May 4, 1937. C. A. PATTERSON 2,078,968

BUILDING STRUCTURE

Filed May 23, 1934 9 Sheets-Sheet 1

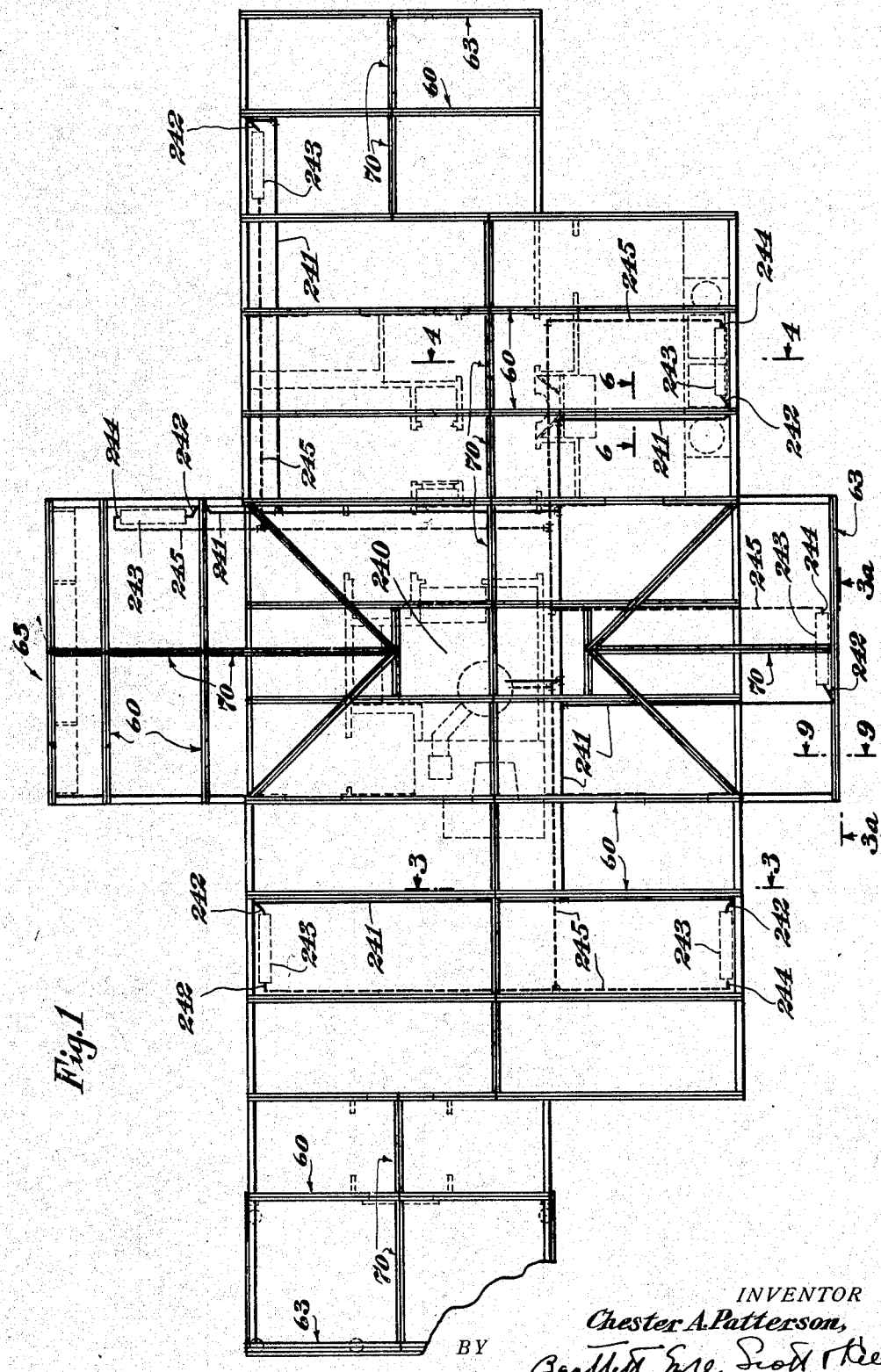


Fig. 1

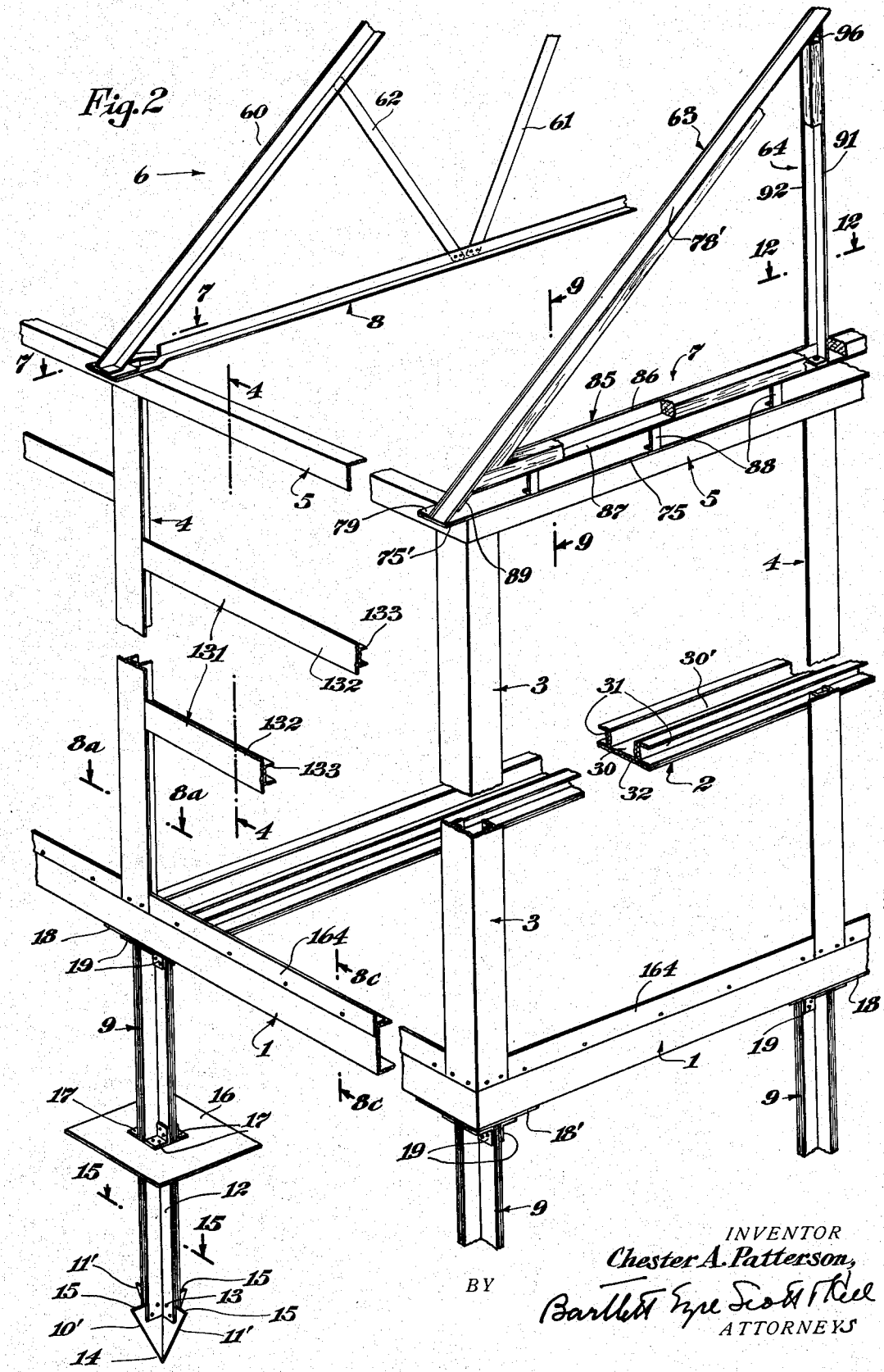
INVENTOR
Chester A. Patterson,
BY
Bartlett Sye Scott & Reel
ATTORNEYS

May 4, 1937. C. A. PATTERSON 2,078,968

BUILDING STRUCTURE

Filed May 23, 1934 9 Sheets-Sheet 2

Fig. 2



INVENTOR
Chester A. Patterson,
BY
Bartlett Sipe Scott & Reel
ATTORNEYS

May 4, 1937. C. A. PATTERSON 2,078,968

BUILDING STRUCTURE

Filed May 23, 1934 9 Sheets-Sheet 3

Fig. 3

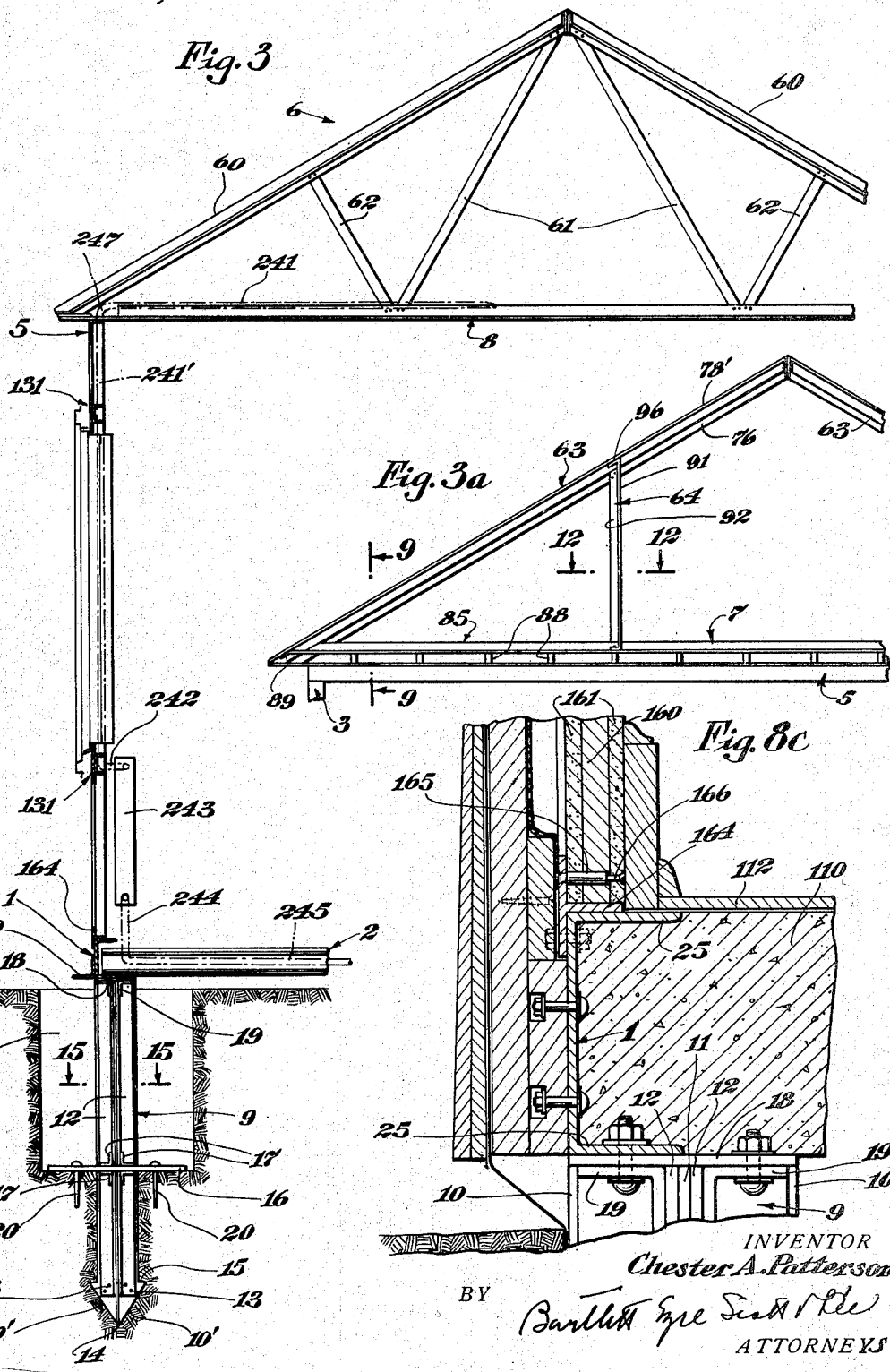


Fig. 3a

Fig. 8c

INVENTOR
Chester A. Patterson,
BY
Bartlett Eyre Smith & Lee
ATTORNEYS

May 4, 1937. C. A. PATTERSON 2,078,968

BUILDING STRUCTURE

Filed May 23, 1934 9 Sheets-Sheet 4

Fig. 4

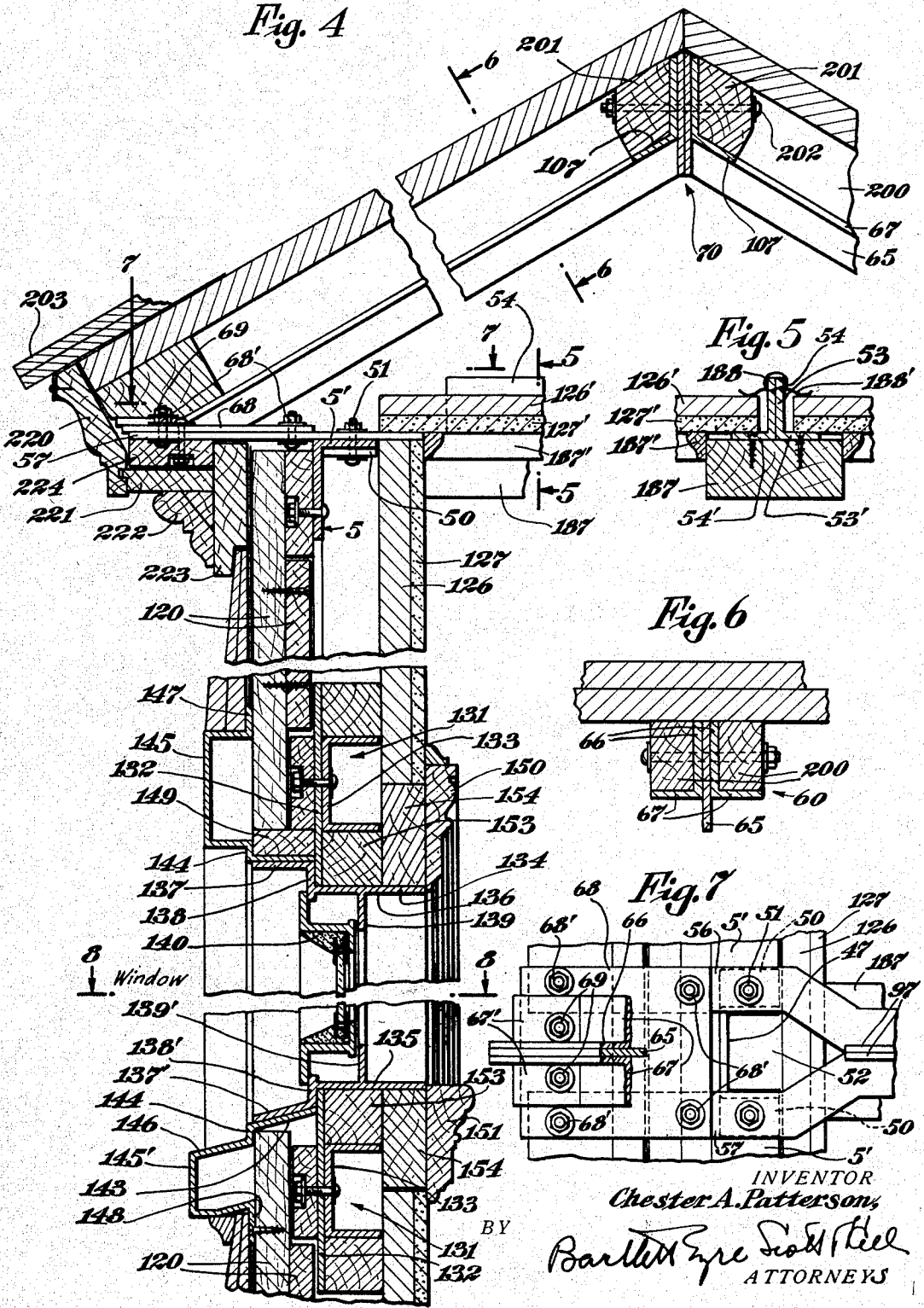


Fig. 5

Fig. 6

Fig. 7

INVENTOR
Chester A. Patterson,
BY
Bartlett Epre Scott & Peel
ATTORNEYS

May 4, 1937. C. A. PATTERSON 2,078,968

BUILDING STRUCTURE

Filed May 23, 1934 9 Sheets-Sheet 5

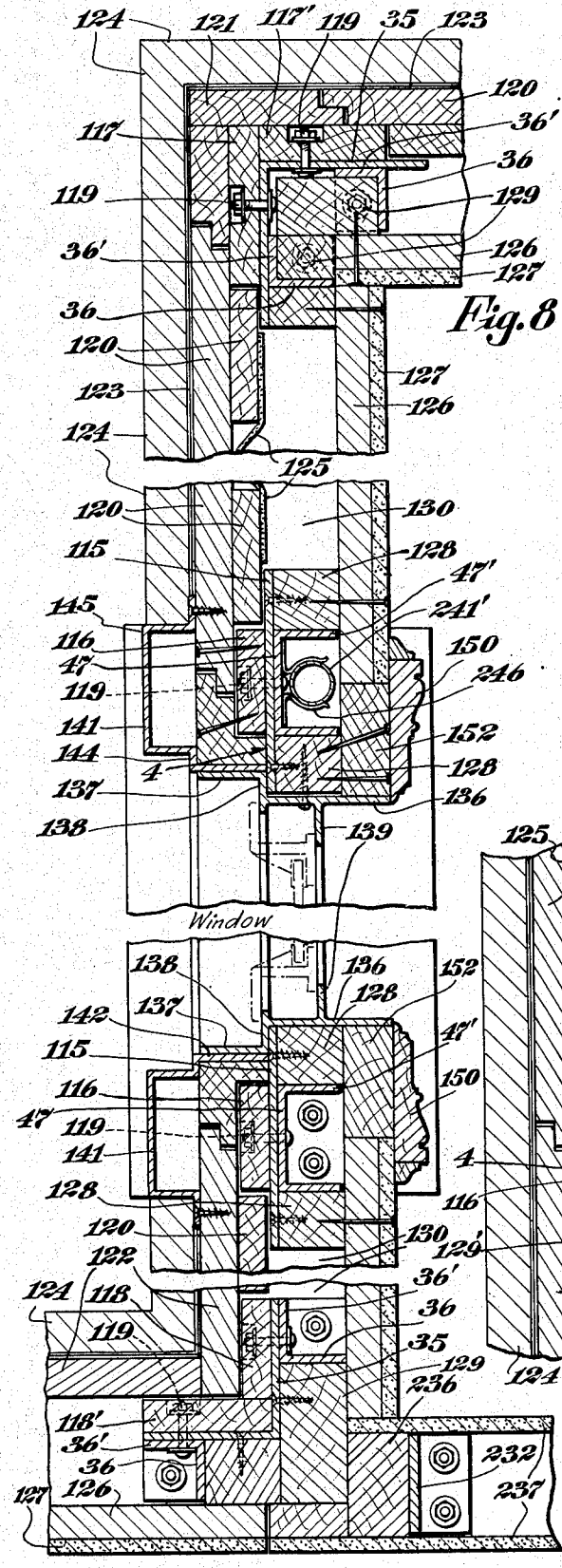


Fig. 8

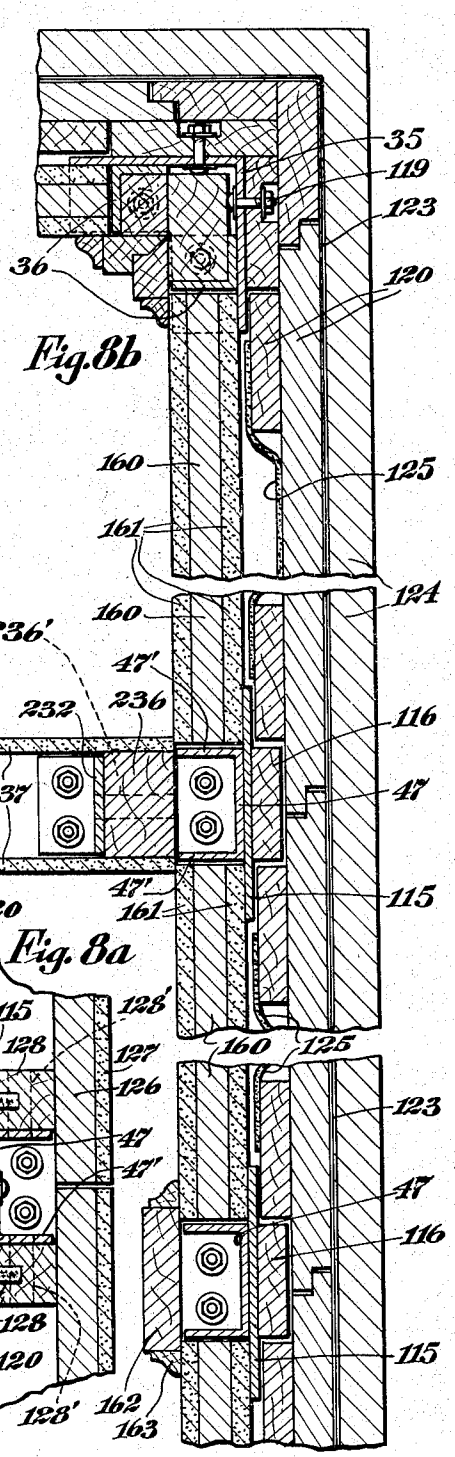


Fig. 8b

Fig. 8a

INVENTOR
Chester A. Patterson,
BY
Bartlett Eyre Scott & Peel
ATTORNEYS

May 4, 1937. C. A. PATTERSON 2,078,968

BUILDING STRUCTURE

Filed May 23, 1934 9 Sheets-Sheet 6

Fig. 9

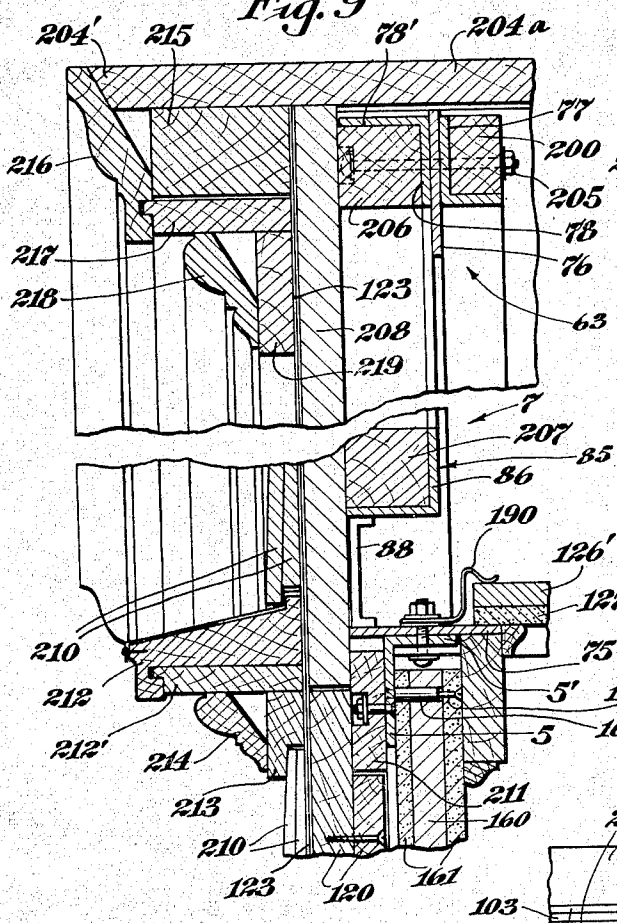


Fig. 9a

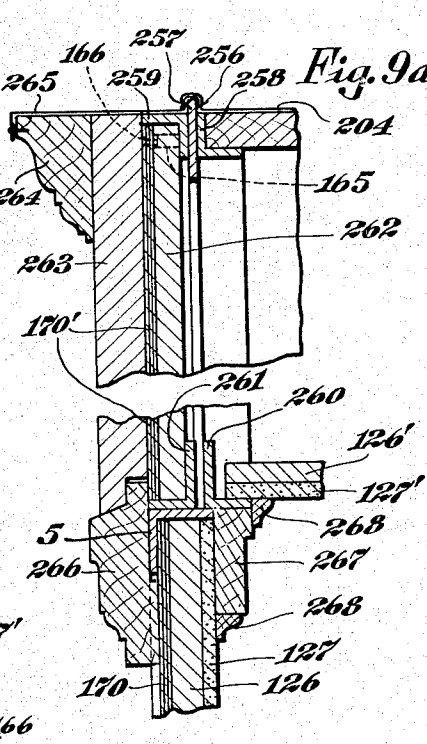


Fig. 10

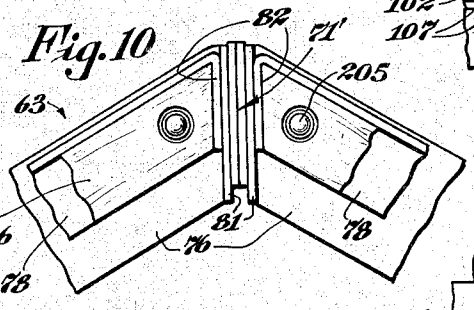


Fig. 11

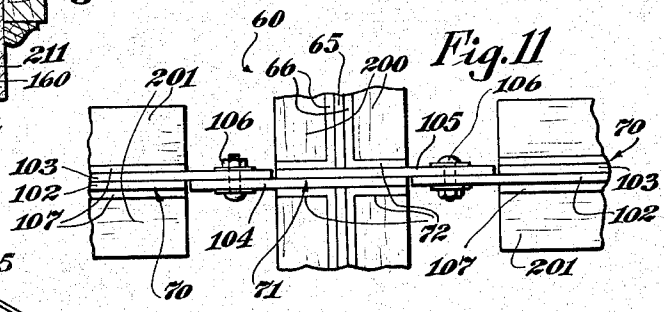


Fig. 12

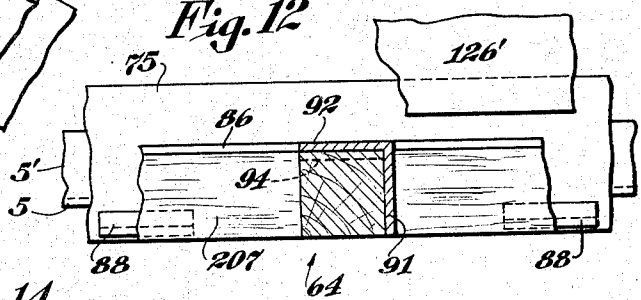
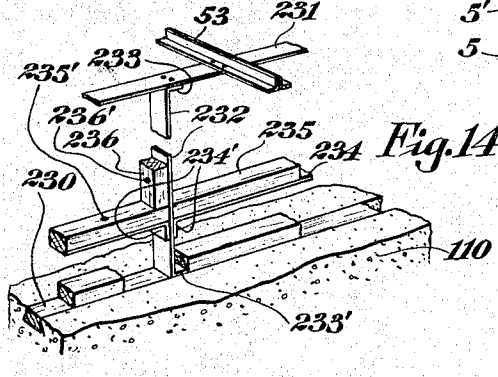


Fig. 14

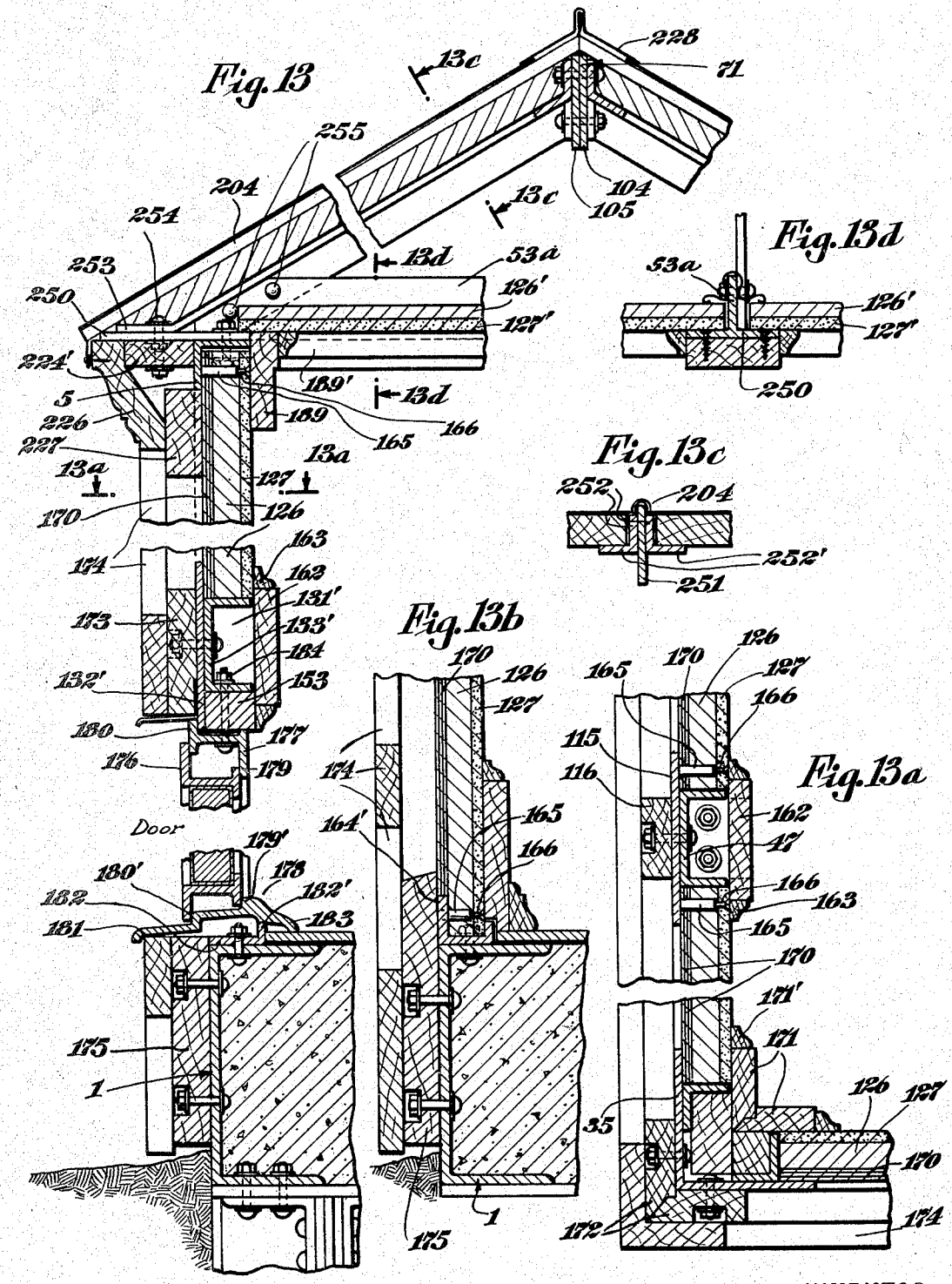


INVENTOR
Chester A. Patterson,
BY Bartlett Sprague Scott & Bell
ATTORNEYS

May 4, 1937. C. A. PATTERSON 2,078,968

BUILDING STRUCTURE

Filed May 23, 1934 9 Sheets-Sheet 7



May 4, 1937. C. A. PATTERSON 2,078,968

BUILDING STRUCTURE

Filed May 23, 1934 9 Sheets-Sheet 8

Fig. 16

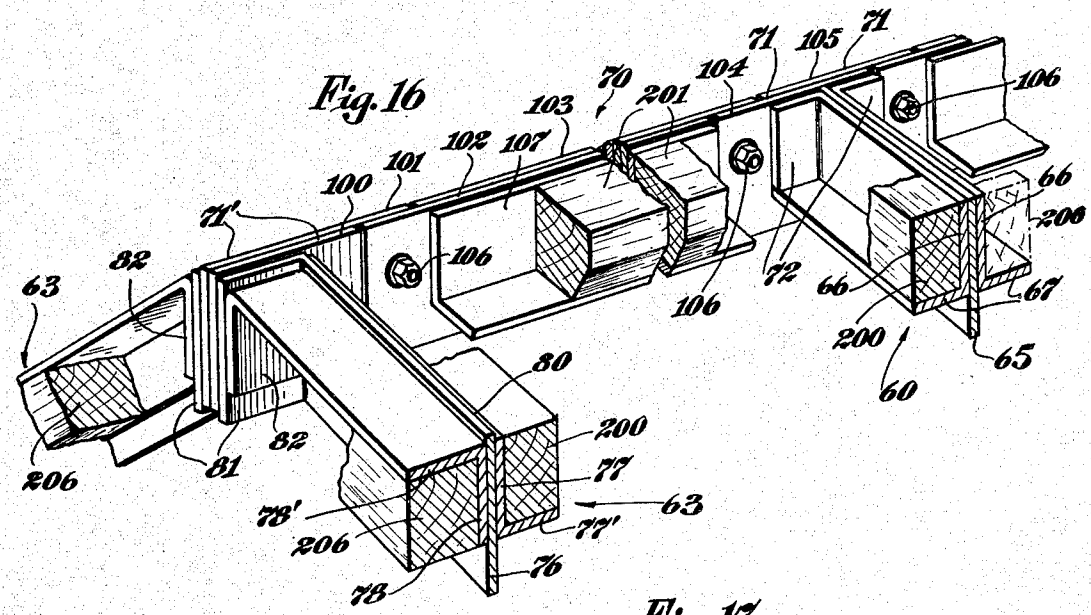


Fig. 17

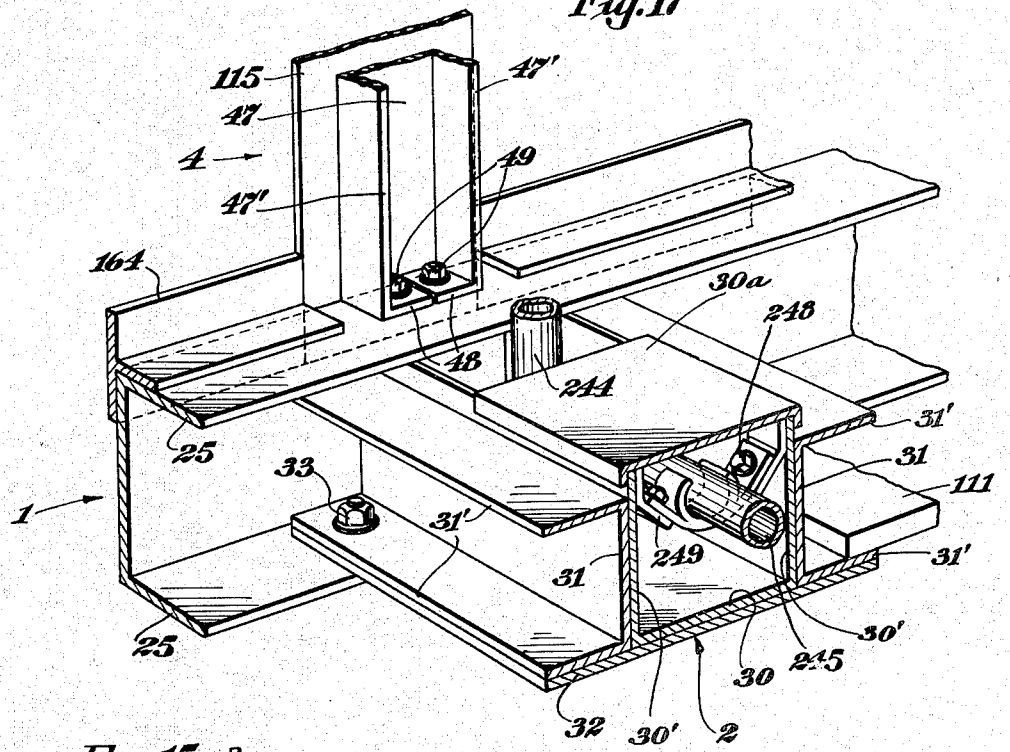
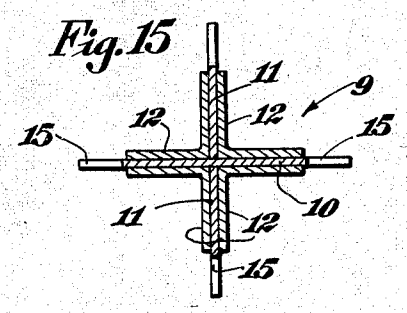


Fig. 15



INVENTOR
Chester A. Patterson,
BY Bartlett Sype Scott & Neil
ATTORNEYS

May 4, 1937. C. A. PATTERSON 2,078,968

BUILDING STRUCTURE

Filed May 23, 1934 9 Sheets-Sheet 9

Fig. 18

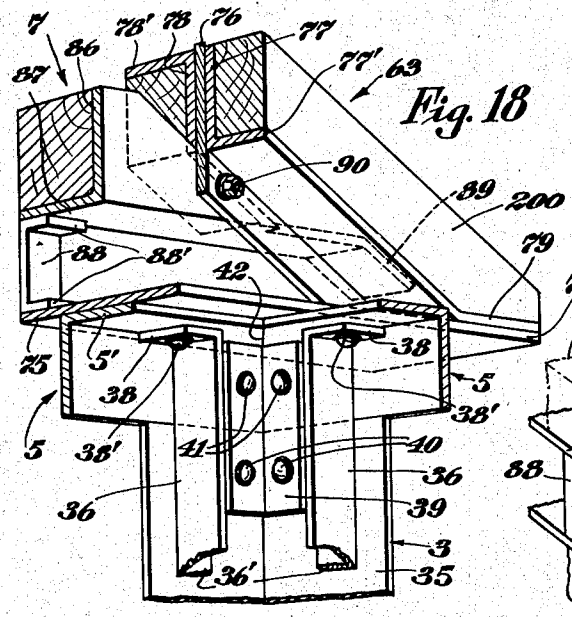


Fig. 19

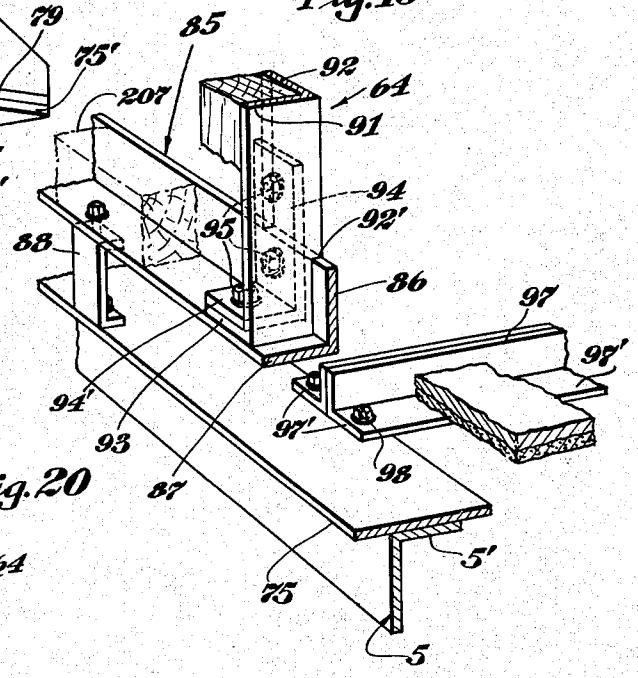


Fig. 20

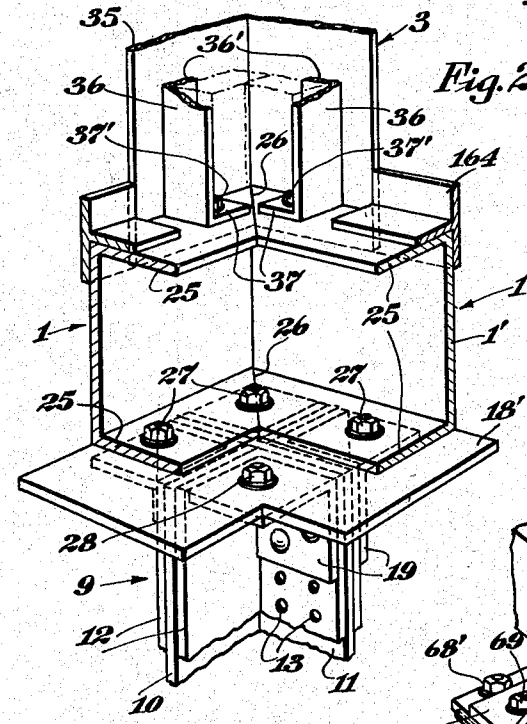
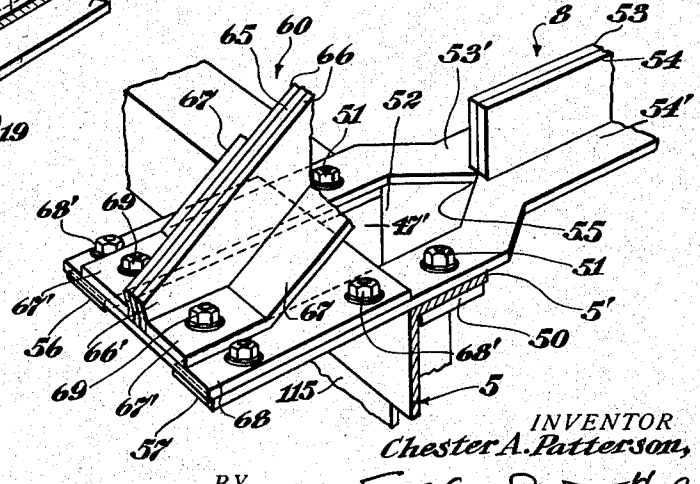


Fig. 21



INVENTOR
Chester A. Patterson,

BY Bartlett Eyre Scott & Peel

ATTORNEYS

Patented May 4, 1937

2,078,968

UNITED STATES PATENT OFFICE

2,078,968

BUILDING STRUCTURE

Chester A. Patterson, Peekskill, N. Y., assignor to Hiter King, New York, N. Y.

Application May 23, 1934, Serial No. 727,090

29 Claims. (Cl. 189—1)

This invention relates to houses and particularly to houses and dwellings made of prefabricated parts.

One object of the invention is a novel house or dwelling construction which permits the utilization of prefabricated parts and materials throughout and which is characterized by its strength and durability and by the economy and rapidity with which it may be erected in the field.

A further object of the invention is a house or dwelling of the above indicated character which is further characterized by the flexibility of its construction and its adaptability to the various standard architectural periods or types and to the various shapes and forms thereof, both as to interior and exterior finish.

A further object of the invention is a house or dwelling of the above indicated character which is further characterized by the facility with which any ordinary architectural plans may be followed with the utilization of the prefabricated parts of novel and improved construction.

A further object of the invention is a novel house or dwelling frame structure which is characterized by the facility with which any architectural design or any interior or exterior finish or wall may be incorporated therein.

A further object of the invention is a novel house or dwelling frame structure made of prefabricated parts which is characterized by the facility with which pipes and service lines may be led to any point of the house or dwelling desired.

A further object of the invention is a house or dwelling frame made of prefabricated parts together with a pipe and service line distribution including the disposition of the pipe and service lines between the ceiling and the roof with vertical channel studs and horizontal channel studs forming ducts for the accommodation of such lines.

A further object of the invention is a novel floor construction and method of forming the same, including the casting of the floor in a manner to have it suspended from and supported by outside channel beam members and cross channel beam members and of a material which is resistant to moisture and disintegration.

A further object of the invention is a novel roof truss including a nailing groundwork whereby roof materials of any type may be incorporated therein on sheathing as a base for slate, tile, wood, shingles, metal, composition or other types of roofing.

A further object of the invention is a novel roof truss and framework.

A further object of the invention is a novel ridge structure for houses or dwellings.

A further object of the invention is a novel foundation or under structure for houses and dwellings.

A further object of the invention is a novel foundation or under structure for houses and dwellings with the elimination of the necessity for a cellar.

A further object of the invention is a novel wall structure for houses and dwellings.

A further object of the invention is a novel ceiling construction for houses and dwellings.

A further object of the invention is a novel interior partition construction for houses and dwellings.

Further objects of the invention will hereinafter appear and for a better understanding thereof reference may be had to the accompanying drawings wherein:

Fig. 1 is a diagrammatic layout plan view of a house embodying the invention;

Fig. 2 is a perspective view of the framework of the house;

Fig. 3 is a diagrammatic view looking in the direction of line 3—3 of Fig. 1 and showing an intermediate roof truss and other features of the invention;

Fig. 3*a* is a diagrammatic end view of an end roof truss on the line 3*a*—3*a* of Fig. 1;

Fig. 4 is a sectional view generally on the line 4—4 of Fig. 1 and Fig. 2;

Fig. 5 is a sectional view along the line 5—5 of Fig. 4;

Fig. 6 is a sectional view along the line 6—6 of Fig. 1 and Fig. 4;

Fig. 7 is a plan view taken on line 7—7 of Fig. 2 and Fig. 4 looking down upon a part of the roof truss;

Fig. 8 is a horizontal sectional view along the line 8—8 of Fig. 4;

Fig. 8*a* is a sectional view taken on the line 8*a*—8*a* of Fig. 2;

Fig. 8*b* is a sectional view similar to Fig. 8 showing a modification;

Fig. 8*c* is a sectional view along the line 8*c*—8*c* of Fig. 2 showing one form of wall;

Fig. 9 is a sectional view along the line 9—9 of Fig. 1, Fig. 2 and Fig. 3*a*;

Fig. 9*a* is a view similar to Fig. 9 showing a modification;

Fig. 10 is an end view of the ridge;

Fig. 11 is a plan view of the ridge at an intermediate roof truss;

Fig. 12 is a sectional view along the line 12—12 of Fig. 2 and Fig. 3a;

Fig. 13 is a sectional view similar to Fig. 4 through a door and showing a modification;

Fig. 13a is a sectional view along the line 13a—13a of Fig. 13;

Fig. 13b is a vertical sectional view showing the sill of the modification shown in Fig. 13 where there is no door;

Fig. 13c is a sectional view along the line 13c—13c of Fig. 13;

Fig. 13d is a sectional view along the line 13d—13d of Fig. 13;

Fig. 14 is a perspective view of a skeleton of a partition;

Fig. 15 is a sectional view along the line 15—15 of Fig. 2 and Fig. 3;

Fig. 16 is a perspective view of the ridge construction and roof truss members;

Fig. 17 is a perspective view of the floor beams and a vertical channel stud;

Fig. 18 is a perspective view of the corner frame construction at the eaves;

Fig. 19 is a perspective view of a part of the end roof truss;

Fig. 20 is a perspective view of the corner construction of the floor beams or channels;

Fig. 21 is a perspective view of a part of an intermediate truss at the eaves.

Referring to the drawings the house of this invention embodies a framework of prefabricated parts and units which are fabricated at the factory and assembled into an enduring and permanent structure with a minimum of labor cost and with certain other advantages characteristic of the particular structure forming the subject-matter hereof. For example, the framework comprises outside floor channels or beams 1, inside floor beams or channels 2, corner vertical studs 3, intermediate vertical studs 4, outside horizontal ceiling or floor beams 5, roof trusses indicated generally by the numeral 6 and comprising end horizontal truss structures 7 and intermediate truss beams 8, and a foundation comprising a multiplicity of pier structures 9. As hereinafter more particularly described, the structure of this framework is characterized by its flexibility and adaptation to various architectural designs, to the size and general plan of house desired, whether one story or multiple story, and to the use of any of the conventional materials for the outside finish and wall and for the inside finish and wall and further by the facility with which windows and doors may be incorporated at any desired place and by the facility with which the distributing pipes and service lines may be incorporated and distributed with due consideration of both economy and convenience.

Foundation structure

The preferred foundation includes, as above indicated, a plurality of more or less closely positioned prefabricated pier units 9 and these units 9 may be used alone or in combination or correlation with concrete and other foundations.

Referring to Figs. 2, 3, 15, and 20 each pier unit 9 comprises angularly disposed webs 10 and 11, there being a pair of webs 11 disposed on opposite sides of the web 10 and engaging the sides thereof edgewise, in the particular embodiment shown at angles of 90°. These web members 10 and 11 are rigidly fastened in their angular relation by means of four similar angle irons 12, the angle irons and the webs being fastened together to form a rigid structure in any suitable manner, as for example by the riveting or welding indicated at 13. The webs 10 and 11 project beyond the lower ends of the angle irons 12 and are cut off on an angle at their projecting edges to form cutting and driving edges 10' and 11' merging into a driving point 14. The webs are also enlarged in the vicinity of the ends of the angle irons 12 to form shoulders 15 extending outwardly at right angles from the angle irons 12 which enables driving and cutting edges 10' and 11' to be formed of the desired character and which also assists in anchoring the piles in position.

The foundation piers 9 are also formed or provided at a point intermediate their lengths with anchoring webs 16 disposed at right angles thereto, these webs 16 being preferably integrally formed with slots formed therein at right angles to each other for the passage of the webs 10 and 11 and angle irons 12. These anchoring webs or plate members 16 are fastened at any desired point by means of the angle pieces 17 with one wing of the angle pieces welded or riveted to the webs and angle irons and the other wings welded or riveted to the web or plate member 16. These angle pieces 17 may be duplicated above and below the anchoring plate members 16 if desired. Each of these foundation piers 9 is provided at its upper end with some suitable means whereby the ground or floor beams may be mounted upon and fastened thereto. For example, they may be provided with intermediate anchoring plates 18 and corner plate 18' which rest upon the upper ends of the pier member 9, the webs and angle irons of which terminate in a horizontal plane. These anchoring plates 18 and 18' may be anchored thereto in any suitable manner, as for example by the angle pieces 19, having one wing in engagement with the angle irons 12 and the other wings in engagement with the under sides of the plates 18 18' and the parts are suitably fastened together by welding or riveting.

Where the character of the earth foundation permits, these pier structures 9 are assembled in position at least in part by driving. The anchoring and retaining web plates 16 rest firmly upon the ground or other surface surrounding the vertical web structure of the pier and it may be advantageous in certain cases to fasten the anchoring plate 16 upon the ground surface independently of and supplementary to the fastening obtained through the web structure itself. For example, in Fig. 3 there is indicated pins or other fastening devices 20 passing down through suitable openings formed in the plate 16 and entering the ground or other bearing surface of the plate. The pile structures are mounted in position preferably by the method indicated in Fig. 3. According to this preferred method holes 21 of slightly larger lateral dimensions than the plate 16 are formed in the ground of the desired depth and the bottoms of these holes 21 form a bearing and anchoring surface for the retaining plates 16, the lower ends of the piers 9 having been driven downwardly, where the character of the earth permits, until plate 16 firmly engages the bottom of the hole 21. As many of these foundation structures 9 may be provided as is desired or required. In the particular embodiment indicated there is provided such a structure for each of the vertical studs, but there may be more or less of these members used de-

pending upon the size of the house, the character of the ground and other considerations. Where it is impractical to drive the members 9 home, they may be mounted in holes dug to the depth thereof and the holes subsequently filled in and if desired concrete or the like may be utilized for this filling.

Frame structure

The outside beams 1 are formed of channel members with their flanges 25 (Fig. 20) horizontally disposed and projecting inwardly and the adjacent ends of these channels 1 have their flanges cut off or mitered along the lines 26 to form mating edges and at a corner where these floor beams 1 are disposed at right angles to each other the flanges 25 are cut off on an angle of 45° with respect to the webs 1' of the channels. The lower flanges 25 rest upon the plates or shelves 18 and 18', disposed on the upper ends of the pier structures 9, and are anchored to said plates 18 and 18' and the pier structures by means of bolts 27 passing down through the anchor plates and also through the angle pieces 19. A bolt 28 is indicated for fastening the plate 18' to the horizontal wing of an angle piece 19. The anchor plates 18 and 18', which are preferably removably secured to the pier structures 9, may be of any suitable thickness and shims may be utilized for compensating for differences in level in the assembly of the prefabricated structures.

The intermediate or cross floor beams 2 are used wherever desired, as for example where it may be desired to reduce the size of the floor panels or where it is desired to incorporate a service pipe or line. The cross beam 2 of Figs. 2 and 17 is disposed in the plane of a vertical stud 4 and co-operates and functions therewith not only as a structural element of the frame but as a continuation of the conduit formed by the vertical stud 4 for the accommodation of service pipes and lines as hereinafter more particularly described. This floor beam 2 comprises 3 channel members, a central channel member 30 having its flanges 30' disposed in vertical planes and two spaced channels 31 having their webs abutting against the flanges 30' and their flanges 31' disposed in horizontal planes and with all three channel members 30 and 31 resting upon a plate 32. The cross beam 2 rests at either end or at one end upon the lower flanges 25 of the sill or channel beam 1, and the whole is anchored thereto by means of bolts 33 passing through flanges 31', plate 32 and the flange 25 and also the bolts may pass through the wings of angle pieces 19 fastened to the upper ends of the pier structures. Preferably, as shown, the webs of the channels 31 are of less depth than the height of the flanges 30' to permit adaptation of a cover 30a for the service pipe enclosure. The flanges 30' of the channel 30 with cover 30a are of sufficient depth to enter freely the space between the flanges 25 of the beams 1.

A corner vertical stud 3 (Figs. 18–20) includes an L-beam 35 with its lower end bolted to the floor beams 1 at their junction point, the webs of the L-beam 35 having their inner surfaces flush with the outside surfaces of the meeting beams and projecting down below the upper flange 25 as shown. The webs of the L-beam 35 are of the same width and thickness and carry on the interior thereof the smaller L shaped members 36, the webs 36' thereof abutting against the inner surfaces of the webs of the L-beam 35 and being rigidly fastened thereto in any suitable manner, with their lower ends flush with the upper surface of the top flange 25. The other webs of the L-beams 36 have inwardly turned feet or flanges 37 at their lower ends resting upon the upper surfaces of the top flanges 25 of the two adjacent corner floor beams 1, being suitably secured thereto by the bolts 37'. At their upper ends the webs are provided with two outwardly turned feet or shelves 38 which are secured by the bolts 38' to and act as a support for a floor or ceiling beam 5, these beams 36 engaging the under side of the horizontal webs 5' of the beams 5. The L shaped member 35 terminates at the edge of the downwardly disposed flanges of the beams 5 and the ends of the webs thereof are flush with said flanges. Preferably the structure is further reinforced by an elongated angle piece 39 fastened at its lower end by rivets or welds 40 to the webs of the L member 35 and fastened at its upper end by the welds or rivets 41 to the adjacent adjoining floor or ceiling beams 5. The horizontal webs 5' of the latter are also cut off or mitered at 42 at an angle of 45° to the vertical web to form a mating engagement at the corner.

The intermediate vertical stud members 4 (Figs. 2, 7, 8, 8a, 17, and 21) comprise the vertical channels 47 whose flanges 47' extend inwardly from the central web and are provided with feet or flanges 48 at their lower ends disposed at right angles to the flanges 47'. The channels 47 rest upon the upper flanges 25 of the floor beams or sills and the feet or flanges 48 are secured by bolts 49 thereto. The upper ends of the channels 47 abut against the under side of the web 5' of the L member 5, and the flanges 47' of the channel 47 are formed with feet or shelves 50 turned at right angles thereto, and outwardly with respect to the feet or flanges 48, abutting against the under side of the web 5' and being secured thereto in any suitable manner, as for example by the bolts 51. At this point a section of the web 5' is removed to form a conduit opening in line with the duct formed by the channel 47, this opening being indicated at 52. The truss beam 8 at this point is especially constructed and correlated with the ceiling beam 5 and the vertical stud 4 to provide a continuous open conduit from a point above the ceiling or above the level of the beam 5 to the service duct formed by the vertical channel 47. This beam 8 comprises a pair of juxtaposed L members 53 and 54, (see Fig. 21) two of the webs of these L members being back to back, while the other webs 53' and 54' are disposed in a horizontal plane and caused to diverge at a point 55, a point substantially in advance of the beam 5, and after diverging until their inner edges are spaced a distance approximately equal to the opening 52, are then continued above the beams 5 in parallel spaced ends 56, 57, which project a substantial distance beyond the beams 5, to provide the desired eave or overhanging of the roof etc. The opening 52 is, therefore, of ample dimensions and shape to facilitate the leading of service pipes and lines to and from points above the ceiling and from and into the ducts formed by the channels 47 and 30. The bolts 51 may be utilized for fastening the channel 47, the beam 5 and the beam 8 securely together.

An intermediate roof truss (Figs. 2, 3, 16, and 21) comprises the horizontal truss members 8, the inclined truss members 60 and the intermediate bracing 61 and 62. An end truss (Figs. 2, 3a, 9, 16, and 18) comprises a structure 7 super-

posed upon the beams 5, the inclined beams 63 and the intermediate bracing members 64.

The beam 60 comprises a web 65 disposed in a vertical plane, to the opposite sides of which are secured two L-shaped members, the webs 66 of which lie flat against the vertical web 65 and are substantially flush therewith at their upper edges. The web 65 projects below the webs 67 of these L-shaped members. At the lower end where this beam 60 rests upon the overhanging ends 56 and 57 of the truss beam 8 (see Fig. 21) the part 65 of the beam 60 and the L-shaped members are formed into a bearing surface, flat underneath, to rest upon a plate 68 which is secured to and bridges the overhanging ends 56 and 57, the two being suitably secured together, as for example by the bolts 68'. For this purpose the webs 67 are provided with feet 67' turned at an obtuse angle to the main body of the web 67 and the width of the webs 66 are correspondingly reduced at 66' to match the angularly displaced feet 67', the under edge of the web 65 being formed with a surface flush with the under side of the feet 67', the beams 60 being secured to the plates 68 and thence to the extensions 56 and 57 of the beam 8 by means of the bolts 69.

The ridge structure is shown in Figs. 4 and 16. This ridge structure comprises a multiplicity of plate members comprising two layers of staggered plate members 70, 71, and 71' extending horizontally the length of the ridge. The members 71 and 71' are made a part of the truss members 60 and 63, being welded or bolted thereto before being shipped to the home-site. The intermediate ridge members 70 are composed of staggered plates 102 and 103 welded or riveted together. The webs 66, for example, of the beams 60 have their ends 72 turned out of the plane thereof and at right angles thereto, but inclined to the upper edges thereof so as to abut flat against the staggered ridge member 71; the webs 67 are formed so as to have their ends flush with the abutting surfaces of the feet 72 and the upper end of the web 65 is similarly formed with an abutting edge flush with the abutting surfaces of the feet 72. The upper end of the beam 60 is anchored to the ridge structure 71, as before mentioned, in any suitable manner, as for example by bolts passing through the feet 72 or by welding as shown, the ridge members 71 and the feet 72 abutting thereagainst on the opposite side. The bracing members 61 and 62 of the intermediate truss are fastened at their lower ends to the abutting webs 53 and 54 of the beam 8 and are fastened at their upper end to the central web 65 in any suitable manner, as for example by bolting, riveting or welding.

An end roof truss (Figs. 2, 3a, 16, 18, and 19) includes an elongated plate 75 mounted upon the horizontal web 5' of the corresponding floor or ceiling beam 5, this elongated plate overhanging the beam 5 both laterally and longitudinally. The inclined truss member 63 rests at its lower end upon the projecting end 75' of the plate 75. The truss member 63 comprises a central elongated web 76 and a pair of elongated angle irons having webs 77 and 78 abutting against opposite sides of the webs 76, the other webs or wings 77' and 78' of these angle irons being reversely disposed with respect to each other in the vertical direction. The web 77' of the angle iron has its lower end 79 turned at an angle thereto to form a foot rest flat against the overhanging end 75' of the plate 75 and the web 78 of the opposite angle iron is similarly formed to form a bearing edge resting upon the plate. The web 76 projects up above the two angle irons carried thereby to form a projecting edge 80, and also has a sufficient width to project a substantial distance down beyond the two angle irons, and this lower projecting edge is also cut off at an angle on its lowermost end flush with the foot 79 of the angle iron to form a bearing surface. The upper end of the web 76 is formed into an abutting flange 81 abutting against the ridge member 71' and the web 78' of the angle iron has its end turned downwardly to form an abutting flange 82 for resting against the flange 81. The two end truss members 63 abut at opposite sides against the ridge structure 71', the plates 71' being welded or riveted to the flanges 81 (see Fig. 16).

A special frame structure 7 is built upon the elongated truss plate 75, comprising an elongated L-beam 85 having a flange 86 disposed in a vertical plane and a horizontal flange or web 87 and this L-beam is supported up above the level of the truss plate 75 by means of spacers 88, the latter having feet 88' resting upon the truss plate 75 and bearing against the under side of the flange 87 respectively, with bolts indicated in Fig. 19 for securing the parts together. The beam 85 is suitably formed at its end to abut against the inclined roof truss member 63, as for example having the end of the flange 87 turned downwardly to form a foot 89 bearing against the flange 78' of the truss member 63. Also the flange 86 is similarly formed with an edge bearing against the inclined flange 78'. The flange 86 of the L-beam bears at its end against the outside surface of the web 76 and the two may be firmly secured together by bolts 90.

The bracing frame member 64 is in the form of an L-beam with the flanges 91 and 92 which rest upon the horizontal flange 87 of the L-beam 85 (Fig. 19), the lower ends of the flange 91 being turned at right angles thereto to form a foot 93 bearing upon the flange 87. The L-beam is mortised, as indicated, at 92' by mortising off the flange 92 flush with the upper edge of the flange 86 and the outer surface of the flange 92 is flush with the outer surface of the flange 86. In order to reinforce and securely fasten the brace 64 to the beam 85 a bracket 94, having a foot 94' resting upon the foot 93, is secured to the flange 92, the flange 86 and the flange 87 by means of the bolts 95 indicated. At its upper end the brace 64 is securely fastened to the flange 78' of the truss member 63, the flange 91 being turned over at its upper end to form a bearing surface 96 (see Figs. 2 and 3) abutting against the under surface of the flange 78', while the flange 92 is cut off to form a bearing edge against the under surface of the flange 78' and any suitable means may be provided for firmly fastening the upper end of this brace to the truss member, as for example by welding, bolting or riveting the flange 92 against the web 76 or to the flange 78'.

Any suitable cross members needed may be provided between the floor or ceiling beams 5 and the truss members 8, such for example as a beam formed of two L members 97 (Fig. 19) with two of their flanges back to back and with their horizontal flanges 97' resting upon the plate 75 and the webs 53' or 54' at the other end and these beam structures 97 may be securely fastened in position in any suitable manner, as for example by the bolts 98 passing through the plate 75.

The roof ridge members 70, 71, and 71', formed

of staggering leaf lengths disposed in vertical planes, are an advantage because of the rigidity in structure and the simplicity in assembly and the economy and facility with which the same may be prefabricated, shipped and assembled. For example, the two members 100 and 101 forming the end roof truss ridge 71' are of different lengths, while the leaves 102 and 103 of the intermediate roof ridge members 70 are of greater length than either of the lengths 100 and 101, but are of the same length. The lengths 104 and 105 of the ridge member 71 at an intermediate roof truss may also be of the same length and so on to the other end of the ridge where unequal lengths are provided to match the unequal lengths 100 and 101, (or the unequal lengths of other leaves). A continuous smooth surface ridge is thereby obtained of sectional standard character without the necessity of mortising and other fitting operations and the parts are generally interchangeable. At 106 are indicated transverse bolts for securing the units 70 to the adjacent units 71 and 71', these bolts passing through overlapping ends of leaves as indicated. Angle lengths 107 are welded or otherwise secured flat against the intermediate ridge members 70 for a purpose hereinafter described.

In Figs. 13, 13*c*, and 13*d* is shown an intermediate roof truss construction and Fig. 9*a* shows an end roof truss construction corresponding thereto which is particularly adaptable to a lighter house construction than that described above. Referring to the intermediate roof truss it comprises a horizontal T beam 53*a* with the web 250 horizontally disposed and resting at either end upon the outside beam members 5. This web 250 projects beyond the outside ceiling beam 5. The inclined roof truss embodies a beam made up of a central web 251 to the opposite sides of which and intermediate its edges are fastened, as for example by welding or bolting, two L members 252. The outwardly extending flanges 252' of the L member have their ends turned at an angle to the main body of the beam to form feet 253 which rest upon either side of the web 250 of the horizontal member at its projecting end. The web 251 is cut off or formed at its end with a bearing surface flush with the bearing surfaces of the feet 253. The T member 53*a* and the inclined truss member are secured together in any suitable manner, as for example by the bolts 254 passing through the web 250 and the feet 253. If desired, the two beam members of the truss may be further reinforced by securing the T member 53*a* to the web 251, as indicated by the bolts 255, and for this purpose the two beams are offset slightly with respect to each other to a distance equal to the thickness of the web 251, so as to enable the two vertical webs to pass and lie flat against each other for fastening. Preferably the ridge structure in Figs. 9*a* and 13 is similar to the ridge structure above described.

The end roof truss embodies an inclined roof beam 256 comprising a vertical web 257 and two L members 258 and 259 fastened to the opposite sides of the vertical web 257 and intermediate the upper and lower edges thereof. The horizontal truss beam comprises a pair of L beams 260, 261 having their vertical flanges secured at the ends to the opposite sides of the web 256, both L beams 260, 261 resting upon the outside beam 5 with the ceiling panels 126', 127' resting upon the horizontal web of beam member 260. The gable wall comprises prefabricated panels of any suitable material, such as an inner layer of cellotex 262, an intermediate layer of laminated wood 170' or if desired insulation and an outer layer of wood 263. The inner layer 262 with the laminated wood 170' may be anchored in position in any suitable manner, as for example by means of male and female bolts 165, 166 as below described which are fastened to the inclined beams 256 and the horizontal beams 261. The outer layer 263 of wood may be fastened in any suitable manner, as for example by nailing. A corner molding 264 is indicated with metallic flash 265 forming the continuation of the metallic roof 204 and suitable moldings 266 are fastened adjacent the horizontal beam 260, 261. Inside molding at the horizontal beam is indicated at 267, 268.

Walls, floors, ceilings, etc.

The concrete floor 110 is cast and suspended on the outside channels 1 and cross channels 2, the floor being cast with reinforcing wire, omitted for convenience, and the whole unit becomes a monolith which cannot possibly pull apart. Preferably the slabs 110 have incorporated therein a waterproofing paint and the concrete is laid upon sheathing boards 111 (Fig. 17), which sheathing boards will remain in place until they rot and will afford additional protection to the concrete from cold and moisture. These boards, however, do not cover the entire space of the bearing formed by the flanges 31' and 25 so that the concrete is not dependent on the boards for support after it once sets. Any type of floor covering 112 (Fig. 8*c*) may be provided, such as carpets, linoleum or rubber, etc.

The embodiment of the invention shown, is for a single story house, but if there are two or more stories channel beams 1 would rest upon the vertical studs 3 and 4 together with such cross beams 2 as may be desired and a concrete floor may be cast thereon as on the first floor.

Referring to Figs. 4 and 8 which show one embodiment of the interior and exterior walls incorporated into the steel frame structure above described, the vertical studs 4 include the vertical plate or web 115 welded or otherwise fastened to the back of the vertical stud channel 47. To the backs of these webs 115 are fastened the vertical nailing members 116, such for example of a suitable wood or fibre and corresponding nailing parts 117, 118 are fastened to the L-beam members 35, the former to the outside surface of one of the flanges of the L 35 and the latter to the inner surface of one of the flanges of the L. Similar nailing beams 118' and 117' are nailed to the other flanges of the L 35. These nailing beams may be secured in any suitable manner, as for example by the bolts 119 indicated. Composite sheathing 120 prefabricated in sections at the factory are then nailed to these nailing members 116, 117 and 118 to form the base of the outside wall. Corner pieces 121 and 122 prefabricated at the factory are also provided and nailed to the corner nailing bars. The prefabricated units or sections 120 are preferably substantially flush with the webs 115 and the flanges of the corner L beams 35. This sheathing may be covered with insulating building paper or with wire lathes 123 and any exterior finish may be incorporated as desired, such for example as shingles or stucco 124. The interior of the sheathing 120 may be covered with a padding for heat and cold insulation if desired, any suitable commercial padding of this character being usable.

In the embodiment of Figs. 4 and 8 the interior wall is formed of a composite cellotex and sheet rock structure, the cellotex being indicated at 126 and the sheet rock at 127. This is also made in sections, prefabricated and ready for assembly by unskilled workmen. For this purpose nailing bars or blocks 128 are secured to the inside of the webs 115 and against the channel flanges 47' and other nailing bars or blocks 129 are fastened within the L members 36, 36' and these members together form the ground work to which the composite cellotex and sheet rock sections or sheets 126, 127 may be readily nailed or fastened. This construction leaves air spaces 130 between the interior wall and the outside sheathing which also assists in insulation against heat and moisture. If desired, these air spaces may be filled with any suitable insulating or moist-proof material.

A feature of the construction of this application is the flexibility as to the disposition and positioning of windows, doors and the like which may be positioned between any of the vertical studs 3 and 4 as it may be desired. Where a window or door is desired such window or door is positioned between two adjacent vertical studs 3 and 4 or 4 and 4, these studs being positioned at that point to receive a prefabricated window frame structure upon which windows of any desired character may be mounted. A window frame structure is shown, for example, in Figs. 2, 4, and 8. The support for the window frame comprises a pair of cross girders 131 and a channel member 133 attached thereto, the webs 132 being fastened at their ends to the web 115 of a vertical stud 4 and to the web 35 of a corner stud 3. Upper and lower window frame members 134 and 135 are mounted upon the webs 132, the upper member 134 comprising two parallel offset web parts 136 and 137 with a right angle part 138 adjoining them and laying flat against the lower edge of the web 132. The frame member 134 carries a depending flange 139 and this flange 139 and the right angle part 138 form engaging surfaces against which bear the window indicated at 140. The lower frame member 135 also has an upstanding flange 139' corresponding to the flange 139 and then the right angle part 138' corresponding to the right angle part 138, the web part 137' of the lower frame member 135 is downwardly inclined to facilitate watershed. The side window frame members 136 are similar to the upper window frame member 134 and are mounted with their right angle shoulder parts 138 bearing against the webs 115 of the vertical studs 4, as shown in Fig. 8, or as against one web 115 and a corner web 35. Immediately surrounding the inner window frame member comprising the parts 134 and 135 is a molding 141 formed of sheet metal having an inner flange part 142 fitting around the parts 137 of the inner frame member and a flange part 143 fitting under the inner frame part 137'. This flange 142, 143 is offset at 144 and merges into the molding part 145, 145', the molding part 145 extending three-fourths around the window and the part 145' being disposed underneath the window and having an upper inclined wall 146 to facilitate the drain of water, etc. The part 137 may be welded to molding part 145 and similarly part 137' may be welded to molding part 145'. The molding part 145 proper is rectangular in section with a border flange 147 abutting against the outside sheathing 120, while the lower molding part 145' departs from the rectangular section as shown and is provided with a border flange 148 bearing against the sheathing 120. A fitting block or member 149 of any suitable material may be provided between the offset part 144 of the molding frame and the web 132 (Fig. 4). Suitable interior molding for the window may be provided, such as the molding 150 for the upper edge and sides of the window and a lower molding 151 for the lower edge of the window. For fastening the side parts 150, the nailing block or bar 152 is fastened to a block 128, the outside surface of the latter being flush with the interior wall 126 and 127. For fastening the upper and lower interior moldings, nailing members 153 and 154 are provided, the inner blocks 153 bearing against the web 132 and the channel 133 and the outer blocks 154 bearing in turn against the inner blocks 153 and having their outer surfaces flush with the surface of the interior wall.

Fig. 8a shows a horizontal section corresponding to Fig. 8 through a vertical stud at a point where there is no window or door. At 128' are indicated openings through the blocks 128 and the flanges 47' through which electrical conduits or the like are led from the vertical channel stud.

Fig. 8b shows an alternative construction to that shown in Fig. 8. Here the interior wall is flush with the flanges 47' of the vertical channel studs and it is composed of an inner layer of cellotex 160 and outer layers 161 of sheet rock, this interior wall lying flat against the inner surface of the web 115. Where there is no partition to cover up the open channel 47 suitable moldings 162, 163 are applied thereto in any suitable manner. The interior wall 160, 161 may be fastened in any suitable manner. For this purpose I have shown horizontal T frame members 164 mounted upon the outside horizontal channel members 1 (see Fig. 8c), the cross webs of these T members being vertically disposed and the other flange resting upon a flange 25 of the channel 1. These T members 164 are fastened in any suitable manner, as for example by welding, riveting or the like to the channels 1. They are provided with female screw bolts parts 165 and male parts 166, the female parts 165 being riveted or welded to T members 164 and disposed in holes near the interior wall and the male parts 166 being inserted therein from the inside and screwed home to firmly hold the interior wall 160, 161 in position. Similar fastening means 165, 166 may be provided at top in L member 5 (see Fig. 9) for securing the upper edges and the sides of these interior panel walls at intervals in vertical stud members 115 or corner stud members 35.

A further modification of the wall structure is shown in Figs. 13, 13a, and 13b. Here the cellotex sheet rock interior panel walls 126, 127 are backed by a layer of laminated wood 170 resting against the interior side of the vertical web 115, the web of the corner L member 35 and against the web of the outside ceiling beam 5. These panels may be fastened in any suitable manner, as for example by the female and male fastening bolts 165, 166, the parts 165 being carried by the vertical webs 115, by the horizontal beams 5 and, if necessary, the bottom by angle pieces 164' mounted upon the channels 1 (Fig. 13b). The panels 126, 127 are flush with the vertical studs 47, and suitable molding devices 162, 163 may be positioned over the open sides of the vertical channel studs 47. Suitable vertical molding devices 171, 171' may be provided (Fig. 13a) and any suitable outside wall or finish may be in-

corporated and for this purpose nailing blocks 172 are fastened by bolts to the vertical corner L member 35 which with the nailing blocks 116 and nailing blocks 173 secured to the horizontal door frame beam enable any kind of wall and finish to be applied. In Fig. 13*b* the lattice work 174 is embodied as the outside finish, nailing blocks or parts 175 being secured to the floor channels 1 for co-operating with the other nailing blocks and bars and receiving the lattice work.

Fig. 13 also shows the facility with which a predetermined door and frame may be incorporated at any desired location, the door being indicated at 176. When it is desired to incorporate a door at a particular location it is only necessary to incorporate a horizontal channel beam 131' backed by a web or plate 132', this composite member being fastened in the manner above described with respect to horizontal beam 131 (Fig. 4) for the window. The upper part of the door frame is indicated at 177 and the lower part at 178, the side frame members or parts are not illustrated but they are similar to the frame part 177 comprising an inwardly extending flange 179 and an outwardly extending flange 180, the two flanges 179 and 180 forming bearing surfaces against which the door 176 bears. The lower frame member 178 is shown as having shoulders 179' and 180' formed thereon as the jamb surfaces for the bottom part of the door corresponding to the bearing surfaces 179 and 180 and exteriorly this frame member 178 is provided with an overhanging skirt or drain 181. An elongated plate 182 is mounted upon and secured to the upper flange of the channel 1 and is provided with an upwardly turned flange 182', the upper edge of which forms a bearing surface for the under side of the frame member 178. The latter is provided with an interior part 183 of any desired molding finish. The frame parts 177 and 178 may be in separate pieces or in one single piece prefabricated at the factory and may be anchored in position in any suitable manner, as for example by the bolts 184 passing through the flange of the channel 133' and also through a fitting in block 153. The open channel 131' may be covered with any suitable molding 162, 163.

Ceiling

Referring to Figs. 4, 5, 9, 13*d*, and 19 the ceiling comprises a composite layer of cellotex and sheet rock 126' and 127', the panels thereof resting at one end on the flanges 53', 54' of the L beams 53—54, and at the other end or side on horizontal plate members 75 extending out over the interior wall panels 126, 127. Suitable molding devices 187, 187' are fastened in any suitable manner to the under side of the L beams 53—54, as for example by means of the screws indicated, and a holding means 188 is carried by the L beams 53—54 having fingers 188' bearing down upon the ceiling finish panels 126', 127' to hold them in place. In Fig. 13 the ceiling panels 126', 127' rest on ends or sides upon the moldings 189 and T members 53*a* and a molding finish 189' is applied to the corner.

In Fig. 9 the ceiling 126', 127' rests on one side on the plating web 75 and clip means 190 fastened to the plate 75 and flange 5' by means of bolts, as shown, frictionally hold the ceiling panels in position.

In Fig. 19 is shown a condition where great width of room may require a cross ceiling beam 97 at right angles to beams 53 and 54, in which case the flanges 97' will rest on one end bolted by bolts 98 to plate 75 and at the other end on flanges 53'—54' of beams 53—54, and securely bolted thereto. In this case ceiling 127'—126' can rest on flanges 97' and moldings 187'.

Roof construction

The roof is arranged to take either slate or any other composition or shingles. Referring to Figs. 4, 9, 13, 16, and 18, the L members of the inclined roof trusses, namely the L's 66, 67 and 77, 77' carrying nailing blocks 200, these nailing blocks being substantially flush with the L carrying members and forming together with the nailing blocks 201 carried by the cross L's 107 which are welded to the ridge, a background upon which the roof may be firmly secured. These nailing blocks may be secured in position in any suitable manner, the blocks 201, for example, being secured by bolts 202 (Fig. 4) passing all the way through the blocks disposed on opposite sides of the ridge 70 and through the angle pieces 107. A shingle roof 203 is indicated in Fig. 4, while in Fig. 9 the roof finish is omitted, and in Fig. 13 the roof 204 is indicated as a metal roof but may be any desired form of roof. At 205 are indicated transverse bolts passing through nailing or fastening blocks 200 and 206 which are carried by the end inclined roof trusses, the bolts passing through both blocks and through the webs of the truss. The blocks 200 on intermediate truss members may be similarly fastened in position.

In Fig. 9 is shown the wall construction for the gables. The nailing block 206 together with the nailing block 207 carried by the horizontal L member 85 form a nailing background to which the wall base 208, such as sheathing or weatherboarding and the like, insulated as at 123, may be fastened or nailed and any finish may then be applied, such for example as shingles 210. If desired, a nailing block or bar 211 may be secured, as for example by the bolts indicated, to the outside of the horizontal L beam 5, as a nailing block for the boarding 208 and the boarding 120 and to form a continuous layer of insulating paper or the like 123. Horizontally disposed watershed molding means 212 may be provided immediately below the gable shingles and suitable molding and finish devices 212', 213, and 214 are associated therewith and underneath the same. The roof 204*a* overhangs the gable at 204' and a filling block 215 is disposed under the roof and up against the boarding 208 and suitable molding finish 216, 217, 218, and 219 is associated with the roof edge.

In Fig. 4 eaves molding finish is shown comprising the members 220, 221, 222, and 223, the latter being mortised to receive the upper end of the shingles. A nailing block 224 is bolted to the under side of the beam ends 56—57 for facilitating the application of this molding device. In Fig. 13 a nailing and spacing block 224' is bolted to the under side of the flanges of the girders 53*a* and a suitable molding finish 226 is nailed at the upper end to this block 224' and at its lower end to the block 227. At 228 is indicated a metallic flashing means for preventing access of water to the ridge.

Partitions

A feature of the construction is the facility by which partitions may be set up at any points desired. Interior partitions, for example, may be readily set up by incorporating a sleeper in the

concrete floor 110 where the partition is to go, such for example as the sleeper 230 (Fig. 14). Overhead a steel strip 231 is bolted to the horizontal truss. A vertical stud 232 having its ends turned to form feet 233 and 233', the former to be fastened to the sheet 231 and the latter to the sleeper 230 is provided. The sheet 231 and the feet 233 are provided with bolt holes for the reception of screw bolts. The bolts are clamped in place after which the stud is leveled and nailed into the sleeper 230 by means of the holes provided in the feet 233', shim plates being utilized to tighten the stud, whereupon the partition becomes a solid fixed partition. The partition construction shown in Fig. 14 is purposely illustrated in skeleton form. In addition to the vertical studs 232 and the top plate 231, it is provided with intermediate horizontal members 234 having their ends 234' turned at right angles thereto to form means for securing the wall members to the studs through the aid of nailing blocks 235, 236 as indicated. In Fig. 8 a section of a partition is shown at the corner with a wall finish on either side 237 of sheet rock or the like. In Fig. 8b a similar partition is shown adjacent a vertical stud channel 47, the partition forming the closure for this channel.

Service pipe and line distribution

A general plan of the house embodying the invention is shown in Fig. 1. In the particular embodiment shown the boiler or heating plant room 240 is centrally disposed, though it may be otherwise positioned. The floor of this boiler room is a few feet lower than the main floor of the house. The boiler room 240 is partitioned off according to any standard plan of partition but preferably the partitions above described. It may have these partitions extend up to the ceiling with the ceiling removed from the partitions so as to be opened up to the roof. Whether open or closed, however, the supply lines and pipes run upwardly from the boiler room to the space between the ceiling and the roof. I have indicated one of the pipes at 241 thus disposed above the ceiling (Fig. 3). These pipes are then laid down through the opening provided between the splayed feet 56 and 57 of the truss 8 and thence downwardly through the channels 47 of the vertical studs 4 to the points of desired use. In view of the two or more vertical studs 4 disposed on the outside of a room, a supply pipe or line may be run to any particular point in the room desired, for example, as indicated in Fig. 3, the pipe line 241' runs down through one of the vertical channel studs is taken out through the open side thereof by means of a connection 242 leading to a radiator 243 and from thence through a connection 244 to the return line 245 returning through the cross channel 2 on its return to the boiler room. The vertical channel studs 47 having their open sides disposed inwardly facilitates the distribution to the points desired. Vertically extending pipes passing through the channel studs are designated by the numeral 241'. In Fig. 8 is shown this supply pipe line 241' as mounted within the vertical channel stud by means of the retaining devices 246. Preferably this unit including the channel and the pipe 241' is prefabricated and assembled at the factory so that it is ready for making the connections 242, 244, and 247 which, of course, may be done by unskilled labor. Similarly the pipe 245 may be assembled at the factory and mounted in the floor channel 30, supports 248 being bolted by lugs 249 carried by the channel. These supports 248 are mounted at the proper level to give the required incline to the pipe 245 and this channel together with the pipe 245 may be purchased as a prefabricated unit at the factory. The risers or connections leading up from the boiler room 240 to a point above the ceiling are omitted for convenience in illustration. The main water supply pipes are thus all overhead and since the roof is sheathed and insulated and the cellar boiler room open to the roof all these service lines, while wrapped, will be protected against frost and are readily accessible for repairs and replacements.

In Fig. 3, attached in any desired manner to sill beam 1, is shown an angle iron 250 which would be necessary in case a brick or stone veneer finish for the outside of house were desired. This L 250 would, of course, run entirely around the house or wherever necessary as a base for the brick or stone or the like.

An opening 236' through block 236 and vertical stud 232 leading from vertical channel stud 47 into the interior of partition wall is shown for distributing plugs at any convenient points (Figs. 8b and 14). Openings 235' may be provided, if desired, for passage of cables vertically through horizontal partition frame members 234, 235 to plugs which may be there disposed.

A house structure, as above described, may be made more durable and more satisfactory than the present day constructions and by entirely eliminating the cellar, the plastering and the greater part of the skilled labor usually required, the house can be built in quantity production for less money than the normal construction and still be a much better built house. The adaptability of the construction to the various architectural designs and the standard working materials is also an important feature of the construction. The particular foundation comprising the special pier construction eliminates the greater part of the skilled labor usually required in the preparation of the foundation and at a saving of both time and material for its erection. The wall sheathing sections which are nailed to the top and bottom nailing ground bars are prefabricated at the mill so that all that is necessary is that they may be set in place and nailed in position with horizontal cleats holding the sheathing boards together which are in turn nailed on to strips bolted on to the sheath uprights. This sheathing in turn receives the outside shingles and the cornice and the laying of these shingles and cornice together with a few strips of molding on the inside of the house practically constitute the entire skilled labor required.

The wiring and piping come down from above the ceiling through the vertical channel studs so as to permit base plugs or side outlets at any points desired and also by using metal clamps heating pipes are furnished in the stud already in place so that merely a joint needs to be hooked up on the reverse male and female thread to take the piping into the radiator and from the radiator back into the channel.

The wall, such for example as the double section of sheet rock on the outside of a layer of heavy cellotex or the like, is fastened in place against the vertical studs and this is all set up with lag screws and with angle irons at top and bottom to prevent drafts and vermin and is fireproof. The air space between the outside sheathing and this insulating layer may be filled

with balsam, wool or some sheet insulation which is applied at the factory to the sheathing in section. In the event that a wood finished room is desired, whether it be mahogany, pine, walnut, etc., the inside layer instead of being sheet rock may be ply wood or if the wall is to be papered or painted cellotex and ply wood both may be used. The ceiling construction embodies adequate insulation at every point so that the construction is much more sound and wind-proof than is often obtained under present day normal constructions. The window section is completely set up in the steel work and with hinged hardware on and ready to operate as soon as that particular panel is fastened to the outside of the stud work. At the base of the window is attached the radiation unit which may come all set up with the window to which the nipples will be threaded and ready for operation. The special floor channels lead the heating ducts, pipes, etc. back into the center channel and these channels may have the pipes all connected and mounted therein ready to be hooked up by merely screwing up the nipples. The concrete floor is cast and hung on these return channels and upon the outside channels and being cast with reinforcing wire becomes a monolith which cannot possibly pull apart. The auxiliary finish may be of shingles, brick, veneer, or stucco and/or any other form of construction may be employed indicating the flexibility of the construction. Instead of a single story as illustrated, a two or more story building may be employed, as for example by repeating the channels at the second floor level and suspending a floor thereover as described with respect to the first floor. By repeating the angle iron at the second floor level it in turn will take the second floor channels and the second story construction can be utilized. The interior studs, as shown, can be used for any intermediate spacing which will permit any form of construction to any size and any shape so that any architect's drawings can be taken and materials can be applied from this construction.

The roof is arranged to take either slate or any other composition or shingles or metal and all cabinets, drawers, etc. can be made either of metal or wood in units standardized so as to be bolted into place on arrival.

The roof ridge structure is important comprising the ridge plates which are bolted from stud to stud to which is also attached the foot of the truss. This together with the cross braces tend to make the frame more rigid. The bolting down of the interior partitions adds strength, the corners all being cross braced for rigidity.

On the concrete floor are placed the carpets, linoleum or rubber or other desired covering. The water supply lines are all overhead and since the roof is sheathed and insulated and the cellar and boiler room open to the ridge all these service lines, while wrapped, are protected against frost and are easy of access. The boiler room floor is a few feet below the level of the main floor. The bathroom section has a false floor and wall, the false floor and wall being applied after the plumbing is all applied and tested out. It is then sent to the job in one piece and merely needs to be connected with the supply lines overhead to be in full operation, after the soil line which comes out at the side of the house is connected to the house trap and the sewer. The double walls in the bathroom and kitchen sections permit getting to the traps at any time.

The chimneys are constructed entirely of steel including the flue being double wall insulated material, any masonry being used except the soap stone facing of the hearth at the fireplace and the support of the steel work being the same as for the rest of the house on steel straps.

I claim:

1. A prefabricated house structure comprising horizontal channel members resting upon the foundation and opening inwardly, vertical channel stud members resting upon said first named channels and opening inwardly, horizontal L beams resting upon the upper ends of said vertical channel studs, roof trusses disposed at angles to certain of said L beams and in the planes of certain of said vertical stud channels, a roof truss including a horizontal member having splayed ends resting above a vertical stud channel and forming an opening leading from a point thereabove into the duct formed by said vertical stud channel, said splayed ends extending beyond the L beam into projecting feet and said roof truss including an inclined truss member resting at its lower end upon said projecting feet.

2. A prefabricated house structure comprising a plurality of outside vertical channel studs, said studs opening inwardly and a plurality of roof trusses disposed at right angles to said vertical channel studs and resting at one end above the ends thereof, said trusses including horizontal members having splayed feet forming openings leading into and from the ducts formed by the vertical channel studs for the reception of service lines and said trusses also including inclined truss members resting at their lower ends upon and fastened to said splayed feet at points beyond the plane of the channel webs.

3. A prefabricated house structure comprising a plurality of outside vertical channel studs, said studs opening inwardly and a plurality of roof trusses disposed at angles to said vertical channel studs and resting at one end upon the upper ends thereof, said trusses including horizontal beam members having splayed feet forming openings leading into and from the ducts formed by the vertical channel studs for the reception of service lines and said trusses also including inclined truss members resting at their lower ends upon and fastened to said splayed feet at points beyond the plane of the channel webs, and horizontal channel members disposed at right angles to said vertical channel studs and located approximately in the plane of the lower ends of the studs and adjacent to certain ones thereof, said last named channels opening upwardly to receive the service lines passing between said splayed feet and through the vertical channel studs, to serve as return ducts.

4. A prefabricated house structure comprising outside vertical channel studs with their open sides disposed inwardly and roof trusses carried by said vertical studs, said trusses including horizontal members having their ends offset to clear the upper ends of the ducts formed by the channel studs for the reception of service lines leading down from points above the ceiling to and into the vertical channel studs.

5. A prefabricated house structure of the character set forth in claim 2 wherein the truss member having the splayed feet are formed of two juxtaposed L beams with two of the flanges being splayed in the plane thereof to straddle the duct openings and to form attachments for the inclined truss members.

6. A prefabricated house structure of the character set forth in claim 4 wherein the trusses in-

clude inclined members formed of a vertical web having fastened to the opposite sides thereof a pair of L-shaped members.

7. A prefabricated house structure of the character set forth in claim 2 wherein the inclined truss members are formed of a vertical web having fastened to the opposite sides thereof a pair of L-shaped members, the L-shaped members of the intermediate trusses having one of their flanges abutting the webs and their other flanges oppositely disposed, with the L members of the end trusses being mounted on flanges abutting against the opposite sides of the webs but disposed reversely with respect to each other.

8. A prefabricated structure of the character set forth in claim 4 wherein the vertical channel studs have the ends of the parallel flanges turned at right angles to the main body thereof to form bearing surfaces and fastening means.

9. A prefabricated structure of the character set forth in claim 4 wherein the vertical channel studs have the upper ends of one of their side flanges turned outwardly at right angles to positions adjacent said offset ends to form bearing surfaces and attaching means therefor.

10. A prefabricated house structure of the character set forth in claim 4 comprising horizontal outside channel members upon which the vertical channel studs rest.

11. A prefabricated structure of the character set forth in claim 3 wherein the horizontal channels comprise a central channel member with the side flanges vertically disposed and two side channel members with their webs abutting against the side flanges with the side flanges of the second named channels extending laterally.

12. A prefabricated house structure of the character set forth in claim 2 wherein the inclined truss members comprise a central web disposed in vertical planes and L members with one each of their flanges engaging the opposite side of said web member and with the other flanges having their lower ends turned at an obtuse angle to the plane thereof to form bearing and attaching feet for attachment to said splayed feet.

13. A prefabricated house structure of the character set forth in claim 2 wherein the projecting splayed feet are bridged by a plate and the inclined truss members are forrmed at their lower end with a bearing surface for engagement with said plate and to form an attaching means therefor.

14. A prefabricated house structure of the character set forth in claim 2 wherein horizontal L beams rest upon the upper ends of the vertical channel studs, the latter having the ends of their side flanges turned outwardly to form a bearing and fastening surface for said horizontal beams said truss members having their splayed feet resting upon said horizontal beams and above the bearing surfaces of the vertical channel studs, and said L beams having their horizontal webs removed to clear the openings leading into the vertical channel stud ducts.

15. A prefabricated house structure comprising outside horizontal frame members resting upon the foundation, a plurality of vertical studs resting upon said horizontal frame members, the corner studs comprising L members with smaller L members secured to the inside surfaces of the flanges thereof, horizontal L frame members resting upon the upper ends of the corner studs with one flange of the smaller L members turned at right angles at their ends to form bearing and attaching feet bearing against said horizontal frame members.

16. A prefabricated house structure comprising outside horizontal frame members resting upon the foundation, a plurality of vertical studs resting upon said horizontal frame members, the corner studs comprising L members with smaller L members secured to the inside surfaces of the flanges thereof, horizontal L frame members resting upon the upper ends of the corner studs with one flange of the smaller L members turned at right angles at their ends to form bearing and attaching feet bearing against said horizontal frame members, the intermediate studs comprising vertical webs with channels having their webs backed against said first named webs with their side flanges extending inwardly and having their ends turned at right angles to form bearing and attaching feet in engagement with said horizontal frame members.

17. A prefabricated house structure comprising outside horizontal frame members resting upon the foundation, a plurality of vertical studs resting upon said horizontal frame members, the corner studs comprising L members with smaller L members secured to the inside surfaces of the flanges thereof, horizontal L frame members resting upon the upper ends of the corner studs with one flange of the smaller L members turned at right angles at their ends to form bearing and attaching feet bearing against said horizontal frame members, the intermediate studs comprising vertical webs with channels having their webs backed against said first named webs with their side flanges extending inwardly and having their ends turned at right angles to form bearing and attaching feet in engagement with said horizontal frame members, and a horizontal door or window frame support fastened at its ends to the webs of adjacent vertical studs.

18. In a prefabricated structure of the character set forth in claim 16 wherein T members are carried by the lower horizontal frame members with their outside flanges disposed flush with the corner L flanges and the webs of the intermediate studs.

19. A house structure of the character set forth in claim 16 comprising nailing blocks fastened to the outside surfaces of the horizontal frame members and the vertical studs, with outside building units nailed to said nailing groundwork to form a wall for the reception of an outside finish.

20. A house structure of the character set forth in claim 16 comprising nailing blocks fastened to the outside surfaces of the horizontal frame members and the vertical studs, with outside building units nailed to said nailing groundwork to form a wall for the reception of an outside finish and a nailing groundwork fastened to the inside of said horizontal frame and vertical stud members for the reception of an interior wall or finish.

21. A house structure of the character set forth in claim 16 comprising nailing blocks fastened to the outside surfaces of the horizontal frame members and the vertical studs, with outside building units nailed to said nailing groundwork to form a wall for the reception of an outside finish and T members carried by the horizontal frame members together with male and female screw members carried thereby for fastening an interior wall or finish to the horizontal frame and vertical stud members.

22. A structure of the character set forth in claim 16 wherein the horizontal frame members

resting upon the foundation are provided with shelves for the support of an outside brick finish or the like.

23. A structure of the character set forth in claim 16 comprising auxiliary beams mounted upon the horizontal frame members resting upon the foundation to provide means for the attachment of an interior wall finish and means carried by the other frame members for co-operation therewith in fastening the interior wall or finish.

24. A house structure of the character set forth in claim 16 wherein certain of the corner vertical stud members have the smaller L members fastened to the inner surfaces of the flanges with a nailing groundwork carried thereby.

25. A house structure of the character set forth in claim 16 wherein at least one of the corner vertical stud members has the smaller L members fastened to the outside surfaces of the flanges thereof with a nailing groundwork carried by the stud.

26. A house structure of the character set forth in claim 4 comprising horizontal channel floor beams disposed adjacent to certain channel studs to serve as return ducts for the service lines.

27. A house structure of the character set forth in claim 4 comprising corner vertical studs and horizontal supporting beams disposed between certain of said vertical members for the reception of standard window frames.

28. A house structure of the character set forth in claim 4 comprising corner vertical stud members and horizontal frame members upon which the vertical frame members rest and a horizontal supporting beam disposed between certain of said vertical members and forming the upper support for a standard door jamb.

29. A structure of the character set forth in claim 4 comprising a partition structure in the plane of a vertical channel, said partition structure comprising a nailing ground sleeper and horizontal and vertical stud members with a nailing groundwork carried thereby.

CHESTER A. PATTERSON.