Nov. 29, 1932. C. I. AUTEN 1,889,512

BUILDING STRUCTURE

Filed Oct. 8, 1930 4 Sheets-Sheet 1

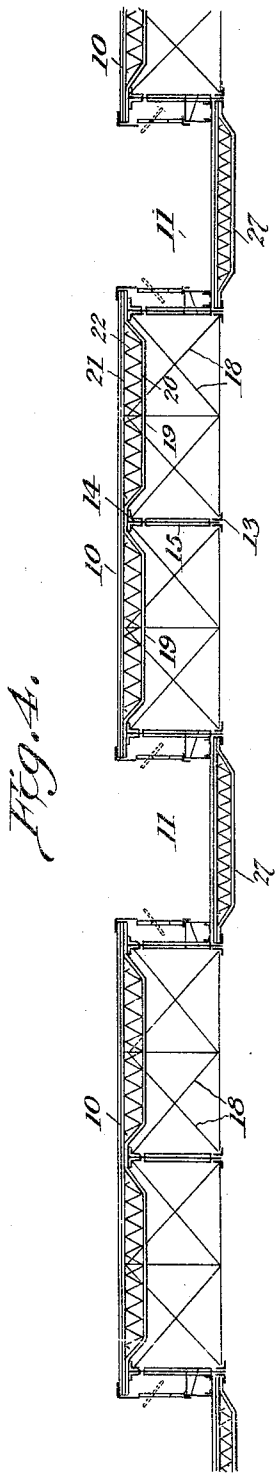


Fig. 4.

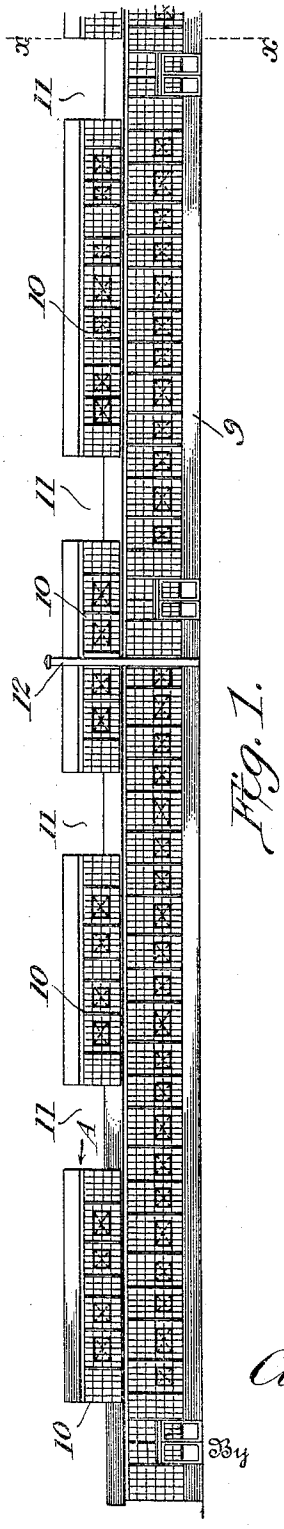


Fig. 1.

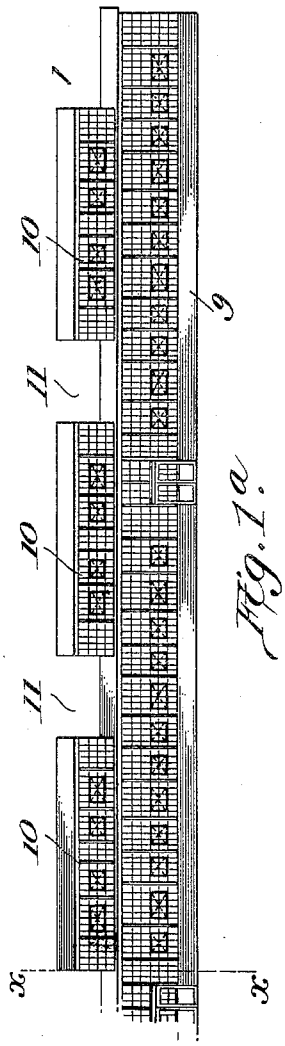


Fig. 1a.

Inventor

Claude I. Auten.

By

Attorney

Nov. 29, 1932. C. I. AUTEN 1,889,512

BUILDING STRUCTURE

Filed Oct. 8, 1930 4 Sheets-Sheet 2

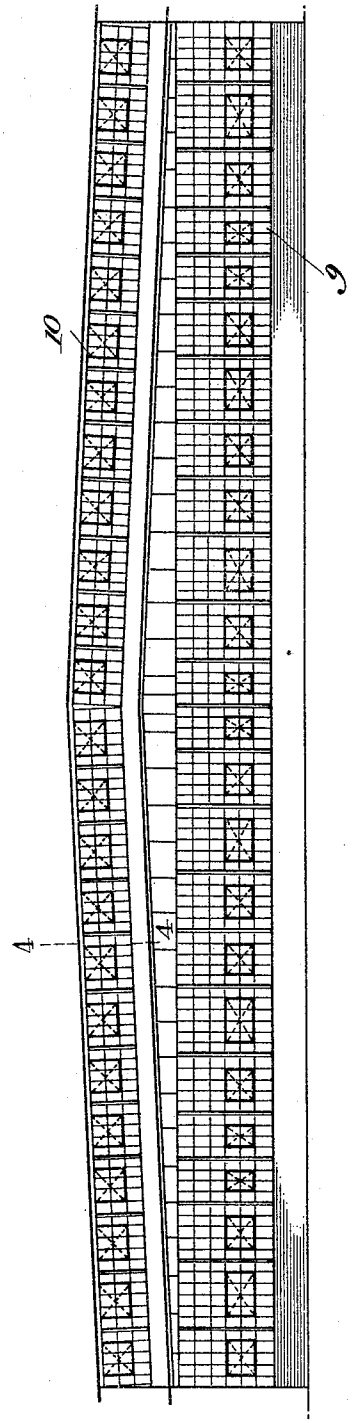


Fig. 2.

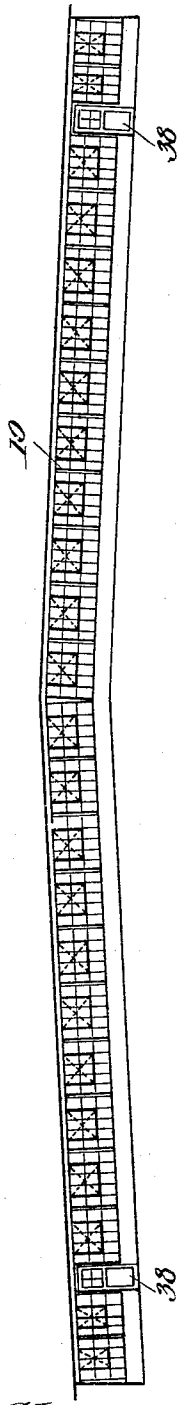


Fig. 3.

Inventor

By Claude I. Auten.

Attorney

Nov. 29, 1932. C. I. AUTEN 1,889,512

BUILDING STRUCTURE

Filed Oct. 8, 1930 4 Sheets-Sheet 3

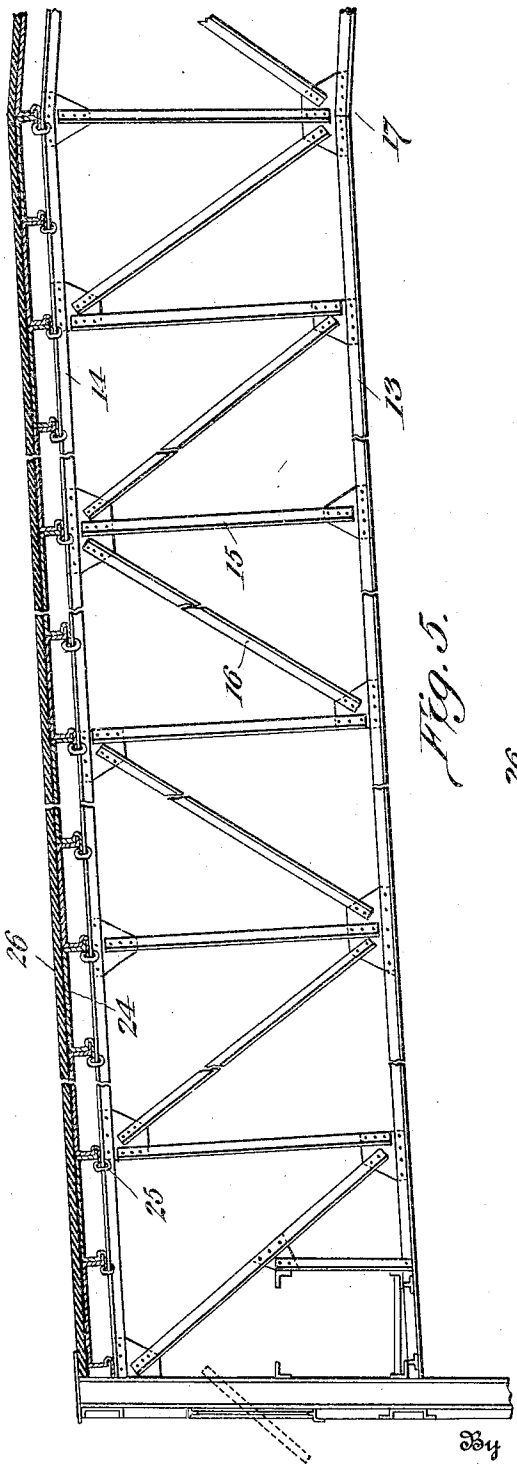


Fig. 7.

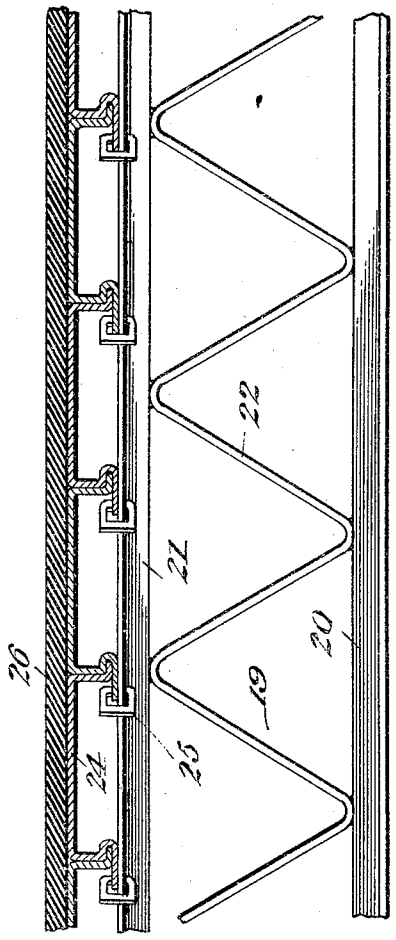


Fig. 8.

Inventor,

Claude I. Auten.

By

Attorney

Nov. 29, 1932. C. I. AUTEN 1,889,512

BUILDING STRUCTURE

Filed Oct. 8, 1930 4 Sheets-Sheet 4

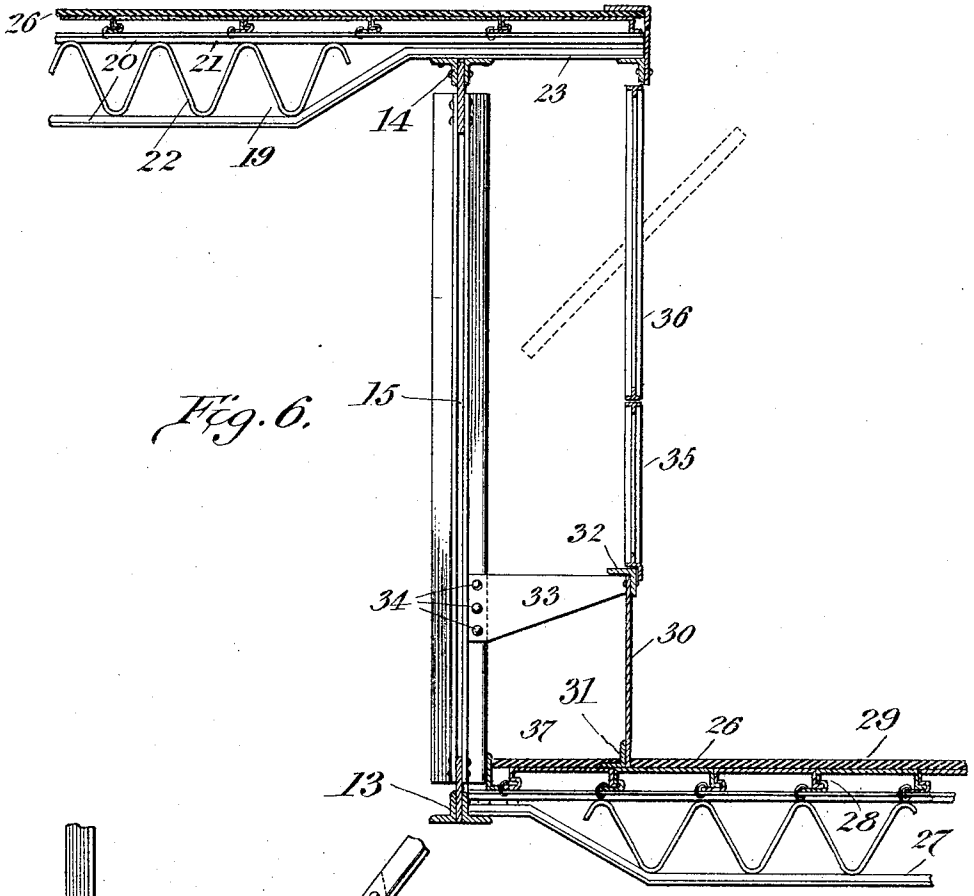


Fig. 6.

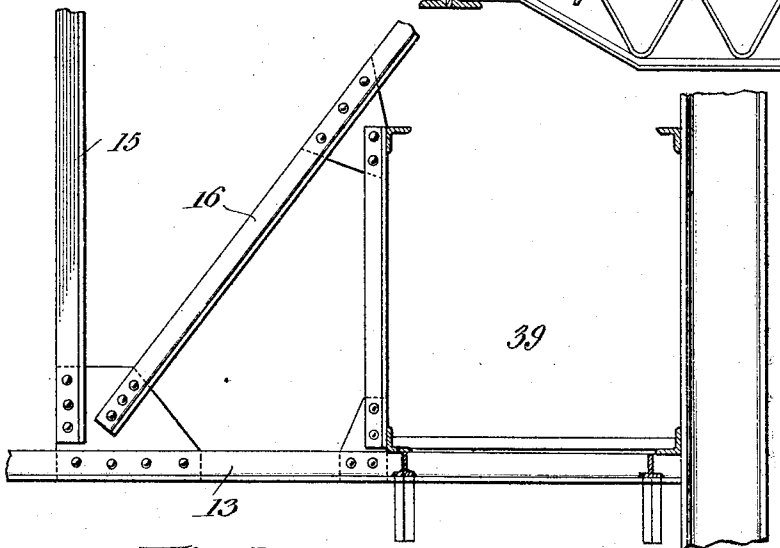


Fig. 7.

Inventor,

Claude I. Auten.

By

Attorney

Patented Nov. 29, 1932 1,889,512

UNITED STATES PATENT OFFICE

CLAUDE I. AUTEN, OF YOUNGSTOWN, OHIO, ASSIGNOR TO TRUSCON STEEL COMPANY, OF YOUNGSTOWN, OHIO, A CORPORATION OF MICHIGAN

BUILDING STRUCTURE

Application filed October 8, 1930. Serial No. 487,302.

The object of the present invention is to provide a building structure, particularly for commercial purposes, though of course not necessarily limited thereto, in which a relatively great area may be enclosed and roofed in a practical, substantial, and genuinely economical manner, the various parts being so associated that the pitch of the roof can be secured by the supporting trusses, and these trusses can be so related to the rafters and other roof elements as to produce bays at any desired places.

A further and important object is to provide a structure of the character which will permit adequate lighting and ventilation and give access to all parts of the building, particularly in and about the roof and ventilating means.

The preferred embodiment of the invention is illustrated in the accompanying drawings, wherein:

Figures 1 and 1*a* together form a side elevation of the structure.

Figure 2 is an end elevation.

Figure 3 is a view in elevation of one of the intermediate walls at a bay and may be considered, for example, an elevation looking in the direction of the arrow A, in Figure 1.

Figure 4 is a longitudinal sectional view through a portion of the roof framing and on the general line 4—4 of Figure 2.

Figure 5 is a detail sectional view on a somewhat enlarged scale over Figure 4 and at right angles thereto, showing one of the trusses and the walkway in the end thereof.

Figure 6 is a section at right angles to Figure 5 and on a still larger scale, cutting through one of the trusses and showing the mounting of the upper and lower rafters thereon.

Figure 7 is a detail sectional view on an enlarged scale through the end of one of the trusses, and illustrating the walkway in greater detail.

Figure 8 is a detail of one of the roof rafters and the roofing carried thereby.

Referring to Figures 1, 1*a* and 2, the side and end walls of the building are designated generally by the reference numeral 9, and the structure thereof may be of any well-known or desired character. It is shown as having upper sections or monitors 10 separated by bays 11. There is also illustrated a central fire wall 12. The present invention is addressed more particularly to the roof structure and the means by which the bays 11 are formed. The general lay-out of the building obviously can be altered in various ways and the elevations shown are merely for exemplification. The roof structure is as follows:

A series of skeleton trusses are suitably carried by the side walls and on such intermediate supports as may be desired though preferably they bridge the entire space between said side walls. Each of these trusses, as shown, consists of a lower chord 13 and an upper chord 14. The chords are connected by struts 15 and diagonal braces or webs 16. It will be noted that these trusses each inclines from a central point 17 (see Figure 5) downwardly and in opposite directions, so that they themselves determine the slope of the roof, and as a consequence the roof pitch is parallel with the upper chords 14, thus eliminating the necessity of inside gutters and down-spouts.

Referring now to Figure 4, it will be noted that sets of three of these trusses are suitably braced by rods 18 or other well-known elements for the purpose and that the said sets leave unbraced spaces which form the bays 11. Supported on the upper chords 14 of the braced trusses are what may be termed rafters 19. These rafters are of skeleton form of well-known character, being built up with lower chords 20 and upper chords 21 joined together by lattices in the form of zigzag rods 22 welded thereto. The ends of the lower chords 20 are bent upwardly and then outwardly so as to lie along the ends of the upper chord to which they are fastened and these ends, it will be noted, rest on the upper chords 14 of the trusses. (See Figure 6.) Single rafters may extend between adjacent trusses, or if desired a double rafter may extend across the three trusses. It will be noted particularly by reference to Figure 6 that the end portions 23 of these rafters pro-

ject beyond the trusses on which they rest and consequently into the spaces or bays 11.

On these rafters 19 is laid a roof section. It may be of any desired character, but preferably channeled roof deck members 24 are clipped, as shown at 25, to the upper chords 21 as shown in Figure 8, forming a metal deck on which is laid a suitable water-proof covering 26.

Roof sections for the bays 11 are provided by employing rafters 27 similar to those above described, the ends of the rafters 27 being supported on the lower chords 13 of the trusses by having their contracted ends resting thereon. On these rafters 27 are laid roof decks 28 covered with suitable water-proof material 29.

It will be obvious that as the rafters rest on the chords of the trusses and as the trusses slope in opposite directions from their centers, the surface of the roof carried by the rafters will have a pitch corresponding to the slope or inclination of the trusses and therefore there is no necessity for inside gutters and down-spouts.

Side walls for the bays 11 extend from the free terminals of the upper rafters 19 downwardly to the lower rafters 27 and the roof carried thereby. The structure of these walls may be varied but in the preferred embodiment, a base portion 30 of metal plates is secured by angle irons 31 to the lower deck and by angle irons 32 to brackets 33 that are fastened as shown at 34 to suitable struts of the adjacent truss. Above these brackets are windows 35 which may include swinging sashes 36 that constitute ventilators. This wall 30—36, it will be noted, is spaced from the adjacent truss that carries the ends of the upper rafters 19 and the lower rafters 27, thereby providing a gallery or walk-way 37 along the inside of the wall over the ends of the rafters 27, and giving access to the windows 35 and ventilators 36. More than this, the wall of the bay, as illustrated in Figure 3, may have doors 38 which open directly on to the roof sections 29 of the bays, so that a person may pass from the interior of the monitors 10 into the bays 11 without clambering over the roof sections of the former. In order that a person may pass along the entire structure, galleries or walk-ways 39 are formed within and transversely of the ends of the trusses (see Figure 7), thereby affording means of communication along the sides of the monitors between the transverse galleries 37.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

What I claim is:

1. In a building structure, spaced inclined roof supporting trusses having upper and lower inclined chords, a set of transversely disposed rafters mounted on the upper chords of certain of the trusses, including a truss on which the end of said rafters are supported, a roof carried by said rafters, another set of rafters supported on the lower chords of certain trusses, and having their ends on the lower chord of that truss on the upper chord of which the ends of the first set are mounted, a roof supported on the second set of rafters, the ends of one of said set of rafters projecting beyond the truss on which they rest, and a vertical side wall extending from the projecting ends of the rafters of one set beneath the same to the other rafters.

2. In a building structure, spaced inclined roof supporting trusses having inclined upper and lower inclined chords, a set of transversely disposed rafters mounted on the upper chords of certain of the trusses, including a truss on which the ends of said rafters are supported, a roof carried by said rafters, another set of rafters supported on the lower chords of certain trusses, and having their ends on the lower chord of that truss on the upper chord of which the ends of the first set are mounted, a roof supported on the second set of rafters, the ends of the upper set of rafters projecting beyond the truss on which they rest and over the lower set of rafters, and a vertical side wall extending from the projecting ends of the upper rafters of one set beneath the same to the lower rafters of the other set.

3. In a building structure, spaced roof trusses having upper and lower chords, a set of rafters mounted transversely on the upper chords of certain of the trusses, another set of rafters mounted transversely on the lower chords of certain of the trusses, upper and lower roof sections carried by the respective sets of rafters, a wall extending from the upper to the lower roof sections, and spaced from the adjacent truss, a walkway in the space and supported by the ends of the lower rafters within the wall, and windows in the walls adjacent the walkway.

4. In a building structure, spaced roof trusses having upper and lower chords, a set of rafters mounted transversely on the upper chords of certain of the trusses, another set of rafters mounted transversely on the lower chords of certain of the trusses, upper and lower roof sections carried by the respective sets of rafters, a wall extending from the upper to the lower roof sections, and spaced from the adjacent truss, a walkway in the space and supported by the ends of the lower rafters within the wall, windows in the walls adjacent the walkway, and a door in the wall

opening from the walkway to the lower roof section outside the wall.

5. In a building structure, spaced roof supporting trusses, a set of transversely disposed rafters mounted on the lower portions of certain of the trusses, another set of transversely disposed rafters located on the upper portions of certain of the trusses, and having their ends extended over the ends of the lower rafters, roofs carried by the respective sets, a vertical wall extending from the overhanging ends of the upper rafters to the lower roof and spaced from the adjacent truss to provide a passageway behind said wall and truss, said wall having openings and closures for the openings, and a walk in said passageway affording access to the closures.

6. In a building structure, spaced roof supporting trusses, a set of transversely disposed rafters mounted on the lower portions of certain of the trusses, another set of transversely disposed rafters located on the upper portions of certain of the trusses, and depending between the same, said rafters having upwardly narrowed ends extended over the ends of the lower rafters, roofs carried by the respective sets, a vertical wall extending from the overhanging ends of the upper rafters to the lower roof and spaced from the adjacent truss to provide a passageway behind said wall and truss, said wall having openings and closures for the openings, and a walk in said passageway affording access to the closures.

7. In a building structure, spaced roof supporting trusses, a set of transversely disposed rafters carried by the upper portions of certain of the rafters, sets of transversely disposed rafters on opposite sides of the trusses carrying the upper set of rafters and mounted on the lower portions of the outermost of said trusses, an upper roof and lower roof carried by the said respective sets of rafters, the ends of the upper rafters extending beyond the outermost of the trusses on which they rest and over the lower rafters, vertical walls extending from the overhanging ends of the upper rafters to the lower roofs in spaced relation to the adjacent trusses to form passageways between said walls and trusses, said walls having openings, walkways in said passageways affording access to the openings, and a walkway across the trusses supporting the upper rafters and affording communication between the walkways of the passageways.

In testimony whereof, I affix my signature.

CLAUDE I. AUTEN.