Jan. 10, 1956 C. M. VALENTINE 2,730,208

BUILDING STRUCTURE

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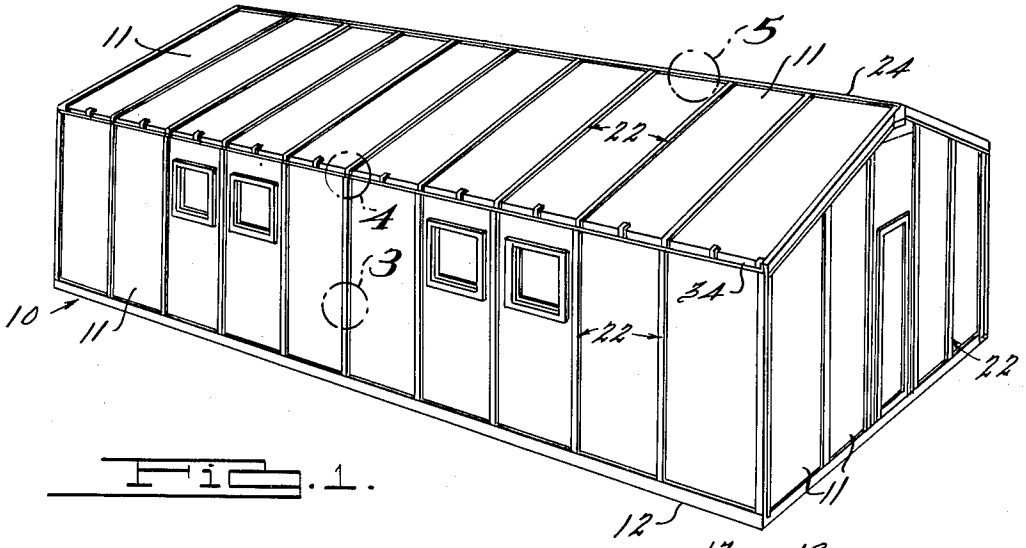


Fig. 1.

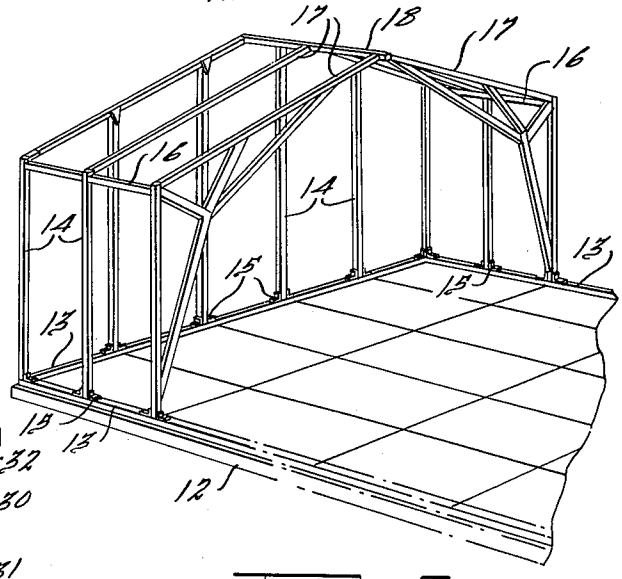


Fig. 2.

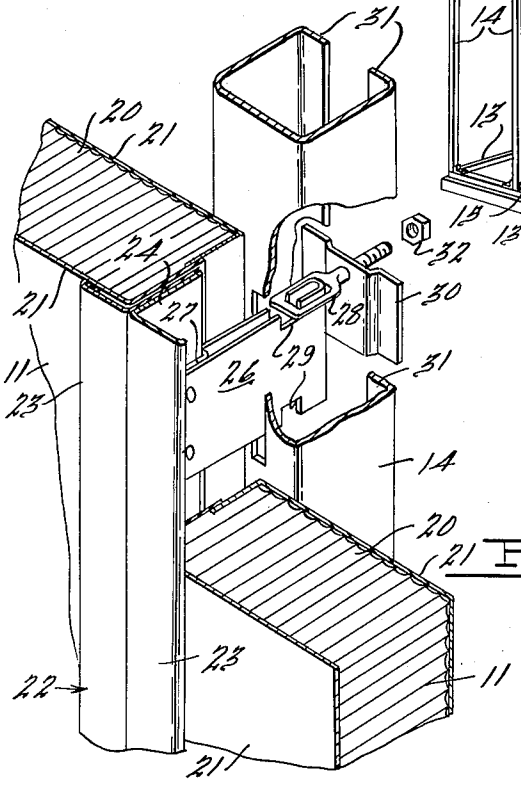


Fig. 3.

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BUILDING STRUCTURE

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2 Claims. (Cl. 189—34)

The invention relates to improvements in a space enclosing building structure.

An object of the invention is to provide a building structure including prefabricated structural components which can be readily assembled and disassembled and which can be easily and economically transported to a site of assembly, and to provide an improved construction for detachably securing the structural components together.

More specifically, an object of the invention is to provide a building structure including a plurality of wall forming panels and a frame work to which the panels are detachably secured in a manner to seal the walls and to thermally insulate the frame work and wall panels; and to provide a connector between the panels and frame work which acts as a seal for adjacent panels and thermally insulates the latter from the frame work. In the specific embodiment a batten is applied to adjacent panels and forms a part of the detachable connection between such panels and the frame work.

In carrying out the foregoing the wall and roof components are constituted by a plurality of relatively light weight, high strength panels each of which consists of an intermediate cellular core of paper, for example, and facing skins of sheet aluminum or other material secured as by surface bonding to the respective opposite extremities of the core. The panels are supported by a frame work including studs and rafters, preferably channel shaped in cross section, and a batten is applied to adjacent panels and is connected with the frame work for securing the panels to the latter.

Other objects and advantages of the invention will be more apparent from the following description taken in connection with the accompanying drawings, in which:

Fig. 1 is a perspective view of a building embodying the invention.

Fig. 2 is a fragmentary, perspective view illustrating the frame work and floor of the building shown in Fig. 1.

Fig. 3 is an enlarged, fragmentary perspective view, partly in section taken within the circle 3 of Fig. 1.

The invention is embodied in a space enclosing building, generally indicated by the numeral **10**, the walls, roof and floor of which are provided by panels **11**. The floor panels rest on and are secured to a sill structure **12** or other suitable support, and a structural plate **13** rests on the floor at the outer edge thereof and is secured thereto, it being understood that the plate **13** includes four sections, one at each side and one at each end of the building. The frame work to which the side wall and roof forming panels are secured includes studs **14** secured by angle irons **15** to the structural plate **13**, a top plate **16** secured to the upper ends of the studs **14** and to the outer, lower ends of rafters **17**, the inner or upper ends of the rafters being connected to a ridge plate **18**. The structural plates **13**, the studs **14**, top plate **16** and rafters **17** are preferably channel-shaped in cross section. A purlin **19**, preferably of wood, is coextensive with each top plate **16** and is secured thereto as shown in Fig. 4.

Each wall and roof forming panel **11** includes an intermediate core **20** of paper contoured to define an open-ended cellular body, and a facing skin or sheet **21** at either end of the open-ended cellular body and bonded thereto. The sheet **21** is preferably aluminum, although other metal or non-metallic material can be used, and adjacent terminal edges of the sheets are preferably flanged into overlapping relationship to substantially enclose the intermediate ore **20**. If desired the cells of the core can be filled with a suitable thermal insulating material.

Adjacent wall forming panels **11** are secured to a respective stud **14** and adjacent roof forming panels **11** are secured to a respective rafter **17** in like manner and corresponding parts are designated by the same numerals. A batten, generally indicated by the numeral **22**, is T-shaped in cross section and has opposite directed arms or flanges **23** respectively overlapping the outer facing **21** of adjacent panels **11** at each pair of adjacent edges of such panels, and a leg **24** extending between adjacent panels. The leg and arms are preferably integral and formed from a relatively light weight metal such as aluminum. The free edge portion of each arm **23** is preferably deflected from the plane of the main body thereof to provide an edge which is drawn against the overlapped skin **21** to provide sealing engagement therebetween. If desired, however, a sealing strip **25** of rubber, fiber, or other suitable material can be used between each arm **23** and skin and which will be compressed therebetween in the final assembly.

Each batten **22** has a number of U-shaped members **26** secured to its leg **24** at longitudinally spaced locations, a typical member **26** being illustrated in Fig. 3. The member **26** embraces the leg **24** and is riveted or otherwise secured thereto and is thermally insulated therefrom by a suitable material **27**. Each member **26** extends through a slot in the registering stud **14** and has a notch **29** at each of the opposite edges. An eyebolt **28** has its head detachably engaged in one of the slots **29** in the member **26** and projects from the open side of the channel stud **14** or rafter **17** in case of the roof panels. The bolt **28** also extends through an opening in a plate **30** which bridges the open side of the channel and seats on the flanges **31** at such open side. The adjacent panels **11** are drawn against the stud **14** (or rafter **17**) and the batten flanges drawn against the panels by threading a nut **32** onto the threaded end of the bolt **28**.

Although but one embodiment of the invention is illustrated and described, it will be understood that various changes can be made therein without departing from the spirit of the invention.

I claim:

1. A space enclosing building structure including a frame work comprising open sided channel members, spaced adjacent wall forming panels, and means securing the panels to the frame work including a substantially T-shaped batten having a leg extending into the space between adjacent panels and oppositely directed flanges overlapping and engaging respective adjacent panels, a U-shaped element receiving and secured to the batten leg and having a notched periphery, a fastener detachably secured to the notched periphery of the U-shaped element and extending through the open side of a channel frame member, a plate bridging the open side of said channel frame member and having an opening receiving an end portion of said fastener, and a nut threaded onto said fastener end portion and reacting against said plate to draw the batten flanges against said panels and said panels against said frame work.

2. A space enclosing building structure including a frame work comprising open sided channel members, spaced adjacent wall forming panels, and means securing the panels to the frame work including a substantially T-shaped batten having a leg extending into the space be-

tween adjacent panels and oppositely directed flanges overlapping the respective adjacent panels each flange having a free edge portion angled from the main body thereof and engaging the overlapped panel, a U-shaped element receiving and secured to the batten leg and having a notched periphery, a fastener detachably secured to the notched periphery of the U-shaped element and extending through the open side of a channel frame member, a plate bridging the open side of said channel frame member and having an opening receiving an end portion of said fastener, and a nut threaded onto said fastener end portion and reacting against said plate to draw said free edge portions of the batten flanges against said adjacent panels and said panels against the frame work.

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