March 16, 1971 R. R. RUHNKE 3,570,198

METALLIC STUD STRUCTURE AND STANDARD LOCATING MEANS

Filed Jan. 9, 1969 2 Sheets-Sheet 1

FIG. 1

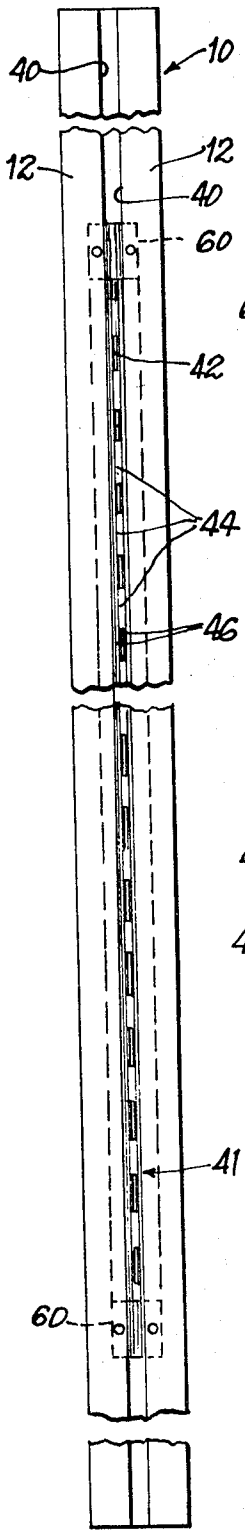


FIG. 2

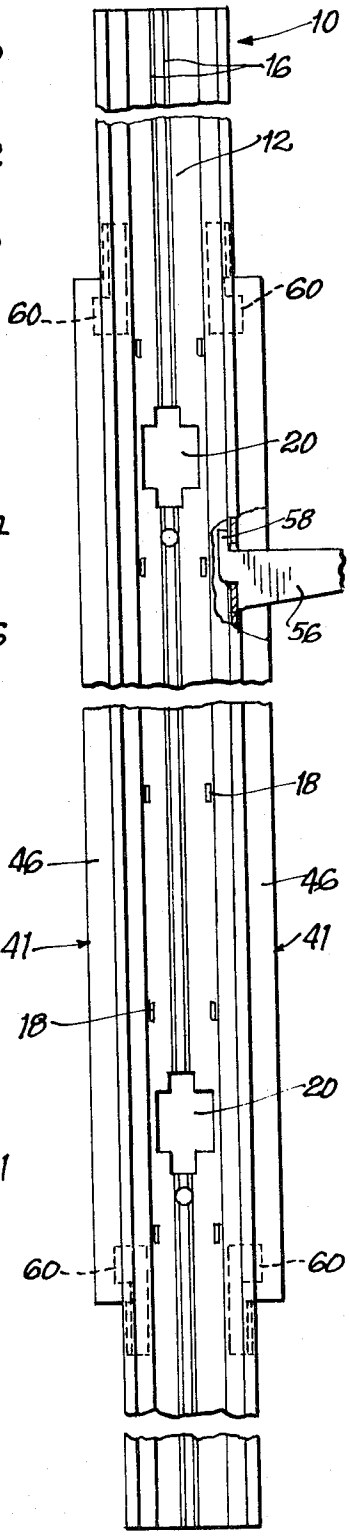
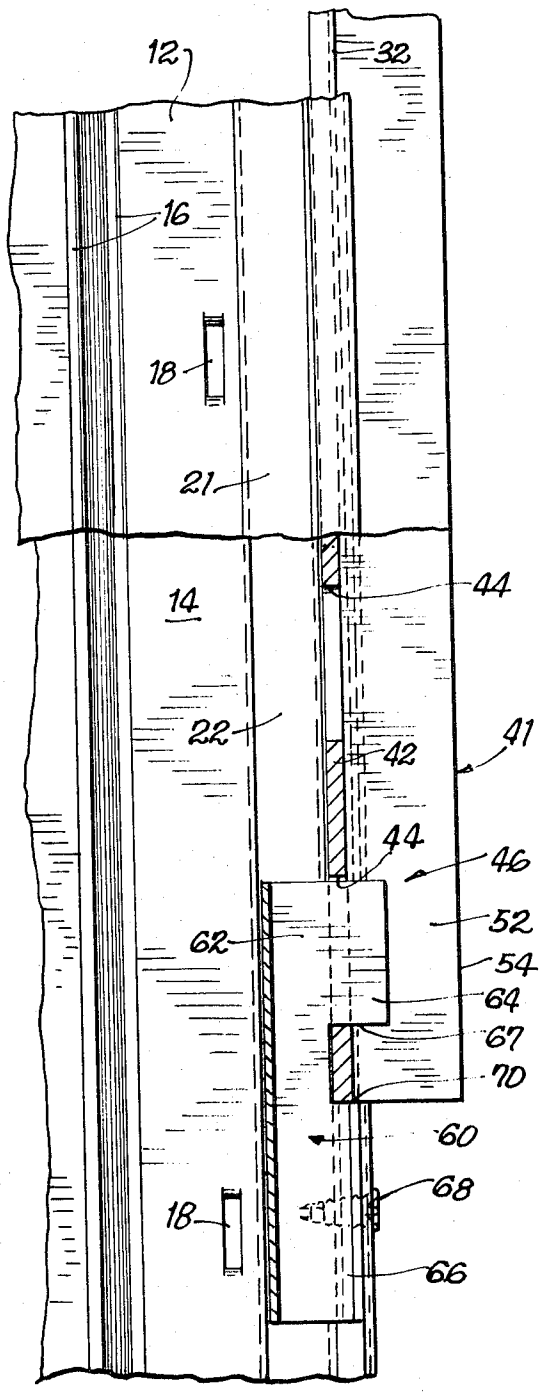


FIG. 3



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METALLIC STUD STRUCTURE AND STANDARD LOCATING MEANS

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FIG. 4

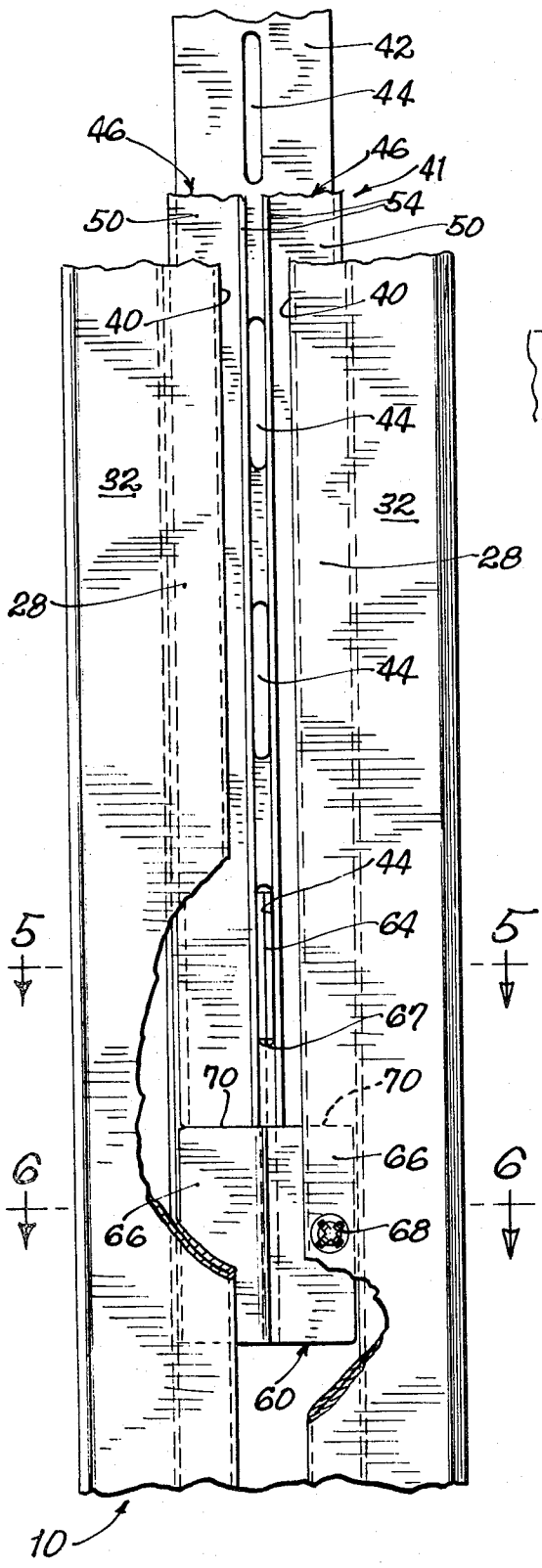


FIG. 5

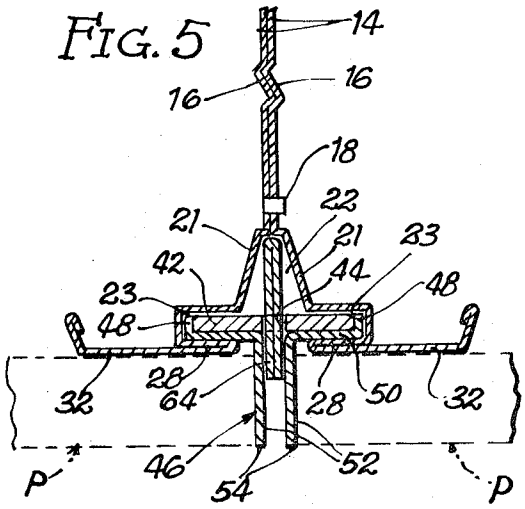


FIG. 6

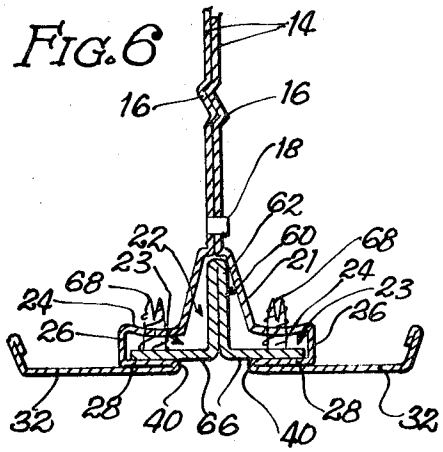
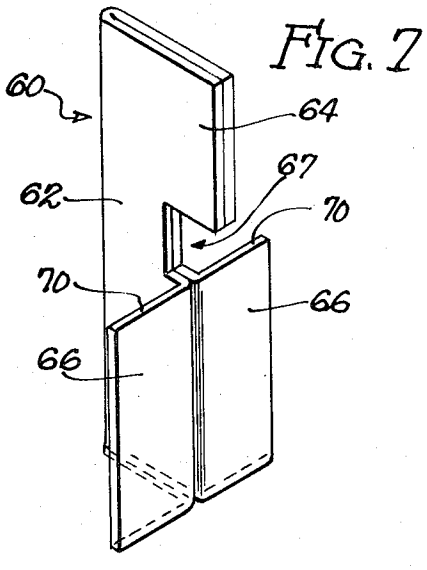


FIG. 7



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3,570,198

METALLIC STUD STRUCTURE AND STANDARD LOCATING MEANS

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Int. Cl. A47b 57/08, 96/04
U.S. Cl. 52—36 5 Claims

ABSTRACT OF THE DISCLOSURE

An upstanding metallic wall stud and standard assembly in which the standard assembly is adjustably positioned within the stud structure. Locating means are positioned in stud channels in which the standard assembly is positioned in keyed relation to the standard assembly. The locating means is secured to stud walls as by threaded fasteners which pass through the stud walls and through wings integral with the locating means and which are positioned within the stud structure, thereby to fix the position of the standard assembly with respect to the stud structure.

This invention relates to improved metallic stud structures particularly adapted for supporting shelf brackets. Stud structures of this character are especially useful in constructing interior building walls, such as in department stores and the like, wherein standard means are desirably provided for supporting merchandise supply shelves and the like upon the interior walls. The improved construction of this invention provides stud structures which, in addition to providing bracket-supporting standard means, also supportingly accommodate wall surfacing materials such as wall boards and panels.

Metallic stud constructions of the general type with which this invention is concerned are known. One such stud structure, with respect to which this invention is an improvement, is illustrated in U.S. Pat. No. 3,407,547. In constructions of the general type there illustrated a metallic stud assembly is fabricated from a pair of suitably configured upstanding vertical stud channel members. The pair of stud members are disposed in close adjacency to each other and back to back and are rigidly secured together, as by stitching, crimping or spot welding. Opposite edges of each of the stud members are so configured that opposite pairs of channels are defined thereby for receiving and mounting a standard assembly which defines slots for receiving the hooks of shelf brackets at a plurality of spaced locations therealong to support associated shelving or the like. Preferably, the standard assembly is frictionally mounted within each pair of channels with the bracket hook receiving slots opening outwardly of the stud assembly. The stud assembly is proportioned so that associated wall surfacing panels are spaced apart a distance sufficient to allow the bracket hooks to pass between adjacent panels and into the slots in the standard assembly therein.

Although a standard assembly mounted in such a stud assembly is frictionally retained therein, it is not itself physically secured to the stud assembly at the time of fabrication. That is so because provision must be made for horizontally aligning the slots of adjacent standard assemblies after the stud assemblies are erected so that shelves supported by adjacent standard assemblies will be truly horizontal. Therefore, after erecting adjacent stud assemblies, means must be provided for fixedly positioning the standard assemblies within the channels defined by the stud assemblies at appropriate elevations with respect to the positions of the slots of adjacent standard assemblies.

In the construction of the aforementioned patent, for example, T-shaped clips are used to locate and position a standard member at a desired elevation within a metallic stud assembly. In that type of construction, the top of the T is positioned against a face of the stud assembly with the leg of the T in one of the slots of the standard member. When the standard member has been appropriately oriented vertically, threaded fasteners are passed through the top of the T and through a wall of the stud assembly to fix the position of the standard member. This, of course, leaves a projecting portion at the face of the stud assembly which does not allow the wall surfacing or panels to be flushly positioned along the entire length of the face of the stud assembly.

Pursuant to this invention, an improved locating means for a standard assembly and associated metallic stud assembly is provided. This locating means is positioned wholly within the same channels in the stud assembly in which the standard assembly is frictionally retained. When the standard assembly is to be fixed in position, the locating means permits ready fastening to the stud assembly through double and triple thicknesses of the stud assembly to enhance the strength of the supported standard assembly therein.

The locating means of this invention comprises an elongate arm and integral spaced apart key means and wing means. The key means is adapted to be positioned within a slot in a standard assembly and the wing means within a channel means in the stud assembly. The key means is preferably coplanar with the elongate arm and lies in a plane normal to the wing means. Both are desirably located at one side of the elongate arm, the key means projecting forwardly from the arm a distance greater than the wing means. The key means and wing means may be adjacent a notch in the arm means to straddle portions of a standard assembly adjacent a slot in the standard assembly.

The wing means preferably comprise a pair of coplanar oppositely directed wing members which are adapted to be secured in the standard assembly channel means via threaded fastener means which pass through the wing members and desirably through at least a pair of walls defining the channel means. The improved locating means of this invention allows paneling and the like to be assembled to the stud to lie against the entire face of the stud assembly without interference from members projecting forwardly of the face of the stud assembly, for example, as is the case with the clip construction illustrated in U.S. Pat. No. 3,407,547.

Other features, objects and advantages of the invention of this application will become apparent from the following description and drawings of which:

FIG. 1 is a front elevation of a stud assembly of this invention;

FIG. 2 is a side elevational view of the stud assembly of FIG. 1;

FIG. 3 is an enlarged view, partially in sections, of a portion of FIG. 2;

FIG. 4 is an enlarged view, partially broken away, of a portion of FIG. 1;

FIG. 5 is a cross-sectional view taken substantially along line 5—5 of FIG. 4;

FIG. 6 is a cross-sectional view taken substantially along line 6—6 of FIG. 4; and

FIG. 7 is a perspective view of a locating member of FIG. 1.

Referring now to the drawings, and particularly to FIG. 1, a metallic wall stud assembly **10** of this invention is adapted to be vertically positioned and mounted in a known manner and to supportingly engage pairs of adjacent wall surfacing members such as the panels P

illustrated in FIG. 5. The panels may be of any of the well-known types, such as plasterboard, fiberboard and the like.

Each metallic stud assembly **10** is preferably fabricated from a pair of elongate formed and channeled parallel metal stud members **12**, each of which stud members **12** may be approximately the size, of a standard dressed two by four wooden stud. Each of the stud members **12** comprises a main web **14** defining longitudinal ribs **16** adapted to be nested. Members **12** are secured to each other as by stitching or crimping as illustrated by crimps **18** in webs **14**, or in any other suitable manner, such as by spot welding. Desirably, the webs **14** are provided with vertically spaced service passages **20** to accommodate piping, electrical wiring, or the like.

Each of the webs **14**, at each side thereof, is formed with an outwardly diverging segment **21** which defines with the confronting and opposed outwardly extending segment **21** a pocket **22** for a purpose to be described. At the outer ends of segments **21**, stud members **12** are formed to define, as illustrated for example in FIGS. 5 and 6, guide channels **23**. Each guide channel **23** is circumscribed then by a pair of stud member inner walls **24**, a pair of stud member side walls **26** and a pair of re-entrant double front walls **28**. The double front walls **28** are folded back on themselves to define confronting edges **40** to provide access to the channel and pocket from the outer surface of the stud assembly. The forwardmost of the two layers of each double wall **28** projects laterally to provide a bearing and stabilizing surface **32** against which a panel is adapted to be positioned. The remote lateral edge of the stabilizing surfaces **32** may be inwardly angled and may terminate with a return fold for finishing purposes, as illustrated in FIGS. 5 and 6.

The stud assembly also comprises a standard assembly in one or both of the guide channels **23**. A standard assembly is positioned in each guide channel when opposite sides of the wall formed with panels and the stud assemblies **10** are to be used for display purposes or the like.

FIG. 2 illustrates a pair of standard assemblies **41** mounted within the stud assembly **10**, one of which standard assemblies is illustrated in greater detail in FIGS. 3 to 5. Standard assemblies **41** comprise a standard bar **42** which is provided with a plurality of vertically spaced clear-through slots **44**. In the embodiment illustrated in this case, the standard assembly further comprises a pair of Z-shaped flange members **46**, each of which has a side wall section **48**, a front wall section **50** and an outwardly extending flange segment **52**. They are preferably secured as by welding to the standard bar **42**. Flange segments **52** project outwardly of the stud assembly between spaced apart confronting edges **40** and confront each other. They are spaced apart from each other a distance approximately equal to the width of the standard slots **44**, so that a bracket **56** may be inserted into the space between them and so that a hook **58** of such a bracket may pass therebetween and into a desired standard bar slot **44**. The flange segment **52** projects forwardly far enough so that their forward edges **56** are generally level with the front surface of the associated panels. It will be observed in FIG. 5 that the flange segment **52** serve as a side wall complementary to the stabilizing surfaces **32** to neatly and more securely accommodate and stabilize the panel P in supported relation on stud assemblies **10**.

It is clear when stud assemblies are first installed, that they are not necessarily precisely horizontally oriented with respect to identical vertical locations on adjacent stud assemblies. This is due to frequently encountered unevenness in the floor with respect to which the stud assemblies are mounted, as well as for other well-known reasons. Accordingly, after stud assemblies **10** are installed, to make certain that brackets **56** mounted to adjacent stud assemblies are exactly aligned horizontally, it is necessary to align adjacent standard assemblies **41** quite accurately. Although, as stated, the standard assemblies are desirably frictionally mounted within the guide channels **23**, because substantial loads are applied to the standard assemblies when associated brackets are loaded, it is necessary to fixedly secure the standard assemblies to the stud assemblies. For that purpose, locating means or members **60** which are adapted to be secured to the standard assembly as well as to the stud assembly are provided. Desirably, a locating member **60** is provided at each end of each standard assembly. Each locating member **60** is slidably mounted in the channel means comprising pocket **22** and guide channel **23** and is slidable therein with the standard assembly until they are anchored to the stud assembly. The locating members **60**, unilke prior art clips and the like, lie completely within the stud assemblies **10**, eliminating the need for separate clips and the like.

In the embodiment illustrated, the locating members comprise a formed piece of metal including a refolded elongate arm section **62**. Arm section **62** terminates forwardly, at one end, in a key means or member **64**. The other end of the arm section of the locating member **60** is provided with a pair of integral oppositely directed outwardly extending expansive wing means or wings **66** which comprise outward folds from the double-wall arm section **62** and which wings are vertically spaced from key member **64**. Between the wings **66** and the key member **64**, the locating means defines a notch **67** for receiving a portion of the standard assembly adjacent to the slot receiving the key member **64**. As viewed from the side, key member **64** projects forwardly beyond the front surfaces of wings **66** (see FIGS. 3, 5 and 6). Desirably, as best seen in FIG. 3, the vertical distance between key member **64** and wings **66** is substantially equal to the distance between the very end of the standard bar **42** and the nearest edge of first slot **44** therein. This minimizes vertical play between the locating member **60** and the associated standard bar **42** when they are assembled.

As stated, it is preferable that a locating member **60** be provided at each end of a standard bar **42** and that it be keyed thereto in the manner illustrated in FIG. 3. Wings **66** provide the dual function of stabilizing the position of the locating member **60** within the guide channels **23** prior to securance to the stud members **12** and that of providing a means for securing the standard assembly to the stud assembly when the standard bar slots **44** have been located in a desired position with respect to the standard slots of adjacent stud assemblies. When the standard bar is so located, threaded fastener members, such as self-drilling screws **68**, are passed through the double front walls **28**, through wings **66** and through the inner walls **24**. Because the screws **68** may be pulled tightly enough so that the shape of the guide channel may be slightly deformed and because the heads tend to countersink themselves within the double walls **28**, the tendency is to provide substantially unobstructed stabilizing surfaces **32** against which panels P may be disposed. It is also clear that by passing the screws through the double front wall **28** and the back wall **24** that there are three thicknesses supporting the weight and load applied to the screws through the brackets associated with the standard assemblies **41** thereby enhancing the overall strength of the assembly of this invention.

As viewed in FIGS. 5 and 6, it will be clear that the pockets **22** are of a depth sufficient to slidably receive arm section **62** of locating member **60**. Further, the guide channels **23** are proportioned to frictionally and slidably receive the standard assembly **41** and to slidably reecive wings **66** of the locating members **60**. In addition to supporting the standard assembly **41** via the key member **64** interlocked with an associated slot **44**, the bottom locating member **60** provides further support for the standard assembly via the top shoulders **70** of the wings **66** upon which the lower edge of a standard assembly rests.

Thus, the load applied to the standard assemblies is more evenly distributed over the locating members than with clips of the type used in prior art constructions.

What is claimed is:

1. In a metallic wall stud assembly comprising a pair of elongate upstanding channelled metal stud members having webs secured to each other in opposed substantially parallel relation, said stud members defining channel means within said stud assembly for slidably receiving a standard assembly therewithin, said stud assembly defining access space between said channel means and an outer surface of said stud assembly, said standard assembly defining a plurality of vertically spaced slot means for receiving supporting brackets and the like, the improvement comprising a locating member wholly disposed within said stud assembly, separate from and keyed to said standard assembly, said locating means comprising an elongate arm, a key means integral with one end of said elongate arm and projecting into one of said spaced slot means and expansive wing means lying within said channel means at the other end of said elongate arm and projecting in a direction generally normal to said key means, said wing means and said key means being spaced apart.

2. In the metallic wall stud assembly of claim 1 in which said wing means comprises a pair of oppositely directed coplanar wing members.

3. In the metallic wall stud assembly of claim 2 in which said wing members are secured to said stud members by threaded fasteners passing through a pair of spaced apart walls defining said channel means.

4. In the metallic wall stud assembly of claim 1 in which key means extends forwardly of said elongate arm a distance greater than said wing means.

5. In the metallic wall stud assembly of claim 4 in which said locating means defines a notch between said key means and said wing means in which notch is disposed a portion of said standard assembly adjacent said one slot means.

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U.S. Cl. X.R.

52—483, 729