ABSTRACT OF THE DISCLOSURE

Prefabricated building comprising a plurality of vertical post members in spaced apart relationship forming the skeletal wall structure of a building; a plurality of eave frames extending across the top of the vertical post members; a plurality of rafter members extending inwardly from the top of the vertical members upon an oblique plane; means angularly joining the rafter members at the top thereof to form a roof peak; coupling means joining the horizontal members to the vertical members, said coupling means further joining the rafter members at the lower end thereof to the vertical and horizontal members; panel retaining means integrally connected to the vertical posts, the horizontal ceiling members and the rafter members; and a plurality of wall and roof members fixedly interposed between the respective panel retaining means.

This invention relates to a prefabricated aluminum building, combination of aluminum pipes, sheets and extrusions adaptable for assembly into a building of variable dimensions.

This invention also relates to an improvement in building construction and as one of its objects, aims to provide an improved prefabricated aluminum roof truss and roof panel.

Another object of this invention is to provide a structure for use as garden ornamented building for out-door living, summer bungalow and light residential building.

Another object of this invention is to combine aluminum pipes, extrusions and sheets of minimum thickness acting together to provide a complete building unit, sufficiently light and rigid, to resist natural elements, such as wind, snow, etc.

Yet another object of this invention is wall framing structure and connections to provide uniform panels of wall, window or door.

It is also an object of this invention to provide a ceiling framing structure and connections for use of any suitable ceiling material found in the market.

Another object of this invention is the ease of dismantling and re-erecting the units without damage to the parts and without providing new or additional parts.

Another object of this invention is the use of units which can be completely fabricated at the factory and can be used for ready assembly into a building.

Another object of this invention is to provide a prefabricated structure using the same prefabricated members, for use as a home without limitation as to size, the number, or the layout of the rooms, or for any local climatic conditions, whether assembled for use as permanent or temporary living.

Yet another object of this invention is the use of extruded aluminum frames for panels in conjunction with commercially available sheet aluminum.

Another object of this invention is to provide prefabricated units of small number of types that the units of each pattern be interchangeable with all units of the same pattern, to facilitate and shorten the time required for field assembly of units by either experienced or inexperienced workmen.

Another object of this invention is to provide units of such pattern that, units of the same pattern and also units of different pattern, when joined together, form strong, durable and permanent connection resisting the superimposed live loads and wind forces.

The above and other important features of this invention will become apparent from the following detailed specification in connection with the accompanying drawings in which drawings:

FIG. 1 is a perspective view in partial cross-section of the building in course of construction illustrating certain of the details.

FIG. 2 is a vertical section post connection to concrete floor, taken on line 2—2, FIG. 1.

FIG. 3 is a view of a section of a corner post intersection.

FIG. 4 is a view of a section of a three-way post intersection.

FIG. 5 is a view of the ridges, taken on line 5—5, FIG. 1.

FIG. 6 is a view showing the continuous angular shaped fitting called the eave framing member, taken on line 6—6, FIG. 1.

FIG. 7 is a view showing the fitting for connection of the ceiling frame members, taken on line 7—7, FIG. 1.

FIG. 8 is a view of the rafter, taken on line 8—8, FIG. 6.

FIG. 9 is a view showing the top of the wall panel connected to the eave framing member, taken on line 9—9, FIG. 1.

FIG. 10 is a view showing the bottom of the wall panel connected to the floor channel, taken on line 10—10, FIG. 1.

FIG. 11 is a view taken on line 11—11 of FIG. 1, and FIG. 12 is a view taken on line 12—12 of FIG. 1.

Referring particularly to the drawings, the building 10 may be supported on any suitable foundation. The vertical post 15, is connected to the concrete foundation 16 by means of anchor bolts 17 embedded in the foundation, and bolted to a base plate 18 welded to the bottom of the post 15.

The components of the superstructure including wall panels 11, door and window panels 11', roof panels 11' and roof truss 20 are preferably made of patterned aluminum preformed parts. The frame 60 of wall, door and window panels are preferably fabricated of extruded aluminum members.

The eave frame 30, and stiffener plate welded there with on the exterior walls is preferably fabricated of steel sections and comprises a modified angle having a leg 31 projecting horizontally to connect to the vertical post 15 and a vertical leg 32 connecting to the horizontal ceiling rectangular members 59 and then an oblique leg 33 inclined so as to be perpendicular to and connecting with rafter 40 presently to be described. The eave frame 30 shown in FIG. 9 is secured to a U-shaped clip 35 provided for fastening to and alignment of the wall panels 11 by means of screws (not shown), through screw acceptance grooves 36 provided at the top edge of panel frame 60.
The posts 15 are attached at the upper end thereof to horizontal leg 31 of eave frame 30 by means of a plate 37 welded to the top of the post 15 and bolted to said horizontal leg 31.

The rafter 40, shown in FIG. 8, is preferably fabricated of aluminum extrusion and comprises a substantially rectangular elongated member 41 having integrally formed therewith radially protruding fins 42 which are shaped to form a continuous gutter 43. An internally serrated continuous screw acceptance groove 44 is received therein and will clasp the battens 46 and the flanges 12 of roof panel 11" together to the rafter 40. The gutter 43 formed into the rafter 40 provides positive drainage to the exterior structure 10 by directing the seepage through or by the batten 46.

The batten 46 is provided with triangular members 47 fabricated of a plastic material and inserted along the longitudinal edges and upon the inner surface thereof so that when said batten 46 is clasped upon roof panel 11" a tension lock of said batten 46 against panel 11" is created.

The ridge connecting plate 21, shown in FIG. 5, is preferably fabricated of aluminum and connects rectangular elongated member 41 of roof rafter 40 to the vertical truss member 22, and to the opposite rectangular elongated member 41.

The horizontal, rectangular ceiling member 50, as shown in FIG. 6, is attached transversely from eave frame 30 and bolted to the end thereof within a U-shaped channel member 51. The end of said U-shaped channel member 51 is further secured to the face of vertical leg 32 of eave frame 30.

At the center of the span of the horizontal ceiling member 50 as seen in FIG. 7 and directly below the peak of the truss 20 a bolted connection plate 23 is installed to connect horizontal rectangular ceiling member 50 to vertical truss member 22.

The rectangular elongated member 41 of rafter 40 is cut at the undersurface thereof, short of its full length so as to rest on the oblique leg 33 of eave frame 30 and bolted by means of U-shaped channel member 52 thereon.

The end of rafter 40 is angle cut to form a V-shaped peak, as seen in FIG. 5. The rectangular elongated member 41 is connected to vertical rectangular brace member 22 by means of ridge connecting plate 21. The gutter 43 extends to the lower end of and beyond the eave frame 30 for a distance of at least six inches to establish the line of the eave cornice 34, presently to be described.

Sufficient vertical post columns 15 are provided in each building 10 to resist the extreme, year round, local weather conditions.

The frame 60 of wall panel 11 is comprised of a bottom edge member 61 as shown in FIG. 10 assuming a substantially U-shaped configuration adapted to receive, and have seated the wall panel between the arms of the U-shaped member.

Between the bottom edge member 61 of the wall panel 11 and concrete foundation 16 there is provided an extruded aluminum double weather stripped floor channel 62. After the framing has been properly erected and the vertical post columns 15 are rigidly anchored, the floor channel 62 is placed between columns 15 and bolted to the concrete foundation 16.

Between the floor channel 62 and concrete foundation 16 a flexible plastic material 63 is provided to compensate for any unevenness of the concrete foundation 16 up to and at the same time, acts as insulation or a weather strip for weather protection. The top face of floor channel 62 is provided with two upwardly projecting fins 64 which interlock with the bottom edge member 61 of the frame 60 thereby establishing the alignment of the panel 11 and additionally forming a weather insulation at the joint.

Panels 11 and 11' are installed by lifting said panels so that the top edge 65 of frame 60 is pushed up into the U-shaped channel clip 35, as shown in FIG. 9, and previously attached to the undersurface of the eave frame 30 and positioned so that the bottom edge of panel 11, 11' is directly above and in proper alignment with the floor channel 62 on which it is then firmly set down upon.

Vertical posts 13 are provided with cover plates 70 secured by screws 71 to vertical frame member 66 at spaced points thereof, along the sides thereof so that said cover plates 70 and frame member 66 form a cage-like structure enveloping posts 13. Said plates 70 may be substantially flat as shown in FIG. 4, or angular, suited for corners, as shown in FIG. 3.

After a wall panel 11, and its frame 60, has been thus temporarily set, each of the panels 11, 11' are then shifted to its proper position with relation to the cover plates 70. The cover plates 70 are then firmly connected by means of screws 71 and set so that margins of the frame 60 are exposed. At this point the U-shaped clip 35 on the eave frame 30, supporting the top edge of the panel 11 is then firmly attached with screws (not shown) through the arms of U-shaped clip 35 into the screw acceptance grooves 36 on both sides of the frame 60.

The roof panels 11' are preferably fabricated of aluminum sheets, glued to plywood 13 with flanges 12, provided therewith.

The roof panel 11" at the cornice is provided with a flange 25 formed at a right angle to the pitch of the roof line and extending downwardly. Flange 25 is placed so as to cover the space equivalent to the depth of the gutter 43 and their supporting rafters 40. The roof panel flanges 12 are bent downward and into the gutter 43 of the rafter, each flange 12 extending into its own space in the gutter 43 created by reason of the upward projecting fin 42 of the internally serrated and continuous screw acceptance groove 44.

The ridge framing member 80 shown in FIG. 5 is connected to the peak of roof truss 20 through screw acceptance grooves 81. This will act to align the top of rafters and also to receive the roof panels 11". The roof panels 11" are preferably of aluminum sheets glued to plywood sheets 13. The aluminum sheet of roof panel extends beyond the plywood sheet 13 and is provided with a U-shaped flange 82 overlapping the ridge framing member 80.

At the eave end, the batten plate 46 is bent to an angle, similar and closely following the line of the roof panel 11" at this point and of sufficient length to completely cover the eave end thereof and of the gutter area that was left exposed.

At the peak of the roof a continuous aluminum extrusion ridge cap 85 is attached with screws (not shown) to the rafters 40 through the screw acceptance grooves 44 of the rafter. This will act to cover the top of the roof panels 11" and to receive the upper end of the batten 46.

The space left between the eave end of the roof panels 11" and the upper end of the wall panels 11 as shown in FIG. 9 is covered with a specially formed sheet aluminum eave cornice 34 heretofore described. The cornice 34 is formed so that a downwardly extended lip 38, overlaps the top edge 60 of the wall panels 11. From this point the cornice shape continues vertically and horizontally until it makes contact with the lower extended ends 39 of the gutter portion of the rafters 40 on the underside thereof. The shape shall follow a contour to suit the gutter ends and ending with an upwardly extending leg 39', whose width shall be equal to the depth of the gutter and placed under the flange 25 of the roof panels and the lower batten ends 46. When thus assembled, the upwardly extended flange 39' of the cornice 34, under the downwardly extended end flange 25 of the roof panels, are fastened by means of a screw (not shown) into the batten end 46.

The wall panels 11, and window panels 11', are pro-
vided with aluminum edgings at the top 65 as shown in FIG. 9, at the sides of frame 60 as shown in FIG. 4 and FIG. 3 and the bottom 61 as shown in FIG. 10. In each case the aluminum edgings overlap the panel surface area by ¼ inch.

Referring now to FIG. 12, the gable end truss 20' of the building 10 is comprised of a modified horizontal ceiling member comprising an elongated rectangular portion 106, extending from one side thereof is provided with a plate 107 perpendicular to said flange and adapted to be positioned and secured to a plate 37 at the top of vertical post 15. The rectangular portion 105 is then fitted within a U-shaped channel socket member 51 for receiving a horizontal member 50 as hereinafter described.

In order to secure a gable end panel 101 as shown in FIG. 12 to the roof peak, a cornice gable 110 as seen in FIG. 11 is provided for securement of the rafter 40 heretofore described. Said cornice gable 110 comprises a substantially inverted U-shaped portion 111 adapted to receive between the arms thereof the top end of gable panel 101, one such arm thereof being secured by bolting or the like to the rafter portion 41 of rafter 40, the bottom end of gable panel 101 disposed upon and secured to eave cornice 34, said panel 101 and eave cornice 34 being secured to elongated rectangular portion 105.

Extending upwardly from U-shaped portion 111, of cornice gable 110 there is provided a vertical portion 112 at the top of which is provided a modified horizontal flange brace 113. Said horizontal flanged brace 113 is adapted to be interposed between the flanged fins 42 of rafter 40 and the resilient triangular member 47 of batten 46. The gable end panels 101 are further secured to each other by the interposition of vertical batten members 114; said batten members 114 being secured by bolts (not shown) or the like to the vertical truss brace member 22.

While I have illustrated and described the improved construction of my invention it will be understood, of course, that I do not wish to be limited to the precise details of construction and arrangements of parts illustrated and described, but regard my invention as including such changes and modifications as do not involve a departure from the spirit of the invention and the scope of claims.

I claim:
1. A prefabricated building comprising a plurality of vertical post members in spaced relationship forming the skeletal wall structure of a building; a plurality of eave frames extending across the tops of said vertical post members; a plurality of rafters extending inwardly from the tops of said vertical members upon a horizontal rafter frame, means for supporting the ends of said rafters extending thereto in a section of said rafter member, a plurality of interposed vertical rafters extending thereto in a section of said rafter member, and a plurality of oblique fins extending thereof to said vertical post members in spaced relationship forming the skeletal wall structure of a building; a plurality of eave frames extending across the tops of said vertical post members; and horizontal ceiling members extending between said vertical post members, means for supporting the ends of said rafters extending thereto in a section of said rafter member, and a plurality of oblique fins extending therefrom to said vertical post members.
2. A prefabricated building comprising a plurality of
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7 panels; said downwardly extending clip adapted to be interposed between said vertical flanges.

5. A prefabricated building according to claim 3 wherein said top anchoring means comprises a substantially inverted U-shaped channel member extending along the top edge of a panel and a clip member secured to said eave member; the arms of said U-shaped members adapted to be interposed between said clip member.

6. A prefabricated building according to claim 3 wherein said panel members along the vertical edges thereof are disposed between said channel members; said vertical channel frame members and said panel members interposed therebetween, being disposed between said spaced vertical post members; vertical cover plate bracket members connecting said vertical frame members integrally with each other and said vertical post members interposed therebetween.

7. A prefabricated building according to claim 3 provided with a batten and a cornice, the latter comprising a substantially elongated angular member having a vertical portion; means securing said vertical portion to said top anchoring means; a substantially horizontal portion extending from said vertical portion at the top thereof and an outwardly extending flange member substantially at the end of said horizontal portion; said flange member adapted to receive thereupon the outer edge of said batten; means for securing said flange to said batten.

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