Jan. 7, 1947. G. SCHAEFER ET AL 2,413,892

SHELVING

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FIG. 1

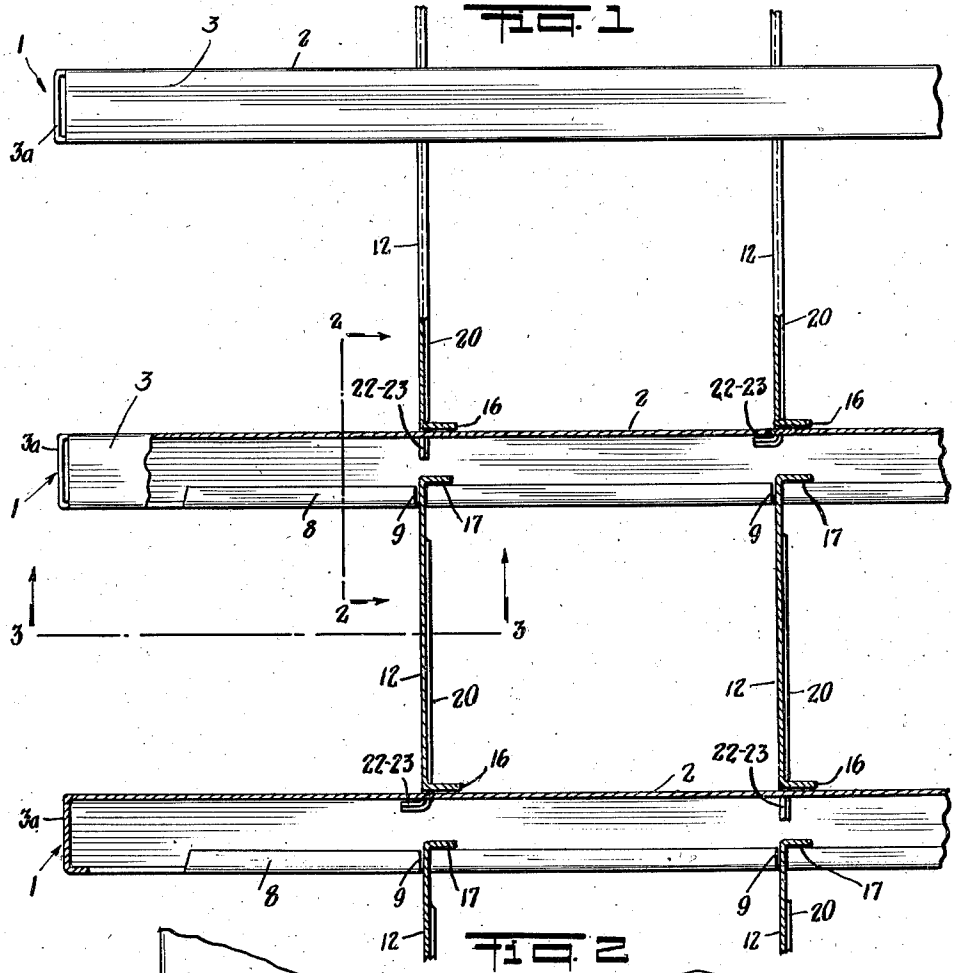
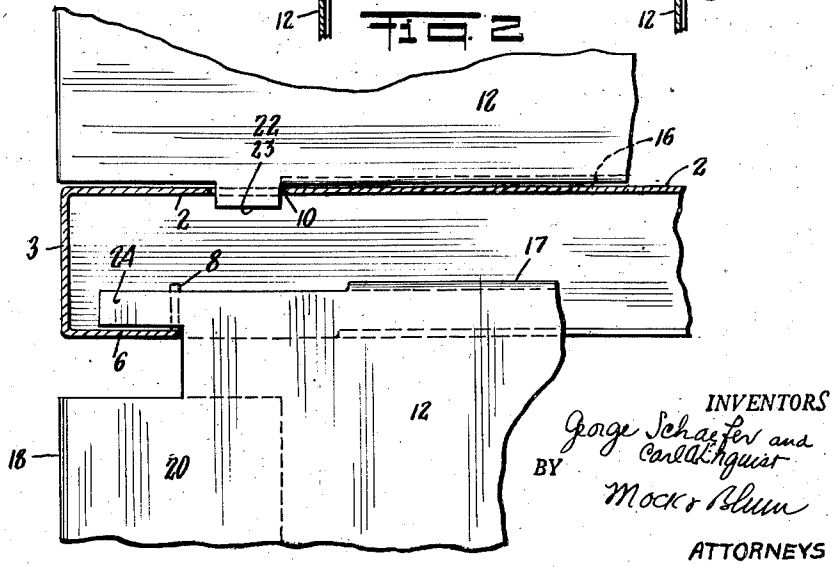


FIG. 2



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Fig. 3.

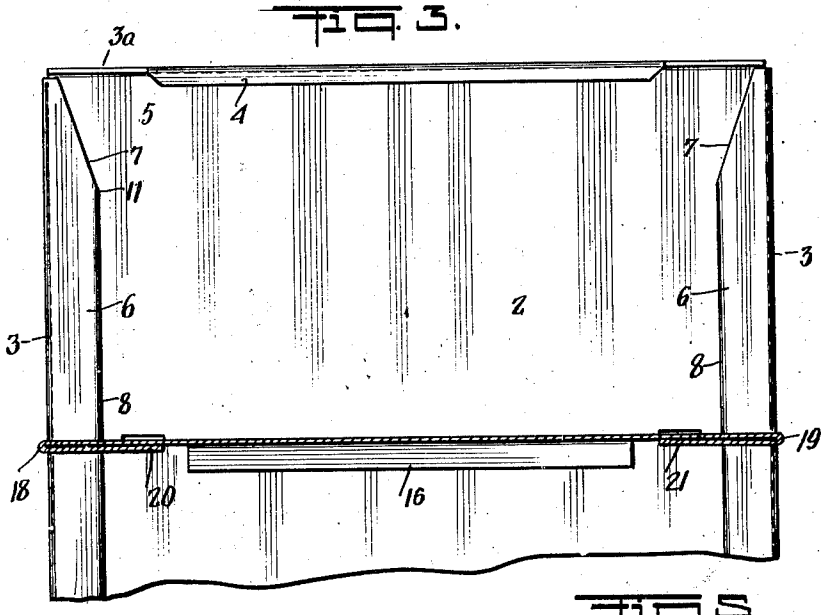


Fig. 4

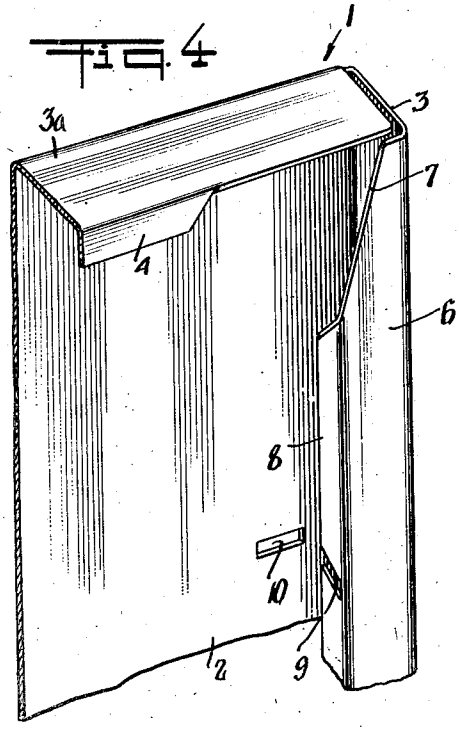
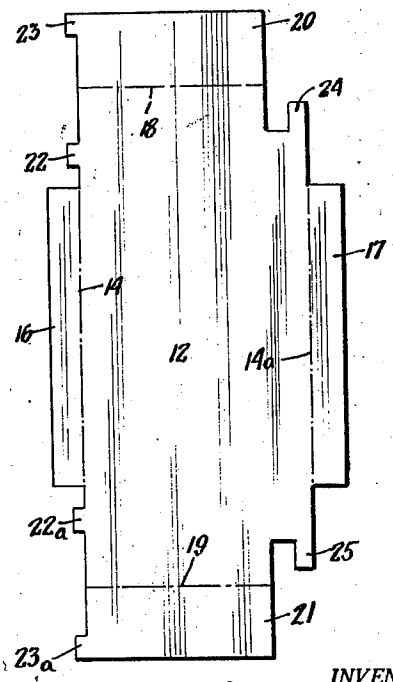


Fig. 5



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2,413,892

SHELVING

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Application October 20, 1944, Serial No. 559,518

2 Claims. (Cl. 211—135)

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Our invention relates to a new and improved assembled shelving.

The main object of our invention is to provide a plurality of superposed shelves which are connected in a simple and efficient manner, thus eliminating the necessity of using spot welding, or rivets or other fastening members of the usual type.

Another object is to connect the superposed shelves to each other by means of vertical spacers which are formed so as to maintain the shelves in superposed relation.

Other objects of our invention will be stated in the annexed description and drawings which illustrate a preferred embodiment thereof.

Fig. 1 is a front elevation, partially in vertical section, which shows an embodiment of the assembled device.

Fig. 2 is a sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a sectional view on the line 3—3 of Fig. 1.

Fig. 4 is a partial perspective view of one of the improved shelves.

Fig. 5 is a plan view which shows the metal blank which is bent in order to provide a spacer.

The assembled device comprises a series of identical shelves 1. Each said shelf is made by bending and perforating a metal blank. Each said shelf has a top wall 2 of rectangular shape, and it is provided with longitudinal and vertical flanges 3, which are perpendicular to said top wall 2. For convenience, it is assumed that the top walls 2 are horizontal. Each said longitudinal and vertical flange or wall 3 is integral with an inwardly bent and horizontal extension 6, which is parallel to top wall 2. Each said extension 6 is provided with a transversely bent and vertical extension 8, which is perpendicular to the top wall 2. Each transversely bent extension 8 is provided with a series of vertical recesses 9. Each said recess 9 is open at its top or inner end, namely, at the end which is proximate to the top wall 2. The recesses 9 are spaced equally from each other. The end recesses 9 are spaced from the lateral edges of the top wall 2. The distance of each end recess 9, from the respective lateral edge of the top wall 2, may be equal to the spacing between consecutive recesses 9. Each recess 9 is of rectangular shape. The top wall 2 is provided with a series of through-and-through perforations 10, of rectangular shape. These rectangular perforations 10 are arranged in lateral pairs. The perforations 10 of each pair have a common axis which is parallel to the lateral edges of the top wall 2. The vertical recesses 9 of the respective vertical extensions 8 are likewise arranged in transversely located pairs. Each pair of recesses 9 is associated with a respective pair of perforations 10. For example, the longitudinal distance of the end recess 9 which is shown in Fig. 4, from the proximate lateral edge of the horizontal wall 2, is equal to the longitudinal distance of the perforation 10 which is shown in Fig. 4, from said lateral edge of the top wall 2. Since the construction of each shelf is identical at its respective longitudinal edges and at its respective lateral edges, such construction is shown sufficiently in Fig. 4.

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The respective ends of each horizontal extension 6 and of each vertical extension 8, are shaped as shown in Fig. 4.

Each lateral edge of the top wall 2 is provided with a vertical flange 3a, which is perpendicular to said top wall 2. Each said flange 3a is provided with a horizontal extension 4, which is parallel to said top wall 2. Fig. 4 shows only a part of the respective extension 4, which is shown fully at the top of Fig. 3. The bottom surfaces of the members 6 and 4 are in the same horizontal plane, which is parallel to the plane of the planar top wall 2. Although the parts are illustrated in the respective positions shown in Fig. 1, in which the top walls 2 are horizontal, the invention is not necessarily limited to this detail.

As shown in Figs. 3 and 4, each member 6 is provided at each end thereof, with an inclined edge 7. Each spacer is made from a flat metal blank 12, which is bent along the lines 14, 14a, 18 and 19. The flap or area 20 of said blank 12, is bent through an angle of 180° along the fold line 18, so that the identical lugs 22 and 23 then abut and coincide with each other. The adjacent surfaces of the flap 20 and of the body 12 also abut each other after flap 20 has been thus bent. This provides a reinforced construction, which has a smooth edge at the bend line 18. The flap or area 21 is similarly bent through an angle of 180° along the fold line 19, so that the identical lugs 22a and 23a also then coincide and abut each other. This provides the aforesaid double reinforced construction at the bottom of the blank 12, after flap 21 has been thus bent. The flaps 16 and 17 are bent along the respective lines 14 and 14a, through respective angles of 90°, so that they remain perpendicular to the body of the blank 12. The metal of the blank 12 has sufficient rigidity so that the flaps 16 and 17 are held perpendicular to the flat body of the blank 12.

The parts are assembled as follows:

The top shelf 1 is fixed to any suitable support, so that its top wall 2 is held horizontally.

The rigid lugs 24 and 25 of a respective supporting spacer 12 are placed above the horizontal members 6 of said top shelf, by passing said lugs 24 and 25 above said members 6, at the respective pair of inclined edges 7. The distance between the remote edges of lugs 24 and 25, is less than the distance between the internal or proximate faces of members 3.

The respective spacer 12 is then slid longitudinally, until its supporting lugs 24 and 25 enter a pair of lateral recesses 9. The respective spacer 12 is thus supported by the members 8 of the top shelf 1, and the body of said respective spacer 12 is held parallel to the vertical flanges 3a and the lateral edges of top wall 2. The body of said respective spacer 12 is thus located in a vertical plane.

Each lateral pair of recesses 9 of the top shelf 1, can thus have a respective spacer 12 associated therewith, so that there is a top series of spacers 12. Each spacer 12 has smooth vertical edges, which are produced by doubling the members 23 and 21 upon the body of the blank 12. The coincident lugs 22—23 of each said spacer 12 of the top series, are then inserted into a respective perforation 10 of the top wall 2 of the second or next lower shelf 1, and the coincident lugs 22a—23a of each said spacer of the top series are inserted through another and associated perforation 10 of the top wall 2 of said next lower shelf 1.

The lugs 22—23 and 22a—23a of each spacer of the top series are then bent until they are horizontal, thus locking the top shelf 1 to the next lower shelf 1, at each perforation 10. Each pair of laterally aligned recesses 9 thus prevents longitudinal movement of the respective spacer 12, relative to the superposed shelves.

Spacers 12 are assembled to provide a second tier or series in the manner above described, with the recesses 9 of the second shelf, and the lugs 22—23 and 22a—23a of the second tier of spacers 12 are bent so as to fix said second tier of spacers to the top wall 2 of the third shelf. The lugs 22—23 and 22a—23a may be bent in the same direction or in opposed directions. They may be bent in the same direction as the flanges 16, 17 or in opposed directions.

Each spacer 12 has its bottom flange 16 held in abutting relation against the top wall 2 of the next lower shelf. The top flange 17 of each spacer abuts the top edges of the respective members 8.

The lateral edges of the shelves may be located between fixed vertical walls of a support, in the usual manner, so that the shelves are held against longitudinal movement. Such vertical walls are not shown, as they are old and well-known per se.

Fig. 1 shows a pair of the coincident locking lugs or tongues 22—23 in vertical inserted position, before said locking lugs or tongues are bent to horizontal position. A pair of the coincident locking lugs or tongues 22a—23a are also shown as being bent horizontally.

The construction can be applied to two or more shelves.

The lateral depending walls 3a may be shorter than the longitudinal depending walls 3, as shown in Fig. 4. The lateral depending walls 3a and their extensions 4 can be omitted without departing from the invention.

Each member 3, 6, 8, constitutes a supporting member which is transverse relative to the respective wall 2. The slots 9 are located transversely, relative to the respective supporting wall 2.

If the invention is applied to two assembled shelves, it is not necessary to provide the slots 10 in the supporting wall 2 of the top shelf. In such case, it is not necessary to provide the supporting members 3, 6, 8 in the bottom shelf. Similarly, if the invention is applied to assembling three or more shelves, the slots 10 can be omitted in the supporting wall 2 of the top shelf, and the supporting members 3, 6, 8 can be omitted in the bottom shelf of the assembly.

However, and for practical purposes, all the shelves can be identical, for ease of assembly.

For convenience, the top shelf which is shown in Fig. 1 is designated as the first shelf, the intermediate shelf which is shown in Fig. 1 is designated as the second shelf, and the bottom shelf of Fig. 1 is designated as the third shelf. The lateral flanges 3a of the respective shelves can be located between suitable vertical abutments, such as vertical rails or the like, in order to prevent the shelves from shifting longitudinally relative to each other. This detail is not illustrated herein, because it is old and well known per se. Since the invention is not limited to the horizontal position of the shelves which is illustrated in Fig. 1, the improved construction can be applied to partitions and to any other assembled parts.

For convenience, the walls 2 of the respective shelves may be designated as their main walls. As shown in Fig. 1, the flanges 17 and 16 of each connecting member 12 are bent laterally, relative to the body of the respective connecting member. The flange 17 of each connecting member abuts or substantially abuts the free edges of the respective transverse flanges 8. The flange 16 of each connecting member abuts or substantially abuts the face of the main wall 2 of the respective shelf which is proximate to the main wall 2 of the next preceding shelf in the assembly.

It is clear that numeraus changes and omissions and additions can be made without departing from the spirit of this invention.

We claim:

1. In combination, a first shelf and a second shelf, each said shelf having a main wall, said main walls being substantially parallel to each other, said main wall of said first shelf having supporting members fixed thereto, said supporting members extending transversely from the main wall of said first shelf towards said main wall of said second shelf, said supporting members having flanges which are located transversely relative to said main walls, said flanges having recesses which are transverse relative to said main walls, said recesses being arranged in respective aligned pairs, said main wall of said second shelf having perforations which are also arranged in aligned pairs, each said pair of perforations being aligned with a respective pair of said recesses, rigid connecting members which connect said second shelf to said first shelf, each said rigid connecting member having lugs which are located in a respective pair of said recesses, each said supporting member having tongues which extend through a pair of said perforations, said tongues being bent to fix the second shelf to said connecting members, said recessed flanges having free edges which are spaced transversely from said main wall of said first shelf.

2. A combination according to claim 1, in which each said connecting member has substantially parallel flanges, said flanges being bent laterally relative to the body of the respective connecting member, one of the flanges of the connecting member substantially abutting said free edges of said transverse flanges of said supporting member of said first shelf, the other flange of each said connecting member abutting the face of the main wall of the second shelf which is proximate to said main wall of said first shelf.

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