elements in the manner illustrated in Fig. 16 and may comprise an outer sheet portion 110 and an inner sheet portion 111 which are connected to each other. The central portion of the sheet 110 extends between the outer face sheet portions of the wall assemblies while the end por-

tions thereof engage the end tension elements of the wall assemblies, the inner edges of the sheet 110 being connected by the narrow strip 111. A space which may be substantially circular in cross section may thus be provided for the initial pouring of concrete to permit first the erection of a concrete post at the corner afforded by the intersection of straight wall portions. After the post has thus been poured in this manner, the straight wall form assemblies may be connected to the envelope surrounding the concrete of the post. Thus, as shown, tension elements 11 at the end of these sections may be wrapped about curved surface portions of the sheets 110 and secured thereto.

Fig. 15 illustrates another form of wall assembly wherein two similar sheet members 120 have their inner edges connected to the ends of the inner face sheets of the straight wall portions as well as to the inner ends of the end tension elements of these portions. The outer edges of the sheets 120 are connected to the ends of the outer face sheets of the straight wall portions and also to the edges of a relatively narrow bridging strip 121. Thus, the members 120 and 121 may define a substantially cylindrical space which may be filled with cementitious material in the manner already described.

It is evident that post assemblies of the type illustrated in Figs. 14 and 15 may be employed at the corner of a floor frame which is supported intermediate its corners by temporary uprights 71 or the like.

Fig. 17 illustrates a cross section of a typical wall formed in accordance with this invention, the face sheet portions of the assembly being slightly distended by the pressure of the poured concrete so that the wall may have a typical face of undulatory form rather than being substantially planar as is the case with a conventional concrete wall erected by the use of form boards.

It is evident that this invention affords elements permitting the employment of inexpensive and quickly erected forms of sheet material and that these forms may be readily manufactured from inexpensive and relatively strong fabric such as burlap. The invention permits the major portion of the work in making forms to be performed in a manufacturing establishment and requires the minimum of work in erecting the forms in situ. Thus, the forms may be prepared in advance and quickly connected to the framework, being suspended from temporary uprights or the like as conditions may require so that actual pouring of cement to provide a cellar wall or the like may be initiated in a very short time after the footing has been properly prepared.

After the concrete walls have been poured in this manner and have been allowed to set for a suitable period, the burlap may receive a suitable coating of waterproofing material such as an asphaltic composition, if desired. This coating also serves to afford a protection for the burlap itself. This invention avoids the necessity of stripping forms and permits succeeding operations in the erection of the building as, for example, the erection of framework for successive stories, the laying of floor boards or the like to proceed without interference by laborers carrying on the form stripping operation. Thus, economy and facility in building construction is afforded by the employment of sheet elements of the character illustrated herewith.

I claim:

1. Method of building a concrete wall on a 75

suitable base, comprising erecting a pair of spaced uprights upon the base, mounting a support upon the uprights to span the distance therebetween, arranging envelopes of flexible sheet material about said uprights, filling and distending the envelopes with cementitious material, permitting the cementitious material initially to set, suspending a form of flexible sheet material from the support between said envelopes, and pouring cementitious material into said form to fill the space between said distended envelopes.

2. Method of building a concrete wall on a suitable base, comprising erecting a plurality of spaced temporary uprights, mounting supports upon the tops of the uprights to span the distances between uprights, suspending forms of flexible sheet material from the supports and between uprights, filling and distending said forms with cementitious material, permitting the same to set, removing the uprights, suspending envelopes of sheet material in the spaces which were occupied by the uprights, and filling said envelopes with cementitious material.

3. A form for a concrete wall comprising a sheet of textile fabric folded back and forth upon itself to provide opposite face sections of double thickness and intermediate connecting portions of a single thickness, said sections cooperating to afford cells or chambers of substantially triangular cross section.

4. A form for a concrete wall comprising a series of woven textile units of sheet material having sections enclosing three sides of a square, the edges of the outer sections of one unit being connected to the edges of the intermediate section of the next unit.

5. A framework comprising posts and a horizontal member spanning the distance between the posts provided with a form of flexible, fibrous sheet material to permit the pouring of the wall between the posts and below said horizontal member, said form comprising a pair of form portions each having outer face sheets and inner face sheets juxtaposed to each other, the inner and outer face sheets of the respective form portions being connected by tension sections of sheet material whereby a wall may be poured with an outer covering of sheet material and with a central web of sheet material.

6. A wall comprising a body of poured and set cementitious material, face sheet sections upon the outer faces of the cementitious material comprising a fabric of coarse mesh, tension sections of fabric of coarse mesh extending transversely of the wall between the face sheet sections upon opposite sides of the wall and being connected thereto, the cementitious material penetrating the interstices provided by the coarse mesh of the tension sections thereby providing integral connections of the poured concrete between bodies of concrete upon opposite sides of a tension section.

7. Wall form arrangement comprising a horizontal support and a form of sheet material suspended from the support, said form comprising face sheet sections of fabric connected by fabric tension sections extending between the face sheet sections, and ties secured to portions of the face sheet sections between their regions of connection to the tension sections.

8. A form to receive poured concrete in the

making of a concrete wall, comprising an assembly capable of being folded or rolled into a compact bundle and including opposite face sheet portions of woven textile fabric and tension sheets of woven textile material connecting said portions, whereby the assembly may be suspended from a frame to afford a cellular form.

9. A form construction comprising a form of readily foldable, sheet material providing opposite face sheet portions and tension elements connecting said portions, a horizontal support and connecting elements holding the upper portions of the face sheet portions suspended from the support, a base, and means securing said portions to the base, so that the face sheet portions are under tension when receiving concrete poured into the upper part of the form, whereby the pressure of the poured concrete is primarily opposed by the tensile strength of said sheet portions.

10. Method of erecting a concrete wall upon a suitable base which involves the employment of a fabric form having opposite spaced face sheet portions incapable of being self-supporting, comprising arranging a substantially horizontal support above the base, connecting the upper parts of the face sheet portions to the support so that concrete may be poured into the top of the form, securing the lower edges of the face sheet portions to the base so that said portions are under tension, and pouring concrete into the top of the form to fill the space between the face sheet portions.

11. Wall form arrangement comprising a horizontal support and a form suspended from the support, said form comprising spaced generally parallel face sheet portions formed of flexible sheet material, tension elements connecting said portions, said support and form being arranged so that cementitious material may be poured into the space between the sheet portions, said portions being suspended from the support in such a manner that the sheet material may bulge outwardly between said elements so that its tensile strength may be primarily effective in opposing the pressure of the cementitious material thus poured.

12. Wall form arrangement comprising a horizontal support and a form suspended from the support, said form comprising spaced generally parallel face sheet portions formed of flexible sheet material, tension elements of similar sheet material connecting said portions, said support and form being arranged so that cementitious material may be poured into the space between the sheet portions, said portions being suspended from the support in such a manner that the sheet material may bulge outwardly between said elements so that its tensile strength may be primarily effective in opposing the pressure of the cementitious material thus poured.

13. A structure of the class described comprising two walls extending along opposite sides of a space for cementitious material, at least one of the walls comprising a horizontal series of portions which are outwardly convex in cross section with intermediate troughs extending vertically, and partitions interconnecting the two walls at said troughs to form vertical cells individual to said convex portions respectively.

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