This invention relates to prefabricated structural sections for the walls and ceilings or other partitions of building and residential structures generally, one object being to provide an improved and more efficient prefabricated section of this nature and method of making the same.

Another object is the provision of such a section, including the frame and an interior facing or finishing panel, of a more rigid, strong and durable character.

Another object is to supply the section of the above character affording more complete insulation against the transmission of changes in temperature and humidity.

Another object is to provide a section of the above nature including means for securely attaching an interior finishing panel to the supporting frame without the use of nails, clips or other deflecting parts.

A further object is to supply such a section having the same means for concomitantly unifying, insulating and sealing the section and its parts.

A further object is a section having the above advantages in a construction adapted to be manufactured readily and inexpensively of known material.

A further object is to supply a practical method for quantity production of such sections in a convenient and economical manner.

Still another object is the provision of an efficient method by which sections of the above nature, including supporting frame, interior finishing panel and exterior weather boarding, can be assembled and completely fastened together without turning over the section.

To these and other ends the invention resides in certain improvements and combinations of parts and method steps, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

FIG. 1 is an elevation partly broken away of a prefabricated structural section embodying the present invention;

FIG. 2 is a sectional view on the line 2—2 in FIG. 1;

FIG. 3 is a sectional view on the line 3—3 in FIG. 1, and

FIG. 4 is a view similar to FIG. 3 but showing a modified construction.

The invention is embodied, in the present instance, in a prefabricated structural section for forming ceilings, walls, partitions and the like, of buildings and housings generally and comprises a supporting frame shown generally at 10 (FIG. 1). Such frame preferably includes an upper or ceiling plate 12 and a lower or floor plate 14, of the usual 2 x 6 inch size, or smaller, as well understood in the art.

These plates are connected by spaced studs 16 at the usual spacing of 16 inches between centers and these studs may be the usual 2 x 4 inch forms, or of lighter construction, as hereafter referred to. The studs are preferably nailed, as at 18, through the upper and lower plates. In the form of the invention shown in FIGS. 1 to 3 inclusive, studs 16 are assembled with one edge of each level with the edge of the associated plates so as to leave a space 20 (FIGS. 2 and 3) of about ¼ inch between the other edges of the studs and the edges of the plates for a purpose hereafter described.

A frame such as the above is assembled or subsequently laid on an interior panel or finishing strip 22 of wallboard or other known and suitable material 22. A known and suitable liquid formulation, such as a polyurethane, is sprayed in the spaces of the frame and on the panel 22 to partially fill such spaces, including the spaces 20 between the studs 16 and the panel (FIG. 3). The plastic or polyurethane material is of a known character that can be sprayed and foamed in place to form a rigid, closed-cell body 24 which adheres tenaciously to the frame members and to panel 22, so as to firmly unite the same, without need for nails, clips or other means for securing the panel to the frame. The added rigidity enables the use of thinner panels and lighter frame members. The plastic is filled into the frame to the depth of about one half the height of the studs, leaving spaces in the frame conveniently available for the reception of piping, wiring and the like.

Instead of a polyurethane, I may employ other formulations of plural component resins which react and foam to form rigid, closed-cell materials, having a density of, say, 2.1 pounds per cubic foot, a tensile strength of 44 pounds per square inch and 90% of its volume formed by closed cells, as well understood in the art.

Besides uniting the parts, as described, to form a rigid, strong section, the plastic provides the section with a high degree of continuous insulation against changes in temperatures and moisture, as well as completely sealing the section parts together, in a construction which is rot proof, shock absorbing and acoustically sealed.

While the parts are in the above described position, weather boarding 26 of any known and suitable character is readily nailed to the side of the studs opposite the panel 22 to complete the section.

In a somewhat modified construction (FIG. 4), studs 28 are employed having the same height as the plates 12 and 14 with the same results that the parts are effectively united, insulated and sealed by the application of the plastic.

The invention provides also an improved and practical method for quantity production of the sections. The unitary panel 22 is laid on the bed of a nailing machine of known and suitable character by means of which the frame parts are assembled and nailed together. The plastic is then sprayed in place as described and quickly forms the rigid bond between the frame parts and panel 22.

The weather boarding is then assembled and nailed or otherwise fastened to the opposite sides of the studs and the door and window frames installed to complete the section without requiring it to be lifted and turned while being so formed, thus providing for manufacture of the sections in a convenient and economical manner.

The invention affords a wide range of component sizes up to 10 or 12 feet in width and 50 to 60 feet in length, and adapted to form a complete ceiling or side wall unit for a mobile home.

The invention thus provides a construction and method of making the same by which the same means of plastic filling concomitantly unifies, insulates and seals the parts to produce an exceedingly rigid, effective and economical section.

It will thus be seen that the invention accomplishes its objects and while it has been herein disclosed by reference to the details of preferred embodiments, it is to be understood that such disclosure is intended in an illustrative, rather than a limiting sense, as it is contended that various modifications in the materials and method steps will readily occur to those skilled in the art, within the spirit of the invention and the scope of the appended claims.

1. Prefabricated structural section comprising:
(1) a frame comprising, transversely, a wooden ceiling plate and a wooden floor plate longitudinally...
3. A prefabricated structural section according to claim 1 wherein said panel is an interior face panel and said section further comprises exterior weather boarding on said other side of said frame, and means fastening said boarding to said frame.

References Cited by the Examiner

UNITED STATES PATENTS

1,728,837 9/1929 52—743
1,805,069 5/1931 52—745
1,825,346 9/1931 52—238 XR
2,200,713 5/1940 52—743
2,226,617 12/1940 52—743
2,268,251 12/1941 52—405
2,744,042 5/1956 52—309 XR
3,000,144 9/1961 52—309
3,029,172 4/1962 52—309 XR
3,041,785 7/1962 52—309

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