

June 14, 1960

E. C. BULLOCK

2,940,804

CLAMP MEANS FOR JOINING VERTICALLY OFFSET METAL TOPS

Filed Oct. 17, 1955

2 Sheets-Sheet 1

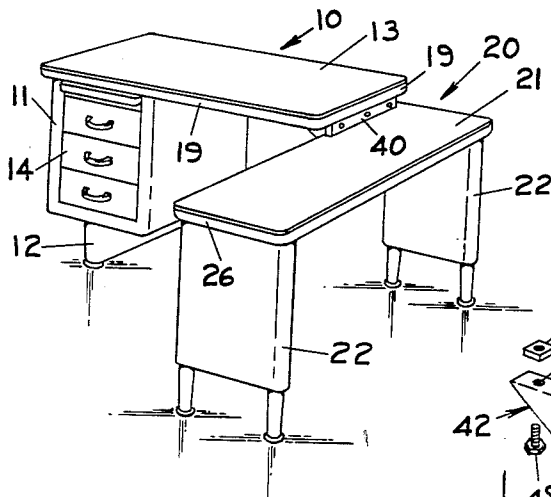


FIG. 1

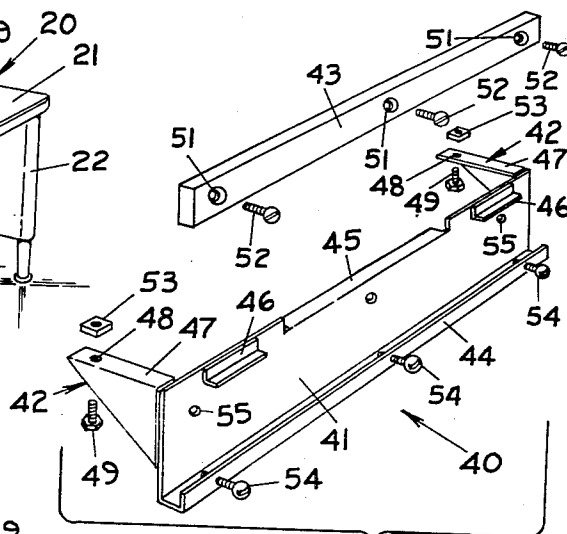


FIG. 2

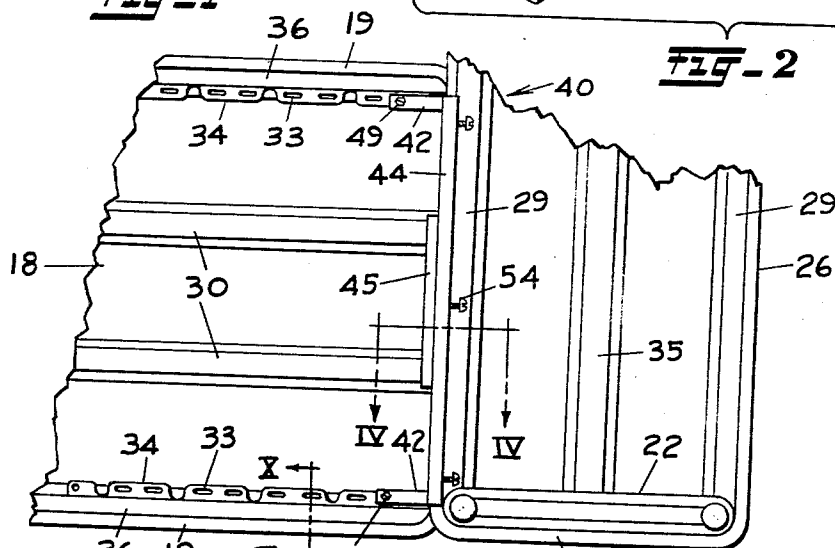


FIG. 3

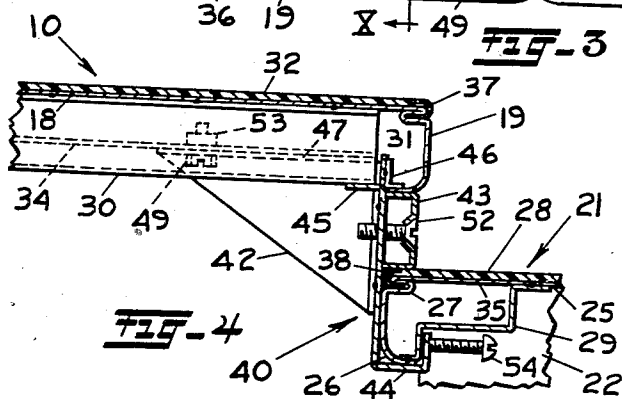


FIG. 4

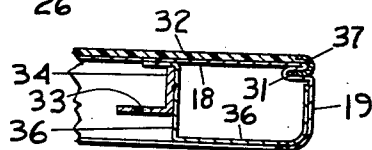


FIG. 10

INVENTOR.
EARLE C. BULLOCK
BY *Peter P. Price*
ATTORNEY

June 14, 1960

E. C. BULLOCK

2,940,804

CLAMP MEANS FOR JOINING VERTICALLY OFFSET METAL TOPS

Filed Oct. 17, 1955

2 Sheets-Sheet 2

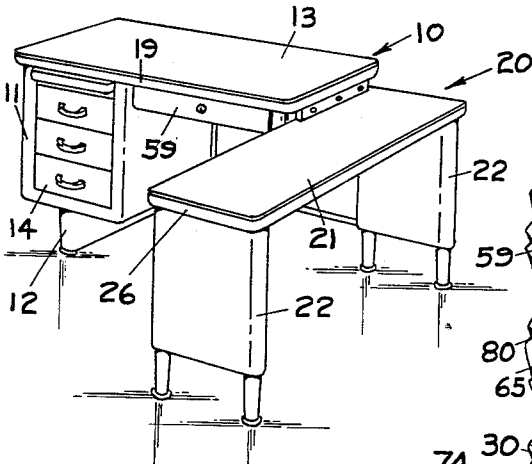


FIG-5

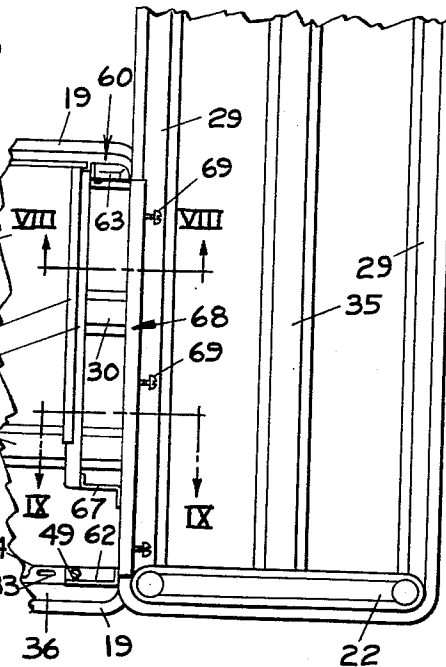


FIG-7

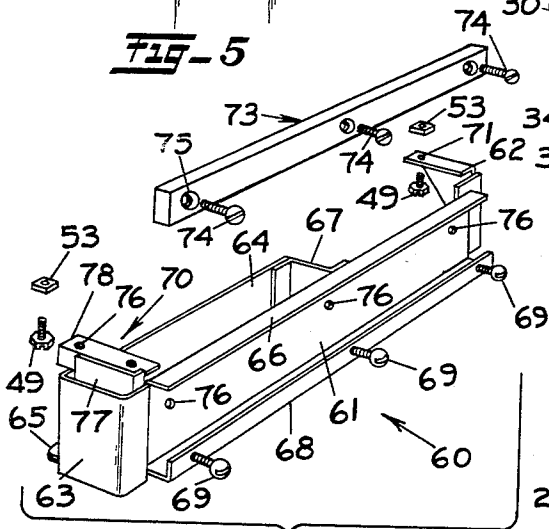


FIG-6

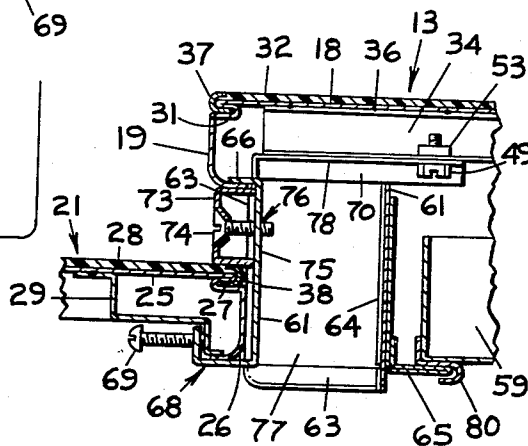


FIG-8

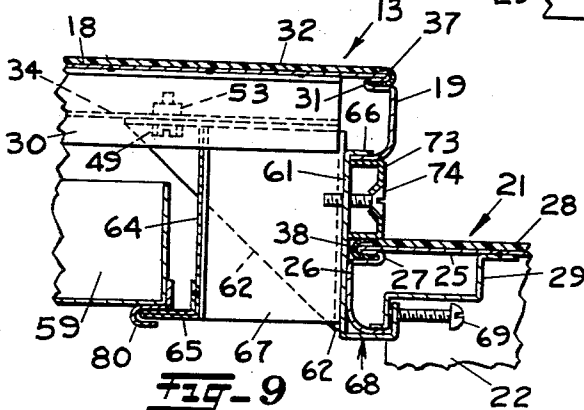


FIG-9

INVENTOR.
EARLE C. BULLOCK
BY *Peter P. Quinn*
ATTORNEY

1

2,940,804

CLAMP MEANS FOR JOINING VERTICALLY OFFSET METAL TOPS

Earle C. Bullock, East Grand Rapids, Mich., assignor to
Steelcase, Inc., Grand Rapids, Mich., a corporation of
Michigan

Filed Oct. 17, 1955, Ser. No. 540,735

8 Claims. (Cl. 311-4)

This invention relates to clamp means for joining vertically offset tops of metal furniture units. More particularly, this invention relates to clamp means for joining and supporting to the edge of a metal table a vertically offset, free, unsupported end of a metal desk.

Desks of the type which have a table extending along their sides have become increasingly popular. Such units provide the convenience of both front and side working space. These units have generally been custom made. Sometimes they have been modified in the field to adapt them to this type of installation. This has made this type of arrangement very expensive. Such units have also been very difficult to separate for relocation. This invention relates to furniture units of metal construction which can be disassembled readily to facilitate movement and relocation. It also provides an easy and simple means of initially installing the unit.

An object of this invention is to provide an easy and simple means of joining and supporting the free unsupported end of a unit of metal furniture upon the top of a supported unit of metal furniture.

Another object of this invention is to provide a clamping means for supporting and anchoring the free unsupported end of a metal furniture top to the side of a supported metal furniture top, such means being usable in metal furniture units of conventional design.

Still another object of this invention is to provide a clamp adapted to support and anchor the free unsupported end of a metal desk to the side of a metal table whose top is vertically offset from the desk.

A further object of this invention is to provide a clamp which in addition to meeting the above objectives also provides a means for slidably mounting one edge of a desk drawer.

Other objects of this invention will become evident upon reading the following specification in conjunction with the accompanying drawings wherein:

Fig. 1 shows in perspective the arrangement of a desk having a free unsupported end secured to the side of the table.

Fig. 2 is an exploded oblique view of one of the clamps.

Fig. 3 shows a fragmentary bottom view of the desk and table combination.

Fig. 4 shows an enlarged fragmentary sectional view taken along IV-IV of Fig. 3.

Fig. 5 is an oblique view of a modified form of this invention.

Fig. 6 is an oblique exploded view of a clamp used for the arrangement illustrated in Figure 5.

Fig. 7 shows a fragmentary bottom view of the clamp connecting the unsupported free end of the desk to the table.

Fig. 8 shows an enlarged fragmentary sectional view taken along the plane III-III of Fig. 7 (said view being inverted from that produced by projection).

2

Fig. 9 shows an enlarged fragmentary sectional view taken along the plane IX-IX of Fig. 7.

Fig. 10 is a cross-sectional view taken along the plane X-X of Fig. 3.

Briefly, this invention is concerned with a clamping means for securing and supporting the free, unsupported end of a top of a metal furniture unit upon a supported top which is vertically offset from the first top. A modified form of this invention is adapted to support one edge of a drawer for the unsupported top.

Referring to Fig. 1 there is shown the desk 10 having a top 13 supported at one end by the drawer well 11 and leg 12. The other end of the desk is secured to and supported by the table 20. The table 20 has a top 21 supported by the legs 22. The clamping unit 40 secures the desk top 13 to the table top 21 which is vertically offset from the top 13.

The structure of the desk top 10 includes a metal panel 18 flanged along its edges to form the front, back and side aprons 19 (Fig. 4). The lower ends of aprons 19 are wrapped under and turned inwardly to form wrapped under flanges. The panel 18 is supported and stiffened by the parallel, hat-shaped channels 30 extending lengthwise of the desk and terminating at the end near the aprons 19 (Figs. 3 and 4). These channels are welded to the bottom surface of the panel 18. Aprons 19 are inwardly crimped, creating a recess 31 which serves as a means of anchoring the anchor strip 37 for the top surfacing material 32.

The apron 19 is reinforced and supported at the front and rear of the desk top by a somewhat Z-shaped reinforcement member 36. One end of the channel 36 nests in the lower end of apron 19 and is secured thereto by welding. The other end bears against and is welded to the bottom surface of panel 18. Adjacent this end the channel 36 has a vertical web.

The drawer wells carry drawers 14 and are secured to the top structure by hold down angles 33 secured to the vertical web of bar 36 by welding or otherwise. Angles 33 have openings 34 therein for securing the drawer wells by screws, bolts, or any other suitable means.

The table 20 is also of metal construction having a metal panel 25 turned down and inwardly to form the apron 26. Similar to the construction of the desk 10, the aprons 26 are crimped inwardly to form the channels 27 which serve as means for anchoring anchor strip 38 for the top surfacing material 28. A reinforcement bar 29, of somewhat Z-shape, is welded to the end of the wrapped under flange of the apron 26 and to the under-surface of the panel 25 thus reinforcing the apron 26.

The clamp 40 is used to lock the table and desk together. It includes the hanger plate 41, the mounting brackets 42 on each end of the hanger plate 41, and the facing plate 43 adapted to fill the gap between the tops 13 and 21 to assure a satisfactory ornamental appearance.

The hanger plate 41 is an L-shaped plate having a foot portion 44 bent outwardly and then upwardly to form a channel. At its upper end the hanger plate 41 is notched out, creating an inwardly turned stop lip 45. To the other face of hanger plate 41 there is welded a pair of angles 46 extending in the opposite direction from stop lip 45.

The mounting brackets 42 are triangular in shape and have inwardly turned bearing flanges 47 at their tops. Each flange 47 has an aperture 48 adapted to receive the bolts 49. The mounting brackets 42 are welded or attached by any suitable means to the hanger 41 beneath the top 13.

The facing plate 43 has the countersunk openings 51 through which the screws 52 are adapted to be inserted to secure the plate by means of the screws 52 to the hanger

plate. The holes 51 are countersunk so that the heads of the screws 52 are flush with the facing plate to give a good appearance.

Figs. 3 and 4 show the desk 10 and table 20 secured together by clamping unit 40. The flange 47 bears against the hold down angle 34 and is secured thereto by bolt 49 extending through the holes 48 and 34. Nut 53 is threaded on bolt 49. The flange of angle 46 seats on the wrapped under portion of apron 19 and the stop lip 45 bears against the hat-shaped channels 30. In this position, the hanger 41 is rigidly secured to the understructure of desk top 13.

Apron 26 is seated in the channel of foot portion 44 and is secured therein by the screws 54 which in many cases may be unnecessary. The facing plate 43 fits between the overlapping tops 13 and 21 and serves the purpose of maintaining the vertical spacing of the tops as well as carrying the weight of top 10 and filling the gap therebetween to give a finished ornamental appearance. With this arrangement the desk top 13 is supported by the table 20 in overlapping position, thereby providing a rigid and stable supporting structure.

Assembly of the desk 10 to table 20 by the clamping unit 40 is simple. The flange of angle 46 is inserted to seat upon the top of the wrapped under portion of the apron 19. Then the hole 48 in the flange 47 of the bracket 42 is aligned with selected openings 33 of the hold down angle 34. The bolt 49 is inserted through the holes and the nut 53 is installed and tightened. With the nut 53 tightened on the bolt 49, the plate 41 is rigidly secured to the edge of the desk 10 with the lip 45 bearing against the hat-shaped channels 30 and the flanges of angles 46 resting on the wrapped under portion of the apron 19. After the plate is rigidly secured to the desk 10, the apron 26 is inserted in the channel formed by the foot portion 44 of the hanger 41. The screw 54 is threaded through the opening in the upstanding portion of the foot 44 and it is made to bear against the reinforcement member 29. The facing plate 43 is then inserted between the tops 13 and 21 and is secured by the screws 52.

Figs. 5 through 9 show a modified form of this invention, such modification pertaining to those cases where the desk 10 has a drawer 59 supported immediately under the top 13. In this modification, the structure of the desk top 13 and table top 21 is exactly the same as previously described. Thus, there is shown the table top 13 having a panel 18 and apron 19, crimped inwardly to form the channel 31 for reception of anchoring strip 37 for the top covering material 32. There is also shown the hold down angles 34, attached to the edge reinforcement channels 36 and the hat-shaped channel 30 extending lengthwise of the desk top and secured to the panel 18. The table top construction includes the panel 25 and the apron 26 crimped inwardly at its top to form the channel 27 serving to anchor the strip 38 at the end of the covering material 28. The apron 26 is reinforced by the reinforcement member 29.

Basically, the clamp 60 is the same as the clamp 40, previously described. In clamp 60 however, structure is provided to serve the function of slidably mounting one edge of the drawer 59.

The clamp 60 includes the hanger plate 61 to which is welded at one end of the bracket 62. The bracket 62 is identical to the bracket 42, previously described. A front, U-shaped, vertical apron 63 is secured by welding or other suitable means to the front end of the hanger plate 61. Frame 64, which includes the track 65, is inwardly spaced from hanger plate 61 and is welded at its front end to the inner side of the apron 63 and at its back end to the Z-shaped spacer 67 which in turn is welded to the inner side of the hanger plate 61. Fixedly secured in the apron 63 is the front bracket 70 which includes the plate 77 extending upwardly and welded to the back of the apron 63. The angle 78 is welded at the

top of plate 77 forming a flange having holes 76 therein provided for securing the bracket to the hold down angles 34.

In this modification the facing plate 73 serves the same purpose and is mounted exactly the same as previously described. It is adapted to fit between the bottom edge of top 13 and the upper edge of top 21. The screw 74, extending through hole 75 in facing plate 73 and threaded into hole 76 of the hanger 61, secures the facing plate 73 in place on hanger 61.

The hanger plate 61 of this modification has a top flange 66 bent outwardly. The foot portion 68 of the hanger plate 61 is formed exactly like foot portion 44 previously described.

Figs. 7, 8, and 9 show the desk 10 and table 20 secured together by clamping unit 60. Fig. 9 illustrates the means for securing the rear bracket 62 to the understructure of the desk. This structure is very similar to that previously described in relation to clamping unit 40. The flange 66 seats on the wrapped under portion of apron 19 and the bracket 62 bears against hold down angles 34. Hole 71 is aligned with a selected hole 33 of the angle 34, and bolt 49 extending therethrough, secures bracket 62 to the hold down angle by means of nut 53.

At the front of the clamping unit 60, the bracket 70 is secured to the hold down angle 34 by bolt 49 extending through one of the holes 76 in the angle 78 and an aligned hole 33 of hold down angle 34. The apron 63 to which the plate 77 of bracket 70 is secured hides the bracket from the view of one standing in front of the desk and at the same time spaces the frame 64 a sufficient distance from hanger 61 so that it can slidably support the drawer 59. Drawer 59 is slidably mounted on the track 65 by means of the runner 80 on the drawer.

In secured position on the understructure of the desk top 13, the hanger 61 depends downwardly. The foot portion 68 receives and seats the apron 26 of the table top 21. Apron 26 is secured in the channel of the foot portion 68 by screws 69. Facing plate 73 is secured between the tops 13 and 21 to the hanger plate 61 by screws 74 extending through the countersunk holes 75, and into tapped holes 76. The facing plate 73 serves the exact function as facing plate 43 described previously in the description of Figs. 1 to 4.

The assembly of desk 10 and table 20 with the clamp 60 is very simple. First the flange 66 is hooked over the wrapped under portion of the apron 19. Then the holes 71 and 76 of the brackets 62 and 70 respectively are aligned with the openings 33 of the hold down angles 34 on the front and back of desk top 13. The bolts 49 are inserted through the aligned holes and the nuts 53 are installed and tightened. With the bolts 49 securing the brackets 62 and 70 rigidly to the table top 13, the apron 26 of top 21 is seated in the channel of the foot portion 68. The screw 69 is tightened to secure the apron in the channel of foot portion 68. The facing plate 73 is then inserted between the tops and is fixed in place by the screws 74 extending through the countersunk holes 75 and threaded into the holes 76 of the hanger plate 61. With the clamp 60 in place the drawer 59 having the drawer runner or guide 80 is slidably mounted in the desk with the drawer runners 80 riding on the track 65.

It will be seen that there has been provided a clamp adapted to attach the free unsupported end of a metal unit of furniture to a supported top of another metal unit of furniture. The clamp for accomplishing this is simple and easy to assemble. In one modified form of this invention the clamp is adapted to support one edge of a sliding drawer for the desk. In either form disassembly of the desk and the table tops can be effected simply by loosening the screws of the face plate, removing the face plate, and loosening the screw in the foot

5

portion of the hanger to permit the apron 26 to be lifted out of the foot portion.

It should be understood that in describing this invention and the modifications thereof, such description has been made for purposes of illustration only. Various modifications of this invention may be made, each without departing from the principles thereof. It should be especially understood that this invention should not be limited to the exact structure of the table and the desk as shown in the specification, nor should the exact structure of the clamps be considered to be the only structure which can be used within the spirit of this invention. The structure of such clamps shall be considered to be limited only as set forth in the appended claims. Various modifications are to be considered as included in the hereinafter appended claims unless these claims by their language expressly state otherwise.

I claim:

1. In a metal furniture assembly the combination comprising: a supported metal top and a top with an unsupported free end, said tops being vertically offset from each other and having rigid depending side aprons; clamp means for locking said free end to said supported top, said clamp means including a mounting bracket secured to the underside of said unsupported top end adjacent its apron; a hanger plate secured at one end to said brackets and having another end extending beyond the level of said supporting top; and means for securing said apron of said supported top to said other end of said hanger plate whereby the weight of said unsupported top end is transmitted by said clamp means to said supported top.

2. In a metal furniture assembly the combination comprising: a supported metal top and a top with an unsupported free end, said tops being vertically offset from each other and having rigid depending side aprons; clamp means for locking said free end to said supported top, said clamp means including mounting brackets secured to the underside of said unsupported top end adjacent its apron; a hanger plate secured at one end to said brackets and having another end depending downwardly from said brackets below the level of said supported top; and means for securing said apron of said supported top to said other end of said hanger plate whereby the weight of said unsupported top end is transmitted by said clamp means to said supported top.

3. In a metal furniture assembly the combination comprising: a supported metal top and a top with an unsupported free end, said tops being vertically offset from each other and having rigid depending side aprons; clamp means for locking said free end to said supported top, said clamp means including mounted brackets secured to the underside of said unsupported top end adjacent its apron; a hanger plate secured at one end to said brackets and having another end extending beyond the level of said supported top; said other end having a channel adapted to receive said apron of said supported top; and means for securing said apron of said supported top in said channel whereby the weight of said unsupported top end is transmitted by said clamp means to said supported top.

4. In a metal furniture assembly the combination comprising: a supported metal top and a top with an unsupported free end, said tops being vertically offset from each other and having rigid depending side aprons; clamp means for locking said free end to said supported top, said clamp means including mounting brackets secured to the underside of said unsupported top end adjacent its apron; a hanger plate secured at one end to said brackets and having another end depending downwardly from said brackets beyond the level of said supported top; means securing said apron of said supported top to said other end of said hanger plate whereby said unsupported top end overlaps an edge of said supported top; and a facing plate secured to said hanger between said

6

tops and adapted to bear against the bottom edge of said unsupported top end and the top edge of said supported top.

5. In a metal furniture assembly the combination comprising: a supported metal top and a top with an unsupported free end, said tops being vertically offset from each other and having rigid depending side aprons; clamp means for locking said free end to said supported top, said clamp means including mounting brackets secured to the underside of said unsupported top end adjacent its apron; a hanger plate secured at one end to said brackets and having another end extending beyond the level of said supported top; said other end having a channel adapted to receive said apron of said supported top; and means for securing said apron of said supported top in said channel whereby said unsupported top end overlaps an edge of said supported top; and a facing plate secured to said hanger between said tops and adapted to bear against the bottom edge of said unsupported top end and the top edge of said supported top.

6. In a metal furniture assembly the combination comprising: a supported metal top and a top with an unsupported free end, said tops being vertically offset from each other and having rigid depending side aprons; clamp means for locking said free end to said supported top, said clamp means including mounting brackets secured to the underside of said unsupported top end adjacent its apron; an L-shaped hanger plate having a web secured to said brackets and depending therefrom and having a foot portion forming a channel receiving the apron of said supported top; a lip extending inwardly from the upper portion of said hanger and adapted to bear against the understructure of said unsupported top; a flange extending outwardly from the upper portion of said hanger plate and seated upon wrapped under portions of the apron of said unsupported top; and means for securing said apron of said supported top in said channel.

7. In a metal furniture assembly the combination comprising: a supported metal top and a top with an unsupported free end, said tops being vertically offset from each other and having rigid depending side aprons; clamp means for locking said free end to said supported top, said clamp means including mounting brackets secured to the underside of said unsupported top end adjacent its apron; an L-shaped hanger plate having a web secured to said brackets and depending therefrom and having a foot portion forming a channel adapted to receive the apron of said supported top; a lip extending inwardly from the upper portion of said hanger and bearing against the understructure of said unsupported top; a flange extending outwardly from the upper portion of said hanger plate and seated upon wrapped under portions of the apron of said unsupported top; and means for securing said apron of said supported top in said channel whereby said unsupported top end overlaps an edge of said supported top; and a facing plate secured to said hanger between said tops bearing against the bottom edge of said unsupported top end and the top edge of said supported top.

8. In a metal furniture assembly the combination comprising: a supported metal top and a top with unsupported free end having a drawer underneath, said tops being vertically offset from each other and having rigid depending side aprons; clamp means for locking said free end to said supported top, said clamp means including mounting brackets secured to the underside of said unsupported top end adjacent its apron; a hanger plate secured at one end to said brackets and having another end depending downwardly from said bracket below the level of said support top; said other end having a channel receiving said apron of said supported top; means for securing said apron of said supported top in said channel whereby the weight of said unsupported top end is transmitted by said clamp means to said supported top; and a frame extending inwardly from said hanger plate and

having a track slidably supporting one edge of said drawer.

References Cited in the file of this patent

UNITED STATES PATENTS

854,667 Paulson ----- May 21, 1907
1,110,948 Langdon ----- Sept. 15, 1914

1,412,788

2,701,659

1,741,904

2,158,467

2,223,557

2,759,779

5

Lehman ----- Apr. 11, 1922
Bechtel ----- Feb. 12, 1929
Aurutik ----- Dec. 31, 1929
Madsen ----- May 16, 1939
Doyle ----- Dec. 3, 1940
Bergman ----- Aug. 21, 1956