July 5, 1949. R. W. McLAUGHLIN, JR 2,475,433

BUILDING CONSTRUCTION COMPRISING SEMIPOLYGONAL UNITS AS PRINCIPAL TRANSVERSE SUPPORTS THEREOF

Filed Sept. 17, 1945 10 Sheets-Sheet 1

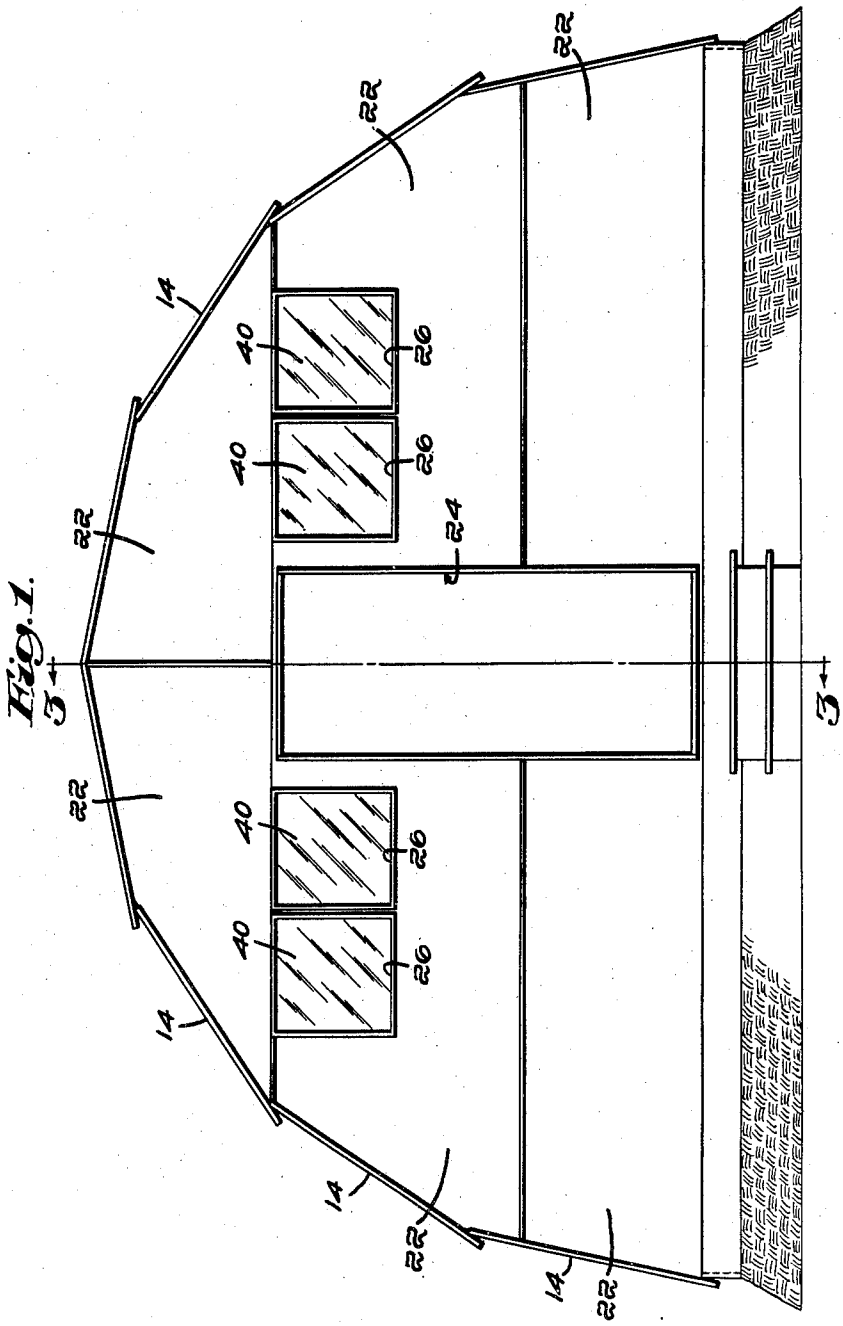


Fig. 1.

Inventors:
Robert W. McLaughlin, Jr.
By Donald R. Brown
Attorney

July 5, 1949. R. W. McLAUGHLIN, JR 2,475,433

BUILDING CONSTRUCTION COMPRISING SEMIPOLYGONAL UNITS AS PRINCIPAL TRANSVERSE SUPPORTS THEREOF

Filed Sept. 17, 1945 10 Sheets-Sheet 2

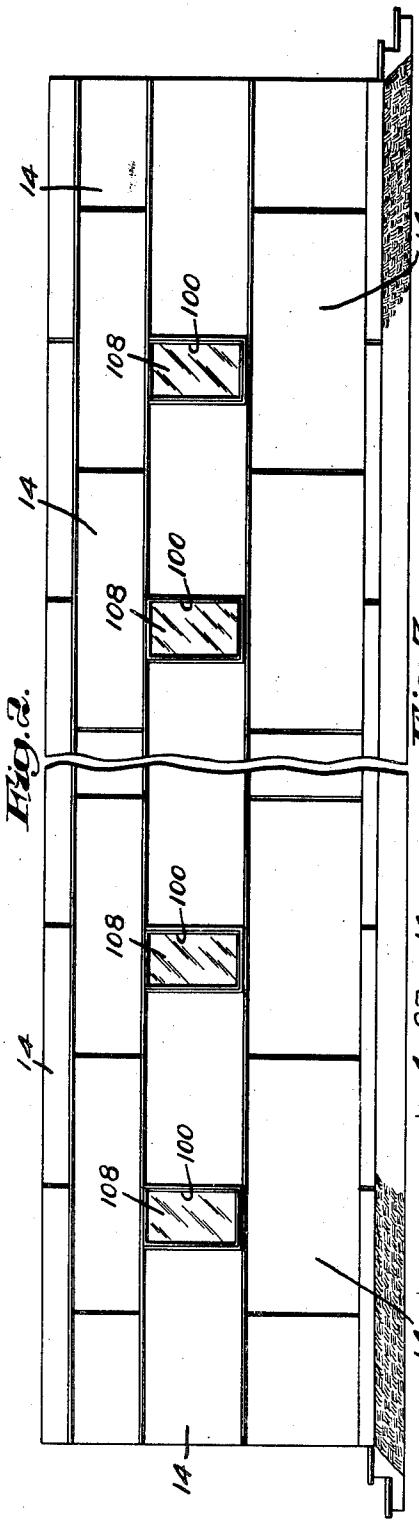


Fig. 2.

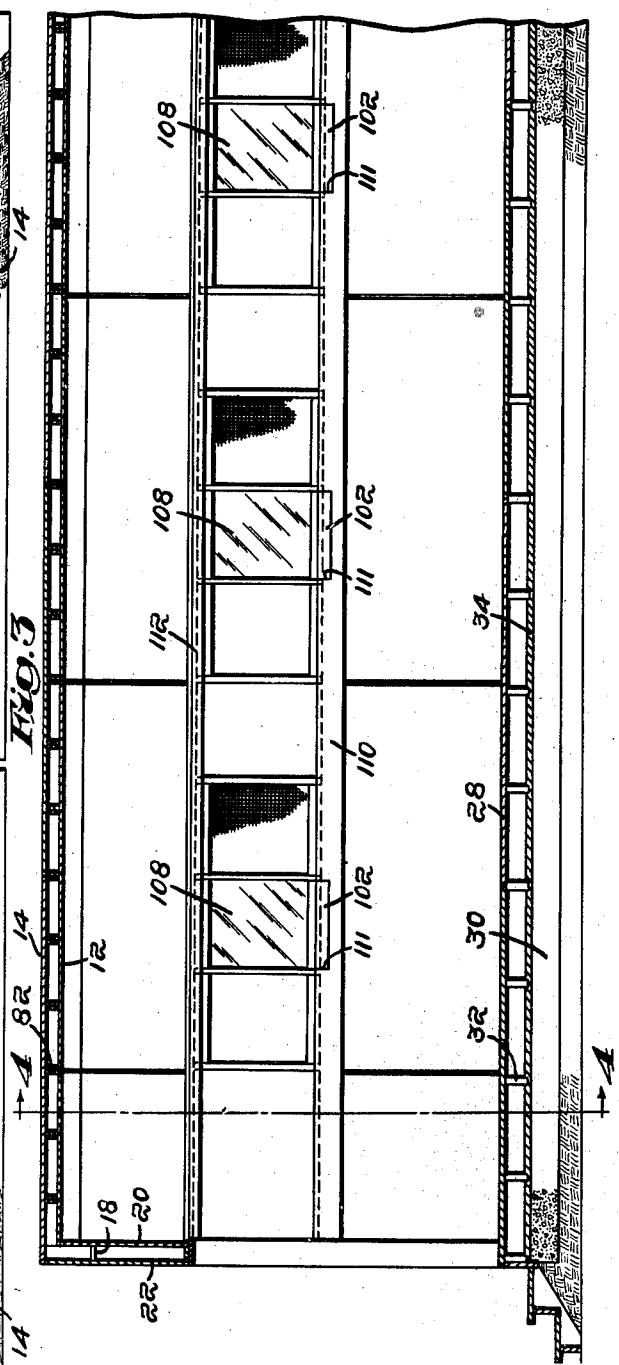


Fig. 3

Inventor:
Robert W. McLaughlin, Jr.

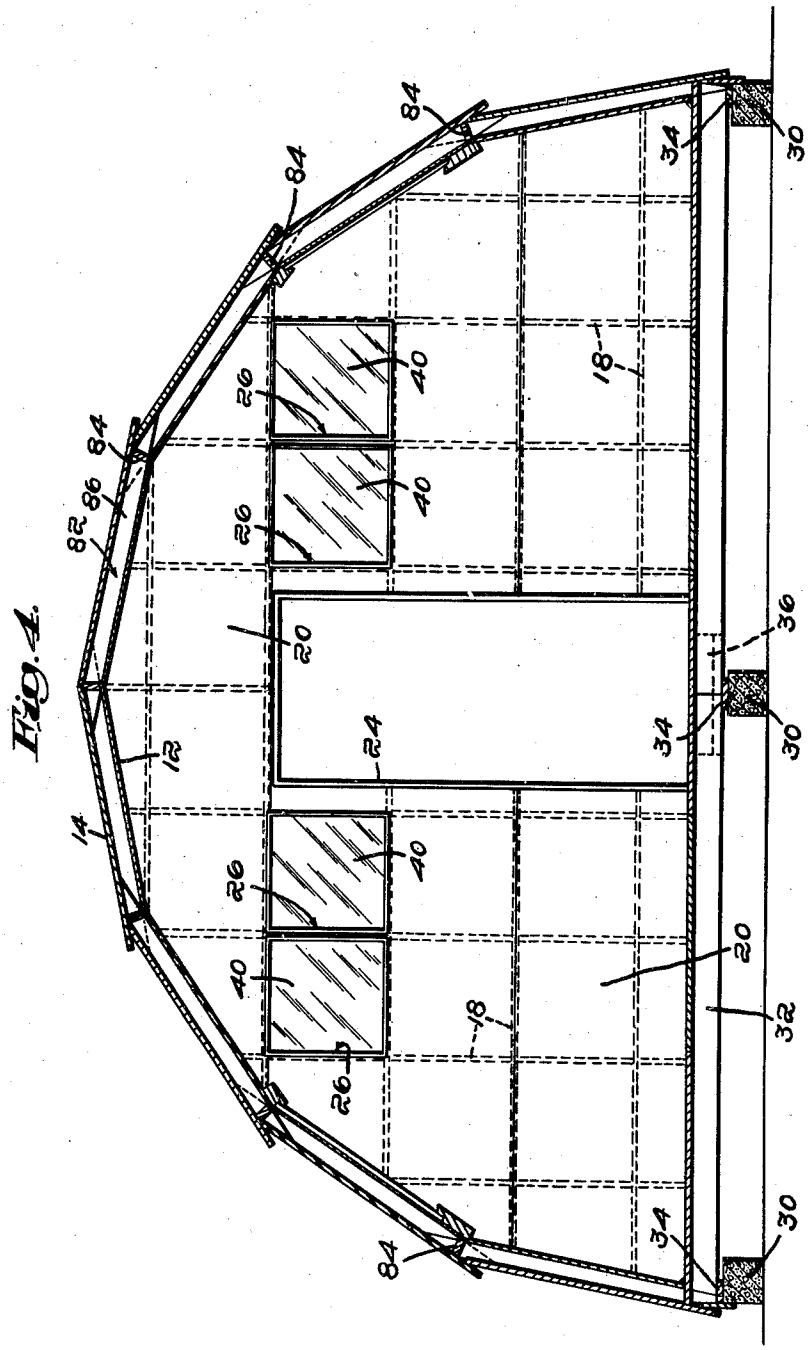
By Donald L. Brown
Attorney

July 5, 1949. R. W. McLAUGHLIN, JR 2,475,433

BUILDING CONSTRUCTION COMPRISING SEMIPOLYGONAL UNITS AS PRINCIPAL TRANSVERSE SUPPORTS THEREOF

Filed Sept. 17, 1945 10 Sheets-Sheet 3

Fig. 4.



Inventor:
Robert W. McLaughlin, Jr.
By Donald L. Brown
Attorney

July 5, 1949. R. W. McLAUGHLIN, JR 2,475,433

BUILDING CONSTRUCTION COMPRISING SEMIPOLYGONAL UNITS AS PRINCIPAL TRANSVERSE SUPPORTS THEREOF

Filed Sept. 17, 1945 10 Sheets-Sheet 4

Fig. 5.

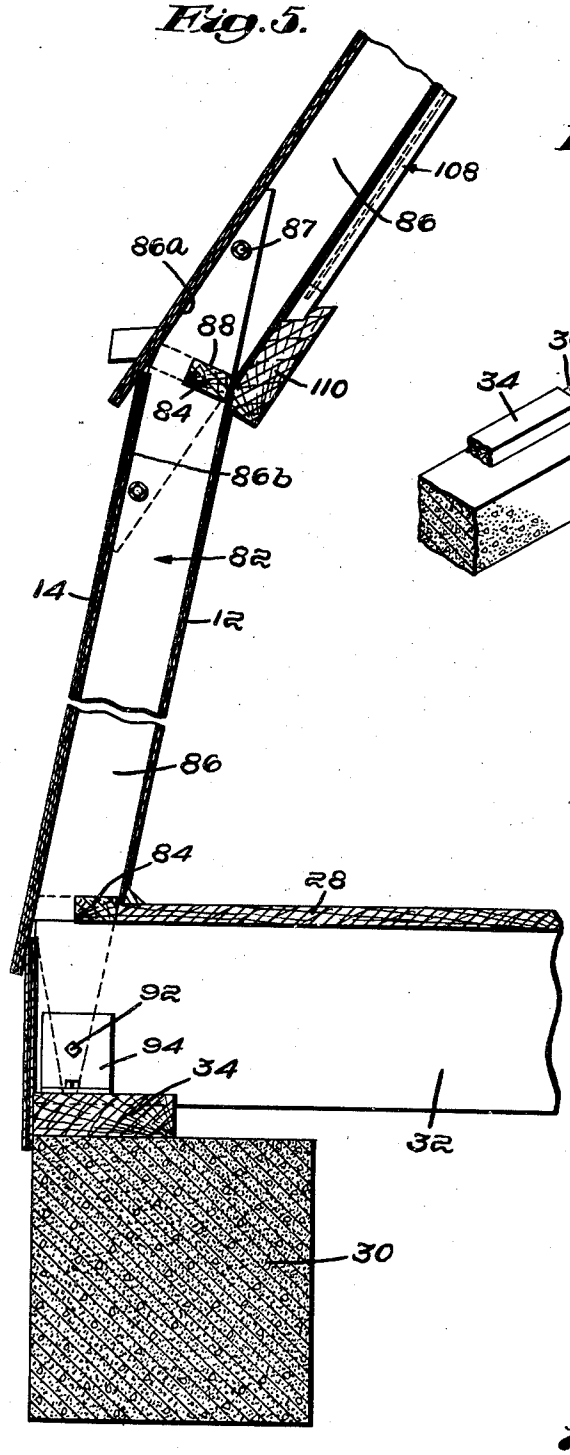
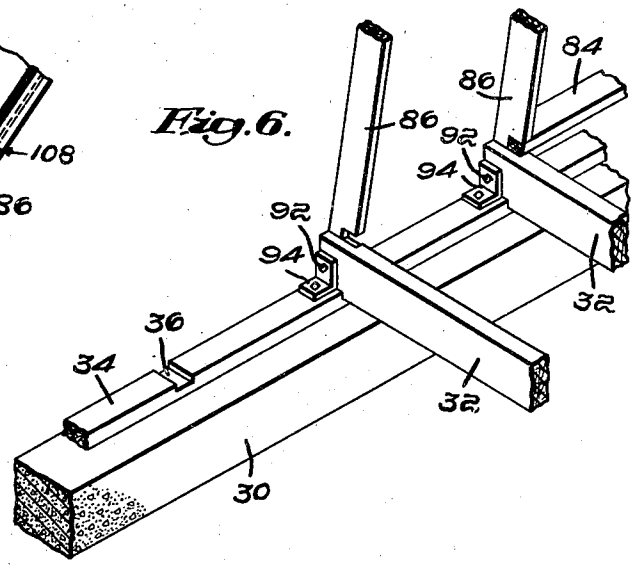


Fig. 6.



Inventor:
Robert W. McLaughlin, Jr.

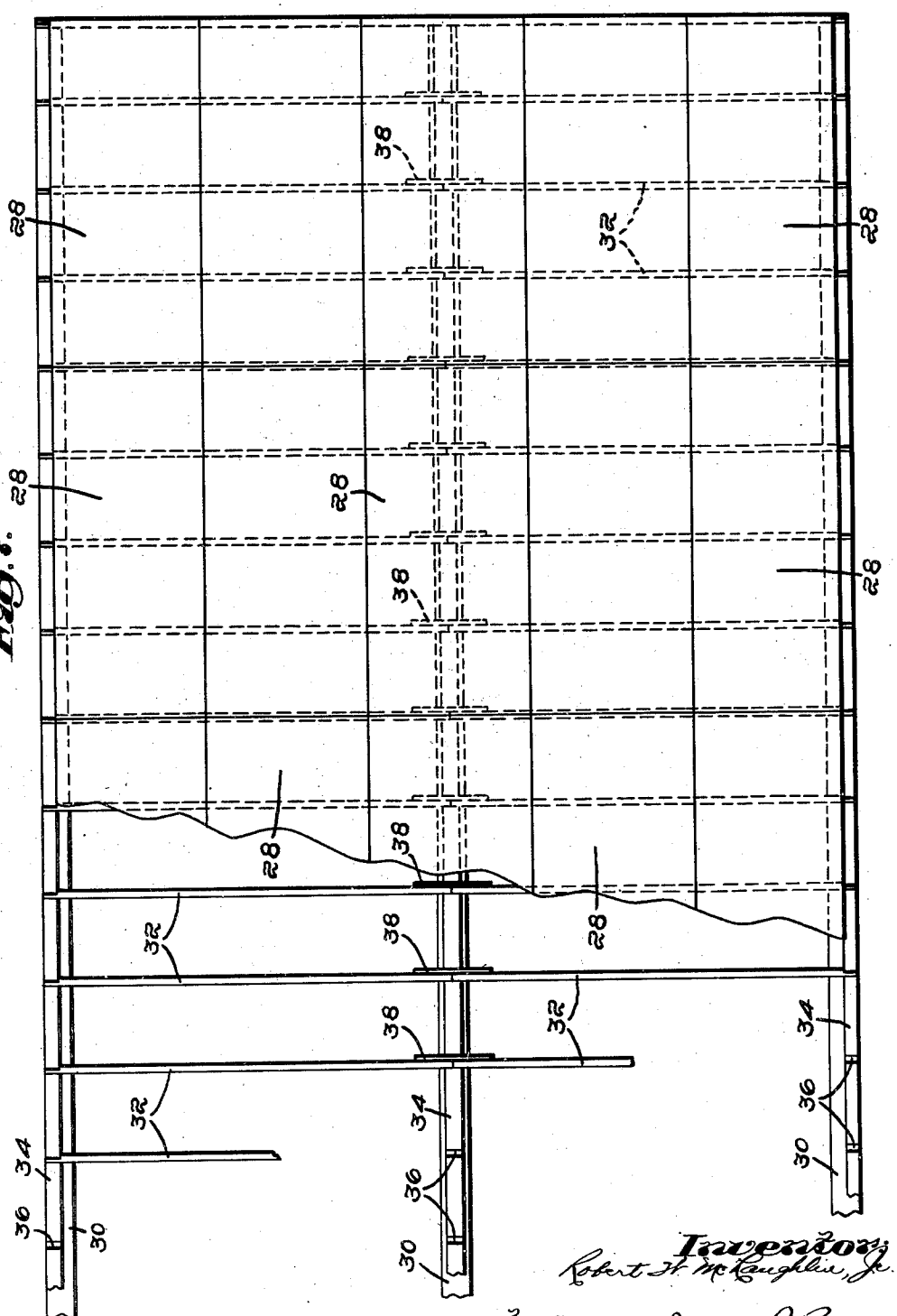
By
Donald L. Brown
Attorney

July 5, 1949. R. W. McLAUGHLIN, JR 2,475,433

BUILDING CONSTRUCTION COMPRISING SEMIPOLYGONAL UNITS AS PRINCIPAL TRANSVERSE SUPPORTS THEREOF

Filed Sept. 17, 1945 10 Sheets-Sheet 5

Fig. 9.



Inventor
Robert W. McLaughlin, Jr.

By Donald L. Brown
Attorney

July 5, 1949. R. W. McLAUGHLIN, JR 2,475,433

BUILDING CONSTRUCTION COMPRISING SEMIPOLYGONAL UNITS AS PRINCIPAL TRANSVERSE SUPPORTS THEREOF

Filed Sept. 17, 1945 10 Sheets-Sheet 6

Fig. 9.

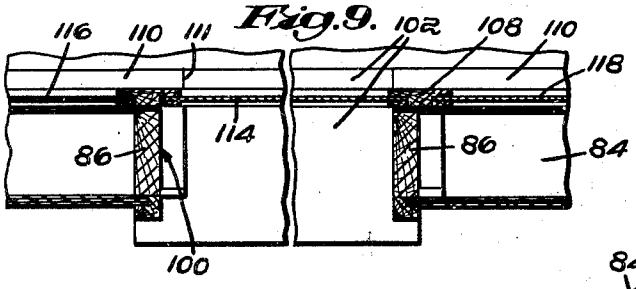


Fig. 8.

Fig. 10.

Inventor:
Robert W. McLaughlin, Jr.

By Donald L. Brown
Attorney

July 5, 1949. R. W. McLAUGHLIN, JR 2,475,433

BUILDING CONSTRUCTION COMPRISING SEMIPOLYGONAL UNITS AS PRINCIPAL TRANSVERSE SUPPORTS THEREOF

Filed Sept. 17, 1945 10 Sheets-Sheet 7

Fig. 11.

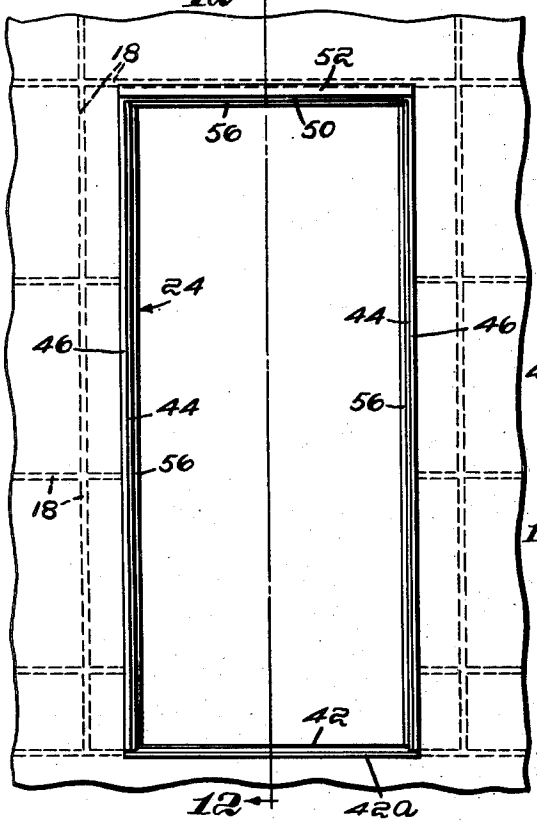


Fig. 12.

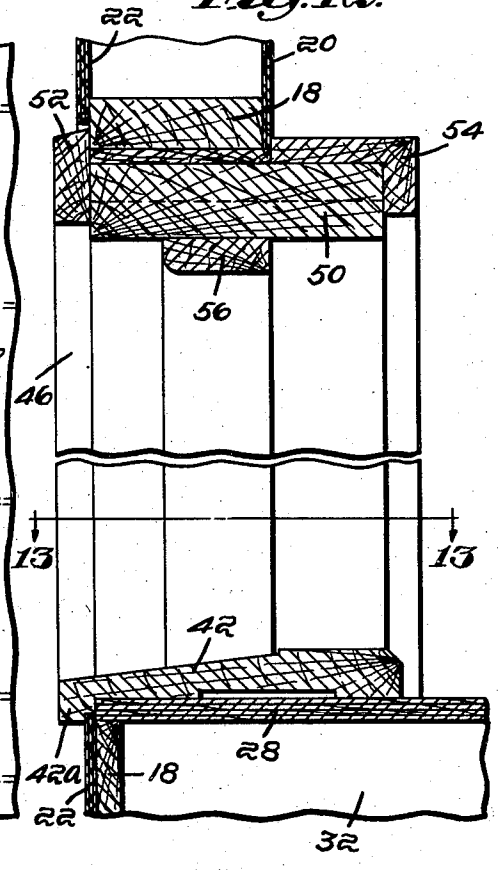
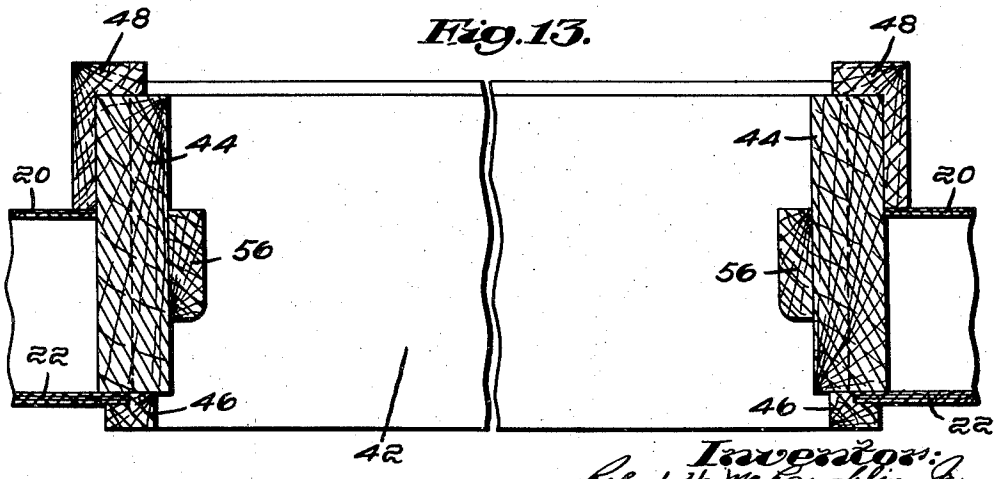


Fig. 13.



Inventor:
Robert W. McLaughlin, Jr.

By Donald L. Browne
Attorney

July 5, 1949. R. W. McLAUGHLIN, JR 2,475,433

BUILDING CONSTRUCTION COMPRISING SEMIPOLYGONAL UNITS AS PRINCIPAL TRANSVERSE SUPPORTS THEREOF

Filed Sept. 17, 1945 10 Sheets-Sheet 8

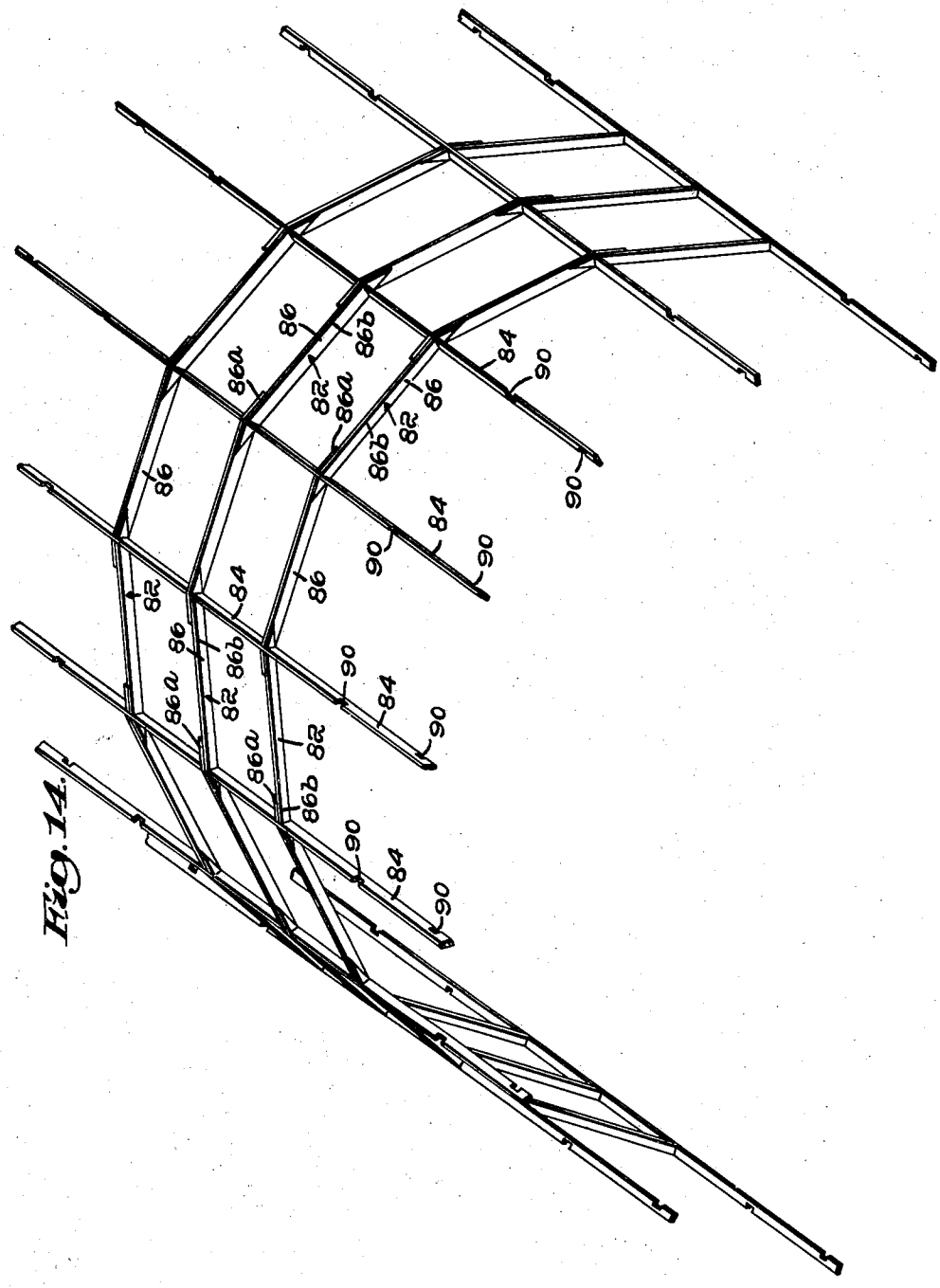


Fig. 14.

Inventors:
Robert W. McLaughlin, Jr.

By Donald L. Brown
Attorney

July 5, 1949. R. W. McLAUGHLIN, JR 2,475,433

BUILDING CONSTRUCTION COMPRISING SEMIPOLYGONAL UNITS AS PRINCIPAL TRANSVERSE SUPPORTS THEREOF

Filed Sept. 17, 1945 10 Sheets-Sheet 9

Fig. 17.

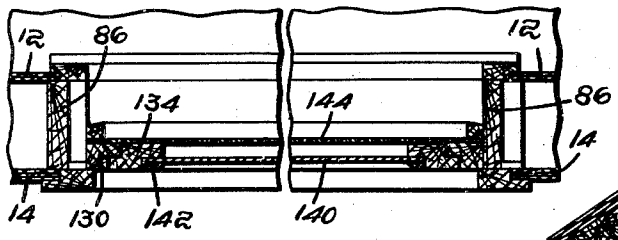


Fig. 16.

Fig. 15.

Robert W. McLaughlin, Jr. Inventor.

By Donald L. Brown Attorney

July 5, 1949. R. W. McLAUGHLIN, JR 2,475,433

BUILDING CONSTRUCTION COMPRISING SEMIPOLYGONAL UNITS AS PRINCIPAL TRANSVERSE SUPPORTS THEREOF

Filed Sept. 17, 1945 10 Sheets-Sheet 10

Fig. 18.

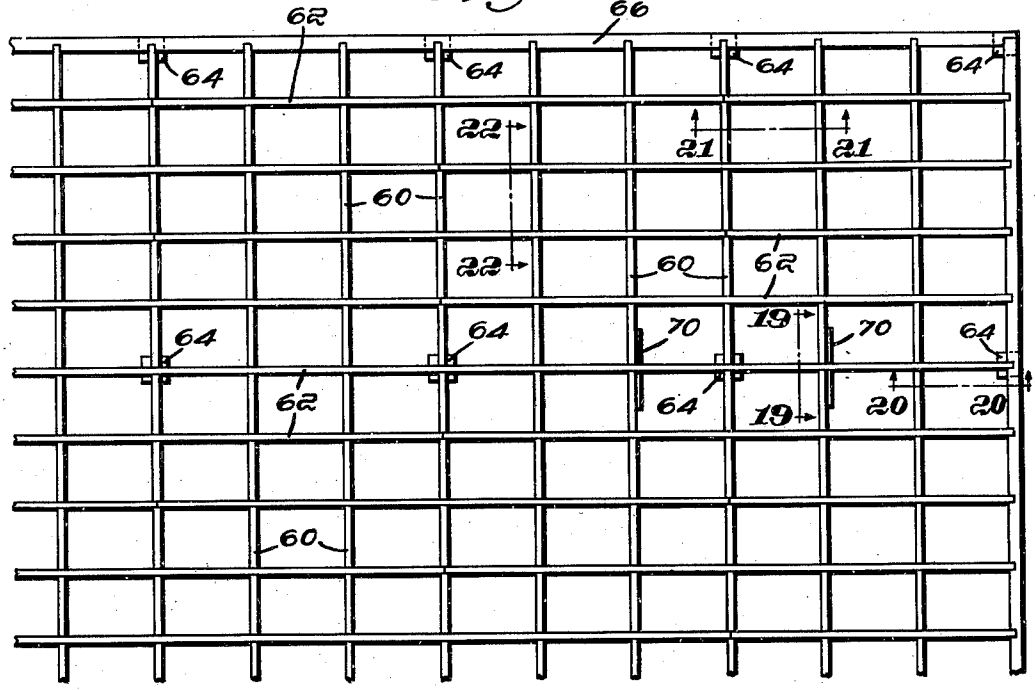
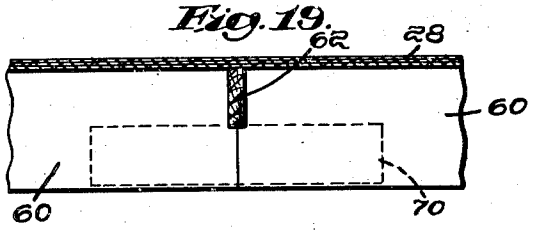


Fig. 19.



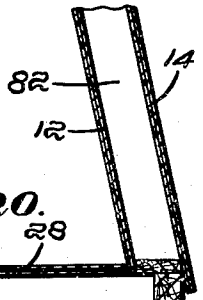


Fig. 21.

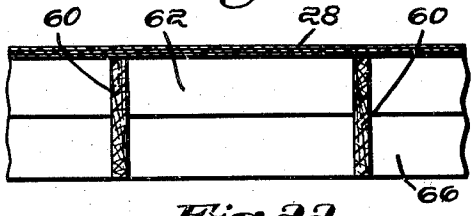


Fig. 20.

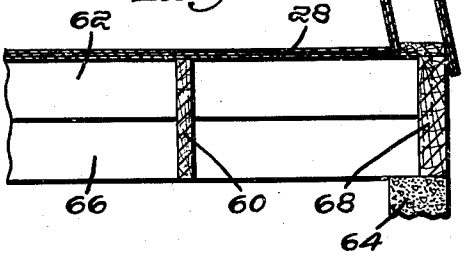
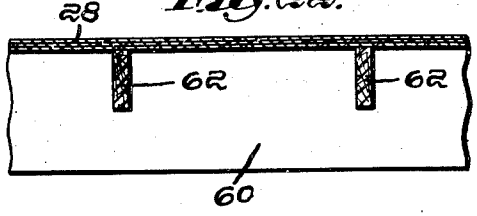


Fig. 22.



Inventor:
Robert W. McLaughlin Jr.

By Donald L. Brown
Attorney

Patented July 5, 1949 2,475,433

UNITED STATES PATENT OFFICE

2,475,433

BUILDING CONSTRUCTION COMPRISING SEMIPOLYGONAL UNITS AS PRINCIPAL TRANSVERSE SUPPORTS THEREOF

Robert W. McLaughlin, Jr., Bedford Village, N. Y., assignor to American Houses, Inc., New York, N. Y., a corporation of Delaware

Application September 17, 1945, Serial No. 616,716

5 Claims. (Cl. 20—2)

1

This invention relates to structures such as buildings, and more particularly to a long-span, light-weight, load-supporting structure whose component parts may be prefabricated and readily assembled to provide, for example, a basic housing unit such as a military hutment suitable for use in substantially any climate with a minimum of modification.

One object of the present invention is to provide a light-weight, long-span building construction whose parts may be prefabricated away from the point of assembly and shipped thereto, or whose parts may be readily fabricated at or close to the place of assembly without requiring complex or expensive machinery.

Another object of the invention is to provide a building construction of the above type which permits of ready assembly and disassembly.

A further object is to provide a novel frame for the side and top walls for the above building construction, said frame comprising a plurality of substantially semi-polygonal arches which may be readily assembled and interconnected by suitable longitudinal reinforcing members such as horizontal ties.

Still another object is the provision of a novel frame of the above character having a large number of component parts thereof of the same shape and interchangeable whereby the latter may be readily and economically fabricated and the frame may be rapidly assembled.

A still further object is the provision of a novel window construction which may be operatively combined with the housing structure comprising the above frame so as to provide ready lighting and/or ventilation and screening and/or blacking-out of the interior of said housing structure.

A further object is the provision of a novel housing unit comprising a continuous multi-sided, semi-polygonal side and top wall structure and vertical end wall structures, said unit requiring no internal longitudinal or transverse supporting members.

A still further object is the provision of a novel floor and foundation construction having a particular utility in the above combination.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises an article of manufacture possessing the features, properties and the relation of elements which will be exemplified in the articles hereinafter described and the scope of the application of which will be indicated in the claims.

2

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description, taken in connection with the accompanying drawings, wherein like reference characters refer to like parts throughout the various figures and wherein:

Figure 1 is an end elevational view of one form of housing structure embodying the novel building construction comprehended by the present invention;

Fig. 2 is a side elevational view, with parts broken away, of said housing structure;

Fig. 3 is a central, longitudinal sectional view of said housing structure, with parts broken away, the section being taken substantially along the plane of line 3—3 of Fig. 1;

Fig. 4 is a transverse sectional view taken substantially along the line 4—4 of Fig. 3;

Fig. 5 is a fragmentary, transverse sectional view illustrating the construction and interconnection of the segments of the novel semi-polygonal arch which constitutes part of the framework for the side and top walls of said housing structure, said view illustrating the manner of securing the end segments of the arches to the foundation and the floor structure;

Fig. 6 is a fragmentary, perspective view of the structure illustrated in Fig. 5 with the interior and exterior skin material, one of the floor joists and one of the arches shown removed for the purpose of more clearly illustrating the construction of the parts;

Fig. 7 is a top plan view, with parts broken away, of one form of floor construction which may be used in the housing structure of Figs. 1 through 6;

Fig. 8 is a fragmentary, transverse, sectional view showing the details of parts of a side window unit and of the mounting for said unit;

Fig. 9 is a sectional view, with parts broken away, illustrating the construction of the window mounting, the section being taken along line 9—9 of Fig. 8;

Fig. 10 is a front elevational view of a novel window unit which may be slidably mounted in the mounting illustrated in Figs. 8 and 9;

Fig. 11 is a fragmentary view in elevation of one form of door frame suitable for the said housing structure;

Fig. 12 is a longitudinal, vertical sectional view, with parts broken away, taken substantially along line 12—12 of Fig. 11 and illustrating the details of the door frame;

Fig. 13 is a longitudinal, horizontal, sectional

view, with parts broken away, taken substantially along line 13—13 of Fig. 12;

Fig. 14 is a perspective view, with parts broken away, of the novel semi-polygonal arch-like frame of the invention, said frame being shown only partially assembled;

Fig. 15 is a fragmentary, front elevational view of an alternate form of side window construction;

Fig. 16 is a transverse vertical sectional view, with parts broken away, taken substantially along line 16—16 of Fig. 15;

Fig. 17 is a longitudinal sectional view, with parts broken away, taken substantially along line 17—17 of Fig. 16;

Fig. 18 is a top plan view, with parts broken away, of a novel alternate floor and foundation construction for the housing structure of the invention;

Fig. 19 is a fragmentary, transverse sectional view taken substantially along line 19—19 of Fig. 18;

Fig. 20 is a longitudinal vertical sectional view taken substantially along line 20—20 of Fig. 18;

Fig. 21 is a longitudinal vertical sectional view taken substantially along line 21—21 of Fig. 18; and

Fig. 22 is a transverse vertical sectional view taken substantially along line 22—22 of Fig. 18.

Referring to the drawings, there is shown a housing unit (Figs. 1 through 4) embodying the novel building construction of the present invention, said unit being in the form of a hutment suitable, for example, for such military uses as personnel quarters, field offices, hospitals and light storage units under various climatic conditions.

The housing unit may be of any desired length and may, if desired, be provided with a plurality of transverse walls which separate the interior into two or more rooms. As illustrated in the drawings (Figs. 1 through 4), the housing structure comprises a novel semi-polygonal arch-like supporting framework (Fig. 4) to which there are secured inner and outer wall panels 12 and 14, respectively, to form a semi-polygonal and substantially continuous shell which provides the side and top walls of the structure. The inner and outer wall panels may be formed of any suitable sheet material, a fiber board such as Masonite or plywood being preferred, although such other materials as planks, boards or an insulating canvas blanket may be used, depending on the climate in which and the purpose for which the housing structure is to be employed, as well as on the availability of certain of these materials in the locality in which the structure is to be assembled.

Rigidly secured to the ends of said semi-polygonal side and top wall structure are suitable vertical end walls comprising a grid-like framework 18 preferably formed of crossed and interconnected vertical and horizontal frame members to which are secured the inner and outer skin panels 20 and 22 respectively of said end walls. Each end wall may be provided with a central door frame 24 (Figs. 1 and 11) and a plurality of window frames 26 which in the illustrated housing structure are provided in pairs symmetrically disposed on opposite sides of the door frame. Suitable flooring 28 (Fig. 3), for example of plywood, is preferably provided and mounted on a relatively light-weight, load-supporting framework, for example of joists 32, mounted on a plurality of supports 30 (Figs. 3 and 7).

Floor and foundation structure

The novel flooring and foundation arrangement comprising supports 30 and joists 32, as shown in Fig. 7, includes three of said masonry walls arranged parallel to one another and extending the length of the housing structure. Mounted atop each said wall is a sill 34, the sill on the central one of said walls being preferably somewhat wider than others to provide a greater bearing surface for joists 32. Each said sill is preferably provided with a plurality of transverse grooves 36 which are adapted to receive joists 32 and automatically space the latter at substantially equal distances across the length of said flooring structure. Each of said joists is preferably equal in length to half the width of the housing structure and each extends from one of the outer sills to the central sill, abutting ends of coextensive pairs of said joists being interconnected by suitable splice plates 38. The latter are secured to said joists by any suitable mechanical means such, for example, as bolts or nails. Floor panels 28, which are preferably prefabricated and formed of plywood, are secured to joists 32 to provide the flooring. It will now be apparent that various modifications of the above floor and foundation arrangement are possible, as, for example, the substitution of prefabricated girders for masonry walls 30. One novel modification of the floor and foundation structure which may be employed as an alternative construction to the above-described structure is shown in Figs. 18 through 22 and comprises a plurality of interlocking, transverse and longitudinal supporting members 60 and 62, respectively, all of which constitute load-bearing supports for the floor and to all of which the floor may be directly secured. The foundation members for this structure may be a plurality of masonry walls or girders, but are preferably a plurality of posts 64 spaced lengthwise and transversely at predetermined points throughout the area to be covered by said structure so as to support said structure along the outer walls and corners thereof and at a plurality of the intersections of the longitudinal and transverse members. The foundation framework preferably comprises a pair of longitudinal, outer-wall girders 66 and a pair of transverse outer-wall girders 68, only one of the girders of each of said pairs being shown in Fig. 18. Extending transversely of said frame are joists 60 which are preferably as wide as the longitudinal outer-wall girders 66 and which are preferably mounted in vertical grooves provided in said longitudinal outer-wall girders, said grooves extending the entire width of said girders and serving to space said girders at substantially equal distances across the length of said framework. Joists 60 may extend continuously across the width of the foundation structure, but are preferably formed of portions shorter than the width of said structure, said portions being secured together as by suitable splice plates 70 (Figs. 18 and 19).

Extending longitudinally of said framework at equally spaced intervals are supporting members 62 preferably of a width less than the width of joists 60, as, for example, of a width equal to half the width of said joists. Each of the latter is preferably provided with a plurality of transverse vertical grooves adapted to cooperate with grooves in said longitudinal supporting members whereby an interlocking construction is obtained. Transverse wall girders 68 (Figs. 18 and 20) are also dadoed as to receive the ends of and space

said longitudinal members. The various elements of this novel flooring framework may be readily prefabricated and shipped to the point of assembly either as separate elements or with portions of the finished framework assembled for splicing to other portions. It is to be noted that the upper edges of both the transverse joists 60 and longitudinal supporting members 62 are coplanar whereby the flooring may be mounted so as to engage all of said supporting members and whereby the floor panels may be directly secured to all of said floor members. This provides a relatively rigid, although light-weight construction for the flooring which is particularly suited for prefabricated housing units.

End wall construction

As shown in Fig. 1, the end walls of the housing unit are provided with a plurality of window frames 26 which preferably have fixed windows 40 mounted therein. It is to be understood, however, that said windows may be of any desired construction such as casement windows, and may be positioned in any desired places on the end wall. The arrangement shown in Fig. 1 is more suited to colder climates, whereas if the hutment is to be used in warmer climates, the end walls may be provided with substantially larger window frames and window and screen arrangements permitting a greater ventilation of the interior of the hutment.

Door frame 24 is preferably centrally located within the end wall and one type of construction for said frame is illustrated in detail in Figs. 11 through 13. In the form shown, said frame comprises a sill 42 mounted upon flooring 28 and having a shoulder 42*a* formed in the outer or front end thereof, said shoulder abutting outer wall 22. Extending vertically upward from said sill are jamb members 44, each of which also abuts outer wall 22 at its front or outer face. A suitable outer trim member 46 (Fig. 13) engages and is secured to the outer face of each said jamb member and overlaps the edge portions of wall panels 22. At its inner or rear face, each of said jamb members is provided with a further trim member 48 which is angular in transverse cross-section and has one side thereof abutting the inner or rear face of the jamb member while the other side engages the side of said jamb member and its end abuts inner wall panel 20. A head member 50 (Fig. 12) extends horizontally between jambs 44 and is secured to one of the horizontal members of the end wall supporting framework 18. Said head member is provided at its front end with a trim member 52 and at its rear end with a trim member 54 corresponding in function and shape to trim member 48. Mounted in the frame that is provided by jamb members 44 and head member 50 is a suitable door stop 56.

Side and top wall construction

To provide the main structural wall support for the housing construction of the invention, a novel, semi-polygonal, arch-like framework is employed which, in the form shown, comprises a plurality of novel, transverse, eight-sided, regular, semi-polygonal, light-weight arches 82 (Figs. 5, 8 and 14), interconnected by means of longitudinally extending, substantially horizontal tie members 84. Each of said arches comprises a plurality of novel rib members or segments 86 which are preferably alike in every respect, facilitating assembly and disassembly and which may

be readily prefabricated in quantity because of their simple construction. Each segment may be formed of a rectangular beam, for example of plywood, which has its ends trimmed by the removal of a corner portion, the angle of the cut to the longitudinal axis of the beam being equal to the external angle formed by the sides of an eight-sided semi-polygon, i. e. the angle which the trimmed inclined edge 86*a* (Fig. 5) makes with the extension of the longitudinal edge 86*b* is equal to the external angle at which the longitudinal axes of adjoining segments 86 intersect. The trimmed end portion of each segment is adapted to overlap the body portion of the adjoining segment and, by trimming said segment at the above specified angle, the edges of the overlapping portions are substantially flush with one another. Each segment is provided at each end, at a point substantially opposite the point at which the angular trimmed edge 86*a* begins, with a suitable groove 88 extending substantially half the width of said segment, the center line of said groove bisecting the angle formed between said trimmed edge and the longitudinal edge of the rectangular portion of the segment, whereby whenever the ends of two of said segments are caused to overlap with their inclined edges 86*a* flush with the longitudinal edges 86*b* of their rectangular body portions, the grooves are in substantial registry with one another. Segments 86 are preferably secured together as by bolts 87 to complete the construction of each of arches 82, one bolt being preferably provided on each side of the registering grooves 88. Grooves 88 are adapted to cooperate with notches 90 (Fig. 14) formed in longitudinal tie member 84 to provide an interlocking structure which further reinforces the resulting construction. It is preferable that alternate arches 82 have grooves on opposite sides thereof and that the notches in the longitudinal ties are alternately formed in opposite directions, i. e. on the exterior and interior of said ties, whereby arches 82 notch alternately over the inside and outside edges of said horizontal ties. The bottom segment of each arch (Figs. 5 and 6) preferably overlaps one of floor joists 32 and is rigidly secured thereto as by bolts 92. The bolt or other mechanical connection whereby said joists and segment are secured to one another is also adapted to extend through the vertical sides of an angular clip 94 which is rigidly secured to masonry sill 34 as by being log-screwed thereto. This simple three-way interconnection of the foundation, flooring and side wall framework contributes substantially to the live-load strength and resilience of the structure.

To further improve the unitary character of the substantially continuous transverse framework, comprising joists 32 and arches 82, which is thus obtained, the bottom longitudinal tie 84 (Figs. 5 and 6) on each side of the arch is preferably rigidly secured to the top of the floor joists 32. The inner and outer wall panels 12 and 14, respectively, are mounted on the inner and outer edges of ties 84 and arches 82 and secured thereto in any suitable manner, as, for example, by nails. In a preferred form, outer wall panels 14 have the bottom edges extending a slight distance beyond the upper edge of the next lower panel (Figs. 1 and 4).

Side window construction and mounting

To light and ventilate the interior of a housing unit comprising the novel arch-like, semi-polygonal framework of the invention, a variety of window constructions may be provided. One

novel form of window construction is shown in Figs. 2, 3 and 8 through 10 and consists of a plurality of frames 100 provided, for example, in the side wall panel which comprises the wall portion next to the bottom wall panels of the semi-polygonal side wall shell of the housing unit. Each of said frames is preferably spaced from the adjacent frame a distance equal to approximately three times its width. The frames are preferably located so as to be coextensive with the space defined by a pair of adjacent arches 82 and a pair of longitudinal, semi-polygonal tie members 84 (Figs. 8 and 9) of the framework, whereby the segments 86 of said arches may provide the side walls of each frame. As illustrated, the head of each of the frames 100 is preferably the longitudinal tie 84 which connects the upper ends of said segments. A sill 102, which is preferably substantially horizontal, is mounted on the longitudinal tie 84 which connects with the lower ends of the frame segments 86, said sill being notched as at 104 to accurately fix its position on said tie and to provide a more secure mounting therefor. At its inner end, said sill is provided with an upwardly extending shoulder 106 whose inner face is parallel to frame segments 86, said face being spaced from the plane of the inner surface of the wall panel mounted on said segments by a distance equal to the thickness of a window sash unit 108 (Fig. 10) for which said sill thus provides a track. The track preferably extends continuously along the entire length of the wall, an extension thereof beyond said sill member 102 being provided by a continuous strip or panel 110 (Fig. 9). The latter strip is preferably notched as at 111 (Fig. 3) opposite each of frames 100 to receive the inner end of said sill member and to provide a further support therefor. To provide a continuous track for the head of window sash 108, a suitably formed and substantially continuous member 112 is secured to the longitudinal tie 84 providing the head of frames 100. Slidably mounted in the tracks thus provided are a plurality of window sashes 108 of novel construction. One of said sashes is associated with each of frames 100 and each is approximately three times the width of said frame, being divided into three panels. One of said panels may be formed, for example, of a transparent material 114 such as glass or plastic, another of suitable metallic or plastic screening 116, and the third of a light-impervious material such as a black-out curtain 118. Each of window units 108 slides horizontally in the tracks provided therefor and one important advantage of using said units is that the entire window frame opening may be availed of for lighting and ventilation. Moreover, by means of this arrangement, black-out conditions within the housing may be easily obtained.

It is to be understood that any one of the spaces defined by adjoining rib 82 and adjoining longitudinal tie members 84 may serve as a frame for a window sash or as a mounting for a window frame, and the details of one form of window construction, which may be used for example in any number of adjacent or separated longitudinal spaces of said framework, are shown in Figs. 15 through 17. As illustrated, said window comprises an auxiliary frame or trim 130 mounted within the frame provided by adjacent segments 86 of transverse rib 82 and the adjacent longitudinal ties 84 which interconnect the upper and lower ends of said segments. Auxiliary frame 130 is provided with a central partition 132 which divides the same into substantially two parts, each of which is provided with a sash 134. The upper sash is hinged at its upper end to the head member of frame 130 by a suitable surface hinge 136. Lower sash 134 is similarly hinged as by a hinge 138 to the lower end of partition 132. Sashes 134 may mount a suitable transparent sheet material such as glass or plastic 140, the latter being secured therein by suitable panelling 142. Mounted on the internal surface of frame 130 is a screen 144 which is secured in position by a suitable panel mounting 146 butt-jointed at the corners into operative engagement with the main and auxiliary frames.

There is thus provided a novel building construction which not only lends itself to prefabrication, but whose component parts may be readily manufactured with a minimum of equipment close to the site at which the structure is to be used. The only machines necessary for the manufacture of these structures in quantities are rip and cut off saws equipped with dado heads and drill press.

The novel construction comprises a basic arch structure which is adapted for use with different floor systems and different types of windows to meet climatic requirements. A wide range of live-load insulation and ventilating requirements are met by this basic structure adapting the housing units embodying the structure for such military uses as personnel quarters, field houses, hospitals and light storage units under climatic conditions varying from equatorial jungles to the most exposed sites in the Aleutians. For example, by using insulating canvas as the outer skin and providing a minimum of window space consistent with proper lighting requirements, the housing structure may be employed under such extreme climatic conditions as are encountered in our most advanced Arctic air base. The novel, reinforced, semipolygonal arch support may also constitute the basic structural element for any type of structure requiring light, long-span construction as, for example, small hangars, light bridges, garages, light storage buildings and such farm structures as barns and poultry and hog houses.

Since certain changes may be made in the above article, and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. As a new article of manufacture, a building construction comprising as a side and top frame structure a plurality of transverse structural units of regular semi-polygonal shape, each said unit comprising a plurality of interchangeable structural members and being provided with notches at the apices thereof, and a plurality of interchangeable longitudinal ties, each said tie being interlocked with each said structural unit at the apices of the latter, each said tie being provided with notches whereby it may be cross-lapped with said units, successive notches in said ties opening in opposite directions whereby each successive unit overlaps opposite sides of each tie.

2. In a building construction, in combination with foundation walls and sills mounted on said walls, a floor framework comprising a plurality of supporting members, a plurality of transverse structural units comprising a plurality of segments, a plurality of longitudinal ties, each said

tie being interlocked with each said unit at the apices of the latter, each end tie engaging the upper faces of said transverse floor-supporting members and each end segment of each said unit overlapping one of said transverse floor-supporting members, and mechanical means securing together the overlapping portions of said supporting members and said structural units and one of said sills.

3. In a building construction, in combination with foundation walls and sills mounted on said walls, a floor framework comprising a plurality of substantially parallel, transverse supporting members dadoed in said sills, a plurality of transverse structural units of regular semi-polygonal shape comprising a plurality of segments mechanically secured together, a plurality of longitudinal ties interlocked with each said unit, each end tie engaging the upper faces of said transverse floor-supporting members and each end segment of each said unit overlapping one of said transverse floor-supporting members, and mechanical means securing together the overlapping portions of said supporting members and said structural units and one of said sills.

4. In a building construction, in combination with foundation walls and sills mounted on said walls, a floor framework comprising a plurality of substantially parallel, transverse supporting members dadoed in said sills, a plurality of transverse structural units of regular semi-polygonal shape comprising a plurality of segments mechanically secured together, a plurality of longitudinal ties, each said tie being interlocked with each said unit at the apices of the latter, each end tie engaging the upper faces of said transverse floor-supporting members and the end segments of each said unit overlapping one of said transverse floor-supporting members, and mechanical means securing together the overlapping portions of said supporting members and said structural units and one of said sills.

5. As a new article of manufacture, a building construction comprising as a side and top frame structure a plurality of transverse structural units of regular semi-polygonal shape, and

a plurality of interchangeable longitudinal ties, each said unit comprising a plurality of interchangeable light-weight structural members, each said member having a rectangular body portion and tapered end portions, said structural members being secured end to end with the tapered ends thereof overlapping the rectangular body portions of adjacent members and with an edge of each said tapering portion flush with an edge of the rectangular portion of the member said tapered portion overlaps, each said tie and each said unit being provided with a plurality of notches whereby each said tie is interlocked with each said unit at the apices of the latter, successive notches in said ties opening in opposite directions whereby each successive unit overlaps opposite sides of each tie.

ROBERT W. McLAUGHLIN, JR.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
332,060	Davis	Dec. 8, 1885
1,064,573	Ulrich	June 10, 1913
1,470,298	Straight	Oct. 9, 1923
1,526,278	Gilmore	Feb. 10, 1925
1,573,724	Lowe et al.	Feb. 16, 1926
1,687,850	Shodron	Oct. 16, 1928
2,076,877	Brown	Apr. 13, 1937
2,108,479	Elmendorf	Feb. 15, 1938
2,317,621	McLaughlin	Apr. 27, 1943
2,319,245	Lunken et al.	May 18, 1943
2,321,221	Linehan	June 8, 1943
2,329,041	Ford	Sept. 7, 1943
2,384,198	Sheldon	Sept. 4, 1945
2,392,678	Loetscher	Jan. 8, 1946

FOREIGN PATENTS

Number	Country	Date
479,046	France	Nov. 13, 1915
414,683	Germany	June 5, 1925
132,285	Austria	Mar. 10, 1933
540,881	Great Britain	Nov. 4, 1941