July 6, 1954 A. W. BAILEY 2,682,939

BUILDING STRUCTURE

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Fig. 4

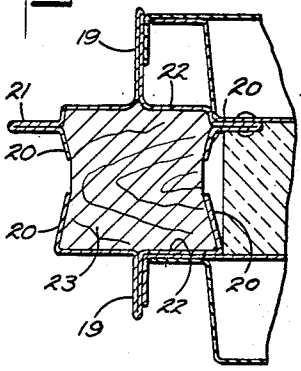
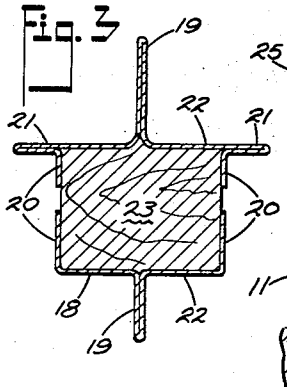


Fig. 3



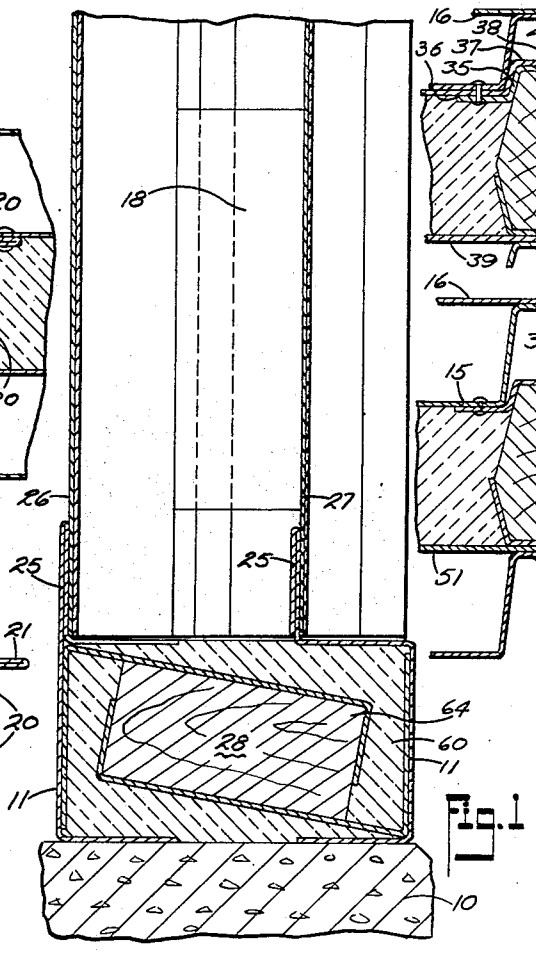


Fig. 1

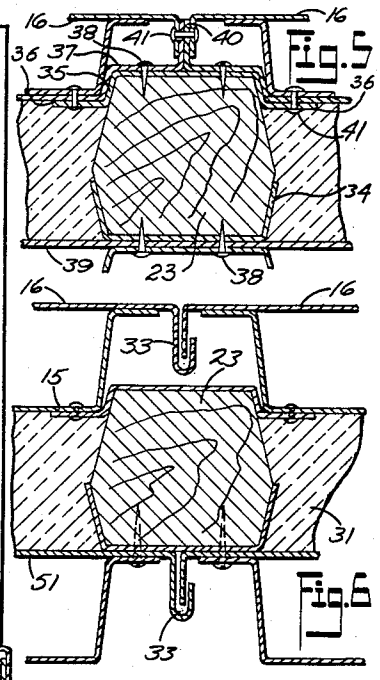


Fig. 5

Fig. 6

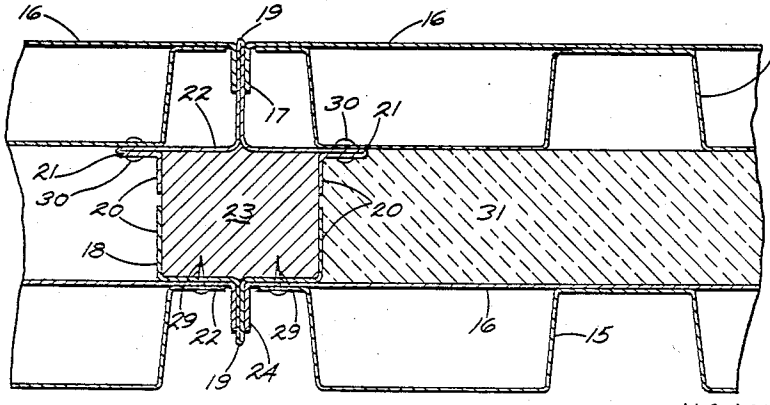


Fig. 2

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BUILDING STRUCTURE

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2 Claims. (Cl. 189—34)

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This invention relates broadly to prefabricated building materials and more specifically to improvements in the construction and organization of such materials in a building structure.

One of the objects of the invention is to provide a vertically disposed load-carrying member which is designed to facilitate the ready assembly thereof with similar prefabricated framing units.

Another object of the invention is to provide a wall panel which may be fabricated at the mill in conformity with the architectural treatment of the building.

Another object of the invention is to provide a tubular sheet metal column which is designed for use in the manner in which wooden studdings are customarily employed.

Another object of the invention is to provide a metallic stud and similar framing materials which may be used in the erection of either a single or multi-story building.

Another object of the invention is to provide a prefabricated metal stud embodying a pair of rolled sheet metal parts disposed in spaced relation with each other and united with non-metallic insulating strips or blocks.

Another object of the invention is to provide a hollow wall panel which may be filled with an insulating material or poured concrete to form a composite wall structure.

Further objects of the invention reside in the provision of a framing unit which is light in weight, sturdy of structure, economic of manufacture, and susceptible of assembly with ease and dispatch.

Other objects and advantages, more or less ancillary to the foregoing, and the manner in which all the various objects are realized, will appear in the following description, which, considered in connection with the accompanying drawings, sets forth the preferred embodiment of the invention.

In the drawings:

Fig. 1 is a vertical sectional view through a wall embodying the improved framing materials;

Fig. 2 is a transverse sectional view through the wall illustrated in Fig. 1;

Fig. 3 is a transverse section through the improved stud shown in Fig. 2;

Fig. 4 is a transverse sectional view of a modified form of the stud illustrated in Fig. 2, together with a fragmentary portion of the parts associated therewith;

Fig. 5 is a detail sectional view of another modified form of the stud and wall panels; and

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Fig. 6 is a detail sectional view of a further modification of the column and sheathing shown in the foregoing figures.

Referring first to Fig. 1, the building structure chosen herein as illustrative of one of the environs within which the improved framing materials may be used comprises a footing 10 having a floor plate 11 thereon which may be of any conventional form or constructed from spaced parallel rails having flanges thereon disposed for telescopic engagement with the wall members. The latter plates form the subject matter of my copending application, Serial No. 125,539, filed November 4, 1949, entitled "Wall construction."

The invention is susceptible of use in a building which is framed primarily of rolled structural steel forms and sheet metal plates. In such construction the sheathing 15 (Fig. 2) is formed of corrugated metal panels having a plate 16 welded or otherwise affixed upon a face thereof and flanged edge portions 17 adapted for engagement with the ribbed portions of the columns or studs 18. The studs, which are substitutive of the wooden framing members heretofore in use, are formed from a pair of rolled sheet metal rails, each comprising a folded portion in the center thereof constituting a rib 19 and marginal flanges 20 defining a channel. The channels are formed with lateral ribs 21 folded from the flanges 20 which may be either in the plane of the web 22 as shown in Figs. 2 and 3, or subjacent thereto as illustrated in Figs. 4 and 5. The channels are arranged in the column assembly with their flanges 20 in confronting relation, and wood or other non-metallic strips or blocks 23 are mounted between the rails for the retention thereof in spaced relation. The sides of the plates 16 are bent over the lineal edges of the corrugated sheathing, the flanges 24 thus formed being disposed in abutting engagement with the ribs 19 and secured thereto during the assembly of the wall panels with the columns.

In the erection of a building embodying the improved structural parts, the columns are mounted in vertical position upon the floor plates 11 which are seated in the conventional manner on the piers or foundation footings 10. The center-to-center distance between the columns is determined by the width of the panels and the thickness of the wall is governed by the depth of the spacer blocks 23. The vertical ribs 25 of the floor plates 11 are engaged, as shown in Fig. 1, with the outer face 26 of the sheathing 15 and the inner face 27 of the interior wall panel, the blocks 28 in the floor plates being proportioned relative

to the thickness of the strips or blocks **23** in the columns to accommodate such assembly.

The outer wall panels are affixed to the columns **18** by screws **29** mounted in the blocks **23**, and bolts or rivets **30** are employed to unite the lateral ribs **21** with the sheathing **15**. The voids between the panels may be filled with an insulating material **31** such as sheets of fiberglass or asbestos as shown in Fig. 2, or a comminuted material blown or poured between the panels in situs before the wall plates, floor joists, or roof beams are set in place.

The studs or columns **18** may be formed, if desired, with concave side walls and convergent flanges **20** as illustrated in Fig. 4, or convex side walls and divergent flanges **32** as shown in Figs. 5 and 6, the insulating cores **23** in each case being milled in complementary configuration thereto. The rolled steel forms in all of the foregoing embodiments may be assembled with sheathing plates of the form illustrated in Fig. 2 or with interlocked plates **33** of the type shown in Fig. 6. In the embodiment illustrated in Fig. 5 one of the faces of the core **23** is clad with a channel **34** while the opposed face is encased in a channel **35** having lateral flanges **36** thereon disposed for the support of the sheathing **37**. In this assembly the channels **34** and **35** are secured to the core by nails **38**, and the sheathing **37** is secured to the channel flanges **36** and the sheathing flanges **40** by bolts or rivets **41**.

From the foregoing it will be recognized that the wood or other insulating blocks or strips will arrest the transmission of heat from the outer sheathing to the inner wall, that condensation of moisture from the ambient air in the building will be minimized, that vibration of the metallic panels will be materially lessened, and that greater fuel economies may be realized in a building embodying the improved framing materials than have been possible heretofore in building structures in which the inner and outer metallic parts of the walls were in direct contact with each other.

Although the foregoing description is necessarily of a detailed character, in order that the invention may be completely set forth, it is to be understood that the specific terminology is not intended to be restrictive or confining, and that various rearrangements of parts and modifications of detail may be resorted to without departing from the scope or spirit of the invention as herein claimed.

I claim:

1. A prefabricated wall structure comprising a pair of corrugated sheet metal panels disposed in spaced parallel relation with each other, a flat sheet metal plate affixed upon the crest of the flutes of each of said panels and defining voids therein, flanges on the vertical edges of said plates disposed in normal relation thereto to accommodate the anchorage of said panels, a pair of sheet metal channels constituting a panel supporting member arranged with the flanged portions thereof in confronting relation, a rib protruding from the central portion of the face of each channel secured to the contiguous flange of said plate, flanges protruding from the sides of one of said channels secured respectively to the edge of the contiguous corrugated sheet metal panels, insulating material intermediate said panels to arrest the transmission of heat through the assembly, and insulating material intermediate said channels for the retention thereof in spaced relation with each other.

2. A prefabricated wall structure comprising a pair of corrugated sheet metal panels disposed in spaced parallel relation with each other, a flat sheet metal plate affixed upon the crest of the corrugated face of each of said panels, flanges on the vertical edges of said plates disposed in normal relation thereto for the support of said panels, sheet metal channels constituting supporting members for said panels arranged with the flanged portions thereof in confronting relation, ribs protruding from the web portions of said channels affixed respectively to said flanges on said plates, flanges protruding from the side walls of one of said channels affixed to the edge of the contiguous corrugated plate members of said panels, insulating sheets intermediate said panels to restrain the transmission of heat through said panel assemblies, said plates and the corrugated panels defining voids in the panel assemblies superjacent said insulating sheets, and vertically spaced blocks of wood intermediate the channels supporting said channels and panels in heat insulating relation with each other.

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