Jan. 2, 1962 A. D. FOSTER 3,015,400

SHELF CONSTRUCTION

Filed Oct. 14, 1959 5 Sheets-Sheet 1

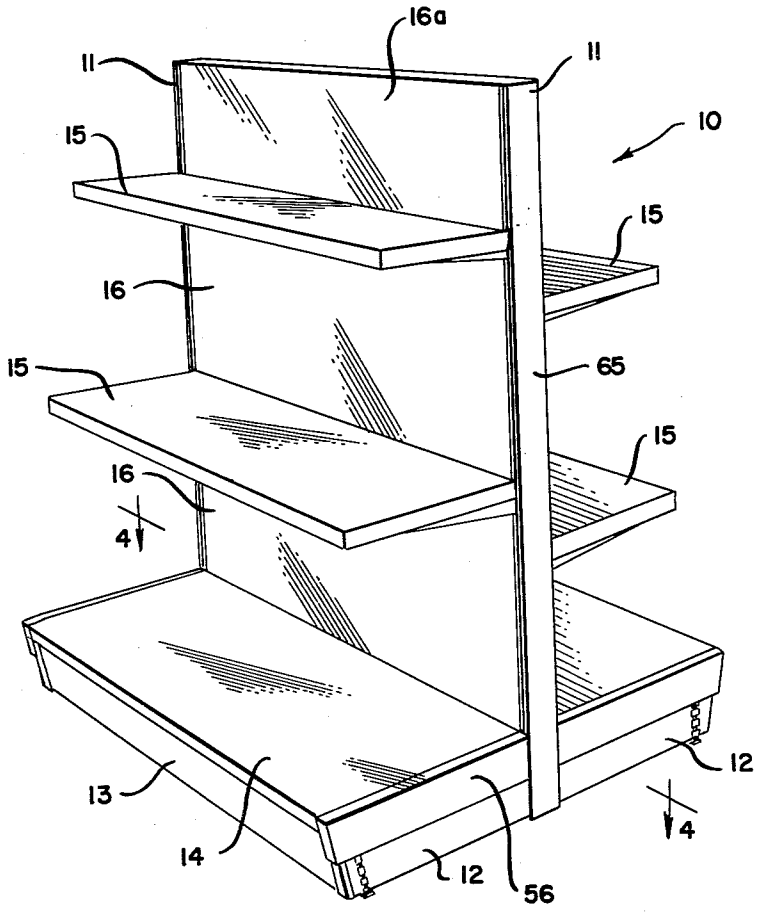


FIG. 1

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SHELF CONSTRUCTION

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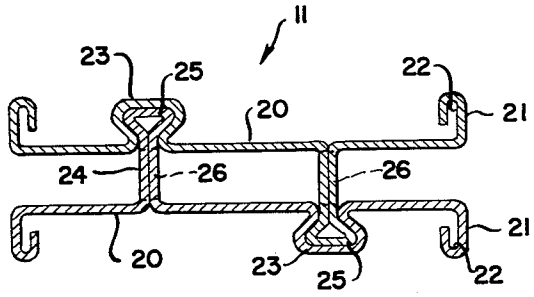


FIG. 2

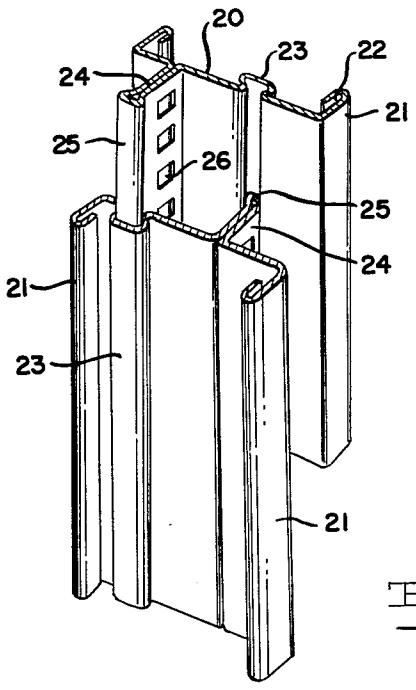


FIG. 3

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SHELF CONSTRUCTION

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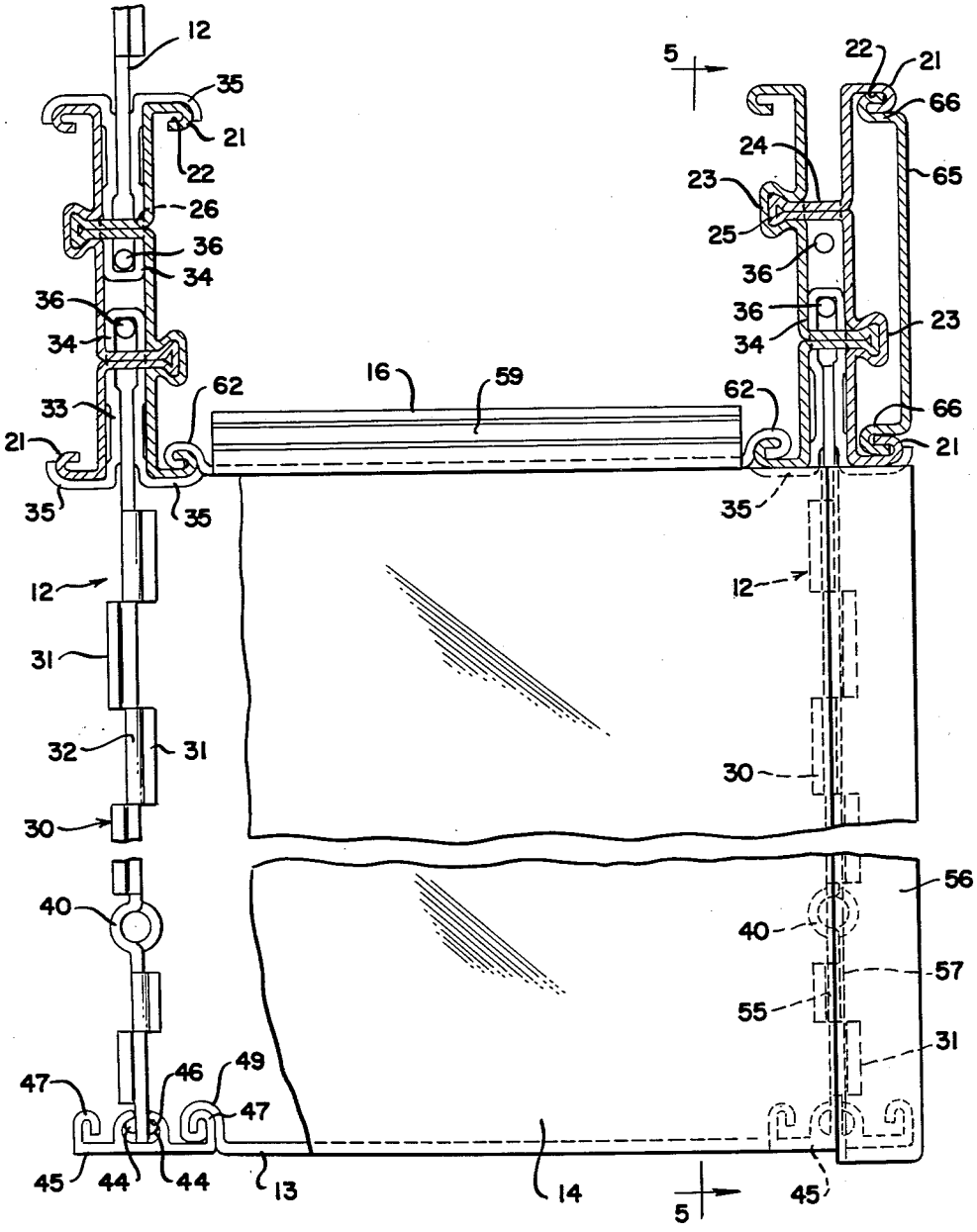


Fig-4

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SHELF CONSTRUCTION

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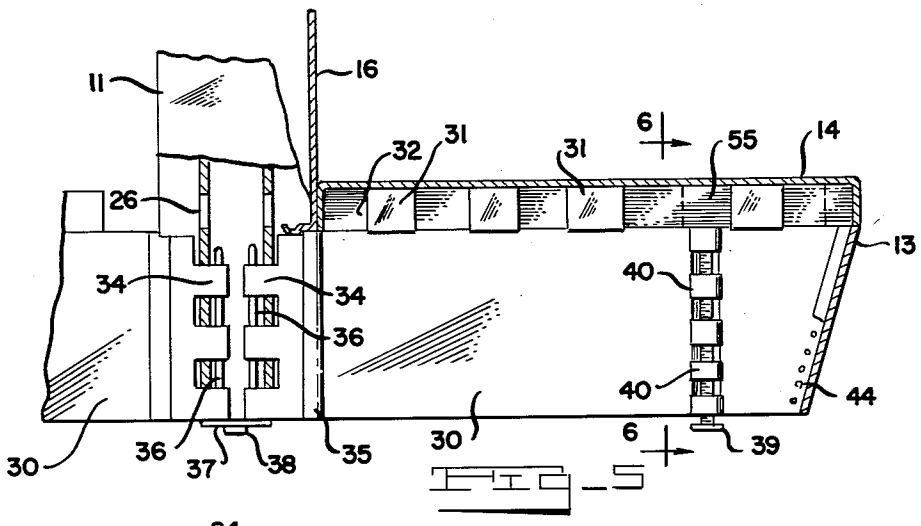


FIG. 5

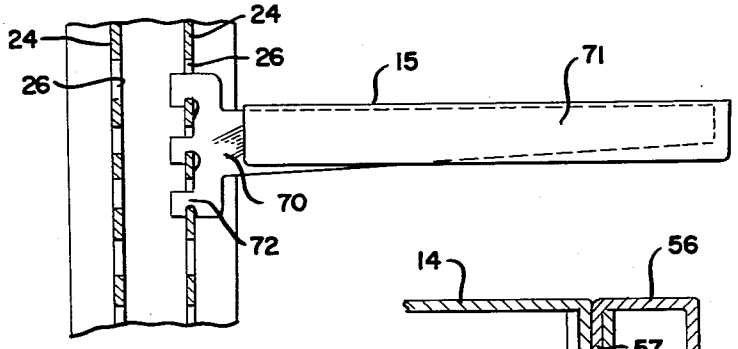


FIG. 7

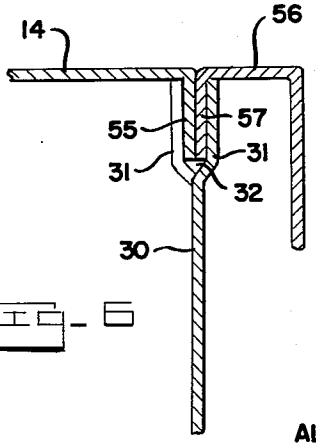


FIG. 6

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SHELF CONSTRUCTION

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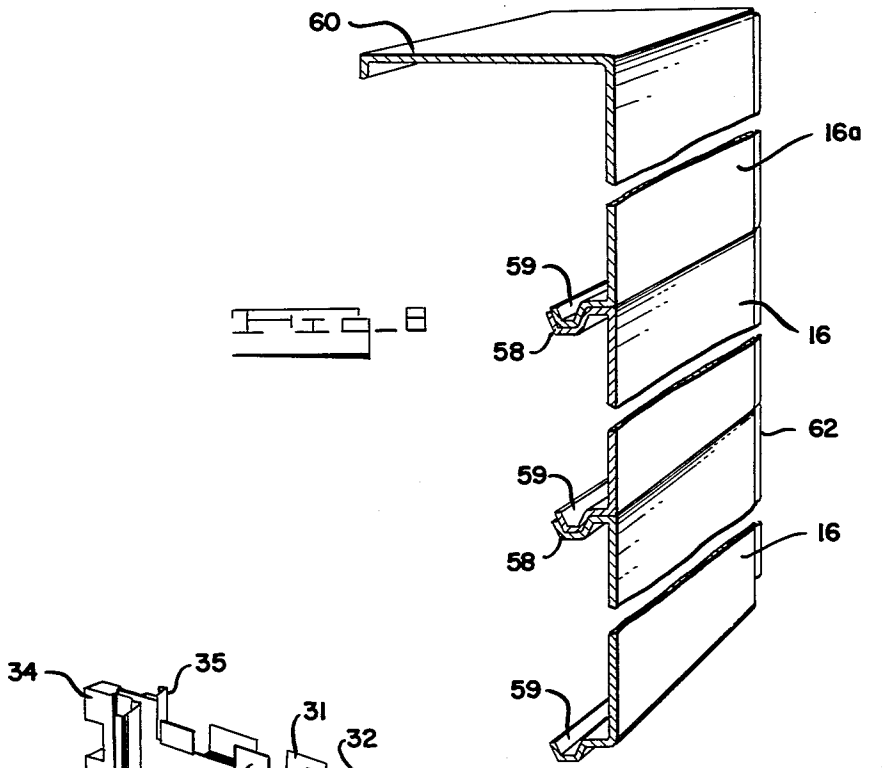


Fig. 8

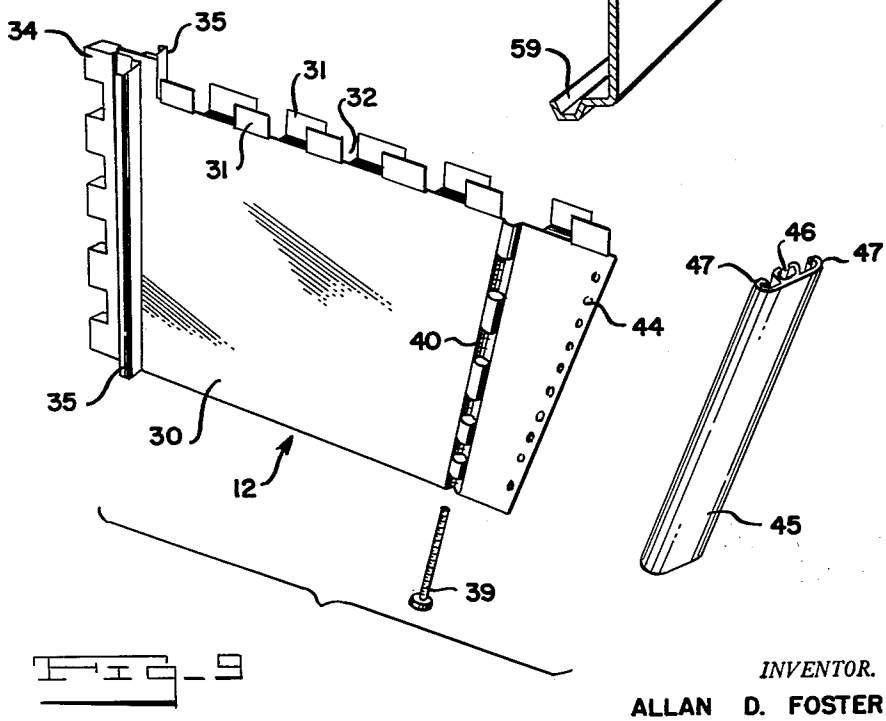


Fig. 9

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United States Patent Office 3,015,400
Patented Jan. 2, 1962

3,015,400

SHELF CONSTRUCTION

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Filed Oct. 14, 1959, Ser. No. 846,301
8 Claims. (Cl. 211—183)

This invention relates to a shelf construction and more particularly to a shelf construction which may be used for the display of merchandise in stores and the like and which may be assembled either as a wall unit or as an island unit.

Two types of shelf constructions are commonly used in stores and the like for displaying merchandise, namely, the wall type of shelf and the island type. Prior to this invention, these two types of units were separately made out of separate types of parts which could not be used interchangeably.

Thus, it is an object of this invention to form a shelf unit out of a number of standard parts which unit may be assembled either as a wall unit or as an island type of unit and whose parts are so formed that they lock together without the need of any screws, bolts or nuts or special adapters and without the need for any tools other than the hand of the man assembling the unit.

Another object of this invention is to form a shelf unit of a minimum number of parts, each part being easily handled by one man, which parts may be easily assembled in a minimum installation time, and which unit can be adjustable in a variety of ways to fit almost all types of displays and which is rigid and strong.

A further object is to form such a shelf construction of a number of interconnected parts wherein all joints between parts are concealed to prevent tampering therewith, to enhance appearance of the unit, and to avoid protrusions which interfere with the merchandise display and also to form a unit which can be easily adapted for use with special types of shelving, display baskets and display racks without modifying the basic support structure of the unit but simply by adding the special parts all without the use of tools or special connectors.

Further, it is an object to form a unit which is so constructed that a number of units can be added together end to end to form an even larger shelf of interconnected individual units and wherein each individual unit can be separately adjusted as to shelf height, types of shelvings used, racks or baskets, etc.

An additional object is to form a shelf construction out of a pair of column members each formed of a pair of identical parts which are frictionally locked together and which parts are simple, inexpensive to make, assemble and use, and which parts are adapted to receive the various shelves and brackets without the use of tools.

Another object is to form a base assembly for the shelf construction which base is arranged to lock into the columns and be held in place simply by pin means and which base is rigid, strong, and is formed to receive the bottom shelf of the unit with the columns being formed to receive back panels and upper shelves.

These and other objects and advantages of this invention will become apparent upon reading the following description, of which the attached drawings form a part.

In these drawings:

FIG. 1 is a perspective view of a shelf unit formed as an island.

FIG. 2 is an end view of one support column.

FIG. 3 is a perspective view of the two halves forming a support column.

FIG. 4 is a view of the base and a bottom shelf taken in the direction of arrows 4—4 of FIG. 1.

FIG. 5 is an elevational view of the base taken in the direction of arrows 5—5 of FIG. 4.

FIG. 6 is an enlarged view taken in the direction of arrows 6—6 of FIG. 5.

FIG. 7 shows in partial cross-section, the attachment of a shelf bracket to the support column.

FIG. 8 is a perspective view of the back panels in cross-section.

FIG. 9 is a perspective view of a base member and molding.

In FIG. 1, an island shelf unit **10** is illustrated. It is formed of side vertical columns **11** and base members **12** which bases are interconnected by base front or kick panels **13**. A bottom shelf **14** and top shelves **15** are secured to the shelf unit and back panels **16** and top back panel **16a** are provided to interconnect the side columns.

The unit may be assembled as an island as illustrated in FIG. 1, or one side of the unit, that is, the base and shelves on one side, can be eliminated, so that the unit can be used as a wall unit.

As shown in FIGS. 2 and 3, each side column is formed of a pair of identical halves **20**, each of which are formed of elongated, thin, narrow, rigid strips of sheet metal whose side edges **21** are bent to form a U-shape and are further bent to form channels **22** that open towards the base of the U.

Each half is also bent so as to provide a channel **23**, having a constricted mouth or opening, which extends the length of the strip. And, each half is provided with a tongue **24** bent therefrom, the tongue having an enlarged head **25** which is arranged to fit into the channel **23**. As shown in FIG. 3, the two halves are assembled by sliding one half downwardly relative to the other so that the enlarged heads **25** of the tongues fit into the respective channels.

Each of the tongues are of sufficient length so as to form walls that interconnect the two strips and thus provide a structure which in cross-section (see FIG. 2), is in the shape of a center rectangle and a pair of side channels which open outwardly of the column. Each of the side walls or tongues **24** are slotted with a row of equally spaced apart slots **26** extending the length of the respective tongues. When the two halves are assembled the slots in one tongue are horizontally aligned with the slots in the other tongue.

Each of the vertical columns is supported in its upright position by means of either one or two base members **12** (depending upon whether the unit is to be assembled as an island unit or a wall unit). The base members are each formed out of vertically arranged plates **30** which are slit along their top edges to form tabs **31**. These tabs are alternately bent to one side of the plate and then up to thus form a channel **32** between the alternately bent tabs.

One end of the plate is arranged to be secured to the support column by means of a U-shaped bent support member **33** which may be welded or otherwise secured to the end of the plate and which is provided with a plurality of vertically axised loops **34** arranged to enter into the slots **26** of the column wall. The loops are held in place, after fitting through the slots, by means of pins **36**.

The pins are arranged in pairs, each pair being secured to a base plate **37** so that the two pins may be used as a unit. A leveling bolt **38** is threadedly engaged through a threaded opening formed in the plate **37** for leveling the unit. Also, a second leveling bolt **39** is threadedly engaged with a socket, formed in the plate **30**, by striking out loops **40** alternately to one side and then the opposite side of the plate and internally threading the loops so as to received the bolt **39**. Hence, the unit may be leveled simply by adjusting the bolts **38** and **39**.

The U-shaped connecting member **33** is also formed with flanges **35** that engage against the side flanges **21**

of the columns so as to locate the plate **30** relative to the column and prevent it from wobbling or moving relative to the column.

The free ends of each of the bases are provided with struckout bumps **44** on the opposite sides of the plate and a base edge molding **45**, having a center channel **46**, is arranged to slip over the end of the plate with its center channel receiving the struck out bumps **44**. The molding is also provided with side channels **47** bent therefrom. The two bases are interconnected as shown in FIG. 4 by means of a front kick panel **13** whose opposite side edges are formed into channel-like bends **49** arranged to fit into the channels **47** of the trim molding and to be frictionally held therein. Thus, the base is rigidified at the forward end thereof.

The bottom shelf **14** is provided with side depending flanges **55** (see FIGS. 4 and 6) which fit into the channels **32** of two of the base members. In addition, a side cover plate **56**, also provided with a depending flange **57**, is arranged with its depending flange in the same channel **32** as is the flange of the shelf. This cover plate **56** covers the side of the unit and strengthens and rigidifies its further.

The back panels **16** may be formed identically to each other and each may be formed of a single sheet of metal or the like having a continuous upper trough **58** and a lower trough **59** formed on each panel with the troughs being arranged so that one fits within the other to support one panel above the other (see FIG. 8). The top edge of the top panel **16a** may be bent to form a cover **60** to cover the space formed by the back panels on each side of the support columns.

The back panels are secured to the support columns by means of side flanges **62** which are bent to fit into the channels **22** of the columns so that the panels may be slid vertically downward into place one at a time. Thus, the back panels interconnect the columns to rigidify the columns and rigidify the unit as a whole and also to provide a backing which enhances the appearance of the unit. The lower of the back panels is arranged to rest on top of the flange **35** (see FIG. 5).

Once the unit is assembled, end caps **65** may be provided to cover the exposed faces of the support columns (see FIG. 4). These end caps have side edges **66** bent to slidably fit into the channels **22** on the exposed face of the columns. Each of these caps may be formed of a single elongated strip which thus functions as a cover.

However, where the individual unit is to be assembeld as part of a number of units connected together, instead of the end cap **65**, an additional set of back panels **16** and **16a** can be inserted in the channels and another support column is added and thus the unit can be extended column by column and back panel by back panel until a number of units are secured together. Thus, each column acts as a support for two adjacent units that are interconnected by that one single column. In that case, the side cover **56** would be omitted and the bottom shelf **14** of the next unit would be dropped into channel **32** in its place.

In this manner, there is a great deal of flexibility of using either one or more units together and it can be seen that the units are individually assembled out of a minimum number of parts without the need of any tools whatsoever and without the need of any mechanical fasteners such as screws or bolts or nuts or the like.

In order to secure the upper shelves **15** to the unit, each shelf is provided with a pair of side support brackets **70** which have elongated arms **71** fitted beneath the shelf surface to support the end of the shelf and connection portions **72** which are provided with a plurality of hook formations that fit into adjacent slots of one support column and lock therein (see FIG. 7).

The shelves **15** can be replaced with baskets or racks or special shaped shelves simply by removing them and slipping the ends of the replacement over its brackets **70** and then securing the brackets to the support columns. Hence, there is a great deal of flexibility as to the type of shelving used and moreover, each shelf can be individually adjusted to whatever height is desired. Also, the connection between the brackets and the columns and between the bases and the columns are all concealed from view and from touch so that they cannot be tampered with by any unauthorized person.

This invention may be further developed within the scope of the following attached claims. Accordingly, it is desired that the foregoing description be read as being merely illustrative of an operative embodiment of this invention and not in a strictly limiting sense.

I now claim:

1. A support column formed of two identical interlocked halves, each half comprising an elongated, flat, rigid strip of rectangular shaped sheet metal having elongated side edges, each strip having an integral groove bent out of one face of the strip and opening at the plane of the other face thereof, the groove extending the full length of the strip parallel to the side edges of the strip and being open at its ends and with the mouth of the groove being constricted relative to the width of the groove, the groove being located near one side edge at a line located approximately one-third the distance from that one side edge towards the other side edge; each strip also having an integral tongue formed of a double fold bent outwardly of the said other face of the sheet with the two folds forming a seam at the sheet and with the two folds being flat and in face to face contact from the sheet to a point near the free end of the tongue formed therefrom, and at the free end, the folds being integrally joined and being spread apart to form an enlarged end shaped to correspond to the shape of said groove for tightly fitting within and filling the groove of the other strip, said tongue extending the full length of the strip and being perpendicular to the flat strip and extending outwardly of the strip a distance substantially less than the width of the strip and being located near said other side edge but spaced therefrom a distance equal to the spacing of the mouth of the groove from said one side edge; the two halves being inverted relative to each other and being interlocked, with the enlarged head of the tongue of each frictionally and snugly fitted into the groove of the other to form an assembled column with the two tongues forming transverse walls and the two strips being closely spaced apart and with the two tongues and the strip portions between them forming a rectangular in cross-section column center portion and with each tongue and the strip portion located between their adjacent side edges and the respective tongue each forming side edge channels opening outwardly at the side edges of the strips, and the tongues each being provided with uniformly spaced apart slots along their entire length.

2. A construction as defined in claim 1, and wherein each of the side edges of the strips is provided with an integral flange arranged perpendicular to the strips, with the flanges on each strip extending outwardly away from the opposite strip; the ends of each of said flanges being bent inwardly, towards the flange of the opposite side edge of the same strip and towards its respective strip, to form channels, which channels each open towards its respective strip so that the strips overlay the mouth of their respective channels.

3. A construction as defined in claim 1 and including a base supporting the column in a vertical position, said base comprising an elongated, narrow, flat, thin, rigid plate arranged in a vertical plane and extending horizontally away from the bottom of the column and having a vertical inner edge; means on said vertical edge for interlocking the plate to the column, said means comprising a U-shaped channel strip arranged vertically with the legs thereof forming the U-shape, at the base of the channel strip, being flat and spaced apart a distance substantially

equal to the spacing between the column strips and being snugly fitted into one of the column side edge channels in face to face contact with both column strips, the base of the channel strip being regularly notched to form a plurality of loops, each fitted through one of the column tongue slots, said column tongue slots each extending the full transverse distance between the column strips for receiving the loop, and pin means fitted into the rectangular central portion of the column and through the loops and engaging the tongue through which the loops are inserted for locking the loops to said tongue, said channel strip receiving said vertical edge of the plate and being permanently secured to the plate, thereby interlocking the plate to the column.

4. A base for supporting a vertical column having a vertically extending edge channel whose base is slotted at regular intervals with the slots transversely extending the full distance between the legs of the channel, said base comprising a vertically arranged, thin, horizontally elongated, narrow plate formed of rigid sheet metal and having a vertical edge, a vertically arranged edge channel strip having a base portion, including the base of the channel strip and the portion of the legs adjacent to it, of a width for snugly fitting within the column edge channel and being regularly notched to form a plurality of loops arranged for fitting through the corresponding slots in the column channel base, and pin means for vertically fitting through the loops and engaging the column channel base to prevent withdrawal of the loops from the slots, the channel strip receiving the full length of the plate vertical edge and being constricted at its mouth for engaging both faces of the plate and being permanently secured to the plate, whereby the plate may be secured to the bottom of a column and support the column.

5. A construction is defined in claim 4 and including integral flanges formed on the free vertical edges of the channel strip legs, the flanges being substantially perpendicular to the legs and extending outwardly away from each other for engaging the edges of the column adjacent the column channel.

6. A construction as defined in claim 4 and wherein said pin means is provided with a head arranged at the bottom edge of the plate for supporting the plate upon a floor, and a vertically axised, downwardly opening threaded socket formed in the plate near the edge of the plate which is opposite to said vertical edge, said socket being formed of a plurality of vertically alined semi-circles alternately stuck-out of the opposite faces of the plate from the bottom edge of the plate towards its top edge, the semi-circles together forming the socket, and a headed bolt threaded into the socket with its head arranged beneath the bottom edge of the plate for adjustably supporting the plate upon a floor.

7. A support column comprising two identical halves, the halves being inverted relative to each other and each half being a narrow, elongated, flat, rigid strip formed of thin, rigid, sheet metal, and with the two halves being aligned and being parallel to each other but spaced apart a short distance; and with part of each strip being bent into a channel which extends the length of the strips, the channel on one strip opening toward the opposite strip; and with part of each strip being bent into a tongue extending normal to the strips and extending the length of the strip parallel to the channel of that strip; the free ends of each tongue being formed to slidably fit into and be frictionally retained within the channel of the opposite strip, with the tongues forming walls extending between the strips, the respective tongues and grooves each being spaced from the long edges of the strips to thus form oppositely opening, unobstructed side channels, each formed of a wall and the parts of the two strips between the wall and one corresponding edge of the strips, each of said tongues being provided with a row of equally spaced apart slots along its entire length, with the slots on one tongue each being aligned with the corresponding slots on the other tongue.

8. A support column formed of two identical interlocked halves, each half comprising an elongated, flat, rigid strip of rectangular shaped sheet metal having elongated side edges, each strip having an integral groove bent out of one face of the strip and opening at the plane of the other face thereof, the groove extending the full length of the strip parallel to the side edges of the strip and being open at its ends and with the mouth of the groove being constricted relative to the width of the groove, the groove being located near one side edge at a line located approximately one-third the distance from that one side edge towards the other side edge; each strip also having an integral tongue formed of a double fold bent outwardly of the said other face of the sheet with the two folds forming a seam at the sheet and with the two folds being flat and in face to face contact from the sheet to a point near the free end of the tongue formed therefrom, and at the free end, the folds being integrally joined and being spread apart to form an enlarged end shaped to correspond to the shape of said groove for tightly fitting within and filling the groove of the other strip, said tongue extending the full length of the strip and being perpendicular to the flat strip and extending outwardly of the strip a distance substantially less than the width of the strip and being located near said other side edge but spaced therefrom a distance equal to the spacing of the mouth of the groove from said one side edge; the two halves being inverted relative to each other and being interlocked, with the enlarged head of the tongue of each frictionally and snugly fitted into the groove of the other to form an assembled column with the two tongues forming transverse walls and the two strips being closely spaced apart and with the two tongues and the strip portions between them forming a rectangular in cross-section column center portion and with each tongue and the strip portions located between their adjacent side edges and the respective tongue each forming side edge channels opening outwardly at the side edges of the strips.

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