May 12, 1970 G. C. HILFINGER ET AL 3,511,550

KNOCK-DOWN DRAWER CONSTRUCTION

Filed Oct. 4, 1968 2 Sheets-Sheet 1

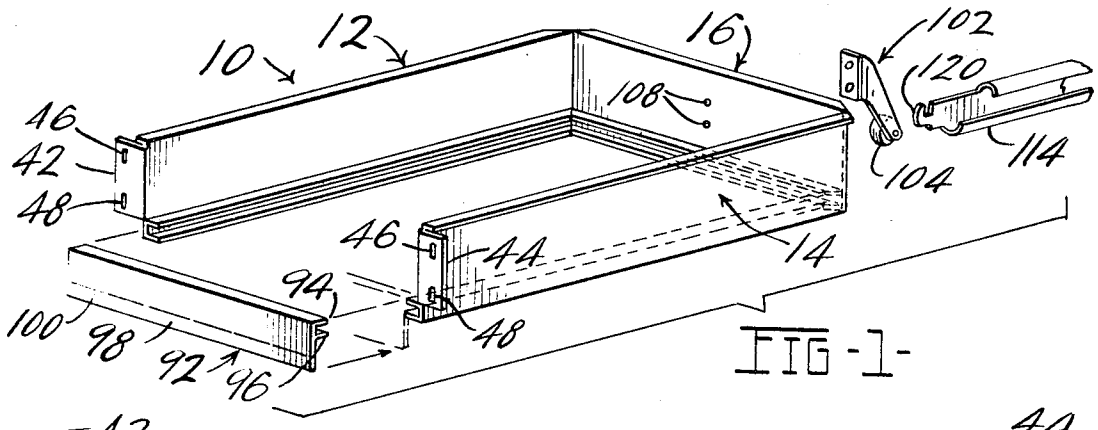


FIG-1-

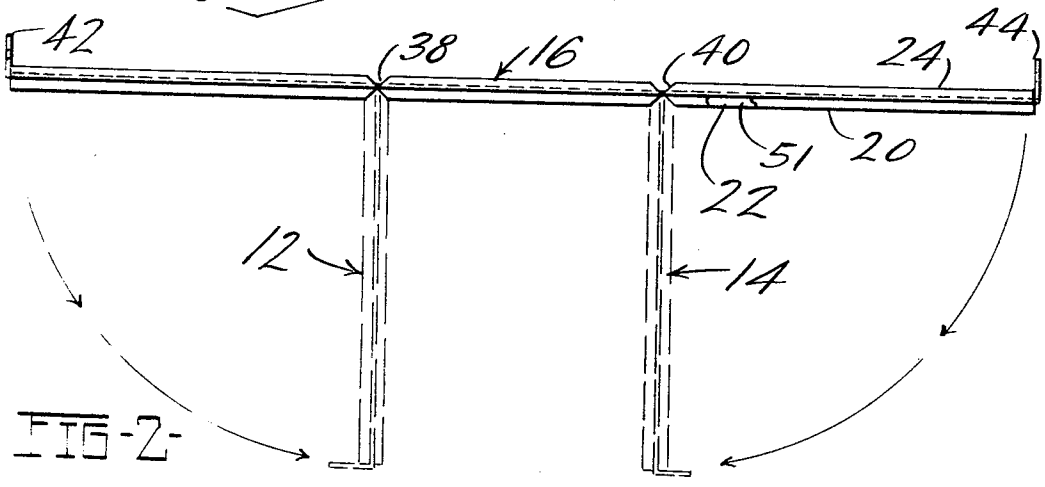


FIG-2-

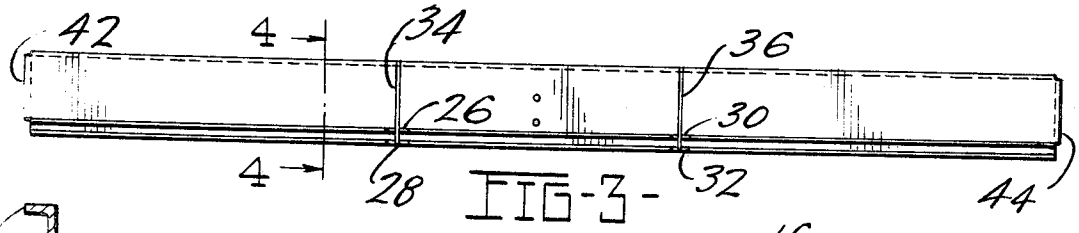


FIG-3-

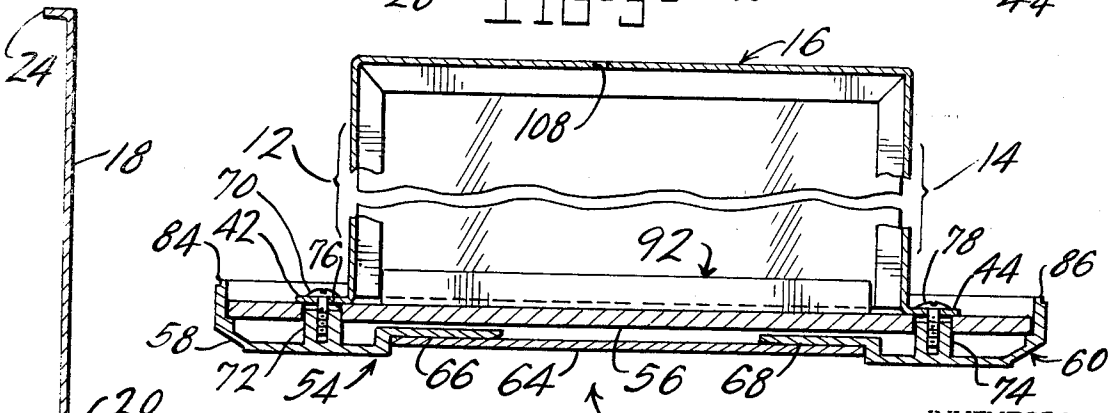


FIG-5-

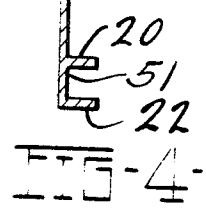


FIG-4-

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KNOCK-DOWN DRAWER CONSTRUCTION

Filed Oct. 4, 1968 2 Sheets-Sheet 2

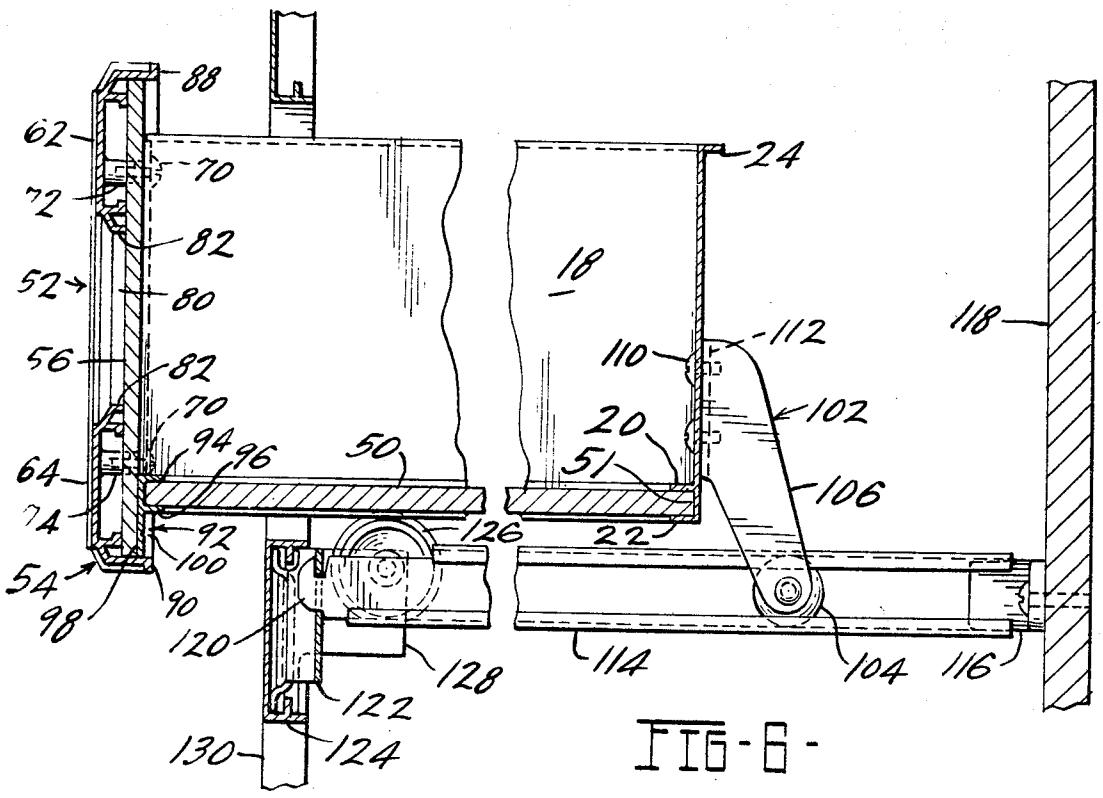


FIG-6-

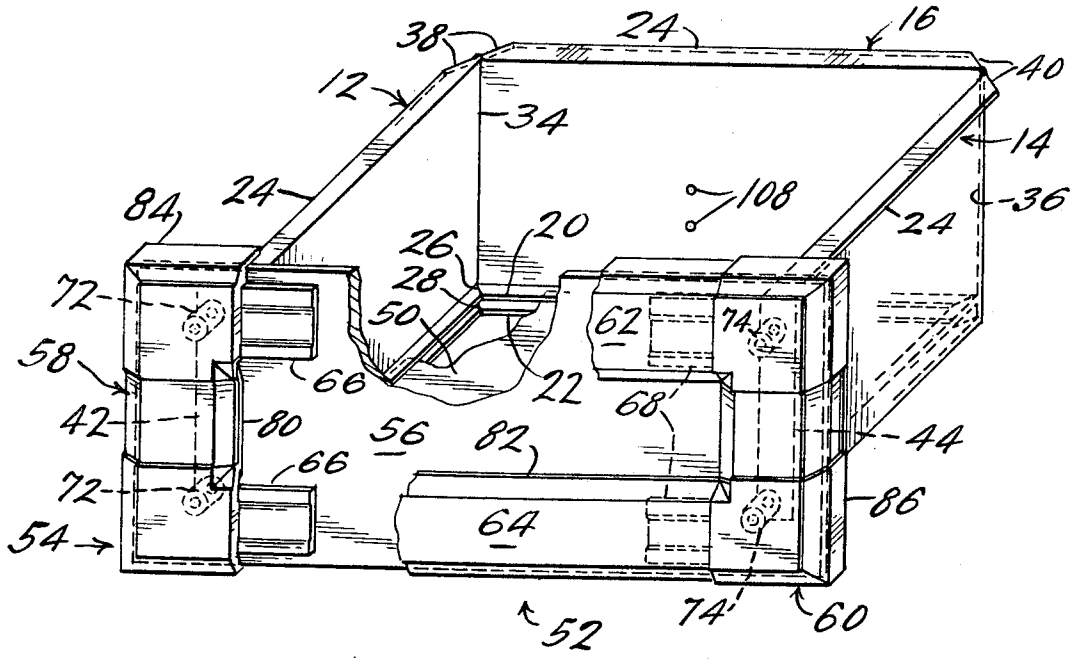


FIG-7-

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KNOCK-DOWN DRAWER CONSTRUCTION

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Continuation-in-part of application Ser. No. 622,495, Mar. 13, 1967. This application Oct. 4, 1968, Ser. No. 765,096

Int. Cl. A47b *88/00*; A65d *9/32*

U.S. Cl. 312—330 10 Claims

ABSTRACT OF THE DISCLOSURE

This invention relates to a drawer construction primarily intended for use with kitchen cabinets and the like. The drawer has a one-piece extruded strip forming the back and sides of the drawer body with a separate central bottom panel engaged with grooves in the lower portion of the strip. The strip also has an outwardly-extending stiffening flange at the upper edge to provide maximum rigidity with minimum thickness for the drawer. The drawer front has a central panel with a metal frame which extends rearwardly beyond the panel and cooperates with a separate lower supporting member which engages and supports the front edge of the drawer bottom. The drawer construction enables the drawer components to be shipped in a flat, knocked-down condition and then to be capable of quick and easy assembly with a minimum of skill.

This application is a continuation-in-part of our co-pending application, Ser. No. 622,495 filed Mar. 13, 1967, now Pat. No. 3,416,850.

This invention relates to a drawer construction and particularly to a drawer construction of a knock-down type.

The drawer in accordance with the present construction is durable yet inexpensive and can be stored and shipped to the consumer in a knocked-down, flat condition. The drawer can be easily constructed, however, by the consumer with a minimum amount of time and skill required. The new drawer includes an extruded metal strip having score or bend lines thereon to facilitate bending of the strip to form sides and an integral back for the drawer body. A separate drawer bottom is then assembled with flanges of the strip, and ends of the drawer sides are fastened to the back of a drawer front to complete the assembly. The drawer front consists of a metal frame with a separate central panel which is particularly effective in matching doors of kitchen cabinets with which the drawers can be employed. As such, the assemblage is particularly effective for kitchens. A separate front edge support for the drawer bottom also can be employed without requiring any additional fasteners or other assembly steps.

The metal frame of the front panel can be either of a one-piece die-cast construction, a four-piece construction consisting of two end die-cast members and two upper and lower extruded frame members, or an eight-piece construction consisting of four die-cast corner members and four extruded frame members. All of these provide a durable drawer and which is used primarily depends upon the number of units to be manufactured and sold. The eight-piece construction is more suitable for smaller quantities and the one-piece construction is preferred for larger quantities wherein die costs can be adequately amortized. Since most drawers are of a single height or two heights at the most, the four-piece construction with the two die-cast end frame members is particularly advantageous since the one die casting will

accommodate most drawer fronts and the extruded upper and lower frame members can be cut to any desired length.

In summary, the invention consists of a drawer construction having sides and a back integrally formed from a single extruded strip. The strip has lower flanges forming an inwardly-facing groove and an upper stiffening flange projecting outwardly. The drawer front includes a frame which preferably consists of four pieces, with a central, separate panel. A front drawer bottom support engages the front edge of the drawer bottom and supports it through the metal frame of the drawer front.

It is, therefore, a principal object of the invention to provide a unique drawer construction having the features and advantages outlined above.

Other objects and advantages of the invention will be apparent from the following detailed description of a preferred embodiment thereof, reference being made to the accompanying drawings, in which:

FIG. 1 is an exploded view in perspective of part of a drawer body embodying the invention;

FIG. 2 is a plan view of an extruded strip used to form the sides and back of the drawer, when bent to the position shown in dotted lines;

FIG. 3 is a view in elevation of the strip of FIG. 2;

FIG. 4 is an enlarged view in cross section taken along the line 4—4 of FIG. 3;

FIG. 5 is a fragmentary view in horizontal cross section of an assembled drawer embodying the invention;

FIG. 6 is a fragmentary view in vertical cross section of the drawer of FIG. 5, and showing a portion of a frame with which the drawer can be used; and

FIG. 7 is a view in perspective, with parts broken away and with parts in section, of the drawer.

Referring particularly to FIGS. 1–4, an extruded metal strip **10** is employed to form sides **12** and **14** and an integral back **16** of a body of the drawer. The strip **10** is of uniform cross section throughout most of its length and includes a main panel **18**, a pair of inwardly-extending lower flanges **20** and **22** spaced apart a predetermined distance, and an upper, outwardly-extending stiffening flange **24**. As shown in FIGS. 2 and 3, the lower flanges **20** and **22** are cut to form V-shaped notches **26** and **28** as well as notches **30** and **32**, with the two pair of notches being symmetrically spaced from the ends of the strip and spaced from each other a distance equal to the length of the drawer back **16**. The panel **18**, at the positions of the two pair of notches, is machined to form shallow grooves or score lines **34** and **36** with the notches and score lines being aligned perpendicularly to the longitudinal extent of the strip **10**. The stiffening flange **24**, extending in the opposite direction from the lower flanges, also is cut to form V-shaped notches **38** and **40**, as shown in FIG. 2, in alignment with the other notches and score lines. The three notches and score lines in each of the two positions facilitate bending of the outer portions of the strips **12** to positions perpendicular to the intermediate portion, as shown in dotted lines in FIG. 2, to form the sides **12** and **14** and the back **16** of FIG. 1.

In the manufacture of the strip **10**, and portions are shaped into end flanges **42** and **44** bent outwardly from the plane of the panels **18**. To accomplish this, the ends of the lower flanges **20** and **22** are removed for a distance equal to the width of the flanges **42** and **44** and the ends of the stiffening flanges **24** are similarly removed. The remaining portions of the panel are then bent perpendicularly to the plane of the main panel **18** to form the flanges **42** and **44**. The flanges **42** and **44** have elongate upper and lower openings **46** and **48** therein for attachment to a drawer front to be discussed subsequently.

After the strip **10** is bent to form the sides **12** and **14** and the back **16**, as shown in FIG. 1, a drawer bottom

50 (FIGS. 5–7) is slid into grooves or channels 51 formed by the lower flanges 20 and 22. The distance between the flanges 20 and 22 is preferably slightly in excess of the thickness of the drawer bottom 50 to enable the drawer bottom to slide into place and yet be held snugly relative to the strip 10. The drawer bottom can be made of hardboard or plywood with a suitable protective and decorative upper sheet thereon, if desired. With the bottom 50 in position in the grooves, a front edge thereof lies substantially in the plane of the end flanges 42 and 44, although it can be slightly recessed from the plane.

A drawer front indicated at 52 in FIGS. 5–7 is then assembled with the strip 10. The drawer front basically comprises a metal frame 54 and a central, separate panel 56 as disclosed in our co-pending application, Ser. No. 622,495. The metal frame 54 preferably includes two die-cast end frame members 58 and 60 which connect two upper (FIG. 6) and lower extruded frame members 62 and 64 by means of tongues 66 and 68 (FIG. 5), which are frictionally received in the ends of the extruded frame members. The panel 56 is clamped in place with respect to the frame by four fasteners or screws 70 which extend through the end flanges 42 and 44 and into bosses 72 and 74 in the end frame members 58 and 60. The panel 56 has openings 76 and 78 (FIG. 5) which are large enough to receive the ends of the bosses 72 and 74. Outer flat portions of the panel 56 are then held snugly against inner flanges 80 of the end frame members 58 and 60 and inner flanges 82 of the upper and lower frame members 62 and 64 by means of the end flanges 42 and 44 pressing against the back of the panel. With the panel in place, outer flanges 84 and 86 (FIG. 5) of the end frame members 58 and 60 and outer flanges 88 and 90 (FIG. 6) of the upper and lower extruded frame members 62 and 64 extend substantially to the rear surface of the panel 56 and preferably beyond, as shown in FIGS. 5 and 6.

With the above design, the outer flanges 84–90 of the metal frame 54 can abut the cabinet frame when the drawer is closed without the heads of the fasteners 70 hitting the frame. Also, the lower outer flange 90 of FIG. 6 provides a supporting shelf for a lower supporting strip 92 (FIGS. 1 and 6). The supporting strip includes a pair of flanges 94 and 96 which are spaced apart the same distance as the lower flanges 20 and 22 of the strip 10 and snugly engage the front edge of the drawer bottom panel 50. The supporting strip 92 further has a depending flange 98, the lower end of which rests on the lower frame flange 90 through which the front edge portion of the drawer bottom 50 is supported. This is particularly an advantageous feature of the invention for wider drawers. Further, the depending flange 98 has a break line or groove 100 extending longitudinally thereof at an intermediate portion to enable the lower extremity of the flange 98 to be broken away for shallower drawers, in which case the edge formed at the break line 100 rests on the flange 90 of the drawer front. The length of the supporting strip 92 preferably is equal to the length of the drawer back 16 less double the width of the flanges 20 and 22, in order to extend completely between the flanges and fully support the front edge of the drawer.

The drawer components, when shipped in knocked-down form, preferably also include components to support the drawer relative to a front frame of the cabinet. For this purpose, a tail wheel assembly 102 including a tail wheel 104 and a bracket 106 is fastened to the back 16 after the drawer is assembled. The back 16 can have pre-drilled openings 108 therein through which fasteners 110 are extended to hold a bracket flange 112 of the bracket 106.

The tail wheel 104 is carried in a C-shaped channel member or track 114 which extends parallel to the path of the drawer when being opened and closed, and is located therebelow. The rear end of the channel 114

can be supported by a plastic bracket 116 which is also included with the kit and which is fastened to a back wall 118 of the cabinet which could also be an existing wall of the kitchen located behind the cabinet, if the cabinet does not have a back of its own. The channel 114 has a front end hook 120 which is carried by a metal bracket 122 held by a cross frame member 124. A pair of side, flanged wheels 126 contact the lower flanges 22 of the sides 12 and 14 to support the drawer forwardly of the tail wheel 104. The flanged wheels 126 can be rotatably mounted on suitable brackets 128 which are then suitably affixed to the frame member 124 or to vertical frame members 130 for the cabinet. The front wheels 126 and brackets 128 can also be included in the drawer kit.

From the above, it will be seen that the drawer construction embodying the invention has many advantages. The drawer components can be shipped in a flat state and the drawer body easily formed to shape and assembled with the drawer bottom and the drawer front. The roller supporting assembly also can be installed relatively easily.

Many modifications of the above-described embodiment of the invention will be apparent to those skilled in the art, and it is understood that such modifications can be made without departing from the scope of the invention, the one embodiment being shown for illustrative purposes.

We claim:

1. A drawer comprising a strip of extruded material having a panel, a pair of inwardly-extending flanges at a lower edge thereof, which flanges are spaced apart a distance substantially equal to the thickness of a drawer bottom, said strip having an outwardly-extending flange at the upper edge thereof, said strip having bend line means spaced apart a distance substantially equal to the length of the drawer back, said bend means comprising notches in said lower flanges, a notch in the upper flange. and a shallow groove on the same side of the strip as said lower flanges extending over the width of said panel between said lower flanges and the upper edge, said notches and said groove lying on a substantially common line perpendicular to the longitudinal extent of said strip, said strip being bent along both of said bend means to perpendicular angles to form side walls and a back for said drawer, the ends of said strip having flanges extending perpendicularly to said strip and substantially the width thereof except for those portions of the strip at the upper and lower flanges, a drawer bottom having edges received between all of said inwardly-extending lower flanges, a drawer front, and fasteners extending through openings in said end flanges and engaged with said drawer front.

2. A drawer according to claim 1 characterized by said drawer front comprising a front panel and a separate frame extending therearound, said frame having means to receive said fasteners and hold said front panel between said end flanges and said frame.

3. A drawer according to claim 1 characterized by said end flanges of said strip extending outwardly away from one another and said openings of said end flanges being elongate in a vertical direction.

4. A drawer according to claim 1 characterized further by a separate supporting member engaging a front edge portion of said drawer bottom and in turn supported by said drawer front.

5. A drawer comprising two side walls and a rear wall, said walls having groove means at lower edge portions thereof, a drawer bottom received in said groove means, said drawer bottom having a length substantially equal to the lengths of said side walls and terminating substantially in the same plane as the ends of said side walls, a drawer front fastened to the ends of said side walls, said drawer front having lower flange means extending rearwardly beyond a plane through said side

wall ends, and means supported on said lower flange means extending rearwardly beyond a plane through said side wall ends, and means supported on said lower flange means and engageable with the front edge of said drawer bottom to provide support for said drawer bottom through said lower flange means.

6. A drawer according to claim 5 characterized by said support means having a groove receiving the front edge of said drawer bottom and having depending means engageable with said lower flange means.

7. A drawer comprising two side walls and an integral rear wall, a bottom, and a front, said front comprising a central panel having at least an outer flat portion of substantially uniform thickness extending around the entire periphery, a metal frame around said panel and separate from said panel, said frame comprising four frame members including two side frame members, an upper frame member, and a lower frame member, each of said frame members having means contacting said flat portion of said panel, and having an integral outer flange, and means fastening said side walls of said drawer to said front.

8. A drawer according to claim 7 characterized in that said two side frame members are of die-cast metal.

9. A drawer according to claim 7 characterized further by support means engaging a front edge of said drawer bottom and in turn supported by the outer integral flange of the lower frame member.

10. A drawer according to claim 7 characterized by said side walls being fastened to the metal frame of said front with said panel clamped therebetween.

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JAMES T. McCALL, Primary Examiner

U.S. Cl. X.R.

217—2

PO-1050
(5/69)

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,511,550 Dated May 12, 1970

Inventor(s) George C. Hilfinger, Xa D. Johnson

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In Column 2, line 60, change"and" to read -- end--;
In Column 5, claim 5, lines 2 through 4, delete the following:after "means": "extending rearwardly beyond a plane through said side wall ends, and means supported on said lower flange means".

SIGNED AND
SEALED
SEP 8 - 1970

(SEAL)
Attest:

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Commissioner of Patents