

July 4, 1961

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2,991,038

INTER-LOCKING SHELVING BRACKET

Filed Dec. 30, 1958

Fig. 1

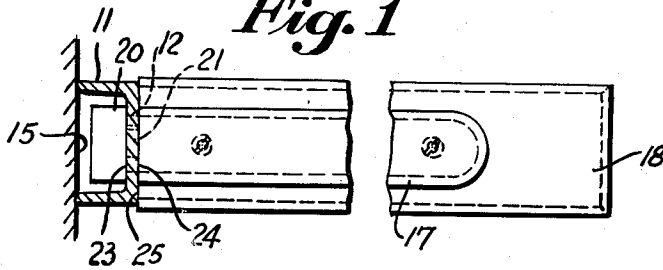


Fig. 2

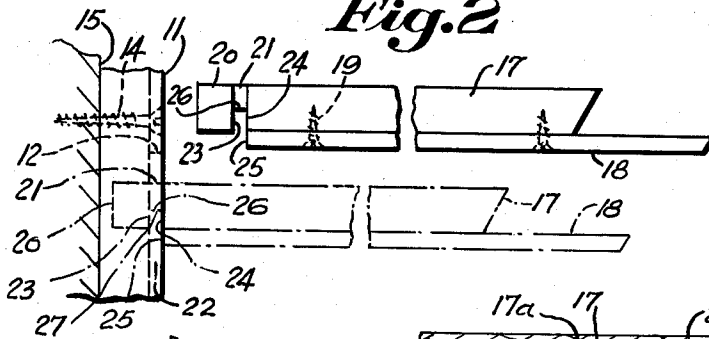


Fig. 3

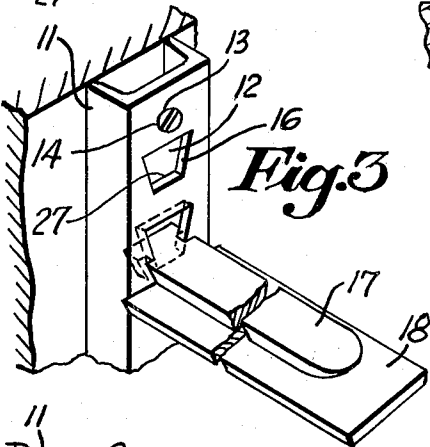


Fig. 6

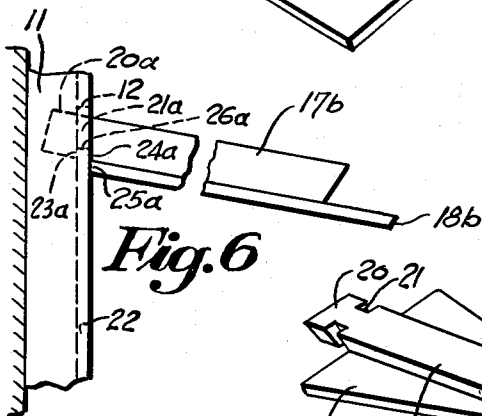


Fig. 7

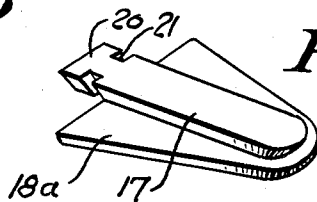


Fig. 4

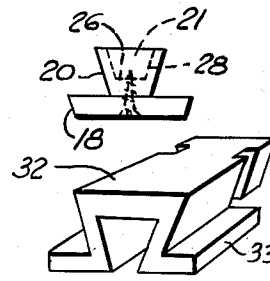


Fig. 8

Fig. 5a

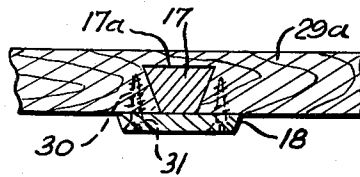


Fig. 5b

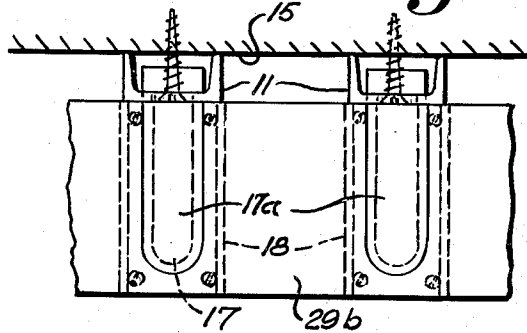
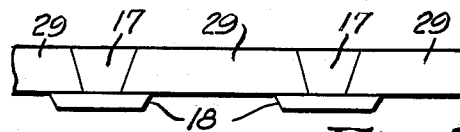


Fig. 5



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INTER-LOCKING SHELVING BRACKET

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Filed Dec. 30, 1958, Ser. No. 783,835

1 Claim. (Cl. 248—243)

This invention relates to shelving brackets and refers more particularly to inter-locking shelving brackets.

Commercial and other enterprises have a great need for shelf space which can be easily utilized for the storage or display of items of various sizes and shapes. The shelving brackets of prior art do not fulfill this need, since they are either rigidly connected together, or require the use of angular braces or gussets located beneath the shelves and serving as supports.

One of the objects of the present invention is to provide shelving brackets with inter-locking parts which can be easily erected and which do not require the use of angular braces.

Another object is to make possible, through the use of inter-locking self-contained shelving brackets, the rearrangement and variation of shelf space, from the same parts and without the necessity of using tools or fastenings.

Another object is to increase the usable amount of storage or display volume by using cantilevered self-contained inter-locking shelving brackets and eliminating the need for any vertical members at the front of, or intermediate the depth of, the shelf space.

Still a further object is to increase the usable shelf space in the vertical direction between shelves through the use of inter-locking shelving brackets.

Other objects of the present invention will become apparent in the course of the following specification.

In accomplishing the objects of the present invention it was found desirable to provide vertical columns or supports having suitably spaced openings adapted to receive specially shaped inter-locking end portions of bracket-carrying gusset bar units. The inter-locking shelving brackets of the present invention make possible the simple erection of shelves through the use of specially shaped members and corresponding recesses and openings. The inter-locking members of the shelving brackets may be connected and disconnected without the use of tools or fasteners of any kind, thus making the rearrangement of shelf space easy and economical. Vertical members, especially slotted, are arranged at the rear of the shelf space and specially shaped members are interlocked in the slots and the shelf itself is then supported by these latter members. Shelving boards in place do not need fasteners to secure them because upward pressure serves to tighten vertical sides of cut outs on shelving to the vertical sides of gusset bar due to the dove-tail shape of the cut-outs and of the gusset bar. For the same reason the shelving when in place cannot warp or twist.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawings showing, by way of example, preferred embodiments of the inventive idea.

FIGURE 1 is partly a sectional view and partly a top view of a gusset bar assembled with a shoulder member and a punch strip, which constitute the shelving bracket of the present invention.

FIGURE 2 is a combined exploded and partly phantom side view of the gusset bar assembled with a shoulder member and the punch strip, as well as an inter-locking assembly of the gusset bar, shoulder member, and punch strip.

FIGURE 3 is a perspective view of the assembled inter-locking shelving bracket along with the punch strip.

FIGURE 4 is an end view of the gusset bar and shoulder member showing the geometrical configuration of the end portion and key stone.

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FIGURE 5 is an end view of adjacent gusset bars and shoulder members with shelving boards in place.

FIGURE 5a is a transverse section through a modified shelving board.

FIGURE 5b is a top view of a continuous cut-out shelving board flush with the top surface of the gusset bars.

FIGURE 6 shows a side view of the assembled inter-locking shelving bracket and punch strip, wherein the inter-locking members are so shaped that the shelf is sloped downward.

FIGURE 7 shows a different shoulder member with gusset bar.

FIGURE 8 illustrates a differently constructed gusset bar with shoulder member.

A punch strip 11 shown in FIGS. 1, 2 and 3 is provided with a series of key holes 12 placed at particular intervals along its length. Countersunk holes 13 are placed at intervals along the center line of strip 11 and are situated intermediate the key hole 12 to receive screws 14 for the purpose of fastening the strip 11 to a support or wall 15 (FIG. 2).

The key holes 12 are trapezoidal in shape with the non-parallel sides 16 extending in a substantially vertical direction (FIG. 3).

A gusset bar 17 and a bottom or shoulder member 18 are fastened together by any suitable means, such as screws 19, welding or the like, with the shoulder member 18 extending beyond the gusset bar 17 on three sides, and the gusset bar having a portion 20 extending beyond the shoulder member on the fourth side (FIGS. 1 and 2).

The self-contained gusset bar 17 may have a thickness of $\frac{5}{8}$ " or $\frac{3}{4}$ ". FIGURE 4 shows an end view of the portion 20 of the gusset bar 17; it is apparent that the cross section of the end portion 20 is geometrically similar to the key hole 12, but slightly smaller. The gusset bar 17 also has a key stone portion 21 which is likewise geometrically similar to the key hole 12, and the width of the lower edge 26 of key stone 21 is the same as the width of the bottom 27 of the key hole 12 (FIGS. 1, 3, and 4). The length of the key stone 21 in the direction of the axis of the gusset bar 17 is equal to the thickness of the wall 22 of the punch strip 11 (FIG. 2).

The surfaces 23, 24, 25 of members 20, 17 and 18, respectively, may be cut vertically or at any desired angle (FIGS. 2 and 6). In this manner the angle of the shelf may be controlled when assembling the inter-locking shelving brackets.

The inter-locking shelving brackets are utilized in the following manner:

Punch strips 11 are fastened in a vertical position at horizontal intervals along a wall 15 by screws 13 in such a manner that the shorter parallel sides 27 of the key holes 12 are toward the floor. Gusset bars 17 and shoulder members 18 are fastened together by screws 19 to form one unit as shown in FIG. 2. No further fastenings of any kind, and no further use of tools of any kind, is now required to erect the inter-locking shelving brackets, or to rearrange the shelf space.

A key hole 12 in the punch strip 11 is selected at the particular height at which a shelf is desired. The end portion 20 of the combined unit of gusset bar 17 and shoulder member 18 is passed through the key hole 12 until the key stone 21 is within the key hole 12 and directly above the punch strip wall 22. The unit is then lowered until the bottom surface 26 of the key stone 21 comes in contact with the lower surface 27 of the key hole 12 (FIG. 2). The sides 28 of key stone 21 are now also in contact with sides 16 of the key hole 12 because key stone 21 is geometrically similar to key hole 12 and

the lower edge 26 of key stone 21 is the same length as side 27 of the key hole (FIGS. 3 and 4). Since the length of key stone 21 in the direction of the long axis of gusset bar 17 is the same as the thickness of the punch strip wall 22, the surfaces 23, 24 and 25 fit tightly against the wall 22 of the punch strips 11 (FIGURES 1, 2 and 6). Thus, the combined unit of the gusset bar 17 and shoulder member 18 is firmly inter-locked in the punch strip 11 without the use of fastenings of any type. Shelving boards 29 may be supported on two or more of the shoulder members 18 as indicated in FIGURE 5.

In FIGURE 5a is shown a modified arrangement, wherein the shelving board 29a is continuous over one or more shoulder members 18 and completely covers the top surface 17a of the gusset bar 17.

FIGURE 5b shows a continuous cut-out shelving board 29b flush with the top surface 17a of gusset bar 17. In this manner continuous shelves of any width and length may be utilized.

If the surfaces 23, 24 and 25 are cut vertical, then the shoulder member 18 and, consequently, the shelving board 29 will extend horizontally when inter-locked with punch strip 11 (FIG. 2).

If the surfaces 23a, 24a, and 25a are sloped as shown in FIG. 6, then the shoulder member 18b (and consequently the shelf) will slope down and away from punch strip 11. This is accomplished by shaping key stone 21a at an angle, and continuing the same angle on surfaces 23a, 24a, and 25a, of parts 20a, 17b and 18b, respectively, and making side 26a normal to surface 23a. The sloping bracket arrangement is particularly well suited for display purposes.

The shelving board 29a may be fastened to the shoulder member 18 by any known means such as screws 30 passing through holes 31 (FIG. 5a).

An assembly of a gusset bar 17 and a shoulder member 18a is shown in FIG. 7. The shoulder member 18a may be conveniently removed by unscrewing the screws 19 and replaced by another of different width. This arrangement makes it possible to adapt the shoulder members to specific display requirements.

FIGURE 8 illustrates a structure wherein the gusset bar 32 and the bottom member or shoulder member 33 are made out of a single piece of suitable material, such as sheet metal.

Some of the advantages of the inter-locking shelving bracket are: easy initial erection of the brackets with a minimum of tools and fasteners; once erected the inter-locking members can be easily rearranged without the use of tools or fasteners, so as to make the most efficient use of shelf space; no maintenance; easy to manufacture inexpensively; and economical use of space since there

are no vertical members save at the rear of the shelf space.

It is apparent that the described examples are capable of various modifications within the scope of the present invention. All such variations and modifications are to be included within the scope of the present invention.

What is claimed is:

In combination with a vertical punch strip having trapezoidally shaped similar key holes disposed at intervals one above the other with the non-parallel sides substantially vertical and the shorter parallel side horizontal and toward the bottom of said punch strip; an interlocking shelving bracket comprising an elongated gusset bar having a main portion, an end portion and a key stone portion between said main portion and said end portion, said end portion being geometrically similar to and smaller than the key hole, said key stone portion being geometrically similar to said key hole and having a shorter horizontal parallel side which is substantially equal to the shorter parallel side of said key hole and a longer parallel side which is of lesser length than the longer parallel side of said key hole, the shorter parallel side of said key stone being located intermediate the top surface of said gusset bar and the shorter parallel side of said end portion, the length of said key stone being substantially equal to the thickness of said punch strip, whereby said end portion is adapted to be disposed behind one of the key holes and said key stone is adapted to be disposed in any one of said key holes with the shorter parallel sides of said key stone and the key hole in contact and with an inner surface of said end portion contacting an inner surface of said punch strip, and a board-like shoulder member located directly below said main portion of the gusset bar and connected thereto, said shoulder member having supporting surfaces extending beyond said main portion on opposite sides of said gusset bar parallel to the top surface thereof.

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