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Uydess

[11] **3,897,669**

[45] **Aug. 5, 1975**

[54] **CLIP FOR SECURING PLASTERBOARD TO COLUMNS**

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[73] Assignee: **Construction Systems, Inc.**, Hillside, N.J.

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[52] **U.S. Cl.** **52/713**; 52/760; 52/364

[51] **Int. Cl.** **E04c 3/30**

[58] **Field of Search** ..... 52/760, 345, 346, 347, 52/355, 357, 359, 489, 356, 364, 376, 377, 725, 727, 728, 714, 713, 753 J, 753 W; 24/73 B

[56] **References Cited**

UNITED STATES PATENTS

3,748,815 7/1973 Parker 52/714

FOREIGN PATENTS OR APPLICATIONS

224,021 2/1959 Australia 52/725

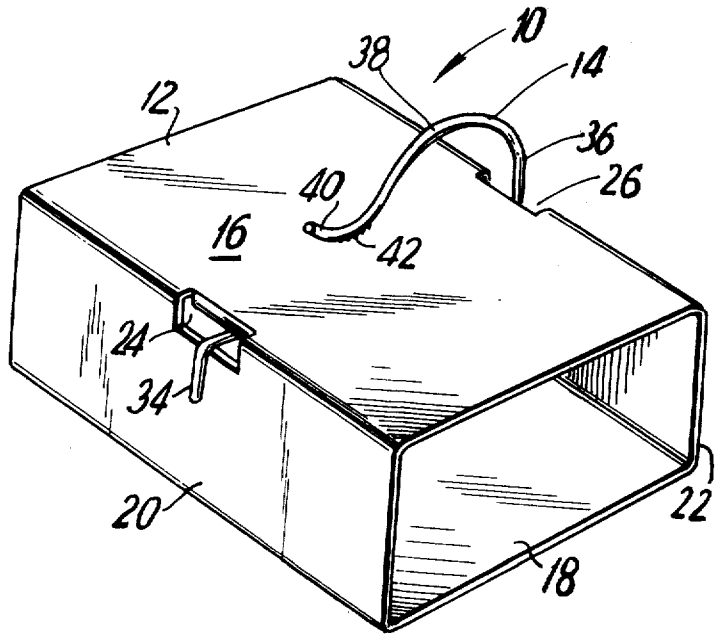
Primary Examiner—Andrew V. Kundrat

Attorney, Agent, or Firm—Friedman & Goodman, Esqs.

[57] **ABSTRACT**

A clip for securing plasterboard to a structural column member comprising a spring member, adapted to clip on to a flange of a structural member, and a box-like member connected to the spring member for receiving fasteners which secure the plasterboard thereto. The box-like member includes a top wall and a bottom wall with two sidewalls disposed therebetween connecting the top wall to the bottom wall to define a cross-section having either a rectangular or square configuration. At least one opening is provided in each of the sidewalls, the openings being in alignment with each other to receive the spring member therethrough. The spring member includes a body portion having a tang on one end thereof and a curved portion on the other end thereof. The body portion is disposed within the box-like member with the ends extending through the openings so that the tang abuts against an outer surface of one sidewall member to maintain the spring member in position relative to the box-like member above the top wall to receive and hold the flange of the structural member between the curved portion and the outer surface of the top wall. Additional spring members and additional openings may be provided in the box-like member as required as the length of the box-like member is increased. Preferably, a section of the curved portion is serrated or knurled to prevent the spring member from slipping relative to the flange of the structural member. Additionally, the rear portion of the spring member is flush with the respective sidewall of the box-like member.

9 Claims, 9 Drawing Figures



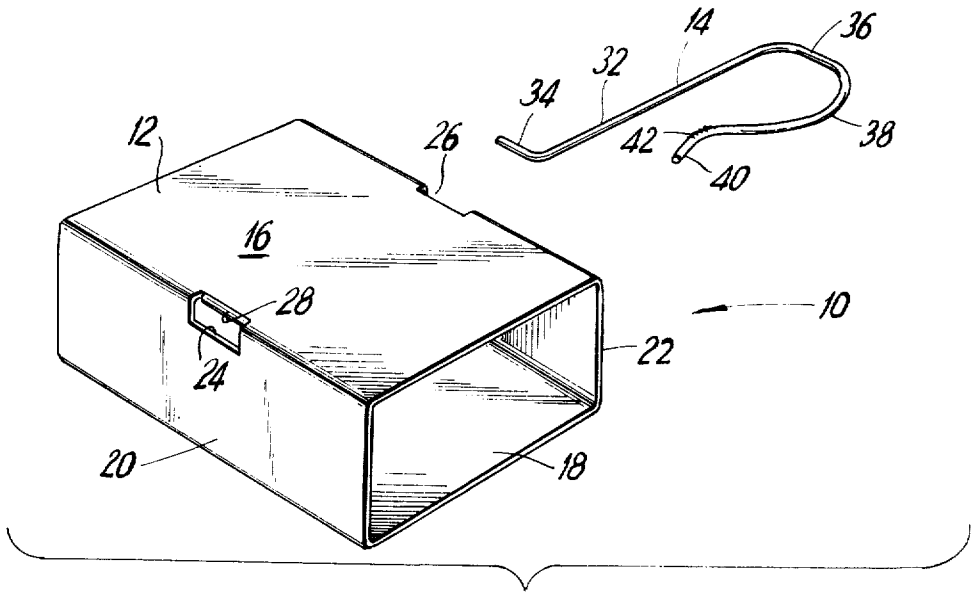


FIG. 1

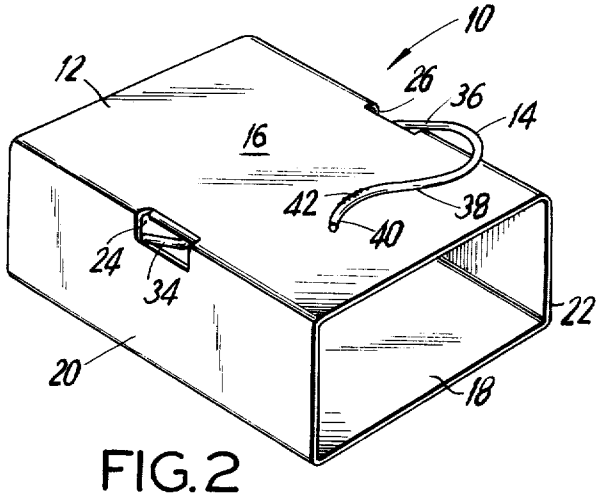


FIG. 2

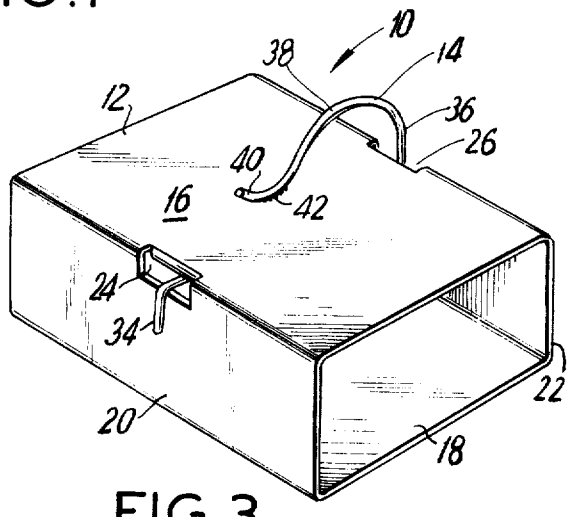


FIG. 3

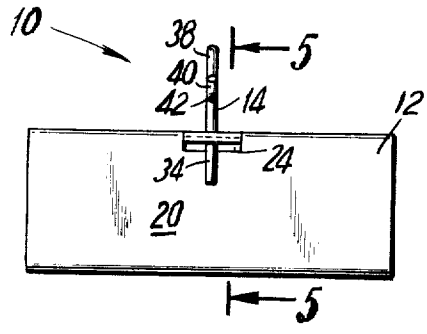


FIG. 4

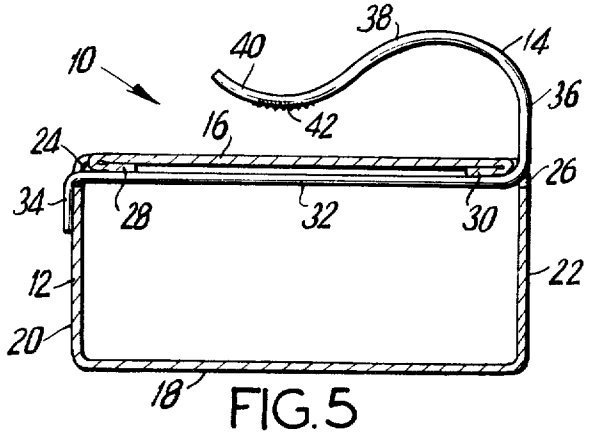


FIG. 5

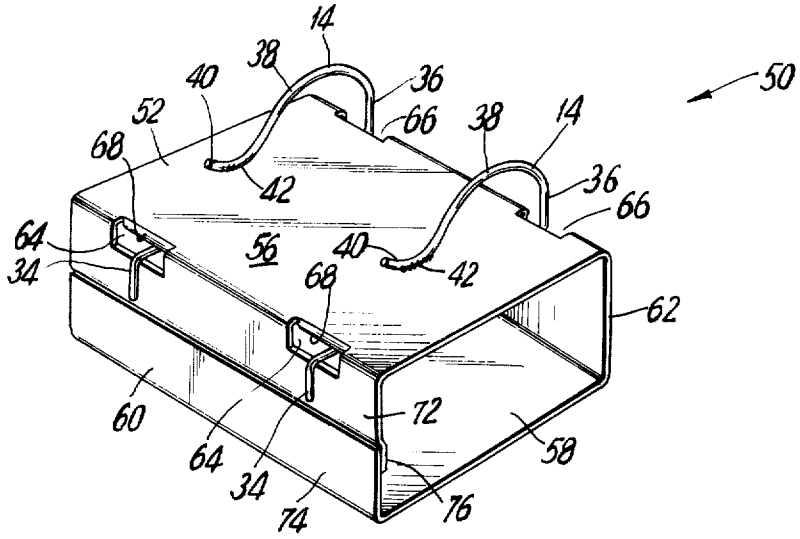


FIG.6

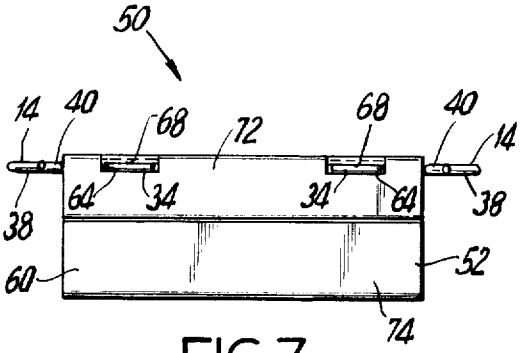


FIG.7

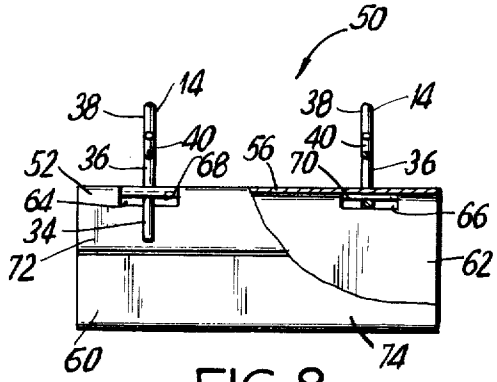


FIG.8

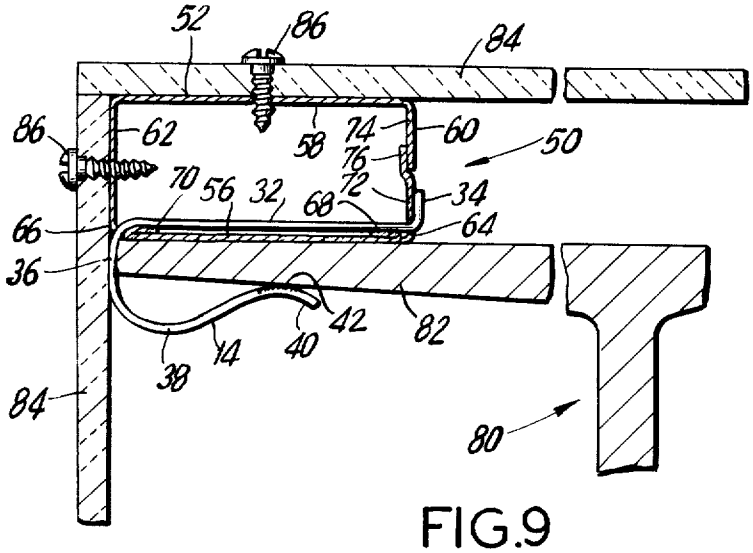


FIG.9

CLIP FOR SECURING PLASTERBOARD TO COLUMNS

BACKGROUND OF THE INVENTION

The present invention relates to a clip, and more particularly to a clip for securing plasterboard to structural columns.

Unprotected main supporting columns and girders in the construction industry are known to warp, buckle, and collapse when heated to high temperatures. Accordingly, these columns and girders must be provided with auxiliary protection against such high temperatures, wherein many jurisdictions require fireproofing of these columns and girders.

One common method of fireproofing these columns was to manually plaster or enclose the columns with masonry, which required many man hours and a large expense. A recent method, permitted in many jurisdictions, is to substitute plasterboard for the manually plastered arrangement. Though the plasterboard can be handled easily, it is not easy to secure the plasterboard to the columns, girders and the like. A further method is to spray the columns with an asbestos-fiber compound. However, this asbestos-fiber compound affords less fire protection than the plasterboard, and endangers the health of the construction workers who are exposed to inhalation of the asbestos.

In order to more easily secure the plasterboard to the columns, a clip was invented by Alvin S. Parker, as set forth in U.S. Pat. No. **3,748,815**, granted on July **31, 1973**. This clip comprises a box section having a spring flap formed integrally therewith. The spring flap slips on 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.

However, because this patented clip is integrally made, it involves additional steps and material in the manufacture thereof which increases its cost. Additionally, this patented clip is not flexible in the use thereof, being designed for only one particular size column. Accordingly, these clips must be stored according to size for each particular column, requiring each construction site to have large quantities of different sizes on hand. Furthermore, if the spring flap is damaged or broken, the entire clip must be discarded, wherein none of the elements can be salvaged.

SUMMARY OF THE INVENTION

This invention relates to a clip for securing plasterboard to a structural column member, the clip comprising resilient means adapted to clip on to a flange of the structural member, box-like means connected to the resilient means for receiving fasteners which secure the plasterboard thereto, the box-like means including top wall, bottom wall and two sidewalls connected in sequence to define a box-like member, the sidewalls being provided with at least one opening each in alignment with each other to allow communication from an outer surface of the first sidewall through the box-like member to an outer surface of the second sidewall, the resilient means including a spring member provided with a body portion, the body portion including a tang extending outwardly in one direction from one end of the body portion and a curved portion extending outwardly in another direction from an opposite end of the body portion, the body portion being disposed within

the box-like member with the one end extending through the opening in the first sidewall and with the other end extending through the opening in the second sidewall, the tang abutting against the outer surface of the first sidewall to maintain the spring member in position relative to the box-like member with the curved portion being disposed outside the box-like member in a position spaced from an outer surface of the top sidewall, whereby the flange of the structural member is clipped between the curved portion and the outer surface of the top sidewall. Additional spring members and additional openings may be provided in the box-like member as required as the length of the box-like member is increased. Preferably, a section of the curved portion is serrated or knurled to prevent the spring member from slipping relative to the flange of the structural member. Additionally, the rear portion of the spring member is flush with the second sidewall of the box-like member.

Accordingly, an object of the present invention is to provide a clip device which overcomes the disadvantages of the prior art.

Another object of this invention is to provide at least a two piece clip device comprising at least one spring member connected to a box-like member for securing plasterboard to a structural column member.

A further object of this invention is to provide a clip device comprising a spring member and box-like member as mentioned above, whereby additional spring members may be added as the length of the box-like member is increased.

A still further object of the present invention is to provide a clip device that is easily mounted on a column member and to which plasterboards can be easily secured.

Yet another object of the present invention is to provide a clip device that is simple and inexpensive to manufacture, one which has few parts and cannot be easily broken.

An added object of this invention is to provide a clip device upon which a plasterboard can be mounted in a flush arrangement.

And yet another added object of this invention is to provide a clip device having a spring member with serrated or knurled portions to prevent the clip device from slipping relative to the flange of the structural member.

BRIEF DESCRIPTION OF THE DRAWINGS

With the above and additional objects and advantages in view, as will hereinafter appear, this invention comprises the devices, combinations and arrangements of parts hereinafter described by way of example and illustrated in the accompanying drawings of preferred embodiments in which:

FIG. 1 represents an exploded perspective view of a plasterboard to column clip pursuant to the present invention, showing the clip prior to assembly thereof;

FIG. 2 represents a perspective view of the clip of this invention, showing the clip during assembly thereof;

FIG. 3 represents a perspective view of the clip of this invention, showing the clip in its assembled condition;

FIG. 4 represents a front elevational view of the clip shown in FIG. 3;

FIG. 5 represents a sectional view, taken on the line 5—5 of FIG. 4;

FIG. 6 represents a perspective view of a modified plasterboard to column clip pursuant to the present invention, showing the modified clip in an assembled condition;

FIG. 7 represents a front elevational view of the modified clip, showing the modified clip during the assembly thereof;

FIG. 8 represents a front elevational view of the modified clip shown in FIG. 6, with a section broken away to reveal the rear wall thereof; and

FIG. 9 represents a cross sectional view showing the clip of the present invention in position on an I-beam column with plasterboard secured thereto.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings, FIG. 1 illustrates a clip **10** of the present invention, comprising a box-like member **12** and a spring member **14.** The box-like member **12** is adapted to receive and hold the spring member **14** in an operative position, as will be set forth hereinafter below in more detail.

The box-like member **12** includes a top wall **16** and a bottom wall **18** substantially parallel to the top wall **16.** Substantially parallel spaced-apart sidewalls **20** and **22** are perpendicular to the top and bottom walls **16,** 18 respectfully, and are disposed therebetween to connect the edges of the top wall **16** to the edges of the bottom wall **18** to define an open-end hollow box. Preferably, the top and bottom walls **16, 18** are wider than the sidewalls **20, 22** to define a rectangle in cross-section, as shown in FIG. **5,** or as shown in an end view thereof as illustrated in FIGS. **1, 2** and **3.** However, the wall members may be of the same width to define a square in cross-section or in end view, or these widths may be varied as desired for any particular suitable arrangement thereof. Additionally, the wall members **16, 18,** 20 and **22** may be formed in any desired suitable length, defined by the longitudinal distance between the opposite open ends.

The box-like member **12** is provided with centrally located, spaced-apart openings or cut-outs **24** and **26** to receive the spring member **14.** The cut-out **24** is centrally located in an upper portion of the sidewall **20** and extends into the top wall **16.** The cut-out **26,** which is symmetrical to the cut-out **24,** is centrally located in an upper portion of the sidewall **22,** and also extends into the top wall **16.** Preferably, the cut-out portion **28** of the cut-out **24** and the cut-out portion **30** of the cut-out **26,** as best shown in FIG. **5,** remain attached to the top wall **16,** both being bent back against the inner surface of the top wall **16** for reasons to be set forth hereinafter below.

The spring member **14** is preferably round in cross-section, however any suitable cross-section may be employed. The spring member **14** includes a substantially straight body portion **32,** as best shown in FIGS. **1** and **5,** which is approximately equal in length to the transverse width of the top and bottom walls **16, 18.** A tang or leg-like portion **34** extends substantially perpendicularly out from the straight body portion **32.** The length of the tang **34** is slightly less than the longitudinal length of the cut-outs **24, 26** to permit insertion through these openings, but is longer than the transverse width of either cut-out **24, 26.**

At the opposite end of the straight body portion **32,** another straight portion **36** extends substantially perpendicularly outward therefrom. Portion **36** is substantially parallel to the tang **34,** lying in the same plain thereof to be in alignment therewith, extending in an opposite direction from the body portion **32** then the direction of the tang **34.** A curved portion **38** extends outwardly from the portion **36** in a direction away from the body portion **32,** and then curves back toward the body portion **32** in a direction towards the tang **34,** the end of portion **38** being spaced from the body portion **32.** A curved end portion **40** extends outwardly from the end of portion **38,** in a direction towards the tang **34** but away from the body portion **32** to define a reverse loop with respect to the loop formed by the curved portion **38.** Adjacent inner or underneath sections of portions **38** and **40,** which face towards the straight body portion **32,** are serrated or knurled in a conventional manner for reasons to be set forth hereinafter below in more detail.

To assemble the clip **10,** the tang **34** of the spring member **14** is inserted through one of the openings **24,** 26 with the opening **26** being shown in the drawings by way of example. The tang **34** is then directed or pushed through the inside of the box-like member **12** until it exists through the other opening **24.** Depending upon the length of the portion **36,** the curved portion **40** of the spring member **14** may not be able to clear the edge of the box-like member **12.**

Accordingly, this above problem is overcome by placing the spring member **14** on its side at a slight angle to the top wall **16,** with the curved portion **40** close to or touching the upper outer surface of the top wall **16,** as shown in FIG. **2.** The cut-outs **24, 26** are made with sufficient clearance with respect to the tang **34** to permit this maneuver. Once the tang **34** has cleared the opening **24** and has past the outer surface of sidewall **20,** the spring member **14** is rotated upwardly so that the tang **34** and portion **36** are substantially perpendicular to the top wall **16,** as best shown in FIGS. **3, 4** and **5.**

As best shown in FIG. **5,** the tang **34** abuts against the outside surface of sidewall **20** and the straight portion **36** abuts against the cut-out edge of the top wall **16** to hold the spring member in this upright, perpendicular position. Additionally, the bent-back, cut-out portions **28** and **30** function to fill part of the space between the inner surface of the top wall **16** and the straight body portion **32** so as to better support the spring member **14** in the upright position. It is further noted, that the cut-outs in the top wall **16** permit the portion **36** to be positioned inwardly of the edge so that the back surface of the portion **36** is flush and in alignment with the outside surface of the sidewall **22.** Preferably, the cut-out in the top wall **16** is approximately equal to the thickness of the portion **36** of the spring member **14** to facilitate the above-mentioned flush arrangement. It is also noted that the serrations **42** face the top wall **16** and are centrally located with respect thereto.

FIG. **6** illustrates a modified embodiment of the present invention, showing a clip **50.** The clip **50** includes a pair of spring members **14,** and a modified box-like member **52.** The box-like member **52** is similar to the box-like member **12,** however the box-like member **50** is provided with two pairs of openings **64, 66** to receive two spring members **14,** set forth hereinafter below in more detail.

The box-like member **52** includes a top wall **56,** a bottom wall **58,** and sidewalls **60** and **62** to define an

open end hollow box, as described above. Preferably, the box **52** is provided with a rectangular cross-section, but may be square in cross-section or varied as desired in any particular suitable arrangement thereof.

The box-like member **52** is provided with the spaced-apart openings or cut-outs **64, 66** located adjacent or near to the open ends thereof. Here again, as with the above-mentioned openings **24** and **26**, the cut-outs **64** are provided in an upper portion of the sidewall **60** and extend into the top wall **56**. The cut-outs **66**, which are symmetrical to the cut-outs **64**, respectively, are provided in an upper portion of the sidewall **62** and also extend into the top wall **56**. Preferably, the cut-out portions **68** of the cut-outs **64** and the cut-out portions **70** of the cut-outs **66**, as best shown in FIG. **9**, remain attached to the top wall **56**, being bent back against the inner surface of the top wall **56** for the same reasons set forth above with respect to the spring member **14**.

Another difference in the box-like member **52** is the construction thereof. Where box-like member **12** was formed from a one-piece hollow tubular member, box-like member **52** is formed from sheet metal being bent into the box-like shape. However, it is understood that box-like member **12** may also be formed from sheet metal where it is just as likely to form box-like member **52** from tubular material or any other suitable material. The sheet metal material is cut and bent so that the sidewall **60** is formed from two end pieces **72** and **74** which are overlapped at **76**. The overlap **76** may be secured together in any conventional manner, such as soldering, welding or the like.

To assemble the clip **50**, the tang **34** of each spring member **14** is inserted through one of the openings **64**, 66 similar to the method set forth above, with the opening **66** being shown in the drawings by way of example. The tangs **34** are then directed or pushed through the inside of the box-like member **52** until they exit through the other openings **64**. However, due to the fact that the openings **64, 66** are near the open ends of the box-like member **52**, there is no problem of clearance with respect to the curved portion **40** as mentioned above.

As clearly shown in FIG. **7**, the spring members **14** are disposed in a horizontal position when being inserted through the box-like member **52**, and then after insertion therethrough, are rotated upwardly to the perpendicular position shown in FIG. **8**. The spring members **14** are maintained in this perpendicular, upright position by the abutment of the tangs **34** against the sidewall **60** and the straight portion **36** against the cut-out edge of the top wall **56**, in addition to the support provided by the bent-back, cut-out portions **68** and **70**, in a manner as discussed above.

It is noted, that the clip **50** is preferably used when it is necessary to provide a box-like member of increased longitudinal length. For box-like members having a desired short length, it would be sufficient to use the single spring member **14** employed in the clip **10**.

The clips **10** and **50** are used in the following manner, wherein clip **50** is used by way of example, as shown in FIG. **9**. At selected locations longitudinally along a structural column **80**, there are placed four retaining clips **50**, one clip on each flange edge **82** as shown in FIG. **9**. The box members **52** are disposed on the outside of the column **80**. The clips **50** are self aligned in that they are automatically positioned in proper orientation providing only that the box member **52** is on the outside of each flange **82** and not on the inside.

The flange **82** is thicker than the spacing between the curved portion **40** of the spring member **14** and the top wall **56** to tension the spring member **14** against the flange **82**. It is further noted, that the serrations **42** of the spring clip **14** are engaged against the flange edge **82** so that the clip **50** is securely held in position due to the resilient pressure of the spring member **14** and the slip-prevention provided by the serrations **42**.

A pre-cut plasterboard section **84** is disposed across adjacent retaining clips **50** with sheet metal screws **86** or other such securing devices being driven through the plasterboard **84** into the box member **52**. The side of the column **80** against which plasterboard **84** has been placed thus is immediately covered. Three other plasterboard sections **84** are then applied, one to each of the remaining faces of the column **80** and sheet metal screws **86** or the like are again used for joining the plasterboards **84** to the clips **50**. When all four faces of the column **80** are covered, the column **80** is in effect encapsulated and is thus fireproof.

As clearly shown in FIG. **9**, it would be best to have the tang **34** abut against the two sectioned sidewall **60** so that the screws **86** engage the one-piece sidewall **62**. It is further noted, that both the sidewall **62** and the portion **36** of the spring member **14** are flush against the plasterboard **84**.

In addition to the resiliency of the tensioned spring member **14** holding the box-like member **50** or **10** in place, aided by the serrated portion **42** to prevent slipping relative to the flange **82**, the box-like members **10** and **50** are locked in position by the plasterboards **84** and screws **86** so that there is no danger that the clips **10** and **50** will loosen. Accordingly, this arrangement is permanent wherein the clips **10** and **50** are hidden from view.

It is further noted, that the arrangement shown in FIG. **9** provides an air space between the flanges **82** of the column **80** and the plasterboards **84** positioned therearound. This air space is desired for its extra insulating value to provide the desired fireproofing thereof.

Preferably, the clips **10** and **50** are fabricated from a relatively heavy gauge tubing or sheet metal or similar material, which is galvanized or otherwise protected against oxidation. The spring member **14** may be formed from any material having the desired resiliency therein, such as steel, extruded aluminum, plastic or any other suitable material.

Numerous alterations of the structures herein disclosed will suggest themselves to those skilled in the art. However, it is to be understood that the present disclosure relates to preferred embodiments of the invention which is for purposes of illustration only and not to be construed as limitations of the invention.

What is claimed is:

1. A clip for securing plasterboard to a structural column member, said clip comprising resilient means adapted to clip on to a flange of the structural member, box-like means connected to said resilient means for receiving fasteners which secure the plasterboard thereto, said box-like means including first, second, third and fourth sidewalls connected in sequence to define a box-like member, said second and fourth sidewalls being provided with at least one opening each, said openings being in alignment with each other to allow communication from an outer surface of said sec-

ond sidewall through said box-like member to an outer surface of said fourth sidewall, said resilient means including a spring member provided with a body portion, said body portion including a tang extending outwardly in one direction from one end of said body portion and also including a curved portion extending outwardly in another direction from an opposite end of said body portion, said body portion being disposed within said box-like member with said one end extending through said opening in said second sidewall and with said other end extending through said opening in said fourth sidewall, said tang abutting against said outer surface of said second sidewall to maintain said spring member in position relative to said box-like member with said curved portion being disposed outside said box-like member in a position spaced from an outer surface of said first sidewall, whereby the flange of the structural member is clipped between said curved portion and said outer surface of said first sidewall.

2. A clip according to claim **1**, wherein said openings are centrally in said second and fourth sidewalls, each opening being disposed adjacent to said first sidewall.

3. A clip according to claim **1**, wherein said second and fourth sidewalls are each provided with two of said openings, each of said two openings being spaced apart and disposed adjacent to opposing open edges of said box-like member respectively, and one spring member being provided for each cooperating pair of said openings.

4. A clip according to claim **1** wherein said curved portion of said spring member includes a serrated section facing said outer surface of said first sidewall to prevent relative slipping between said clip and the flange.

5. A clip according to claim **1**, wherein said opening in said fourth sidewall extends into said first sidewall to receive said curved portion of said spring member so that an outer surface of said curved portion is flush with said outer surface of said fourth sidewall.

6. A clip according to claim **1**, wherein said openings are cut-outs with respective cut-out portions remaining attached to said first sidewall, said cut-out portions being bent back against an inner surface of said first sidewall to reduce a portion of space between said body portion of said spring member and said inner surface of said first sidewall for supporting said spring member in said position relative to said box-like member.

7. A clip according to claim **1**, wherein said box-like member is fabricated from sheet metal with a longitudinal overlap being provided in said second sidewall against which said tang abuts.

8. A clip according to claim **1**, wherein said curved portion of said spring member includes a straight section extending substantially perpendicularly outwardly from said body portion in alignment with and substantially parallel to said tang but extending in an opposite direction from said body portion than said tang, a first curved section extending outwardly from said straight section in a direction away from said body portion and curving back toward said body in a direction towards said tang, said first curved section being spaced from said body portion, and a second curved end section extending outwardly from said first curved section in a direction towards said tang but away from said body portion to define a reverse loop with respect to said first curved section.

9. A clip device comprising resilient means adapted to clip on to a first structural member, box-like means connected to said resilient means for receiving fasteners which secure a second structural member thereto, said box-like means including first, second, third and fourth sidewalls connected in sequence to define a box-like member, said second and fourth sidewalls being provided with at least one opening each, said openings being in alignment with each other to allow communication from an outer surface of said second sidewall through said box-like member to an outer surface of said fourth sidewall, said resilient means including a spring member provided with a body portion, said body portion including a tang extending outwardly in one direction from one end of said body portion and also including a clip portion extending outwardly in another direction from an opposite end of said body portion, said body portion being disposed within said box-like member with said one end extending through said opening in said second sidewall and with said other end extending through said opening in said fourth sidewall, said tang abutting against said outer surface of said second sidewall to maintain said spring member in position relative to said box-like member with said clip portion being disposed outside said box-like member in a position spaced from an outer surface of said first sidewall, whereby the first structural member is clipped between said clip portion and said outer surface of said first sidewall.

* * * * *