March 24, 1970 S. ABEL 3,501,885

WALL CONSTRUCTION

Original Filed Feb. 23, 1967

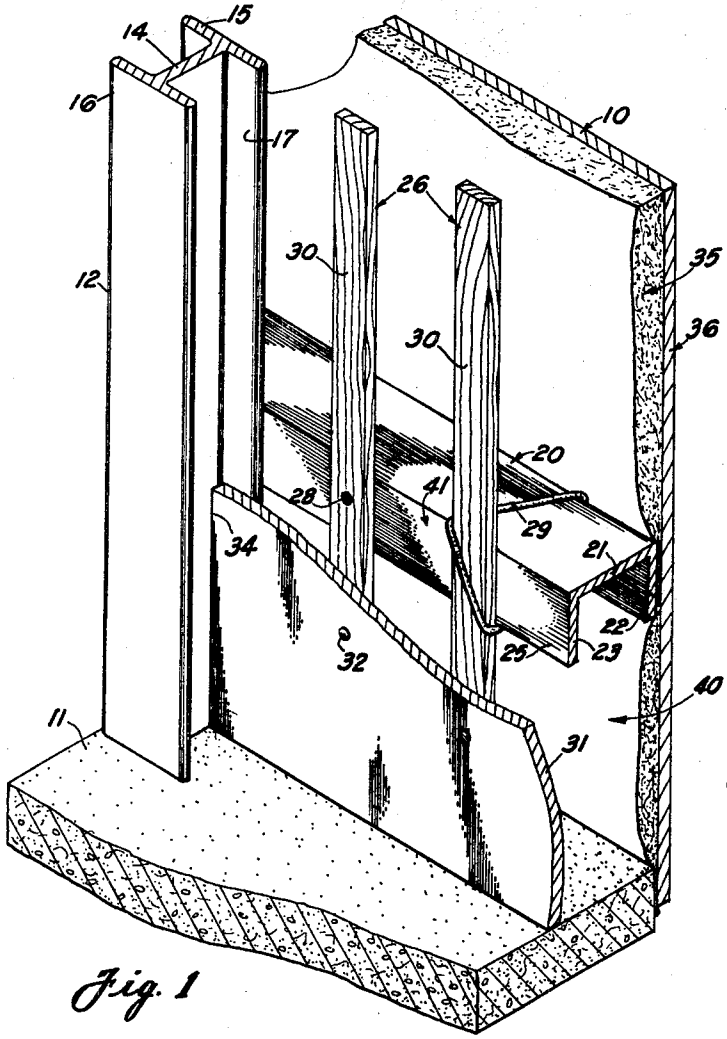


Fig. 1

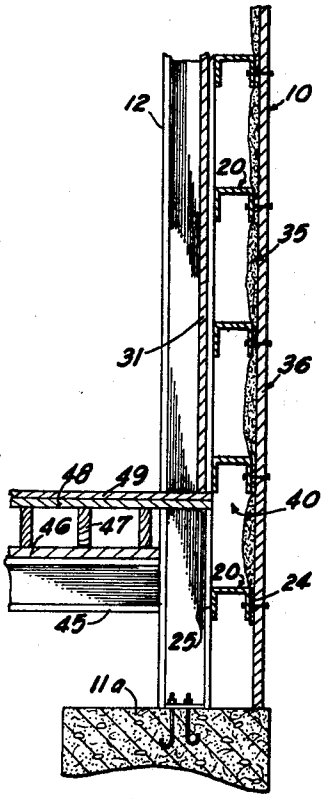


Fig. 2

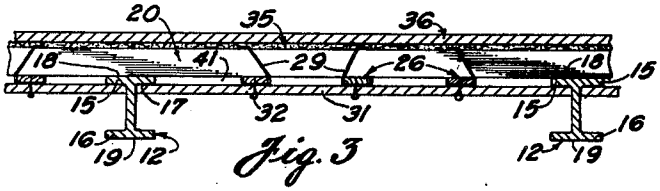


Fig. 3

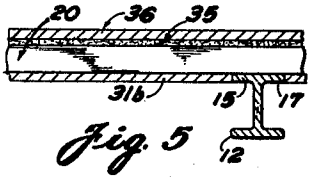


Fig. 5

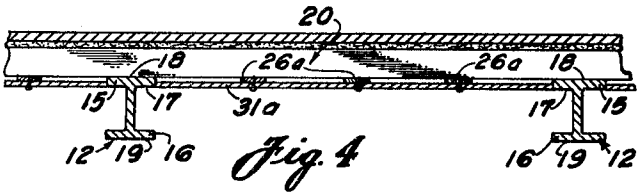


Fig. 4

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WALL CONSTRUCTION

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Continuation of application Ser. No. 620,207, Feb. 23, 1967. This application Nov. 25, 1968, Ser. No. 778,867
Int. Cl. E04b 2/60
U.S. Cl. 52—410 7 Claims

ABSTRACT OF THE DISCLOSURE

Wall construction for a building wherein a plurality of upwardly extending I-beams are disposed in parallel disposition, a plurality of laterally extending bridging beams are attached to the outer surface of the I-beams, insulation material is attached to the outer surfaces of the plurality of bridging beams and extends between the bridging beams, and steel siding is attached to the bridging beams, through the insulation material. A plurality of upwardly extending furring strips are attached to the inside surface of the bridging beams and wallboards are attached to the furring stirps in such a manner that they overlap the outside flanges of the I-beams and leave the inside flanges and a portion of the web of each I-beam exposed to the interior of the building.

This application is a continuation of application No. 620,207 filed Feb. 23, 1967, now abandoned.

BACKGROUND OF THE INVENTION

In the construction of buildings, it has become customary to place the vertical support members of the building inside the exterior walls of the building so as to leave the interior of the building free of any vertical supports. Also, the exterior wall of the building is utilized, wherever possible, to house ducting for heating and ventilation, plumbing, and electrical lines. Moreover, it is desirable to construct the exterior walls of the building with a minimum thickness so as to provide maximum space between the inside surfaces of exterior walls and so the walls do not require excessive amounts of building material.

Recently, there has been an increased demand for buildings which can be assembled in a short time with the use of a minimum amount of skilled labor. While building time and labor costs are of primary consideration in the construction of these buildings, it is also desirable to construct the buildings with the primary vertical supports located in their exterior walls, as explained above.

SUMMARY OF THE INVENTION

This invention comprises wall construction utilized primarily in the construction of buildings wherein upwardly extending I-beams form the vertical supports of the building and are positioned so as to be located in the exterior wall of the building. Horizontally extending beams, such as channel beams, are connected to the exterior surface of the I-beams, and bridge the gaps between the I-beams so as to rigidly connect the I-beams to one another. Insulation material, such as insulation blankets or backing, is connected to the outside surface of the horizontally extending beams, to form the external surface of the building. Upwardly extending furring strips may be connected to the inside surface of the horizontally extending beams. The furring strips may be of a thickness approximately equal to the end flanges of the I-beams, and wallboard or like finishing material is connected to the furring strips, overlapping the inside flanges of the I-beams or the furring strips may be of a thickness approximately equal to the I-beams, and the wallboard or like finishing material is connected to the furring strips overlapping the I-beams.

Accordingly, it is an object of this invention to provide

wall construction for buildings that is inexpensive and expediently assembled.

Another object of this invention is to provide a wall construction for a building that properly insulates the building and provides internal spaces for conduits, plumbing and electrical wiring.

Another object of this invention is to provide wall construction for buildings wherein the majority of the upwardly extending support beams are exposed to the interior or exterior portion of the building while the majority of the remaining portion of the wall structure is displaced outwardly or inwardly of the support beams.

Another object of this invention is to provide wall construction for buildings wherein the majority of the surface of the upwardly extending support beams is exposed to the interior of the building and the surface of the exterior walls facing the interior of the building is attractive.

Another object of this invention is to provide wall construction for buildings wherein the majority of the surface of the upwardly extending support beams is exposed to the exterior of the building and the interior surface of the wall is continuous.

Another object of this invention is to provide wall construction for buildings that is eye appealing, simple in construction, expedient and economical to assemble, and requires a minium amount of building materials.

Other objects, features and advantages of the present invention will become apparent upon reading the following disclosure, taken in conjunction with the accompanying drawing.

DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of the wall construction, with parts broken away.

FIG. 2 is a side, elevational view, taken in cross section, of the wall construction.

FIG. 3 is a top plan view of the wall construction, taken in cross section.

FIG. 4 is a top plan view, similar to FIG. 3, but showing a modified form of the invention.

FIG. 5 is a top plan view, similar to FIGS. 3 and 4, but showing a modified form of the invention.

DESCRIPTION OF THE EMBODIMENTS

Referring now more particularly to the drawing, in which like numerals indicate like parts throughout the several views, FIG. 1 shows a wall construction **10** supported by a foundation **11**. The foundation **11** may vary in configuration, at the option of the builder, but may comprise a concrete base as shown in FIG. 1 which may be utilized as the floor surface of the building. Another arrangement is shown in FIG. 2 wherein the wall construction **10** is mounted on concrete pilings **11***a*.

A plurality of metal structural members such as I-beams **12** extend upwardly from foundation **11** and comprise central web portions **14**, exterior flanges **15** and interior flanges **16**. The I-beams **12** are arranged so that their exterior flanges **15** face the outside of the building and present exterior surfaces **18** to the outside and interior surface **17** on each side of their web portions **14** while the interior flanges **16** present interior surfaces **19** to the inside of the building.

Horizontally extending metal structural members such a channel beams **20** are connected to the I-beams **12** at vertically spaced intervals to form a bridging between the adjacent I-beams. Channel beams **20** each comprise a base portion **21**, exterior leg **22**, and interior leg **23**. Exterior leg **22** defines an exterior surface **24** (FIG. 2) facing the outside of the building and interior leg **23** defines an interior surface **25** facing the inside of the building. Channel beams **20** are connected to the exterior flanges **15** of the I-beams **12** in any conventional manner, as by

bolting, riveting, welding or clamping. Thus, I-beams **12** and channel beams **20** form a rigid connection with one another to form the frame of the building structure.

Upwardly extending furring strips **26** are connected to channel beams **20** by means of conventional connecting means, such as rivets **28** or flexible tying members **29**. Furring strips **26** are of a thickness approximately equal to the thickness of exterior flanges **15** of I-beams **12** so that the interior surfaces **30** of furring strips **26** are generally coextensive with the interior surfaces **17** of exterior flanges **15**.

Wallboard **31** is connected to the interior surfaces **30** of furring strips **26** by means of nails **32** or other conventional connecting means. Wallboard **31** is connected to furring strips **26** in such a manner that the ends **34** of the wallboard extend over the interior surfaces **17** of the exterior flanges **15** so as to abut the central web portion **14** of the I-beams **12**.

Insulation **35** in the form of strips or blankets is connected to the exterior surface **24** of the horizontally extending channel beams **20** by means of adhesive or other conventional connecting means. Insulation **35** generally extends the entire length and height of the wall construction **10**, and steel siding **36** is placed over insulation **35** and connected to the external legs **22** of channel beams **20** by rivets, or other conventional connecting means. Steel siding **36** generally extends the entire length and height of wall construction **10** and forms the exterior surface of the wall.

Referring to FIGS. 1 and 2, it can be seen that insulation **35**, channel beams **20** and wallboard **31** form a plurality of horizontally extending spaces **40**. Spaces **40** can communicate with one another through the spaces **41** (FIG. 1) defined by the interior surface **25** of channel beams **20**, the sides of furring strips **26** and the outside surface of wallboard **31**. Of course, if it is desired to prevent spaces **40** from communicating with one another, spaces **41** may be blocked by connecting a horizontally extending furring strip (not shown) between furring strips **26** in spaces **41** of a thickness equal to furring strips **26**. With this arrangement, grills may be inserted at various points in wallboard **31** and spaces **40** may be utilized as ducts for channeling air, as in heating or air conditioning the interior of the building. While horizontally extending spaces **40** may be utilized in and of themselves as ducting for air flow through the walls of the building it will be readily understood that conventional ducting (not shown) may be placed within spaces **40**.

Spaces **40** may also be utilized to house electrical wiring and pipes for plumbing. While the majority of the electrical wiring for the building may be extended through spaces **41** when extending in a vertical direction, the bulky electrical wiring conduits and plumbing pipes for the building may extend within the wall construction **10** by boring holes through the base portion **21** of channel beams **20**.

FIG. 4 shows a modified form of the wall construction wherein upwardly extending furring strips **26***a* are of a thickness less than that of the exterior flanges **15** of I-beams **12** and wallboard **31***a* extends between the edges of exterior flanges **15** of adjacent I-beams **12**. In this manner, wallboard **26***a* is coextensive with the interior surfaces **17** of exterior flanges **15** of the I-beams thereby requiring a smaller amount of wallboard and thinner strips.

FIG. 5 shows another form of the invention wherein furring strips **26** and **26***a* are omitted from the construction. In this instance, wallboard **31***b* is directly connected to the interior leg **23** of channel beams **20** and may be of a thickness substantially equal to the thickness of the exterior flanges **15** of beams **12** so that wallboard **31***b* forms a continuous surface with the interior surfaces **17** of exterior flanges **15**.

Referring to FIG. 2, it can be seen that the floor construction of the building comprises horizontally extending

support members such as I-beams **45** which are connected to and extend between the upwardly extending I-beams **12**. A horizontal support surface **46** extends over the upper surface of I-beams **45**, and flooring such as 2" by 6" joists **47**, plywood sheets **48** and conventional flooring boards **49** may be supported by the horizontally extending I-beam **45**.

While I-beams **12** have been illustrated as comprising the vertically extending support members, it should be understood that other type beams may be substituted therefor, if appropriate. For instance, T-shaped beams might be substituted for I-beams **12** in such a manner that the web portion of the T-shaped beams would extend inwardly of the building while the head portion of the beam would form the exterior flange to which channel beams **20** could be attached. Moreover, while I-beams **12** have been shown with conventional proportions, it is well within the scope of this invention to use I-beams that have shortened central web portions **14** so that the interior flange **16** of the beam will extend only a short distance into the interior portion of the building. Furthermore, wallboard **31** may be of a thick variety to substantially fill the space between the exterior flange **15** and interior flange **16** of I-beams **12**.

While in some instance, it may be desirable to substantially fill the gaps or spaces between the exterior flanges **15** and interior flanges **16** of I-beams **12**, occasionally these spaces may be utilized for connection of other portions of the building construction to the I-beams. For instance, internal walls of the building may be connected to I-beams **12** by clamps or similar attachig means, by clamping portions of the internal walls about the interior flanges **16** of the I-beams **12**.

At this point, it should be obvious that the wall construction herein disclosed may be easily erected with the use of a minimum amount of skilled labor. The small number of building elements required to construct the wall is such that the workmen do not have to handle a large number of different types of building materials and the builder need only stock the few basic components required in such a structure. The simplicity of construction enables the workmen to work to a high rate of speed and the stock of different types of materials is held to a minimum.

It will be obvious to those skilled in the art that many variations may be made in the embodiments chosen for the purpose of illustrating the present invention without departing from the scope thereof as defined by the appended claims.

What is claimed is:

1. Wall construction comprising

a plurality of laterally spaced upwardly extending I-beams having end flanges and central webs;

a plurality of upwardly spaced laterally extending bridging beams connected to one of the end flanges of each of said I-beams and extending between adjacent I-beams;

siding material disposed outwardly of and extending between said bridging beams;

upwardly extending furring strips connected to and extending between the inside surfaces of said bridging beams;

wallboard connected to the inside surface of said furring strips and extending therebetween, said wallboard abutting said I-beams.

2. A wall construction comprising:

a plurality of laterally spaced upwardly extending I-beams having end flanges and central webs;

a plurality of upwardly spaced laterally extending bridging beams connected to one of the end flanges of each of said I-beams and extending between adjacent I-beams;

insulation extending between said bridging beams and disposed outwardly of said bridging beams;

siding material disposed outwardly of said insulation and extending between said bridging beams;

wallboard connected to the inside surface of said bridging beams and extending therebetween, said wallboard abutting said I-beams; and

upwardly extending furring strips connected to and extending between the surfaces of said bridging beams, said wallboard being connected to said furring strips.

3. The invention of claim **2** wherein said wallboard abust the central webs of said I-beams.

4. The invention of claim **2** wherein said wallboard abuts the edges of said one of the end flanges of each of said I-beams.

5. The invention of claim **2** wherein said laterally extending bridging beams, insulation material and wallboard define substantially closed laterally extending conduits.

6. Wall construction comprising

a plurality of laterally spaced upwardly extending I-beams having end flanges and central webs;

a plurality of upwardly spaced laterally extending bridging beams connected to one of the end flanges of each of said I-beams and extending between adjacent I-beams;

insulation extending between said bridging beams and disposed outwardly of said bridging beams;

siding material disposed outwardly of said insulation and extending between said bridging beams;

upwardly extending furring strips connected to and extending between the inside surfaces of said bridging beams;

wallboard connected to the inside surface of said furring strips and extending therebetween, said wallboard abutting said I-beams.

7. The invention of claim **6** wherein said wallboard connected to the inside surface of said furring strips and extending therebetween, said wallboard extends beyond the inner flanges of each of said I-beams.

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JOHN E. MURTAGH, Primary Examiner

U.S. Cl. X.R.

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