

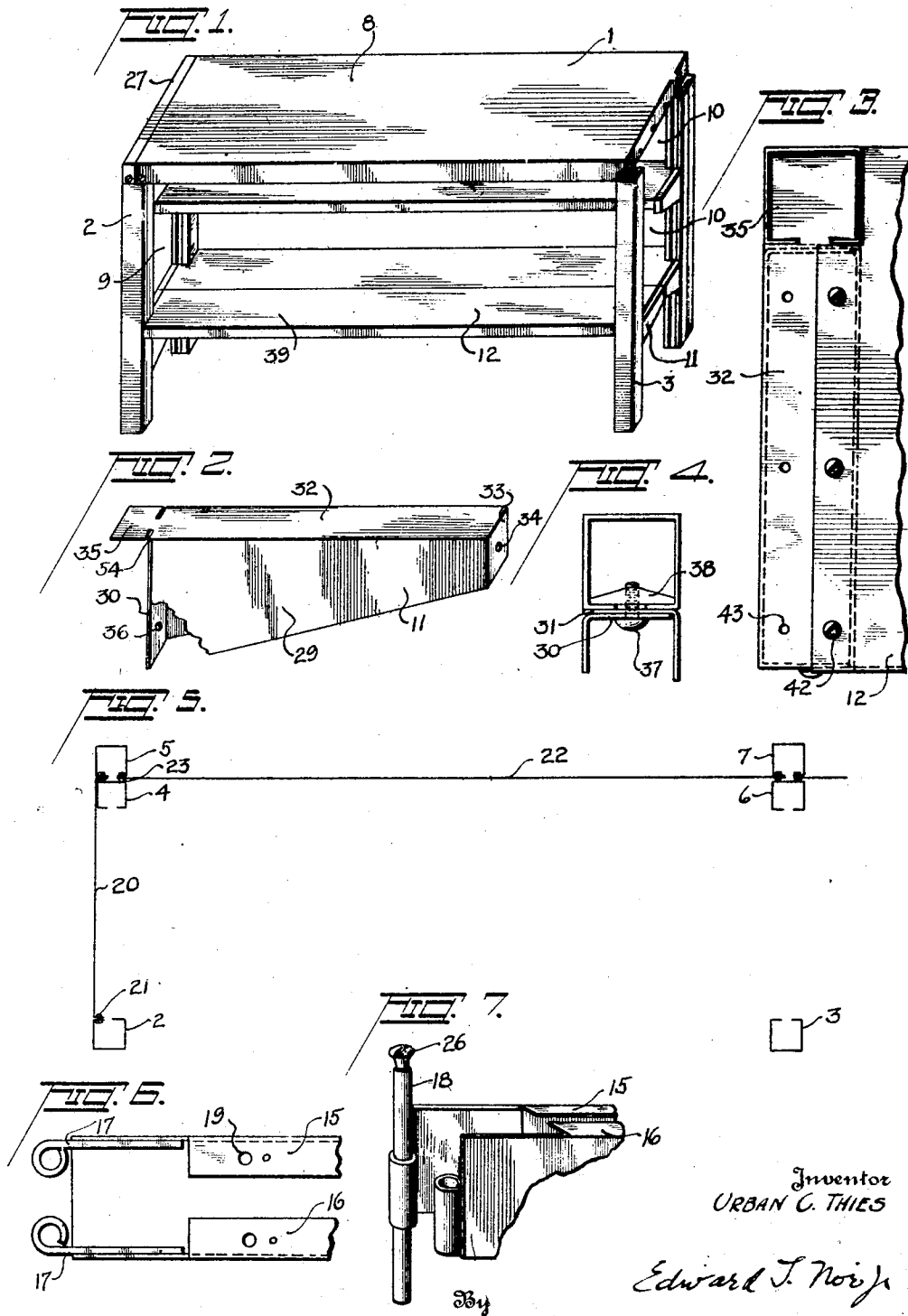
Sept. 22, 1931.

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1,824,243

KNOCK-DOWN FURNITURE STRUCTURE

Original Filed July 23, 1926 2 Sheets-Sheet 1



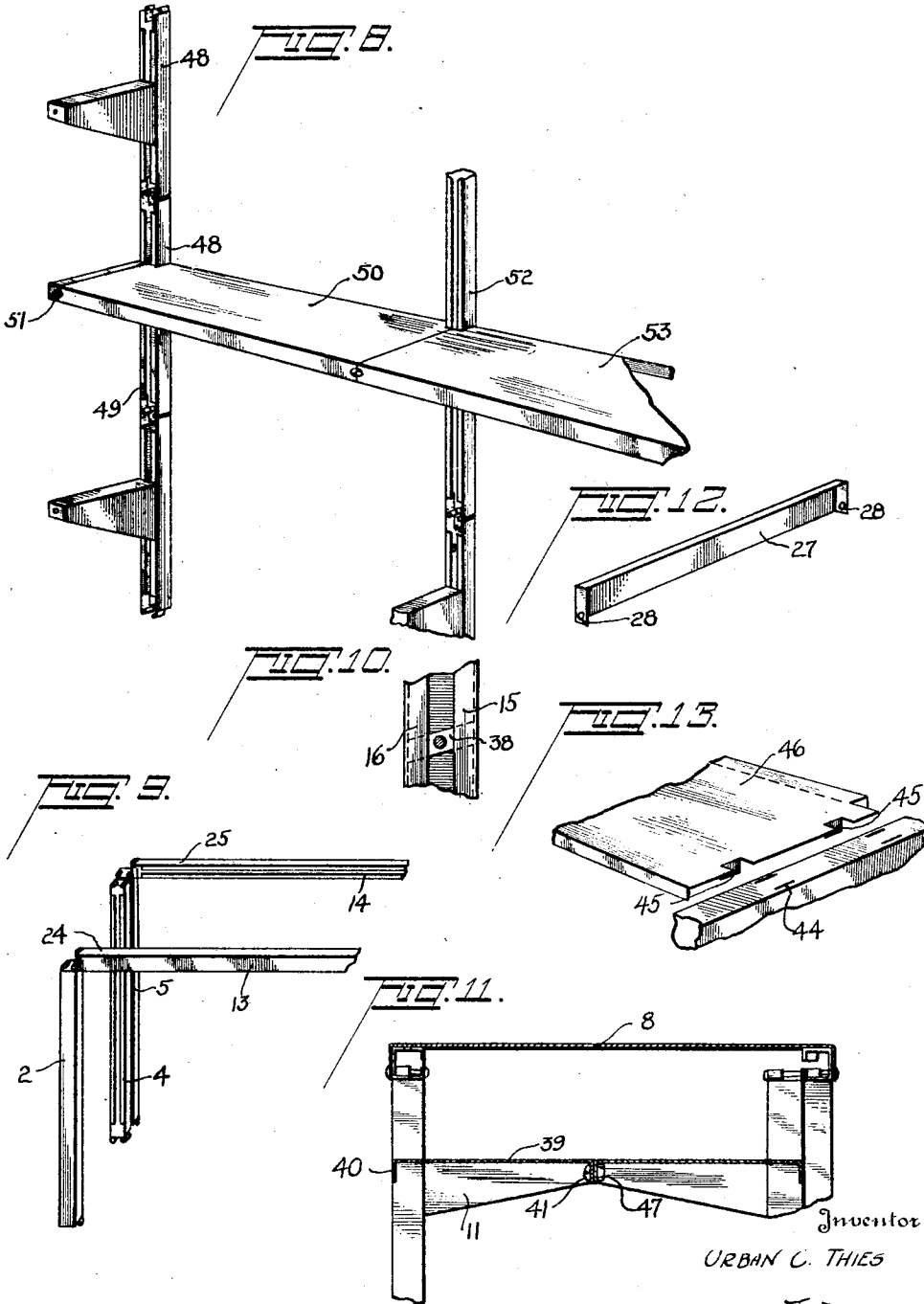
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KNOCK-DOWN FURNITURE STRUCTURE

Original Filed July 28, 1926 2 Sheets-Sheet 2



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KNOCK-DOWN FURNITURE STRUCTURE

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This invention relates to knock-down furniture such as shelving and counters and other articles of like nature.

unit showing one side of the same adapted to be attached to a similar unit.

Fig. 2 is a perspective view of a supporting bracket.

Fig. 3 is a plan view of a bracket and shelf end shown in plan.

Fig. 4 is a detail showing the manner in which the bracket is attached to a supporting unit.

Fig. 5 is a horizontal section in diagrammatic form showing the manner in which the plurality of counter units are assembled.

Fig. 6 is a side view of an end of one of the elongated sheet metal supporting units.

Fig. 7 is a perspective view of the unit end shown in Fig. 6.

Fig. 8 is a perspective view of a series of shelves and their supporting means.

Fig. 9 shows the legs and the transverse cross rails at the front and rear edges of the counter.

Fig. 10 is an elevational detail showing a bracket attaching nut positioned within a vertical supporting unit.

Fig. 11 is a transverse vertical section through the counter shown in Fig. 1.

Fig. 12 is a detail of a filling piece used at the end of a series of counter units.

Fig. 13 is a detail view of a modified form of attaching the shelves to the shelf brackets.

Referring more particularly to the drawings by reference numerals the counter 1 is shown as consisting essentially of two front legs 2 and 3; the two pairs of rear legs made up of the vertical units 4, 5, 6, and 7; horizontal top surface 8; side panel 9; rear panel 10; shelf brackets 11; shelves 12; and transverse cross rails 13 and 14. The members such as the legs and cross rails are constructed in accordance with my prior application for patent entitled "Partition units and construction", Serial No. 89347, filed February 19, 1926 on which this invention is an improvement. In the mentioned prior application the sheet metal supporting units have been described as consisting of a single sheet of metal bent into a hollow rectangular shape and provided on one side with a pair of inwardly extending flanges between which a space is provided. These flanges are indi-

The primary object of the invention is the provision of a knock-down structure provided with shelving which is supported by brackets in a manner permitting the ready extension or addition of other similar structural units.

A further object of the invention is the provision of a novel bracket or shelf support adapted to cooperate with supporting units so that the brackets may be readily positioned or disassembled. This bracket is made of a single piece of sheet metal stamped and bent so that one end of the same forms a projection which is insertible into the hollow sheet metal support to which it is fastened. The bracket has triangular sides which extend downwardly and abut against the sides of the supporting unit. The bracket thus provided is an integral cantilever support especially adapted to hold shelving, and may be used in the erection of shelving applied directly to the wall of a building, a series of shelves erected upon vertical supporting posts, or shelving in counters, tables, and other similar articles of furniture.

A further object of the invention is the provision of a knock-down and easily assembled counter, consisting essentially of leg units, shelving, and a top which are all preferably constructed of sheet metal and which may be assembled together in such a manner as to permit the addition of other similar counter units to extend the same. The legs of the counters consist of hollow elongated sheet metal units provided with means at their ends such as metal curl-plates, by which they may be attached to other similar ends of other similar units. These units make up the upper edges of the counter as well as the legs and form a support and attachment upon which the top, side, panels, and shelf supporting brackets are detachably fastened.

Further objects and advantages of my invention will be more fully set forth in the following description, in the claims, and in the drawings, in which:

Fig. 1 is a perspective view of a counter

cated in Figs. 6 and 7 at 15 and 16. The other three sides of the supporting unit are closed. Each end of the unit is provided with curl-plates 17 which are riveted to the sides of the unit. These curl-plates provide a pair of curls at each end of the unit, the curls being positioned opposite to each other and extending for a distance equal to or slightly less than one-half the width of the unit so that a curl of one unit may be aligned with a curl of another similar unit and the two units held in place by a through pin 18 extending through both curls. The two inwardly extending flanges 15 and 16 are provided with a series of attaching holes 19 which are arranged so that they are symmetrically spaced from the ends of the units as more fully set forth in the prior application already referred to.

The legs 2 and 3 have their open sides facing rearwardly and one end of the counter shown in Fig. 1 is closed by a sheet metal panel 20, the end of which is bent in and attached by attaching screws 21 to one of the flanges of the leg 2. The edges of the panel 20 are provided with a series of holes similarly spaced in a manner which corresponds to the spacing of the holes 19 in the leg units. The rear edge of the panel 20 is attached to a flange of the rear unit 5. The unit 5 and the unit 4 in front of it are both positioned with their open side facing forwardly. The legs at the right side of the counter are similar to those already described. The sheet metal panel 22 is attached to the second flange of the leg unit 5 and the inner flange of the unit 7. The heads of the bolts 23 which attach the panel 22 in place will space the units 4 and 5 and also the units 6 and 7 a slight distance apart.

The upper ends of the leg units 2 and 5 are attached to the ends of transversely extending front and rear units 24 and 25 by means of the curl-plates with which all of the units are provided. The pin 18 shown in Fig. 7 extends through the curls at the upper ends of the units 5, 4, and 25 so as to attach all of these units together. The ends of these pins are internally threaded so as to be engaged by screws 26, which extend through holes provided in the front and back corners of the sheet metal top or cover 8, and thus hold the top securely in place. Additional attaching holes are provided in the downwardly projecting sides of the top cover 8 so that two adjacent and abutting covers may be bolted directly together.

The left side of the counter unit is shown adapted for an end condition and is provided with the sheet metal panel 20 as previously indicated, the left part of the cover being finished by a cap piece 27 having attaching holes 28 to cooperate with screws and pins by which the cap piece is held in place. This cap piece has a transverse extent equal to one-

half of the width of a leg unit. The top or cover 8 extends to the middle of the leg units so that other units and their top covers may be added by the omission of the cap piece 27 and the panel 20 as shown at the right of Fig. 1. When a similar unit is to be added in place a second front cross rail is aligned with the rail 13 and another rail is placed in alignment with rear rail 14 and a second cover placed immediately adjacent to cover 8 and bolted thereto. When a counter unit is to be used alone both ends of the same are finished by means of panels and cap pieces 27. The ease with which these various pieces may be attached and disassembled permits the addition of other units in a very quick and easy manner.

The shelving 12 is supported by means of brackets. These brackets are stamped and bent from a single sheet of metal and are provided with the approximately triangular sides 29, the front portions of which are bent inward in overlapping arrangement as indicated at 30 and 31. The top horizontal portion 32 of the bracket is bent downwardly at the rear end as indicated at 33 where it is provided with a hole 34 for a shelf retaining or bracket connecting bolt. The front portion of the upper surface 32 projects forwardly at 35 and is shaped to fit within the interior of the leg units. For this purpose the top surface is slotted inwardly at 54 to an extent sufficient to receive the opposite flanges 15 and 16 of the leg units. The opposing slots are preferably very slightly inclined toward the center of the front of the bracket instead of extending directly toward each other so that the end 35 may be wedgingly held in place to a slight extent after the bracket has been inserted in a horizontal position, and then twisted through 90 degrees so that the sides 29 extend downwardly. The front faces 30 and 31 of the bracket are each provided with an attaching hole 36, which are aligned so that the bracket may be held rigidly in place by a screw bolt 37 engageable with and threaded into a transversely elongated nut 38. This nut 38 has a width which permits its insertion into the interior of the supporting unit through the space between the flanges 15 and 16. The nut is then turned until its edges engage the sides of the supporting unit. The ends of the nut are cut at such an angle as shown in Fig. 10 that the complete rotation of the nut is prevented. It will thus be apparent that the bracket is adjustably attached to the vertically extending supporting units or legs, by means of the attaching screw and the manner in which the extension 35 fits within the hollow supporting units.

These brackets are applied to the leg units 2, 4, 3, and 6 and any suitable number of brackets and shelves may be used. Fig. 1 shows a single shelf at the rear upper part of

the counter and a pair of lower shelves which extend centrally toward each other. The shelf itself designated 39 is cut away at two opposite corners of one side for the reception of the leg units as shown. Opposite front and rear downwardly extending flanges or projections 40 and 41 are provided to rigidify the shelf and to give a neat appearance. The total length of this shelf is such that the ends of the shelf coincide with the centers of the shelf brackets. When additional counter units are to be applied to the counter shown in Fig. 1 the same shelf brackets are used for the support of additional shelves since these shelves extend only to the centers of the brackets. The shelves are applied or attached by attaching screws 42 extending through attaching holes in the ends of the shelves and similar attaching holes 43 in the top surface of the brackets, as shown in Fig. 3. In an alternate arrangement slots 44 in the upper surface of the brackets are arranged to cooperate and receive downwardly extending lugs or ears 45 in the ends of the shelf 46 indicated in the modified form shown in Fig. 13.

The upper shelf of the counter is supported by the cantilever brackets as shown. The lower shelf formed of two adjacent aligned sections is rigidly united by means of attaching bolts 47 which extend through the holes 34 in the ends of the cantilever brackets 11, and through other holes provided in the ends of the downwardly projecting flanges of the shelves.

The same vertical supporting members which are used in the construction of counters may be used in the construction of the shelving where the shelving is to be arranged merely as a vertical series of individual or double row of shelves. Fig. 8 shows a vertical shelf supporting member composed of individual units designated 48, which are attached together by means of their end curl-plates through which a screw extends as a connecting means which mounts the units in position on the wall. The left end vertical support indicated generally 49 is representative of an end condition and shows the shelf 50 extending to the center of the shelf supporting cantilever bracket 51. As many brackets are used as may be desired and the shelving may be continued to the right as far as is necessary by the addition of other vertical shelf supporting units such as 52 and other supporting brackets and shelves therefor. The two shelves 50 and 53 abut together at their ends at the center of the shelf supporting bracket on which they are mounted and may be held in place either by the slot and lug connection shown in Fig. 13 or by the provision of screws and screw holes as indicated in Fig. 3. The brackets are mounted in the same manner and are made similar to those previously described.

It will thus be apparent that the bracket

may cooperate with the vertical bracket supporting members in a number of different ways and in a manner which permits the easy and quick addition of other units such as other shelves and other counters. It will be apparent that other various uses may be made of my invention and that various modifications and changes may be made without parting from the spirit or scope thereof.

What I claim is:—

1. A knock-down sheet metal structure of the class described comprising a plurality of vertical spaced support members, cantilever sheet metal brackets adjustably secured to said support members and having ends fitting within said members, sheet metal shelves supported on the upper sides of said brackets with the two ends of adjacent shelves at substantially the center of a common bracket, means for detachably fastening said shelves to said brackets, and a fastening screw extending through each of said brackets to clamp said brackets in any position along said members.

2. In a sheet metal structure of the class described, the combination of an elongated hollow sheet metal member having one side open along its center and having flat inwardly extending flanges along said side, and a supporting bracket having a flat face engageable with said side of said member, said bracket having a projecting end fitting within said member and bearing against the flanges of said member, and means to connect said bracket to said member in any position along said member.

3. In a sheet metal structure of the class described, the combination of an elongated hollow sheet metal member having one side open along its center and having inwardly extending flanges along said side, and a supporting bracket having a face engageable with said side of said member, said bracket having a projecting end fitting within said member and bearing on opposite sides of said flange, said projecting end being removable between said flanges and means to connect said bracket to said member in any position along said member, said means comprising a nut bearing on the inner sides of said flanges and a bolt passing through the face of said bracket and engageable with said nut.

4. A sheet metal bracket adapted to be detachably fastened to a hollow bracket support comprising a sheet of metal bent so as to have downwardly extending substantially triangular sides and a rectangular upper face, and a continuation aligned with said face at one end thereof adapted to fit within said bracket support.

5. A sheet metal bracket adapted to be detachably fastened to a hollow bracket support comprising a sheet of metal bent so as to have downwardly extending substantially triangular sides and a rectangular upper face,

and a continuation aligned with said face at one end thereof adapted to fit within said bracket support, said continuation being thin so as to be inserted into said bracket support and then rotated substantially 90 degrees while engaging a side of said support.

6. A sheet metal bracket adapted to be detachably fastened to a hollow bracket support comprising a sheet of metal bent so as to have downwardly extending substantially triangular sides and a rectangular upper face, and a continuation aligned with said face at one end thereof adapted to fit within said bracket support, said continuation being thin so as to be inserted into said bracket support and then rotated substantially 90 degrees while engaging a side of said support, and having opposed slots between the said continuation and the rectangular upper face, placed substantially in the same plane as the adjacent edges of the said triangular sides so that the said edges of the sides may be placed in contact with the bracket support, said bracket having an attaching bolt hole by which it may be clamped to the bracket support.

7. In a sheet metal structure of the class described, the combination of a sheet metal member having a side open along its center and having inwardly extending flanges along said side, and a supporting bracket having a face engageable with said side of said member, said bracket having a projecting end fitting within said member and having opposed slots to receive said flanges, said bracket having a substantially horizontal top surface having provisions for the attachment of shelves, and means to connect said bracket to said member in any position along said member.

8. In a sheet structure of the class described, the combination of elongated members having one side open along its center and having inwardly extending flanges along said side, and a supporting bracket having a face engageable with said side of said member, said bracket having a thin and wide projecting end fitting within said member and bearing on the inner sides of said flanges, and means to connect said bracket to said member in any position along said member, said bracket having a flat depending side engageable with said flanges and having a shelf supporting surface located slightly more than 90 degrees away from said depending side.

9. A sheet metal bracket adapted to be detachably fastened to a bracket support comprising an integral sheet of metal bent so as to have downwardly extending substantially triangular sides, a rectangular upper face, a continuation aligned with said face at one end thereof, opposed slots extending inwardly between said continuation and said upper face, a downwardly extending end

joining the small ends of said sides and the end of the upper face, and inwardly extending adjacent sides below said slots and adapted to engage said bracket support.

10. A sheet metal bracket adapted to be detachably connected to a pair of adjacent metal strips, comprising a surface extending angularly from the said strips, a bracing surface extending angularly from said strips and from said surface, and a continuation of said surface partially separated therefrom by a pair of inwardly extending slots in which the said strips are adapted to be held.

11. A sheet metal bracket adapted to be detachably fastened to a pair of adjacent metal strips which lie in the same plane, comprising a surface extending substantially at right angles from said strips, a bracing surface extending substantially at right angles from said strips and from said surface, and an extension strip extending in the same direction as said surface, and partially separated from said surface by a pair of inwardly extending slots in which the said strips are adapted to be held.

12. A sheet metal bracket adapted to be detachably fastened to a pair of adjacent metal strips which lie in the same plane, comprising a surface extending substantially at right angles from said strips, a bracing surface extending substantially at right angles from said strips and from said surface, and an extension strip extending in the same direction as said surface, and partially separated from said surface by a pair of inwardly extending slots in which the said strips are adapted to be held, said slots being inclined toward each other and toward the outer end of said extension strip and having a width substantially equal to the thickness of said first named strips so as to bend the strips slightly when the bracket is attached thereto, and means for adjustably fastening said bracing surface to said first named strips.

In testimony whereof I have hereunto set my hand this 27th day of July, 1926.

URBAN C. THIES.