

April 6, 1948.

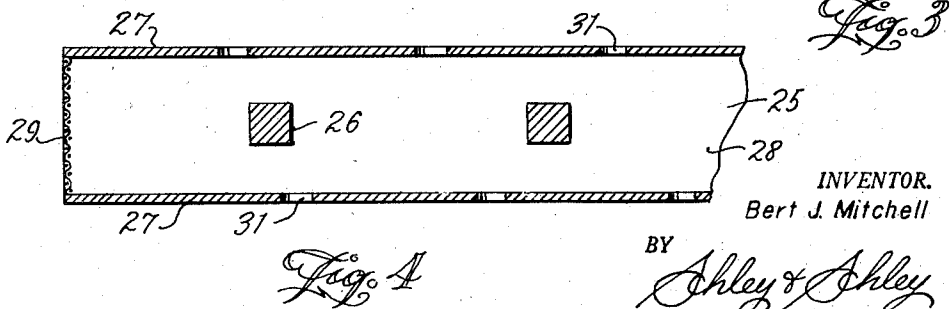
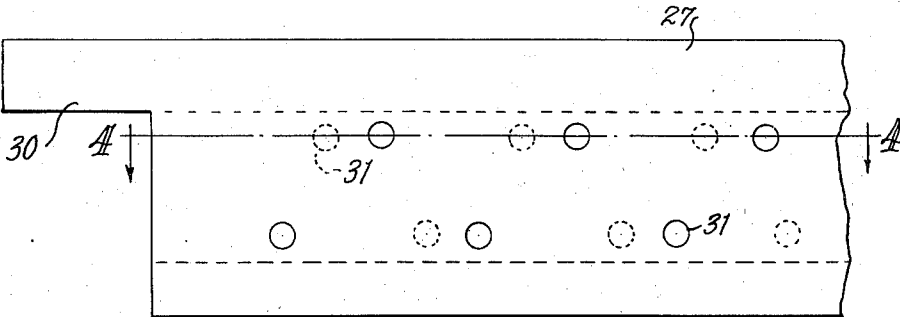
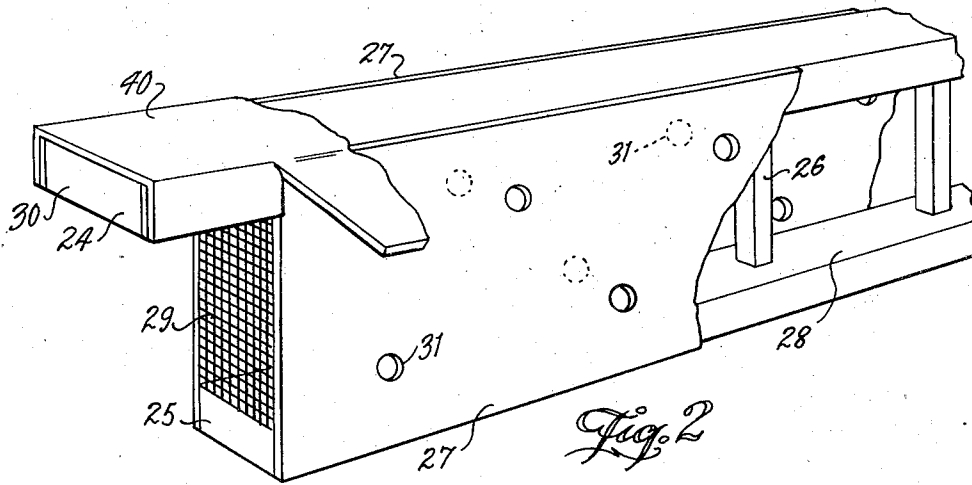
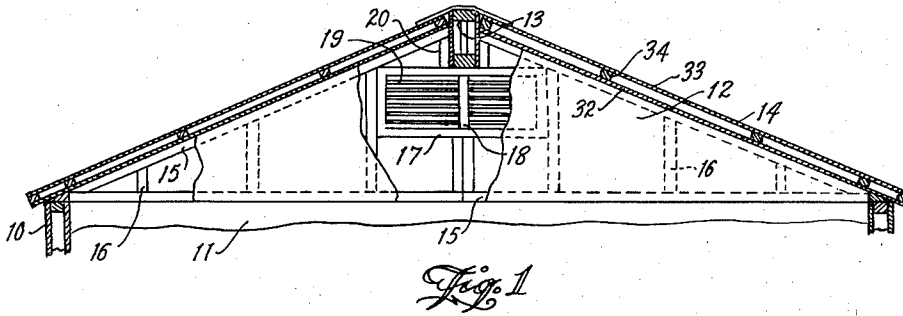
B. J. MITCHELL.

2,439,095

ROOF

Filed Aug. 3, 1946

2 Sheets-Sheet 1



INVENTOR.
Bert J. Mitchell

BY
Ahley & Ahley
ATTORNEYS

April 6, 1948.

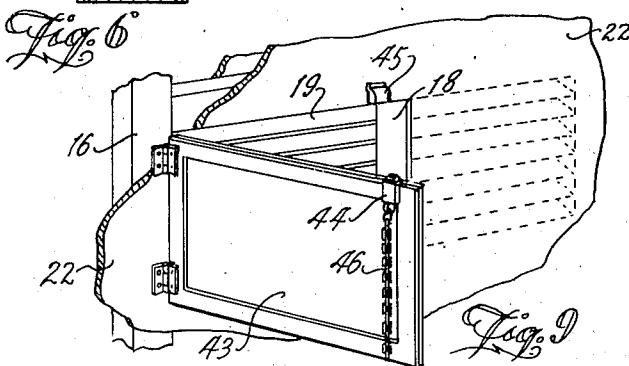
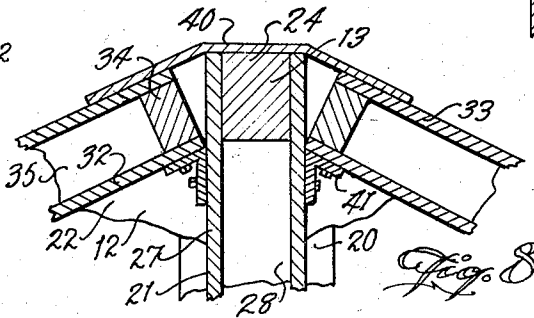
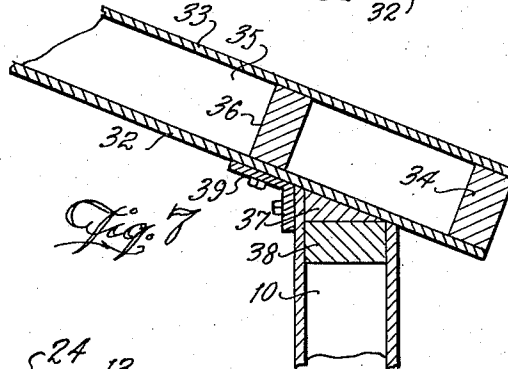
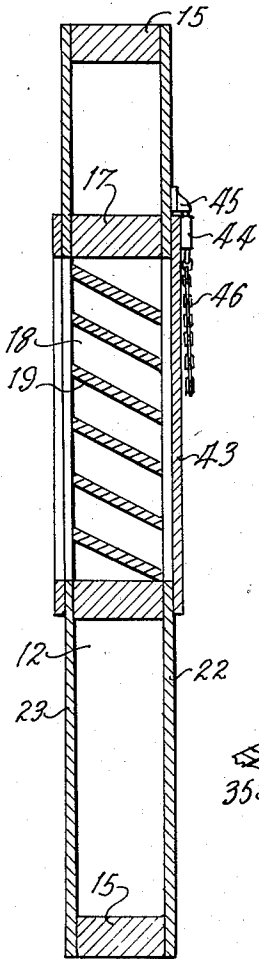
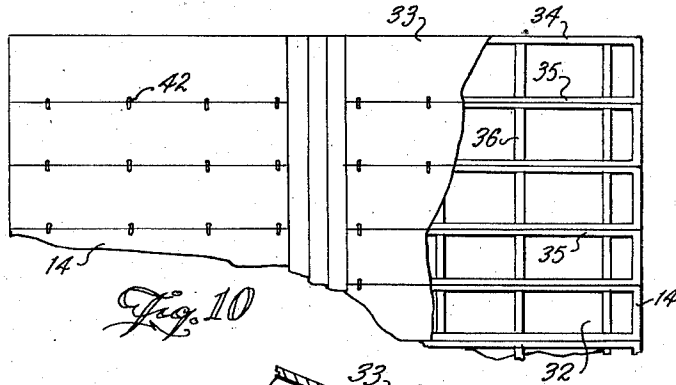
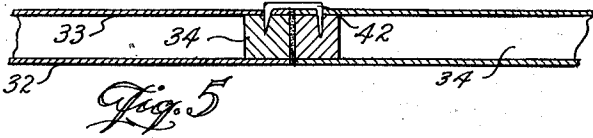
B. J. MITCHELL

2,439,095

ROOF

Filed Aug. 3, 1946

2 Sheets-Sheet 2



INVENTOR.

Bert J. Mitchell

BY

Ahley & Ahley

ATTORNEYS

UNITED STATES PATENT OFFICE

2,439,095

ROOF

Bert J. Mitchell, Dallas, Tex.

Application August 3, 1946, Serial No. 688,308

9 Claims. (Cl. 108—1)

1

This invention relates to new and useful improvements in roofs.

The invention has particularly to do with prefabricated buildings.

It is customary to construct buildings so that they may be transported from a factory in sections or disassembled form and expeditiously erected at the desired location. A common practice has been to employ plywood inner and outer sheathing and to employ inclined roofs which require considerable interior bracing and generally low ceilings and inadequate ventilation. Consequently, the roofs and ceilings of such buildings produce a poorly ventilated interior, which is not only uncomfortable to the occupant, but the walls of which, are subject to sweating, particularly under some climatic conditions and where open gas heaters are used.

One object of the invention is to provide an improved roof structure which will overcome these objections and difficulties and at the same time which can be manufactured and assembled in a substantial and economical manner.

A particular object of the invention is to provide a building roof which will provide adequate ventilation, as well as a relatively high ceiling; together with an interior which will be free of trusses and cross braces.

Another object of the invention is to provide a building roof formed of insulated sections, combining in each section both the inner sheathing and the outer sheathing together with a ridge beam or girder adapted to support said sections and at the same time provide adequate ventilation whereby sweating is prevented and the interior of the building made more comfortable and pleasant.

A further object of the invention is to provide end gables for the roof which provide sufficient bracing and which carry the ends of the ridge beam, one or both of which gables may have a louver and a closure therefor.

Still another object of the invention is to provide an improved ridge beam or girder of the box type, having its end open and connected by an ample air passage extending longitudinally of the roof and provided with spaced inlets open to the interior of the building for conducting air currents from the interior to the exterior of the building, thus providing adequate ventilation as well as carrying off odors.

A construction designed to carry out the invention will be hereinafter described together with other features of the invention.

The invention will be more readily understood

2

from a reading of the following specification and by reference to the accompanying drawing, wherein an example of the invention is shown, and wherein:

Fig. 1 is a transverse sectional view through the upper portion of a building constructed in accordance with the invention,

Fig. 2 is a perspective view of one end portion of the ridge beam,

Fig. 3 is a side view of a portion of the beam, partly in elevation and partly in section,

Fig. 4 is a section on line 4—4 of Figure 3,

Fig. 5 is a sectional view showing one of the joints between the roof sections,

Fig. 6 is a transverse sectional view through one of the gables,

Fig. 7 is an enlarged sectional view showing the manner of fastening the roof to the side walls,

Fig. 8 is an enlarged, transverse, sectional view through the ridge portion of the roof,

Fig. 9 is a perspective view of one of the louvers, and

Fig. 10 is a plan view of the roof with parts broken away.

In the drawings, the numeral 10 designates the side walls and 11, the end walls of a building, which walls, except as hereinafter pointed out, may be of any suitable construction. The roof includes generally, end gables 12, a box beam 13 extending between and having its ends carried by the gables and inclined roof sections 14 having their upper ends fastened to the upper portion of the beam and the lower end portions fastened upon the side walls.

Each gable 12 is preferably formed of two triangular frames 15 having their upright sides fastened together at the center of the gable. The bottoms of the frames are fastened on the top plates of the end walls 11. The frames are each braced by upright studs 16 fastened therein. A horizontal, rectangular louver frame 17 extends across the central portions of the frames, the uprights of the frames 15 being cut out to receive the louver frame, which has its ends fastened to adjacent studs 16. This louver frame is provided with an upright, central mullion 18 and louvers 19.

Above the louver frame 17 the frames 15 have offset uprights 20, which with the top of the louver frame 17, form a saddle 21 for supporting the ends of the box beam 13. The inner side of each gable is sheathed or covered with plywood 22 which conceals the frames and the studs. The plywood sheathing 22 is preferably made

flush with the inner sheathing of the end walls

3

11. The outer sheathing 23, may be plywood or other suitable material. Suitable heat insulating material may be installed in the gables between the sheathings.

The box beam 13 is constructed of upper and lower stringers 24 and 25 respectively which are connected by uprights 26, fastened thereto. The sides of the beam are covered by plates 27 which may be plywood. The upper and lower edges of the plates terminate flush with the top and bottom of the stringers. The uprights 26 are of such width as to provide open spaces on each side thereof and thus the interior of the beam constitutes a continuous longitudinal duct or air passage 28 which is open at each end of the beam. The open ends of the beam are flush with the outer sheathings 23 of the gables and may be covered with wire screens 29 to exclude insects. It will be observed that extensions 30 are provided on the ends of the beam above the screens to support the eaves of the roof.

It will be seen that except for the beam no trusses or cross braces are employed within the building between the gables. The undersides of the roof sections 14 constitute the ceiling and as the roof has a substantial slope or pitch on each side of the beam, a relatively high ceiling is provided. The major portions of the plates 27 of the beam depend from the ceiling. A particular feature of the invention includes inlets or holes 31 in the depending portions of the plates. These inlets are preferably located in a particular pattern which is subject to variation and which is illustrated in Fig. 3. The inlets are arranged in two horizontal rows, one spaced above the other and the inlets of one row being in staggered relation to those in the other row. The inlets in one side plate 27 are offset with relation to those in the other plate so as to prevent direct transverse passages through the beam.

It is obvious that air currents entering the passage 28 through the inlets will flow along said passage and escape at the open ends of the beam to the atmosphere outside of the building. Such an air flow will provide good ventilation and odors will be carried off. This flow of air currents will prevent sweating of the walls and roof sections 14. Since the passage 28 is reasonably large, as for instance approximately 3 inches wide and 8 inches high, it may be used for electrical conductors and other utility conductors.

Each roof section 14 includes an under or ceiling sheathing 32 and an upper outside sheathing 33, which may be made of plywood. These sheathings are fastened on a rectangular frame 34 in which rafters 35 are secured. The rafters are braced by members 36. When the sections are placed in position, their lower end portions rest on beveled rails 37 fastened on the top plates 38 of the side walls 10. The ends of the sections overhang the side walls to form eaves. The sections are secured by metal angle bars 39 fastened to the ceiling 32 and the inner edge of the rail 37. These bars extend from one gable to the other gable.

The outside sheathing 33 of each section slightly overhangs the upper end of the frame 34 so as to lie against the upper edge portion of the side plate 27 of the beam and thus prevents a gap. A longitudinal metal ridge plate 40 is fastened on top of the beam and is bent transversely so as to overlie the upper ends of the inclined roof sections. If shingles are used on the roof,

4

the upper ends of the first row of shingles are slipped under the ridge plate before its bent portions are fastened down. Metal angle bars 41 are fastened to the side plates 27 of the beam and the ceiling sheathings 32, similar to the bars 39. The roof sections may have heat insulating material (not shown) therein. The contacting longitudinal edges of the sections are caulked, and connected by staples 42, driven down thereinto. The ends of the bent portions of the ridge plate 40, which overhang the gables, are bent downwardly and fastened to the extensions 30 of the beam 13.

While the louvers 19 are fully exposed on the outsides of the gables 12, only one-half thereof are exposed on the inside of each gable; the remainder being covered by the inner sheathing 22. A door 43 is hinged to the open end of the louver frame 17 and has a spring latch 44 at its upper outer corner for engaging a keeper 45 on the top of the frame. A chain 46 depends from the latch. When it is desired to open the door, the chain is pulled downwardly and swung.

It is pointed out that the end gables 12 may be assembled at the factory and each shipped ready for installation or the triangular sections and the louver frame 17 may be assembled at the building location. The beam is transported and may be easily placed in position. The roof sections may be stacked in transporting them. The roof lends itself to ready assembly and expeditious erection.

The beam 13 lends rigidity to the roof and with the end gables obviates the necessity of interior trusses and cross braces. By employing the under sheathings 32 as the ceiling, a large amount of head room is provided. The inlets 31 induce a flow of air currents and prevent heated air from pocketing under the ceiling. By closing the doors 43 and opening a window in the building, a pleasant circulation of air through the building is provided. Upright partitions within the building may extend to the roof sections thus adding to the cubical area of the divisions or rooms.

The foregoing description of the invention is explanatory thereof and various changes in the size, shape and materials, as well as in the details of the illustrated construction may be made, within the scope of the appended claims, without departing from the spirit of the invention.

What I claim and desire to secure by Letters Patent is:

1. A building roof including, end gables, roof sections between the gables, and a ridge beam connecting the gables and having its ends open to the outside of the roof, said beam having a longitudinal enclosed passage between its open ends and provided with inlets to said passage for conducting air currents from under the roof.

2. A building roof including, end gables, roof sections between the gables, and a ridge box beam having its ends supported at the gables and supporting the roof sections intermediate its ends, said beam having its sides exposed in the building below the ceiling thereof and provided with openings in its exposed sides, the beam having a longitudinal air passage communicating with its openings and open to the atmosphere outside of the gables.

3. A box beam for the ridge of a building including, an upper stringer, a lower stringer spaced below the upper stringer, upright side plates connecting the stringers, and a member connecting the stringers spaced from the plates,

5

there being a longitudinal air duct between the stringers open at the ends of the beam, said side plates having openings exposed in said air passage.

4. A building roof including, a longitudinal box ridge beam, end gables at the ends of said beam, roof sections between the gables having their upper ends engaging the beam above its bottom, each roof section including an upper plywood sheathing and an under plywood sheathing spaced from the upper sheathing and secured thereto, and means for securing the sections to the sides of said beam.

5. A building roof including, a longitudinal box ridge beam, end gables at the ends of said beam, roof sections between the gables having their upper ends engaging the beam above its bottom, each roof section including an upper plywood sheathing and an under plywood sheathing spaced from the upper sheathing and secured thereto, and means for securing the sections to the sides of said beam, the ridge beam having its ends open to the exterior of the building, said beam extending longitudinally below the roof sections and being provided with openings in its extended portion and a passage extending from said openings to its open ends.

6. A building roof including, triangular end gables, a ridge beam connecting the end gables, inclined roofing sections having upper ends fas-

6

tened to the upper side portions of said beam so as to depend below said sections, a longitudinal ridge plate secured on top of said beam and overlapping the roof sections on each side thereof, and angle bars secured to the undersides of the roof sections and to the sides of the beam.

7. A building roof as set forth in claim 6, with louvers in the gables, and interior doors on the inner sides of said louvers.

8. A building roof including, triangular end gables, a ridge beam connecting the end gables, inclined roofing sections having upper ends fastened to the upper side portions of said beam so as to depend below said sections, a longitudinal ridge plate secured on top of said beam and overlapping the roof sections on each side thereof, and angle bars secured to the undersides of the roof sections and to the sides of the beam, the beam having open ends and a longitudinal interior passage connecting said open ends, said beam having air inlets in its depending sides opening into said passage.

9. A ridge beam for a roof including, an upper stringer, a lower stringer spaced below the upper stringer, and side plates connecting the stringers, whereby a longitudinal air passage is provided within the beam, said side plates having staggered air inlets to said passage.

BERT J. MITCHELL.

30