

[54] **PLASTERBOARD TO COLUMN CLIP**  
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[22] Filed: **Jan. 3, 1972**

**FOREIGN PATENTS OR APPLICATIONS**

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[52] U.S. Cl. .... 52/714, 24/73 B, 52/364,  
 52/727

*Primary Examiner*—Henry C. Sutherland  
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[51] Int. Cl. .... E04c 3/30, E04c 5/00

[58] Field of Search ..... 52/345-347,  
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 376, 377, 725, 727, 728, 714; 24/73 B

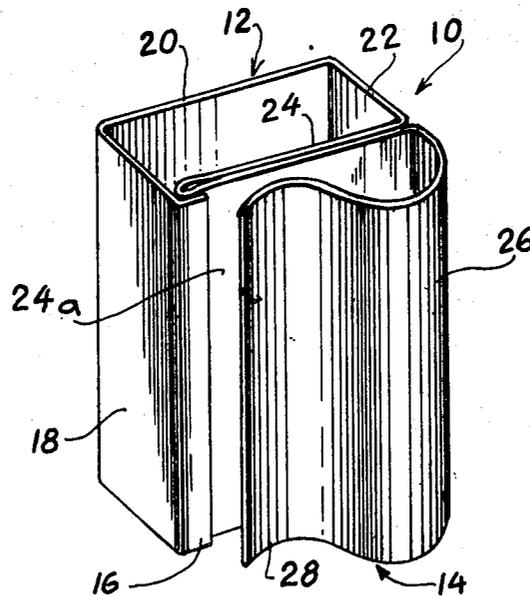
[57] **ABSTRACT**

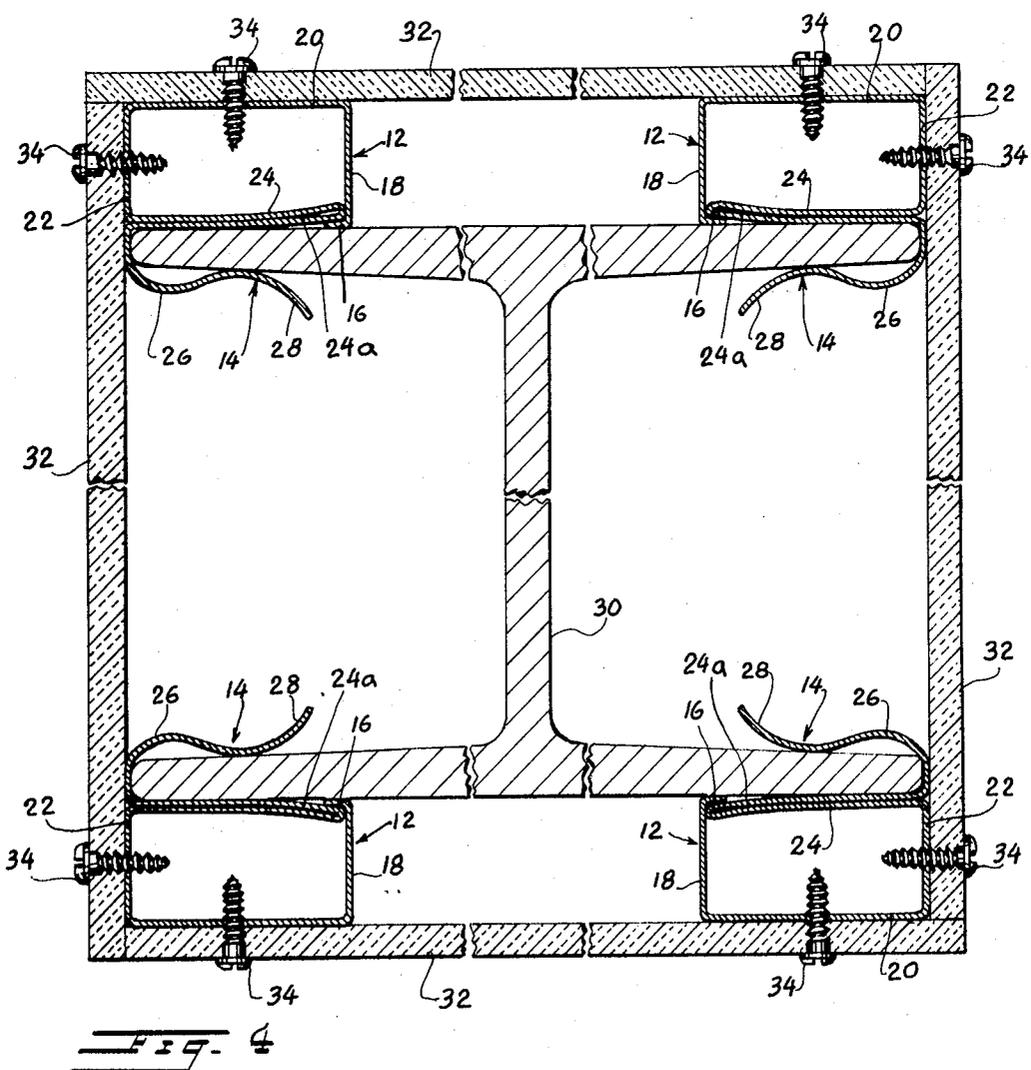
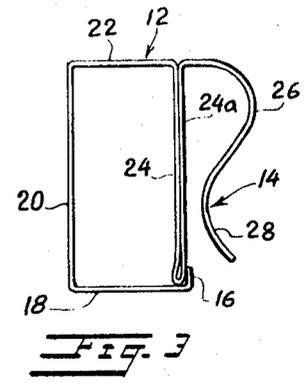
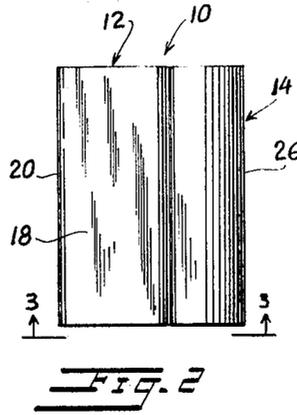
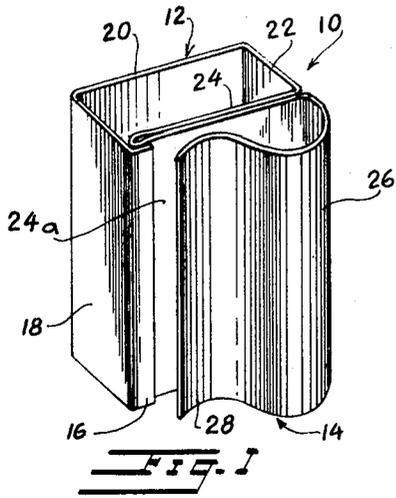
A clip for aiding the attachment of plasterboard to structural columns and the like comprising a box section having a spring flap formed integrally therewith. The spring flap slips onto a flange of the column and the box section provides attaching surfaces for sheet metal screws. When several clips are used the column may be encapsulated and therefore fireproofed by the plasterboard.

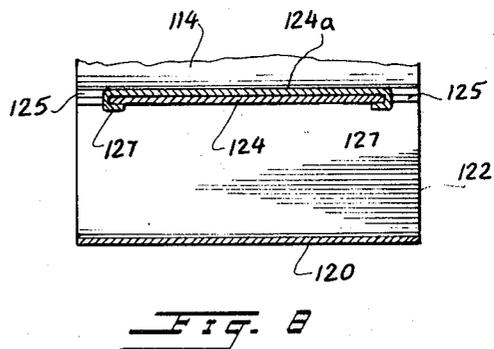
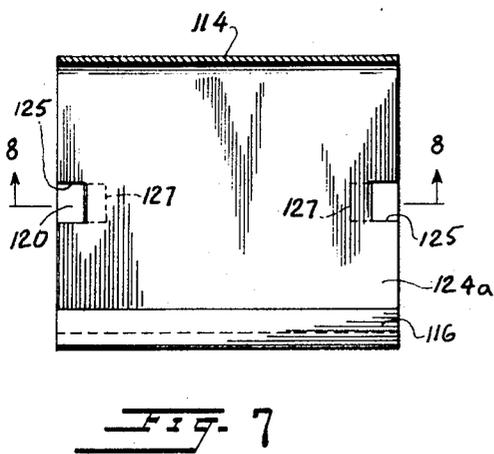
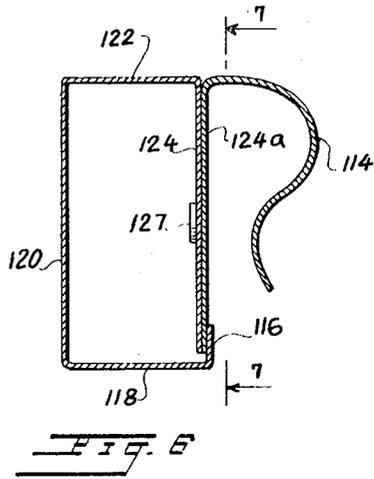
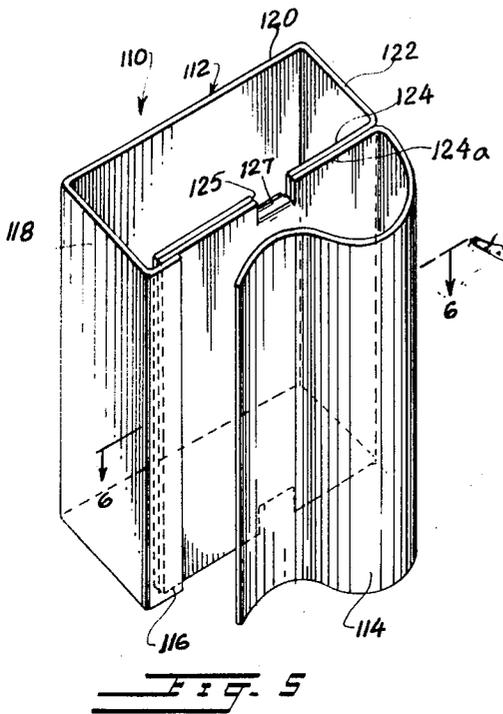
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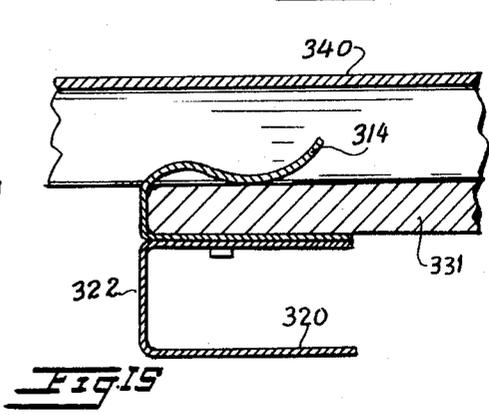
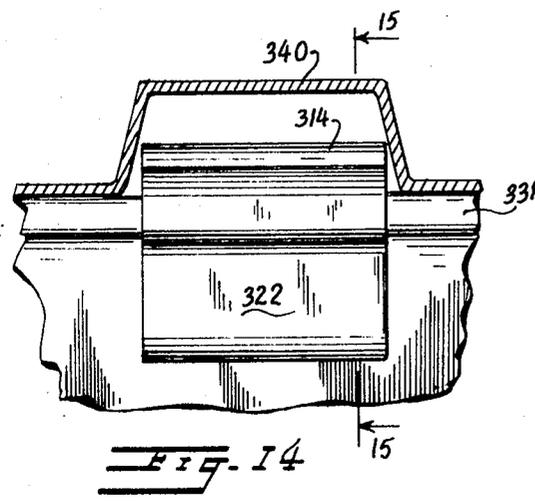
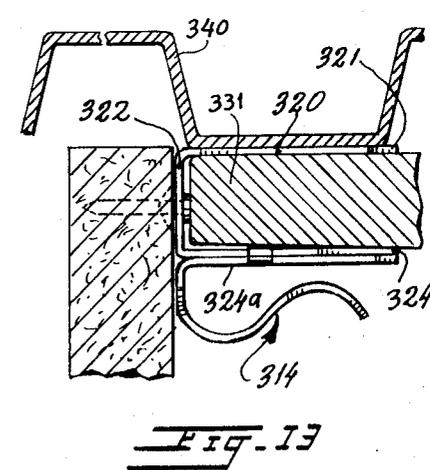
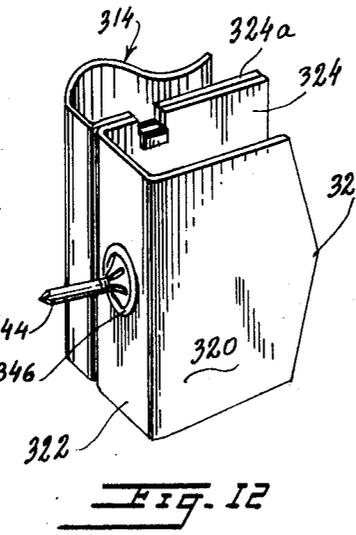
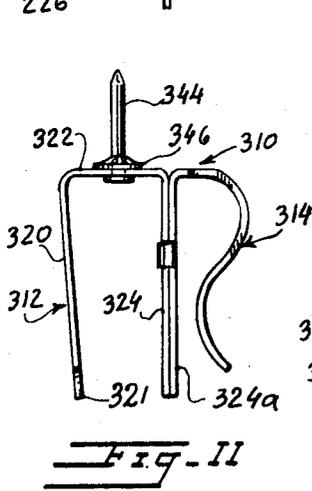
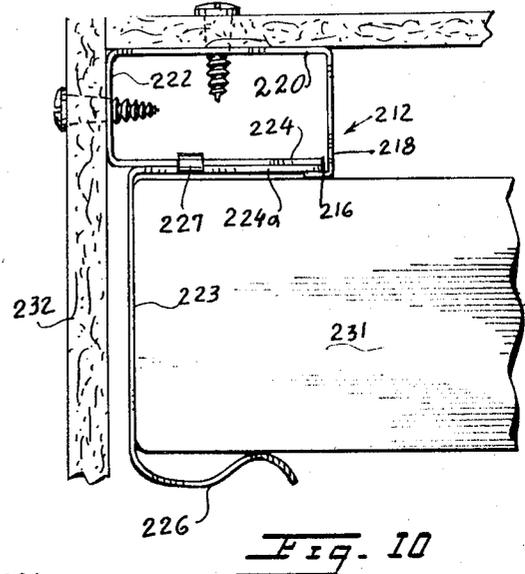
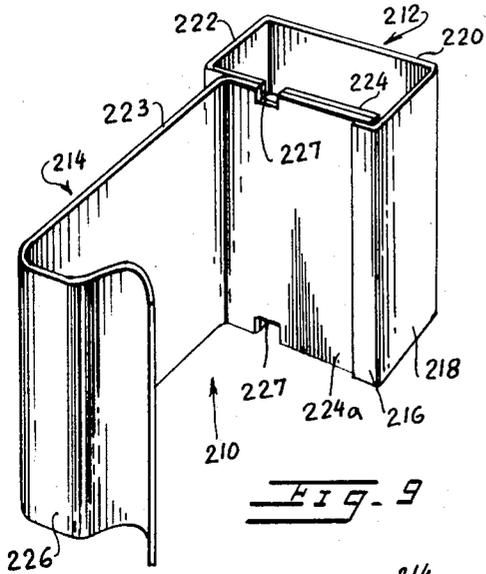
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**2 Claims, 15 Drawing Figures**









## PLASTERBOARD TO COLUMN CLIP

### BACKGROUND OF THE INVENTION

Although construction girders, columns and the like are made of heavy steel I-beams which at first blush are apparently resistant to fire, it is common knowledge in the construction industry that main supporting columns and girders must be provided with auxiliary protection against the high temperatures which a building fire can produce. Unprotected columns and girders are known to warp, buckle and collapse when heated and accordingly in many jurisdictions there are requirements for fireproofing such members. Further, columns are covered for esthetic reasons.

In the past, columns requiring fireproofing were manually plastered or enclosed with masonry. This was a time-consuming and expensive job which required many man hours of skilled labor. More recently some jurisdictions have permitted the substitution of plasterboard, familiar in thinner boards in home dry-wall construction and sometimes called sheetrock, for hand laid plaster. Plasterboard is more easily handled but is not easily secured to heavy steel columns and more recently these problems of fastening the plasterboard have forced building contractors to look to other means of fireproofing. One method currently in use is to spray the columns with an asbestos-fibre compound but less fire protection is provided than with plasterboard. Construction workers exposed to the asbestos are, of course, exposing themselves to inhalation of the fibres and the dangers concomitant thereto.

Examples of the prior patented art are contained in the following United States patents:

Patent Number	Name	Date
1,104,346	Church	July 21, 1914
1,243,001	Stewart	Oct. 16, 1917
2,765,886	Tedaldi et al.	Oct. 9, 1956
3,274,739	Gregoire	Sept. 27, 1966
3,413,775	Katz	Dec. 3, 1968

### SUMMARY OF THE INVENTION

Accordingly, the present invention provides a clip for securing plasterboard to structural columns with ease, economy and unskilled labor.

Briefly, the invention provides a spring clip which holds a receiver for screws or other similar fastening devices. The clip is slipped on the column flange at selected locations, pre-cut plasterboards are held in position and sheet metal screws or the like are driven through the plasterboards into the receiving assembly. When all four sides of the column are provided with the plasterboard, the clip assemblies are completely hidden and the column may be finished as any plasterboard wall.

### BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of the plasterboard to column clip of the present invention.

FIG. 2 is a front view of the clip of FIG. 1.

FIG. 3 is an end view of the clip of FIG. 1 as viewed across line 3—3 of FIG. 2.

FIG. 4 is a cross-sectional view laterally through an I-beam column showing four clips in position with plasterboard secured thereto.

FIG. 5 is a perspective view of another form of the plasterboard to column clip of the present invention.

FIG. 6 is a cross-sectional view taken across line 6—6 of FIG. 5.

FIG. 7 is a cross-sectional view taken across line 7—7 of FIG. 6.

FIG. 8 is a cross-sectional view taken across line 8—8 of FIG. 7.

FIG. 9 is a perspective view of the form of the plasterboard to column clip shown in FIG. 5 but modified to accommodate a relatively thick beam flange.

FIG. 10 is an end view of the clip of FIG. 9 shown mounted on a flange with plasterboards secured to the box section. A further modification is shown in this figure: The box section extends beyond the top of the spring flap.

FIG. 11 is an end view of a further form of the plasterboard to column clip having an open box section and a projecting nail.

FIG. 12 is a perspective view of the clip shown in FIG. 11. Seen in this view is the pointed or wedge-shaped configuration of one plate of the open box section.

FIG. 13 is an end view of the clip of FIG. 11 shown mounted on a flange with plasterboard secured to the nail. The box section holds the flange and the pointed plate is between the flange and corrugated decking.

FIG. 14 is a front view of the clip of FIG. 11 without the nail shown spring-mounted on the flange beneath an open area of corrugated decking.

FIG. 15 is a cross-sectional view taken across line 15—15 of FIG. 14.

### DESCRIPTION OF THE PREFERRED EMBODIMENT OF THE INVENTION

With reference to the drawing, the clip 10 of the present invention comprises a box section receiver assembly 12 and a spring flap 14 formed integrally therewith.

Box section 12 comprises a retaining flange 16 and first, second, third and fourth sidewall members 18, 20, 22 and 24 respectively formed in that order in the shape of an open-end box. Each sidewall is substantially perpendicular to the adjacent sidewall and opposite pairs of sidewalls 18 and 22, and 20 and 24, are substantially parallel. As shown in the drawing, in the preferred embodiment one pair of sidewall members, 20 and 24, are longer than the other pair of sidewall members, 18 and 22, thereby forming a rectangle in cross-section or in end view as may be seen in FIG. 3. Clearly, however, sidewall members may be the same length to form a square in cross-section or the lengths may be varied to suit particular conditions.

In the preferred embodiment spring flap 14 is formed as an integral extension of fourth sidewall 24 as follows. The end of fourth sidewall 24 which engages flange 16 is continued in a reverse loop back toward third sidewall 22 to form a double thickness fourth sidewall 24. The reversed portion of the fourth sidewall will be referred to by reference numeral 24a. Extending from reverse section 24a is a spring flap 14 having a curved spring section 26 and an oppositely curved end portion 28. In cross-section or end view as shown in FIG. 3, spring flap 14 is provided with an S-curve for the entire length of clip 10.

Clip 10 is used in the following manner. At selected locations longitudinally of a structural column 30 there are placed four retaining clips 10, one on each flange edge, with box section 12 on the outside of the column. As may clearly be seen in FIG. 4, clips 10 are self-aligning in that they are automatically positioned in

proper orientation providing only that the box section is on the outside of each flange and not on the inside. A pre-cut plasterboard section 32 is placed across any adjacent retaining clips 10 and sheet metal screws 34, nails, expansion anchors or other such securing devices are driven through the plasterboard into box section 12. The side of column 30 against which plasterboard 32 has been placed is immediately covered. Three other plasterboard sheets 32 are then applied, one to each of the remaining faces of column 30 and sheet metal screws 34 or the like are again used for joining the plasterboards to the clips. When all four faces of the column are covered the column is in effect encapsulated and is fireproofed.

Although each retaining clip 10 is initially held to the column flange by the pressure of spring flap 14, there is no danger that the clips may loosen because they are locked in position by the plasterboards and screws. The construction is permanent and secure and the clips are hidden from view.

With the box section 12 of each clip resting against the outside of the flange, the plasterboard 22 which is parallel to the flange is spaced therefrom by a distance equal to the lengths of sidewall member 18 and 22 of the clip. The air space between the flange and the plasterboard is desirable for its extra insulating value. Such a space is not necessary for those plasterboards which are parallel to the column web and accordingly third sidewall 22 may be flush with the adjacent portion of spring flap 14.

In the preferred embodiment clip 10 is formed from a relatively heavy gauge sheet metal which is galvanized or otherwise protected against oxidation. The clip may, however, be extruded aluminum or plastic or may be formed of any other suitable material.

#### DESCRIPTION OF ANOTHER EMBODIMENT OF THE INVENTION

With further reference to the drawing, and to FIGS. 5-8 in particular, another embodiment of the invention is clip 110 which has a box section receiver assembly 112 and a spring flap 114 formed integrally therewith.

Box section 112 comprises a retaining flange 116 and first, second, third and fourth sidewall members 118, 120, 122 and 124 respectively formed in that order in the shape of an open-end box. Each sidewall is substantially perpendicular to the adjacent sidewall and opposite pairs of sidewalls 118 and 122, and 120 and 124, are substantially parallel. As shown in the drawing, one pair of sidewall members, 120 and 124, are longer than the other pair of sidewall members, 118 and 122, thereby forming a rectangle in cross-section or in end view as may be seen in FIG. 6. Clearly, however, sidewall members may be the same length to form a square in cross-section or the lengths may be varied to suit particular conditions.

In the present embodiment spring flap 114 is attached to fourth sidewall 124 as follows. Formed integrally with spring flap 114 is a back plate 124a which is joined to fourth sidewall 124 by means of crimps 127 which are portions of back plate 124a which are crimped or folded around fourth sidewall 124. For ease of assembly and to prevent unnecessary extensions of material, fourth sidewall 124 is provided with a notch 125 at the position of each crimp 127. As may clearly be seen in FIGS. 5 and 8, crimps 127 located at opposite ends of back plate 124a securely lock the back

plate into a position against and relative to fourth sidewall 124. The back plate 124a is further retained by retaining flange 116. The result is a double thickness fourth sidewall as in the preferred embodiment but formed of two separate members crimped or otherwise joined together rather than the single reversed sidewall of the preferred embodiment. The remainder of the present embodiment, including the extension and configuration of spring flap 114 from back plate 124a, is similar to that described in connection with the preferred embodiment. The embodiments are both used in the same manner.

A slight variation of the embodiment of the invention shown in FIGS. 5-8 is shown in FIGS. 9 and 10.

Box section 212 is formed in the same manner as the embodiment shown in FIGS. 5-8 and comprises a retaining flange 216 and first, second, third and fourth sidewall members 218, 220, 222, and 224 respectively formed in that order in the shape of a closed box but with open ends.

Spring flap 214 is attached to fourth sidewall 224 by means of a back plate 224a jointed to fourth sidewall 224 by means of crimps 227. Spring flaps 214 has a curved spring section 226 which connects to back plate 224a by means of an extension 223.

The length of extension 223 is determined by the thickness of the flange 231 to which clip 210 is to be secured. In FIG. 10 the drawing proportion is such that a beam flange thickness of over two inches is indicated. Such heavy beams are not uncommon in the construction industry.

FIG. 10 demonstrates another feature of this form of the invention wherein third sidewall 222 extends beyond extension 223 providing a spaced relationship between the beam and the plasterboard 232 secured to third sidewall 222.

#### DESCRIPTION OF A FURTHER EMBODIMENT OF THE INVENTION

FIGS. 11-15 illustrate a further form of the invention. Clips 310 is provided with an open box section 312 wherein the flange and first sidewall of the foregoing embodiments are omitted thereby forming a channel or open-sided box 312 consisting of second, third and fourth sidewall members 320, 322 and 324 respectively joined in that order. The balance of clip 310, particularly including spring flap 314 and back plate 324a, are similar to those shown in the foregoing embodiment, FIGS. 5-10.

An important variation is that second sidewall 320 is pointed or provided with the wedge shape clearly seen in FIG. 12. A further variation is that the wedge end 321 is angled inwardly toward fourth sidewall 324 to provide a slight spring action between second and fourth sidewall members 320 and 324 respectively.

The present embodiment of the invention is intended for use on horizontal floor beams 330 as opposed to the vertical column 30 of the earlier embodiments although, of course, it is not necessary for the beams to be either horizontal or vertical.

In poured concrete construction, beams such as beam 330 support corrugated steel decking plates 340 onto which concrete 342 is poured. Box section 312 is intended to slide over both flange 331 and under the adjacent portion of corrugated decking 340. In the condition shown in FIG. 13 wherein decking 340 is sitting directly on flange 331, wedge end 321 can be hammer-

driven or otherwise forced between the decking and the flange. Clip 310 when so used has flange 331 within open box section 312 and spring flap 314 is a generally useless appendage. The appendage does not interfere, however, because it is contained in the space between the flanges of the beams and leaving it on the clip permits the clip to be used as illustrated in FIGS. 14 and 15 discussed below.

In the earlier embodiments the closed box section remains empty after the spring clip fits over the flange but in the present embodiment open box section 312 contains beam flange 331. There is accordingly little space remaining within the box section to accommodate screws 34 and as an alternative a nail 344 is provided protruding through a hole in third sidewall 322 outwardly of box section 312. The nail must, of course, be inserted into the clip before the clip is driven onto the beam flange. The nail may be held in place by a spring-fingered retaining washer 346. A plasterboard 332 may then be driven onto nail 344. Retraction of nail 344 into box section 312 is prevented both by washer 346 and by the head of the nail which bears against flange 331.

Corrugated decking 340 is conventionally provided with a distance of 2-5/8 inches between corrugations and if the width of clip 310 is not greater than 2-5/8 inches it may be used as shown in FIGS. 14 and 15. Spring flap 314 is driven onto beam flange 331 in the open area between a raised part of corrugated decking 340 and the flange. Open box section 320 hangs in the space between the flanges of the beam and a plasterboard may be fastened to the open box section by means of a sheet metal screw fastened into third sidewall member 322 much in the same manner as shown in FIG. 10 with respect to third sidewall member 222.

While the foregoing is illustrative of preferred and modified embodiments of the invention, it is clear that other embodiments may be had within the teachings hereof. For example, the particular shape of the spring clip may be varied to increase the holding power to increase the ease with which the clip may be slipped onto the flange. Also, as can be seen in FIG. 4, screws fasten only to sidewalls 20 and 22; accordingly sidewalls 18 and 24 may be eliminated.

What is claimed is:

1. A clip for securing plasterboard or the like to flanged structural members, comprising:

- a. clip means, said clip means being adapted to clip to a flange of the structural member; and
- b. receiving means, said receiving means being joined to said clip means to receive fasteners which secure the plasterboard thereto;
- c. said receiving means comprising a box section having four sidewalls, said clip means connecting to at least one of said sidewalls;
- d. said clip means comprising a flap extending from at least one of said sidewalls in a curve which returns toward said box section and which terminates in a curve away from said box section;
- e. said box section comprising a retaining flange and first, second, third and fourth sidewalls connected in sequence to substantially from a rectangle in cross-section, said fourth sidewall extending to said retaining flange and thence curving back against itself to form a reverse portion, said flap extending from said reverse portion.

2. A clip in accordance with claim 1, wherein: said flap comprises a spring.

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