

Oct. 29, 1968

J. DOKE ET AL

3,407,547

METALLIC WALL STUD STRUCTURE FOR SUPPORTING SHELF BRACKETS

Filed July 20, 1966

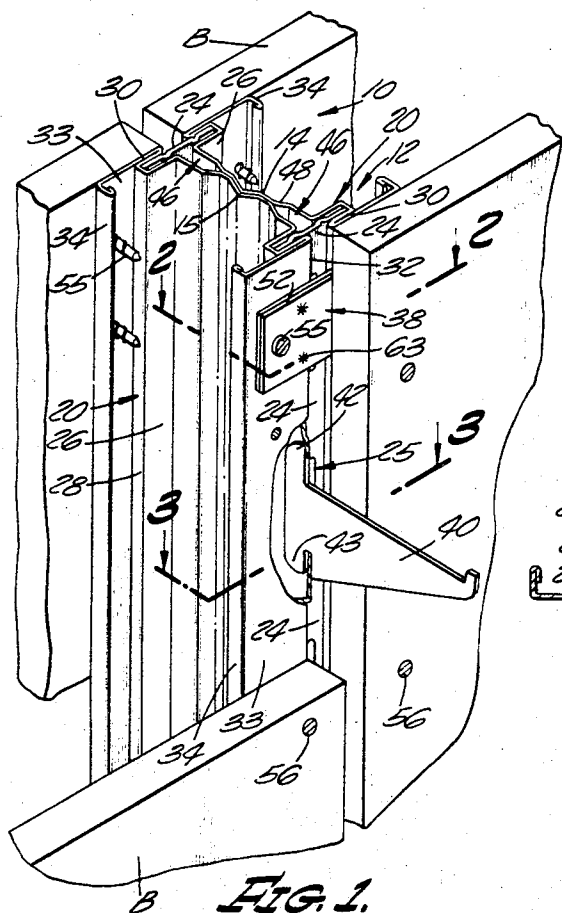


FIG. 1.

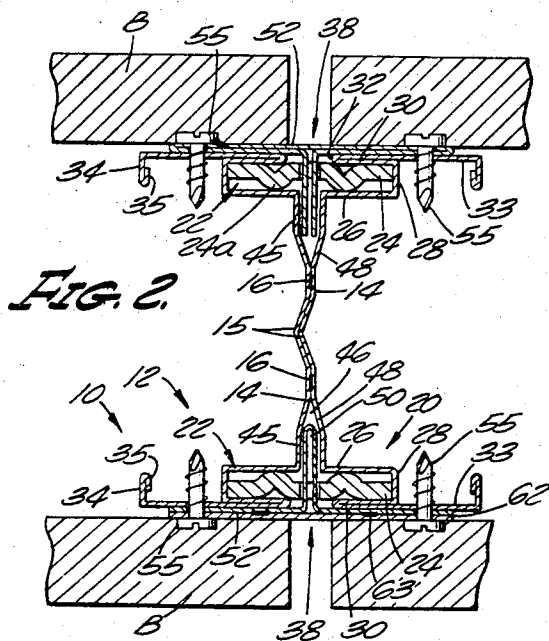


FIG. 2.

FIG. 4.

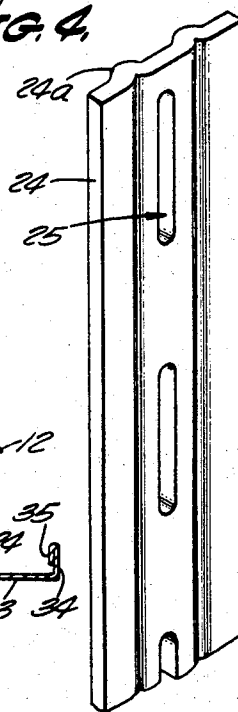


FIG. 3.

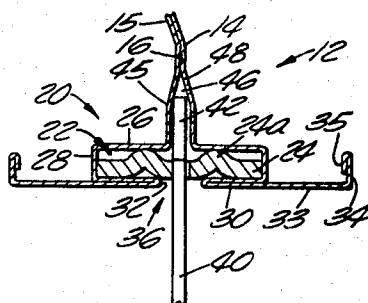


FIG. 5.

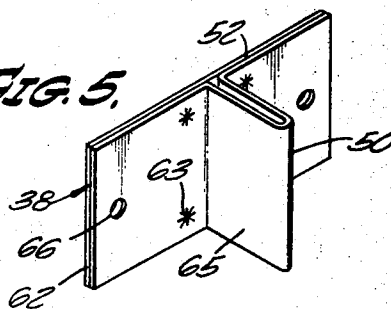
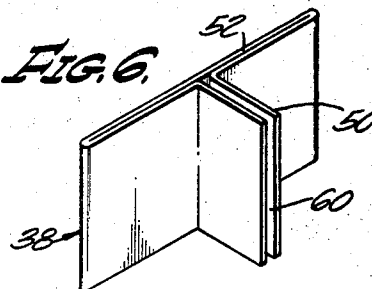


FIG. 6.



JACK DOKE
JACK P. VAN METER
INVENTORS.

BY

Robert J. Pauler
ATTORNEY

1

3,407,547

METALLIC WALL STUD STRUCTURE FOR SUPPORTING SHELF BRACKETS

Jack Doke, Los Angeles, and Jack P. Van Meter, Fullerton, Calif., assignors to Angeles Metal Trim Company, Los Angeles, Calif., a corporation of California
Filed July 20, 1966, Ser. No. 566,526
14 Claims. (Cl. 52—36)

ABSTRACT OF THE DISCLOSURE

This invention involves a wall stud assembly using metal stud members of channeled construction in which two opposed metal stud members are provided at adjacent edge portions with vertical flanges having shallow vertical channels to receive elongated bars slotted to receive inner ends of shelf brackets, and adjustable clips of T-shape have tongues, or keys, to enter slots in said bars to position the bars longitudinally of the stud members, and the cross members or heads of the T's have flange portions to be fixed, as by screws or welding, to the vertical flanges of the stud members whereby to anchor said slotted bars in adjusted position on the studs and thus provide for adjusted mounting of the brackets carried thereby. The extremities of such tongues may extend rearwardly into elongated inner passages between the stud members, as may the inner ends of said brackets.

This invention relates to structures for metal studs, useful particularly for constructing interior walls of buildings such as large merchandising establishments including department stores wherein large quantities of merchandise are displayed.

A particular object of the invention is to provide an efficient, durable and comparatively inexpensive upstanding metal wall stud construction that may carry wall slabs such as plasterboard and, at the same time, support brackets for shelving in properly adjusted position.

Briefly stated, in the best mode of practicing the invention known at this time, the invention employs a stud assembly including two upstanding vertically channeled metal studs, each of which may approximate a two-by-four (2" x 4") in overall cross-section. These two stud units may be disposed back to back and rigidly secured together as by means of spot welding. The opposite edges of the channeled stud units are provided with laterally extending flange members, each unit member providing a vertical channel arranged in opposed relationship to the channel of the other unit member to provide a relatively wide channel space for frictionally receiving a single longitudinally extending metal bar for receiving in turn the inward ends of shelf brackets in condition for outward projection to support appropriate shelves. The frictionally mounted vertical supporting bar carries along its median vertical axis spaced slots proportioned and disposed to receive inner tongue-carrying ends of appropriate metallic shelf brackets to be adjusted vertically in the indicated channel spaces of the opposed stud members for proper positioning of the shelf brackets to support shelves in level horizontal positions. To maintain a vertical supporting bar, carrying a shelf bracket in adjusted relationship in the indicated vertical channels, a clip is mounted on the bar and positioned against the outer faces of the channeled flange portions of the stud members, and is then secured in adjusted position on said channeled flanges by appropriate mounting means such as self-threading screws driven through lateral portions of said clip and through contiguous portions of said flanges. Thus, the clip may be T-shaped and the stem thereof projected through a slot of the vertical, elongated positioning bar

2

means whereby to act to retain such bar means in vertically adjusted position, the ends of the top of the clip being fixedly retained on the flanges of the stud members. The indicated bar means serves both to support the brackets in proper position and to stabilize the edge portions of the entire stud assembly. Another aspect of the vertical bar means is that it is especially shaped, as by being ridged or corrugated, to rigidify the stud structure.

Other objects of the invention and various features of construction thereof will become apparent to those skilled in the art upon reference to the following specification and the accompanying drawing which form a part thereof.

In the drawing

FIGURE 1 is a perspective view of a portion of a wall structure employing vertical metal wall stud assemblies of this invention, one of these assemblies being shown in operative relationship with wallboard slabs and with a shelf supporting bracket;

FIG. 2 is a horizontal section through the assembly of FIG. 1 and is taken approximately on the line 2—2 of FIG. 1 to show the means for positioning the bar for the shelf bracket;

FIG. 3 is a fragmentary cross-sectional view similar to that of FIG. 2 and taken on the line 3—3 of FIG. 1 to illustrate the relationship of the shelf bracket in operative position in the metal wall stud assembly of FIG. 1;

FIG. 4 is a perspective view of the vertically positioned bracket-supporting bar used in the structure of FIGS. 1, 2 and 3;

FIG. 5 is a perspective view of one of the T-shaped clips used in the vertical bar to retain the bar in adjusted position; and

FIG. 6 is a perspective view of a modified form of the clip of FIG. 5.

The drawing illustrates a wall stud assembly 10 of this invention in operative position in a partition wall in which conventional wallboard slabs B are employed to provide wall surfaces. Such wallboard slabs may be of any of the well-known wall members, such as plasterboard slabs, fibreboard slabs, and the like.

As probably best illustrated in FIG. 2, each metallic wall stud assembly 10 of this improvement is built up from a pair of channeled metal wall stud members generally indicated at 12. Each of these stud units 12 is, in general, designed and sized to replace a standard dressed wooden two-by-four. Each stud member 12 embodies a main web or crossweb 14 which is arranged back to back with respect to the corresponding main web 14 of the other stud member of the pair. To facilitate assembly of the pair of stud members 12, each main web 14 is provided longitudinally along its median line with a channeled groove or rib 15, the two ribs being nested as best indicated in FIG. 2 for the purpose of facilitating assembly. These nesting ribs 15 make unnecessary the use of a jig in the assembling operation. The assembled relationship of the two stud members 12 is maintained by any appropriate form of rigid connection such as represented in FIG. 2 by spot weldings 16 which assure maintenance of a rigid back-to-back positioning of the two main webs or back walls 14 of the pair. The two stud members 12 may also be fastened rigidly together by other methods such as by crimping.

The outer or edge portion of each channeled metal wall stud 12 is in the form of an integral folded flange generally indicated at 20, the folding or shaping of such flange structure 20 being such as to provide an enclosed shallow longitudinal channel 22. Such shaping and channel formation are readily accomplished by current metal working operations, inasmuch as machinery is currently available to handle and shape steel sheeting of thicknesses in the order of 0.022 inch.

An elongated bar 24 is snugly received in the wide slot produced by the two opposing U-shaped channels 22 of the opposing flanges 20. It may be formed of $\frac{3}{32}$ inch thick steel stock or of $\frac{1}{8}$ inch thick steel stock, for example. The bar 24 is provided along its median vertical axis with regularly spaced slots 25 for shelf brackets and for anchoring means such as clips.

To provide the channels 22, each folded flange 20 includes a rearwardly disposed transversely extending wall 26 which is integral with the main web or backwall 14 of the respective stud member 12. The outward edge portion of the transverse wall 26 is integrally joined with a connecting edge wall 28 which lies at the outer edge of the bar 24 and extends forward toward the edge of the respective stud member 12 in a direction parallel to the main web 14 sufficiently to form and to provide the required thickness or depth of the respective longitudinally extending shallow U-shaped channel 22 for the bar 24. The outward edge of each connecting edge wall 28 is then directed inwardly to produce a re-entrant double wall 30 which is folded back on itself forming a tight reverse bend or fold 32. The wall 30 is then extended outwardly to form a laterally disposed flange portion 33 that lies beyond the channel-forming portion and the short edge wall 28. The outer edge of this flange portion 33 in each instance is provided with an integral inwardly turned terminal stub flange 34 which, in general, parallels the edge wall 28 and the positioning and stabilizing bar 24. The inward extremity of the stub flange 34 may be provided with a reversely turned finishing flange element 35.

The tight reverse bends 32 of the re-entrant double walls 30 of the two stud elements 12 are spaced from each other opposite the slots 25 of the bar 24 to provide an elongated entrance slot 36 for access to the slots 25.

This means of access to the slots 25 serves two purposes. One purpose is to provide for the mounting of anchoring clips 38 (shown in FIGS. 5 and 6) employed to anchor the positioning bar 24 in adjusted position. The other purpose is to permit installation of shelf-supporting brackets, such as the bracket 40 shown in FIGS. 1 and 3. The inner or rearward end of the bracket 40 (when tipped to an angular position) is insertable into any one of the slots 25 of the positioning bar 24 and may include both an upper terminal retention tongue 42 to engage behind the rear wall of the bar 24 above the respective slot 25 and also a lower retention tongue 43 that engages behind the rear wall of the bar 24 below the respective slot 25 when the bracket 40 settles into the operative position of FIG. 1.

In order to accommodate this inner tongue section of the bracket 40 when installed in its operative position, lateral portions of the main webs or back walls 14 of the two stud members 12 are spaced in a relationship to receive such inner end portions of the bracket 40 and also to limit or prevent swinging movement of the outer end of the bracket. This is accomplished by disposing a wall portion 45 (FIG. 3) of each main web 14 in spaced relation to a corresponding wall portion 45 of the other web member 14 so as to yield a vertical pocket 46 to receive the inward ends of various brackets 40. These wall portions 45 are integral with their respective main webs 14 and transverse walls 26. By causing sloping wall portions 48 between the main webs 14 and the offset wall portions 45 to be at angles somewhat as indicated in FIG. 3, the resultant neat fit of the assembled parts largely avoids sway of the outer end of each bracket 40.

An important feature of the present improvement resides in the employment of T-shaped clips 38 such as indicated in FIGS. 5 and 6. Each clip 38 includes a stem 50, which is double-walled, and a head or cross-element or top 52 which is also double-walled. The function of the stem 50 in each instance is to enter one of the slots 25 in the positioning bar 24, which is a different slot from any slot carrying a bracket 40, and to engage in such slot 25 snugly enough to hold the bar in adjusted position. Also,

the stem 50 yieldably fits its slot 25 so that it snaps into position and is thereby retained by friction while the bar 24 is being adjusted and fixed. All slots 25 are conveniently of the same size. The function of the cross-head 52 in each instance is to fixedly engage the extending flange portions 33 of the folded flanges 20 of the stud elements or units 12. Such fixed attachment may be effected through the medium of self-threading screws 55 (FIG. 2) which are introduced through lateral portions of the top of each T-shaped clip 38 and through contiguous mentioned portions 33 of the flange members of the respective stud units 12.

Thus, to adjust the elevation of any bracket 40 to cooperate with any other laterally spaced bracket 40 for disposing a supported shelf in horizontal position, the stem 50 of a T-shaped clip 38 is introduced into an available slot 25 of the vertical stabilizing bar 24, and the latter is vertically adjusted as required. Thereupon, a self-threading screw 55 is forced into position as shown in FIGS. 1 and 2, to establish the desired vertical adjustment, and another self-threading screw 55 at the other side of the assembly is driven into position to assure rigidity and adjustment. By these means, each shelf bracket may be quickly and accurately positioned at a predetermined level.

In employing wallboard slabs B in the usual fashion, these are spaced from each other opposite the slots 25 of the stabilizing bar 24 and consequently opposite the entrance slot 36 between the tight reverse bends 32 of the flange portions 30. They may be secured by any desired means, such as self-threading screws 56 that enter the studs 12. Additional finishing of the edges of the wallboards B adjacent slots 25 and 36 may be employed as desired.

To consider further the T-shaped clips 38 of FIGS. 5 and 6, such a clip may be produced from one shaped strip of sheet steel bent as in FIG. 6 to provide a double walled cross-head 52 and to provide leg portions 50 spaced at 60. On the other hand, the clip 38 of FIG. 5 may be formed from two strips, one of which is a flat strip 62 welded at 63 to wings 64 of a second strip that is folded to provide a double-walled integral stem 65. In either instance, self-threading screws 55 are forced through end portions of the respective T-shaped clips 38 at loci represented at 66 which, when the parts are installed, lie outside the edge walls 28 forming the edges of the channels 22, as best illustrated in FIG. 2. By these means, the self-threading screws 55 are in general concealed between the edge walls 28 of the channels 22 and the terminal flanges 34 of the folded flange sections 20. Also, the stem portion 50 of either of the two T-shaped clips 38 is accommodated in the same longitudinal pocket 46 that houses the inner end of each bracket 40. Typically, the steel sheet from which the clip is manufactured has a thickness of 0.025 inch.

It is seen from the above that this invention provides an improved metallic wall-stud assembly which may be made and assembled largely in a manufacturing plant and then transported to the job, and there installed and adjusted to mount shelf brackets as desired. In this invention the clips and mounting bars are secured in place in the stud assemblies after the latter have been installed in the building.

While certain forms that the invention may take have been herein disclosed, it is obvious that other forms may be produced within the scope of the patent claims, and it is therefore intended that such shall be covered thereby.

The invention claimed is:

1. A wall stud assembly including:

a pair of elongated upstanding channeled metal stud members having main webs disposed in opposed substantially parallel relation, each web providing a vertical integral outward flange portion, such flanged web portions providing opposed spaced substantially parallel vertical edge portions of said webs;

said flange portions having therein opposed shallow vertical channels extending longitudinally of said stud members to receive adjustably therein slotted metal supporting bar means;

vertical inward portions of said opposed webs being spaced and providing between them an inward vertical passage behind the spacing between said vertical edge portions;

means rigidly connecting said stud members in said parallel relation;

slotted bar means positioned in said vertical channels in said flange portions and adjustable therein and having slot means communicating with said inward vertical passage between said webs and with the spacing between said vertical edge portions for reception and positioning of inner ends of shelf brackets;

anchoring means secured to a flange portion;

and retention means on said anchoring means projecting into slot means in said bar means to retain the latter in adjusted position in said vertical channels.

2. An assembly as in claim 1 wherein said anchoring means is clip means rigidly affixed to said flange portions and the retention means is tongue means on the inward face of said clip means projecting through a slot in said bar means.

3. An assembly as in claim 2 wherein screws secure said clip means to said flanges at loci disposed laterally of said vertical channels and said bar means.

4. An assembly as in claim 1 wherein said anchoring means is a T-shape clip having the cross-member of the T rigidly secured to said flange portions and at least a portion of the stem of the T projecting through slot means in the bar means thereby maintaining the adjustment of the bar means relative to said stud members.

5. An assembly as in claim 4 wherein said bar means has a slot for snugly receiving said portion of the stem of the T to hold the bar means in fixed position thereon.

6. An assembly as in claim 1 wherein flange portions of said stud members provide means for supporting wall-boards.

7. An assembly as in claim 1 wherein said vertical channels in said opposed flange means are sized to snugly receive slotted bar means.

8. An assembly as in claim 5 wherein the stem of the T-shaped clip snaps into a slot in said bar means to maintain its seat therein.

9. An assembly as in claim 1 wherein said webs are arranged back-to-back in said rigid relation.

10. In a metallic wall-stud assembly:

a pair of elongated upstanding channeled metal stud members having main webs rigidly disposed back-to-back in opposed substantially parallel relation, each web providing a vertical outer flange portion;

the flanges of the pair of webs having therein opposed shallow vertical channels extending longitudinally of

said stud members to receive adjustably a metal supporting bar;

edge portions of said webs at said channels being spaced from each other and providing between them a vertical space for access to said bar;

a slotted bar positioned in said vertical channels and spanning said vertical space and adjustable in said vertical channels and having slots for reception of inner ends of shelf brackets;

anchoring means secured to a flange portion;

and means on said anchoring means projecting into a slot in said bar to retain the latter in adjusted position in said vertical channels.

11. An assembly as in claim 10, said anchoring means being a T-shaped clip means rigidly affixed at its top to a flange portion and its retention means being a portion of a stem on the inward face of said clip and projecting into a slot in said bar in bar-supporting relation.

12. An assembly as in claim 11, the affixing means being self-threading screws driven into said flanges at loci disposed exteriorly of said vertical channels and said bar.

13. A wall structure including:

a normally upstanding metallic wall stud assembly;

a normally upstanding bar adjustably movable along said stud assembly and having slot means to receive and support a shelf bracket adjustably on said stud assembly; and

clip means adjustably mounting said bar on said stud assembly, said clip means including means engageable in slot means in said bar for adjusting said bar on said stud assembly and also including means fitted in slot means to support the bar, and also including a member fixed to said stud assembly to support the bar thereon in adjusted position on said stud assembly.

14. A structure as in claim 13 wherein said clip means is T-shaped, the stem of the T is fitted in said slot means, and the top of the T is fixed to said stud assembly.

References Cited

UNITED STATES PATENTS

2,169,254	8/1939	Kotrbaty	52—481
2,633,945	4/1953	Millier	52—729
2,691,502	10/1954	Jones	52—36
2,815,832	12/1957	Schwartz	52—481
2,998,107	8/1961	Zimmerla	52—36
3,066,774	12/1962	Dahme	52—36
3,081,718	3/1963	Shoffner	52—36
3,174,592	3/1965	Berman et al.	52—36

FRANK L. ABBOTT, *Primary Examiner.*S. D. BURKE, *Assistant Examiner.*