April 28, 1970 A. GOLDSTEIN ET AL 3,508,665

ONE-PIECE SHEET METAL SHELF

Filed Aug. 28, 1968 2 Sheets-Sheet 1

FIG. 1

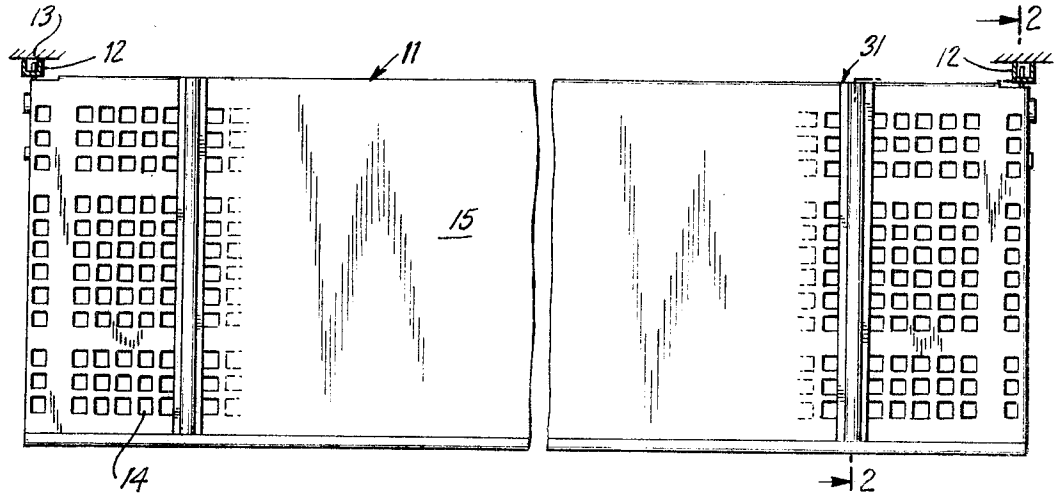
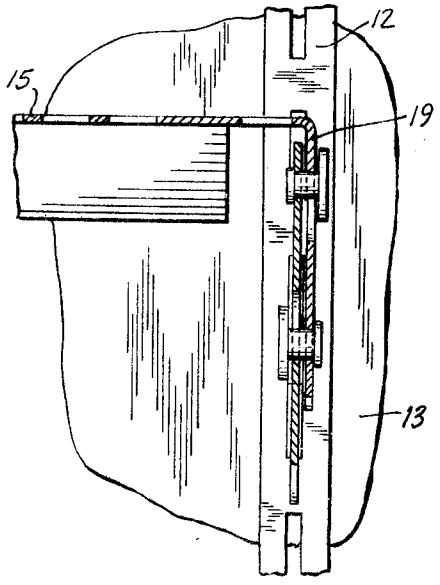


FIG. 3



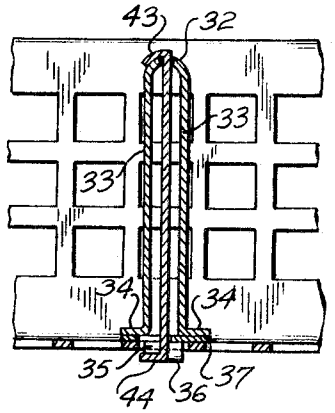


FIG. 4

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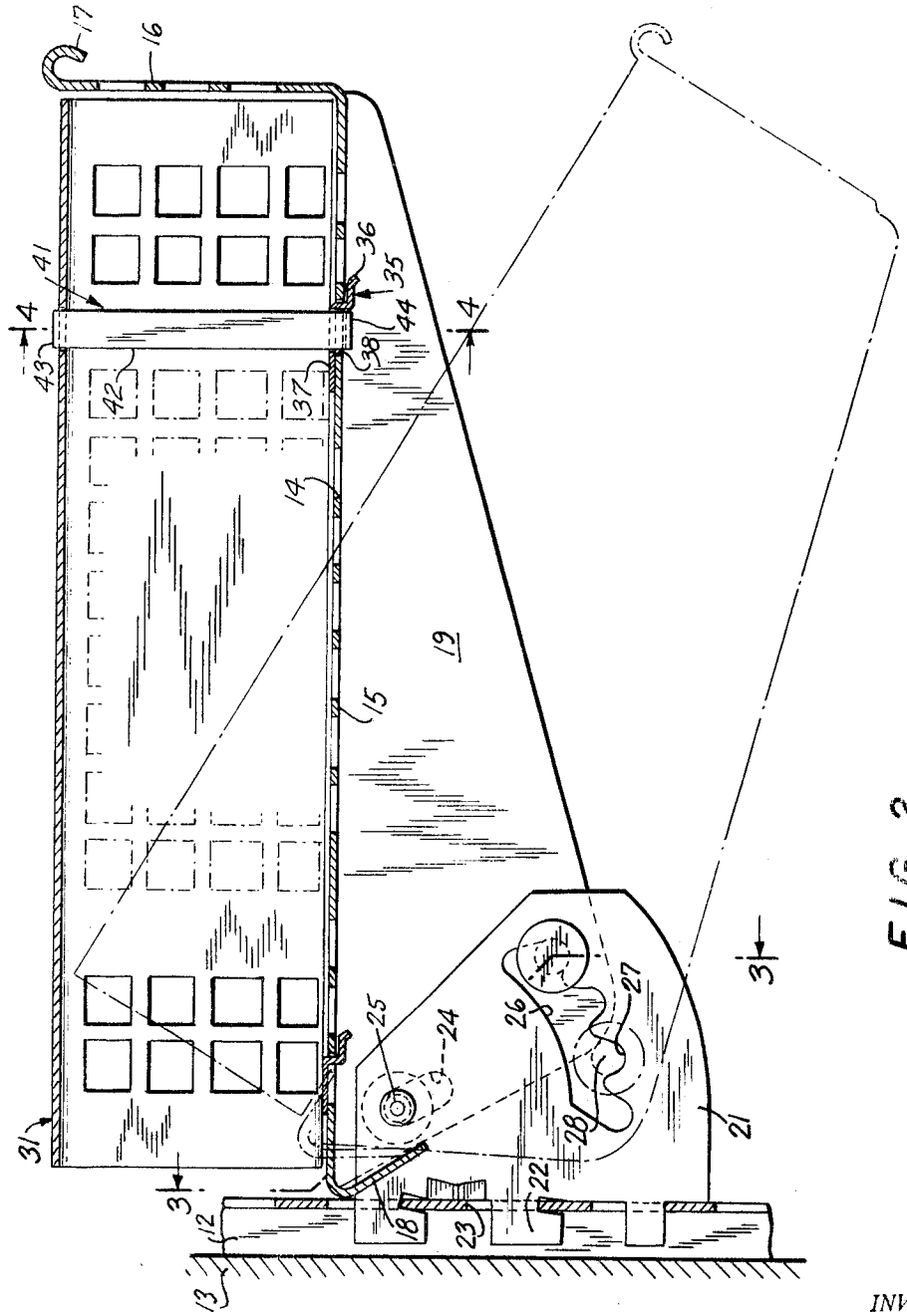

FIG. 2

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ONE-PIECE SHEET METAL SHELF

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ABSTRACT OF THE DISCLOSURE

A shelf formed of a single sheet with various portions of the shelf so arranged that the shelf has substantial structural rigidity when supported at the ends thereof. The shelf can be divided by means of removable dividers which are locked in place when in position.

BACKGROUND OF THE INVENTION

This invention relates generally to shelves and dividers of the type used to display merchandise for point of purchase sale. The shelves can be secured to wall standards or island frames and the shelves are generally movable so that various display arrangements can be created. While the shelves must have considerable rigidity in order to support heavy merchandise, it is also desirable that it have a light and airy feeling so that the principal display will be the merchandise and not the shelf. Since the shelves, at various times, are used for displaying different merchandise, the shelves should also be sufficiently versatile to accommodate and separate a variety of merchandise and dividers are useful for this purpose.

SUMMARY OF THE INVENTION

Generally speaking, in accordance with the invention, a metal shelf is fabricated of one piece construction and includes reinforcing portions at all sides which are so designed as to impart structural rigidity without detracting from the light and airy appearance. With the one piece construction, the cost of the shelf is substantially reduced. The surface of the shelf is perforated and removable dividers can be selectively and randomly mounted thereon in engagement with the perforations and means are provided to secure the dividers in position to prevent inadvertent removal.

Accordingly, it is an object of this invention to provide a shelf of improved construction.

Another object of this invention is to provide a sheet metal shelf of one piece construction that incorporates reinforcement at all sides while being supported at the ends thereof.

A further object of the invention is to provide a perforated shelf with an improved removable divider.

Still another object of the invention is to provide a removable divider for a shelf which locks to the shelf to prevent inadventent removal thereof.

Still other objects and advantages of the invention will in part be obvious and will in part be apparent from the specification.

The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the invention will be indicated in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

For a fuller understanding of the invention, reference is had to the following description taken in connection with the accompanying drawings, in which:

FIG. 1 is a top plan view of a shelf and divider constructed in accordance with a preferred embodiment of the instant invention;

FIG. 2 is a sectional view taken along line 2—2 of FIG. 1;

FIG. 3 is a partial sectional view taken along line 3—3 of FIG. 2; and

FIG. 4 is a sectional view taken along line 4—4 of FIG. 2.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, a shelf **11** is supported by any suitable means such as standards **12** which may be secured to a wall **13**. The shelf is sheet metal and is preferably provided with a plurality of perforations **14** which are preferably positioned in a geometric orientation. The base **15** of the shelf is generally flat and the front wall **16** extends upwardly at a preferred angle of substantially 90°. The top edge of front wall **16** is preferably a rolled edge **17** which finishes off the edge and also adds to structural rigidity. At the rear edge of the shelf, a rear flange **18** extends downwardly at an angle of less than 90° to strengthen and render rigid the rear edge of the shelf. Each side edge of the shelf is provided with a side flange **19** which extends downwardly at substantially 90° from base **15**. Side flanges **19** may taper as shown in FIG. 2 to be of lesser width at the front edge of the shelf than at the rear edge.

Each of the four edges of the shelf includes an integrally formed flange or side which reinforces the base to such an extent that additional reinforcing members are not necessary. In order for the shelf to operate satisfactorily, each edge must be provided with an integral flange so that maximum strengthening will be accomplished by the four flanges. The side and rear flanges extend below the base with the rear flange defining an angle of less than 90° while the front flange preferably extends upwardly to accomplish the purpose of also providing a front for the shelf.

In mounting the shelf to standards **12**, a plate is secured to each side flange **19** and includes any suitable type of hook **22** which will engage in the slots **23** in standard **12**.

In the embodiment disclosed, the shelf may be tilted to several positions. A slot **24** in side flange **19** receives a headed pin **25** secured to plate **21**. A slot **26** having several detent positions **27** is provided in plate **21**. Slot **26** lies on a radius with respect to the center of pin **25**. A headed pin **28** is secured to side flange **19**. With such arrangement, the position of side flange **19** and thus the entire shelf with respect to each plate **21** may be adjusted and a tilted position of the shelf is shown in phantom in FIG. 2.

While the construction of the shelf, per se, appears relatively simple, the utilization of the four flanges or sides located along the four side edges permits of a rigid construction formed from a single sheet. If tilting of the shelf were not desired, hooks **22** could be formed as part of side flanges **19**.

In order to increase the usefulness of this shelf a plurality of dividers **31** are provided which engage in the perforations **14** on the base of the shelf. Divider **31** is an elongated element having a substantially U-shaped cross sectional configuration as shown in FIG. 4. The base **32** of the U forms the top of the divider and is smooth and attractive while the legs **33** of the U form the divider walls. The outer ends of legs **33** are turned outwardly to form flanges **34** and secured at spaced intervals to flanges **34** are clips **35**. Each clip has a hook end **36** extending therefrom for engagement with the bottom surface of the base **15** of the shelf. In the embodiment shown in FIG. 2, two clips **35** are provided and divider **31** is randomly positioned on the shelf by in-

serting hook ends 36 through selected perforations 14 and sliding the divider in a forward direction to cause the hook ends to engage under the shelf.

A locking device indicated generally at 41 passes through one of perforations 14 to limit the reverse movement of the divider to prevent the divider from being unhooked. The locking device is in the form of an elongated plate 42 extending upwardly between the legs 33 of the divider. Plate 42 extends through the base of the U 32 which defines the top of the divider and has a bent over lip 43 which prevents the freely movable plate from dropping down through the divider. Plate 42 extends below the divider and is provided with a lip 44 which will engage beneath one of flanges 34 to prevent plate 42 from being pulled out of the divider.

As shown in FIG. 2, plate 42 and clip 35 substantially completely fill the width of a perforation 14 to thereby prevent movement of the divider. With the orientation shown in FIG. 2, divider 31 must be moved toward the left in order to disconnect the divider. Such movement is prohibited by engagement of the left edge of plate 42 with the edge of perforation 14 through which it extends and thus the divider is locked in position.

In order to move the divider, lip 43 is physically grasped and the plate is thereby lifted to pull the plate out of the perforation so that the divider may be moved toward the left to unhook clips 35 from beneath the base of the shelf.

When positioning the divider on the shelf, the weight of plate 42 will normally cause it to project downwardly below the divider as limited by clip 43. When clips 35 are threaded into the perforations, plate 42 will be positioned over a solid portion of base 15 which will push plate 42 upwardly. When the divider is moved forwardly, to the right as shown in FIG. 2, to move the clips beneath base 15, plate 42 will drop through perforation 14 into the locking position. In the embodiment shown, only one locking device 41 is provided but several locking devices can be used, if desired. Also, the locking device need not be adjacent one of the clips so long as it is positioned to pass through one of the perforations when the clips are engaged under base 15.

With the divider in place, flanges 34 do not rest directly on the base of the shelf as is clear from FIG. 4. Clips 35 include a flat portion 37 from which hook end 36 extends and through which the clips are secured to the flanges, as by means of welding. Flat portions 37 overlie base 15 of the shelf. The flat portion 37 through which plate 42 extends in the disclosed embodiment is provided with an opening 38 sufficiently large to receive plate 42 and lip 44 so that the plate and lip may be withdrawn completely during insertion and removal of the divider.

The dividers disclosed herein are shown extending transverse to the length of the shelf. It will be understood that the dividers could also extend parallel to the longitudinal axis of the shelf and any number of dividers can be provided in order to divide the shelf as desired to receive merchandise.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above construction without departing from the spirit and scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

What is claimed is:

1. In combination, a sheet metal shelf and at least one removable divider, said shelf comprising a base, perforations in said base, a front wall, a rear flange extending at an angle to said base, depending side flanges and means on said flanges for connecting said shelf to a shelf support, said base, front wall, rear flange and side flanges being formed of a single piece of material without additional reinforcements, said connecting means being the sole means for connecting and supporting said shelf on said shelf support, said divider comprising an upstanding portion having a bottom edge, clip means secured to said divider at said bottom edge, said clip means adapted to extend through perforations, and a locking device slideably mounted on said upstanding portion and having a lower end adapted to extend through one of said perforations, said locking device having a raised position in which said lower end is withdrawn from said one of said perforations.

2. A sheet metal shelf comprising a base, a front wall, a rear flange extending downwardly from and at an angle to said base, depending side flanges and means on said flanges for connecting said shelf to a shelf support, said base, front wall, rear flange and side flanges being formed of a single piece of material without additional reinforcements, said connecting means being the sole means for connecting and supporting said shelf on said shelf support.

3. A sheet metal shelf as claimed in claim 2 wherein said rear flange extends at an angle of less than 90° with respect to said base.

4. A removable divider for a perforated shelf comprising an upstanding portion having a bottom edge, clip means secured to said divider at said bottom edge, said clip means adapted to extend through said perforations, and a locking device slideably mounted on said upstanding portion and having a lower end adapted to extend through one of said perforations, said locking device having a raised position in which said lower end is withdrawn from said one of said perforations.

5. A removable divider for a perforated shelf as claimed in claim 4 wherein said upstanding portion has a substantially U-shaped configuration with the base of the U defining the upper edge thereof and the legs of the U being spaced to receive therebetween said locking device.

6. A removable divider for a perforated shelf as claimed in claim 5 wherein said bottom edge is defined by flanges extending outwardly from the legs of the U.

7. A removable divider for a perforated shelf as claimed in claim 5 wherein said locking device is in the form of an elongated plate slideably mounted within the legs of said U, the upper end of said plate extending through the base of the U and having stop means thereon and the lower end of said plate extending outwardly of the legs of the U beyond said flanges and having stop means thereon, said stop means preventing inadvertent removal of said plate.

8. A sheet metal shelf comprising a base, a front wall, a rear flange extending downwardly from and at an angle to said base, depending side flanges and means on said flanges for connecting said shelf to a shelf support, said base, front wall, rear flange and side flanges being formed of a single piece of material without additional reinforcements, said connecting means being the sole means for connecting and supporting said shelf on said shelf support, said rear flange extending at an angle of less than 90 with respect to said base, the angle between each of said side flanges and said base being substantially 90°, and said front wall including a rolled edge.

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