June 17, 1952 J. E. BALES 2,601,201

FASTENING MEMBER FOR PERFORATED SHEET MATERIAL MEMBERS

Filed April 2, 1945

Fig. 1.

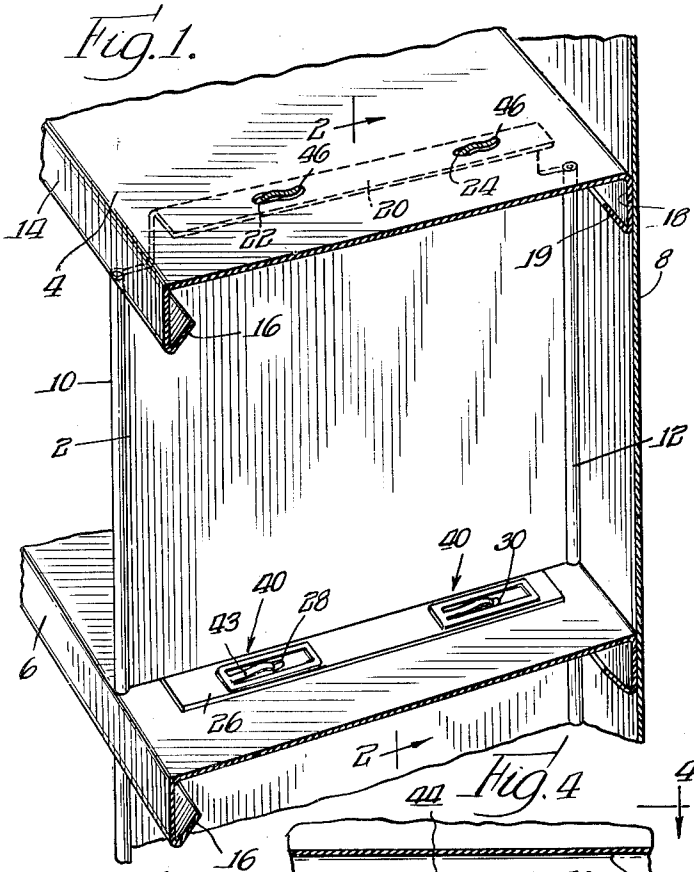


Fig. 2.

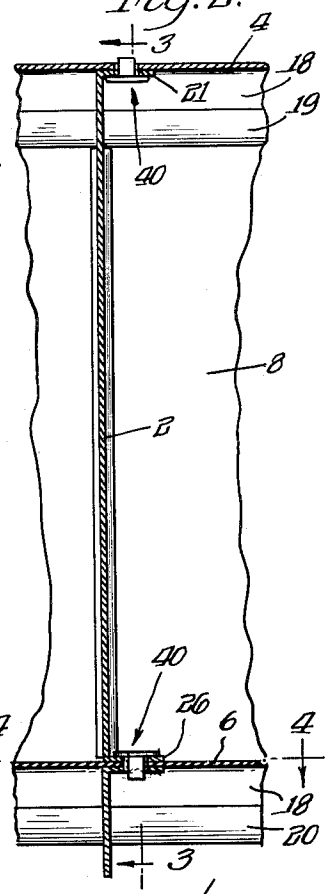


Fig. 4

Fig. 3.

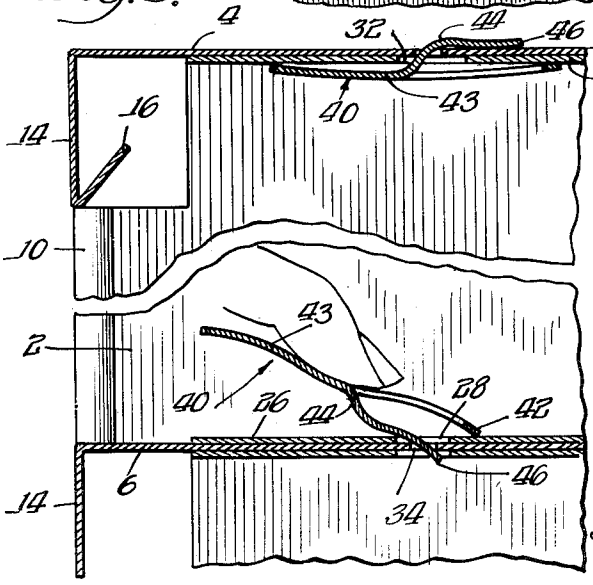


Fig. 5.

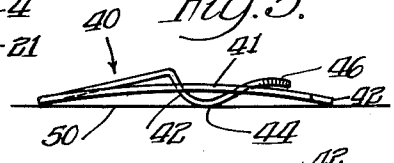
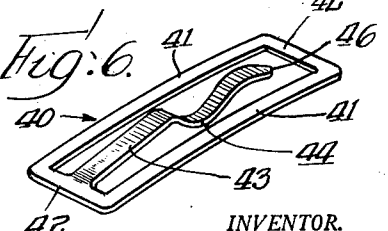


Fig. 6.



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FASTENING MEMBER FOR PERFORATED SHEET MATERIAL MEMBERS

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2 Claims. (Cl. 211—135)

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This invention relates to shelving, and more particularly to fastening means for detachably holding shelving members in predetermined position.

Among the objects of the present invention is to provide an easily attachable means for interconnecting the separable parts of a structure formed of sheet metal or other sheet material, and more particularly to provide a detachable fastener which has means adapted to pass through registering holes of two or more members to be fastened together and which has also means adapted to engage one of the members to prevent the fastener from being rotated about the hole.

Yet another object of the invention resides in providing a simple type of detachable fastener for detachably interconnecting a partition or divider plate or plates to a sheet material shelving in which the partition or divider plate has a normally extending flange provided with spaced perforations adapted to register with spaced perforations formed in the shelf, and wherein the fastening means includes a resilient prong or member adapted to pass through the registering openings of the two members and includes a resilient body portion adapted resiliently to engage the flat surface of one of the members whereby to hold the prong in engaging position and without turning with respect to the registering apertures.

Yet another object of the invention resides in providing a compactly made fastener of sheet metal which includes a resilient portion and a relatively resilient tongue which is adapted to be pressed by the fingers of the operator for insertion in registering holes of two or more sheet metal members to be held together so that when once inserted and released, the resiliency of the body of the member will hold the resilient tongue in fastening position and will hold the body of the member snugly to the flat surface of the member.

Another object of the invention resides in providing a fastening means for a divider plate for a shelf installation comprising a divider having a normal flange with spaced holes therein adapted to register with spaced holes of a sheet metal shelf structure and wherein a plurality of fastening means are provided including resilient tongues adapted to be pressed into the registering openings of the members to be interconnected and including likewise an elongated skeletal resilient sheet metal body normally of curved contour which is adapted resiliently to grip the

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flat surface of one of the members and by means of its resiliency, not only to hold the said flat surfaces together, but also to hold the inner engaging tongue in connective relationship with the two members to be interconnected.

Yet another object of the invention resides in providing, in combination with a pair of shelves having upper and lower registering openings and a divider plate having parallel flanges extending normally to the plane of the divider and provided with openings adapted to register with those of the shelves, a plurality of sheet metal resilient fastening means each including an elongated resilient tongue particularly shaped to be inserted in the registering openings of the members to be fastened together and including likewise a body portion surrounding the tongue and of resilient curved contour adapted snugly to clip against the flat surface of one of the members to be interconnected and to hold the tongue in connected position while at the same time permitting quick detachment of the tongue from the spaced holes to release the members.

Yet another object of the invention resides in providing a substantially elongated skeletal-like fastening member of sheet metal spring material having an arcuate curve longitudinally of itself which frame-like skeletal member has, extending inwardly from one end thereof, an elongated tongue carrying a reverse curve, the free end of the tongue being disposed slightly out of the plane of the curvature of the frame-like member whereby when the tongue is inserted into the registering apertures of two or more flat sheet metal members to be interconnected the resilient over-all curvature of the frame-like portion will snugly grip said flat surface and will serve to maintain the tongue in interlocking, interconnecting position in the registering apertures of the two members.

Yet another object of the invention resides in providing an elongated, relatively narrow, rectangular frame-like body of sheet metal having an over-all curve longitudinally thereof together with a tongue extending parallel to the longer sides of the frame and between them, the tongue having a reverse curve therein extending on opposite sides of the normal curvilinear plane of the frame-like portion, whereby when the tongue is inserted into registering apertures formed midway of the width of the relatively narrow flange carried by the upper and lower edges of a divider plate disposed between sheet metal shelves, the longitudinal edge of the frame-like body will contact the adjacent edge of the ver-

tical wall of the partition whereby to prevent the fastening means from rotating with respect to the partition member.

Yet another object of the invention resides in providing a fastening means of the foregoing type wherein the tongue when engaged in the registering apertures of the shelf and divider holes, serves to brace the divider against shifting sidewise.

Yet another object of the invention resides in forming the free resilient tongue of the fastening means in such a manner that when the end of the tongue is entered into the holes of the divider or dividers and shelf a continued pressure on the tongue will cause it to snap into finally desired position, and wherein thereafter the curvature of the body portion carrying the tongue and its inherent resiliency will cause the body portion to lie flat and the tongue to remain in interlocking position in the registering holes of the portions to be interconnected.

Yet another object of the invention resides in providing a fastener member of resilient sheet metal material including a resilient tongue constructed such that either slightly increased or decreased thicknesses of the divider or of the shelf material will not affect the holding quality of the fastener nor prevent the tongue point from lying as close to the shelf or divider as is desired.

Yet another object of the invention resides in providing fastening means of resilient material and imparting a normal longitudinal curvature thereto so that the ends of the fastener will lie close to the surface of the divider flange or shelf so as to prevent objects from catching onto them.

Yet another object of the invention resides in providing a fastener of the foregoing characteristics wherein the free resilient tongue is formed at an angle so as to provide the desired strength to clear the thickness of the divider and the shelf material and also to prevent removal of the fastener without first lifting the upper end of the fastener and pulling the tongue out of the holes of the divider and the shelf.

Yet another object of the invention resides in providing a fastener having a tongue provided with a specific bend intermediate its ends sufficiently deep so that the usual variation in thicknesses of the shelf and divider material will not make the free end of the tongue project away from the divider or shelf surface, and wherein the tongue at its extreme end is provided with a slight bend for the purpose of guiding it through the divider and shelf holes into which the tongue is inserted.

Another object of the invention is to provide a substantially rectangular fastener having an intermediate floating tongue, the fastener being formed of spring-like material wherein only one size of fastener is needed for holding sheet metal or sheet material perforated portions together at spaced apart points.

These and other objects of invention will be apparent from a perusal of the following specification when taken in connection with the accompanying drawings, wherein:

Figure 1 is a perspective view of a divider or partition held in position between two horizontal shelves by means of the improved fastener;

Figure 2 is a section taken on the line 2—2 of Figure 1;

Figure 3 is a section taken on the line 3—3 of Figure 2;

Figure 4 is a section taken on the line 4—4 of Figure 2;

Figure 5 is an edge view of the fastener; and

Figure 6 is a perspective view of the fastener.

To illustrate the invention I have shown the fastener as holding the partition or divider plate 2 formed of sheet material, particularly sheet metal, in position between two horizontal shelves 4 and 6. There is also illustrated a sheet metal backing 8 which is not particularly concerned with the disclosure of the invention. The partition member is of sheet metal and shows its front and rear edges rolled, as at 10 and 12, for strength and the hide raw edges. The two shelves 4 and 6 are preferably of sheet material and each is shown as provided with a front depending skirt 14 having an inwardly extending, upturned flange 16 at the front and a rearwardly depending skirt 18 having an upturned flange 19, at the rear. The top edge of the partition 2 is provided with a right angled flange 20 having two spaced perforations 22 and 24, the perforations being slightly elongated in a direction parallel with the longitudinal axis of the flange 20. These holes 22 and 24 are formed midway of the width of this flange. In a similar manner, the bottom edge of the partition 2 is provided with a normally disposed flange 26 having the similar registering perforations 28 and 30 which are not apparent in Figure 1 because of the presence of the fastener. It is to be pointed out that the shelves 4 and 6 are each provided with spaced holes 32 and 34 which are spaced apart a distance equal to the distance between the centers of the two elongated spaced holes 22 and 24 of the upper and lower flanges 20 and 26 so that when the partition or divider 2 is inserted in position as shown in Figure 1 between the upper and lower shelves 4 and 6, the holes in the two flanges and the upper and lower shelves will register. In this position four of the fastening devices shown in perspective in Figure 6 are utilized. Each fastener comprises a substantially rectangular skeletal frame 40 of relatively narrow sheet metal material. The portion 41 is considerably longer than the width of the end 42 thereof. Such end has projecting inwardly therefrom a resilient, elongated tongue 43 of material integrally formed from the body of the fastener, and this tongue extends parallel to the two sides 41 and terminates at the point 46 somewhat short of the opposite end 42. This tongue is substantially of the same width as the body portion 41 although if desired it may be somewhat wider for additional strength. Being formed of resilient spring metal, it possesses inherent resiliency. Particular attention is directed to the fact that the skeletal body portion 41 is given an over-all curvature as shown by the line 50 of Figure 5. This is for the purpose of causing the end portions 42 to lie up close to the surface of the divider flange and prevent objects from catching onto them.

The tongue of the fastener is formed to the angle shown, so as to provide the desired strength to clear the thickness of the drivider and shelf material and also to prevent removal of the fastener without first lifting the end 42 of the fastener, as shown in Figure 3, and then pulling the tongue out of the registering holes formed in the divider and shelf. In addition, the portion 44 of the tongue is made sufficiently deep so that the usual variation in thickness of shelf and divider material will not make the extreme end 46 of the tongue point project away from the divider or shelf surface. The extreme end 46 of the tongue 43 is given a slight bend, as shown particularly in Figure 5, for the purpose of guiding the end of

the tongue through the divider and shelf holes when the tongue is inserted therein.

In the foregoing, by reference to Figure 3 it will be seen that the free end 46 of the tongue 43 will tend to lie flat against the upper face of the shelf 4 and that by reason of the curvature of the skeletal frame, as shown in Figure 3, the body portion will tend to lie flat against the underside of the flange of the partition 2. It is to be understood, as shown in Figure 2, that when the fastener is placed in position as shown in Figure 1, the parallel sides 41 of the fastener will engage the lower vertical wall of the divider 2 so that the fastener cannot rotate about the point where the tongue passes through the registering holes in the divider flange 26 and the shelf.

One of the important advantages of the present type of fastener resides in the fact that dividers are usually held in place by fastening them at two or more points of each flange, and these holes are not always the same distance apart. Hence when the present fasteners are used, only one type of fastner is required, as it will always enter registering holes of two flat portions to be interconnected and is not dependent upon the distance these particular registering holes are from any other registering holes in the two members to be fastened together.

It will be apparent that this type of fastener may be used to interconnect the flanges of upper and lower vertical dividers disposed on opposite sides of a horizontal shelf, or in fact, of any partition members or shelf members or any other type of sheet metal members which are capable of being interconnected due to the fact that they have normally disposed flanges forming juxtaposed flat surfaces and are provided with registering holes of a shape capable of receiving the tongues of the fastening members. In shore, a fastening member may interconnect two or more divider plates with three shelves, or may connect a single divider between two shelves, or may connect a divider between a perforated top and a subadjacent spaced shelf. In any case the skeletal body of the fastening means is always adapted to overlie or underlie the flange of the divider so that the long edge 41 of the body will be juxtaposed to the normally disposed wall of the divider to prevent rotation of the fastening means with respect to the divider.

Obviously the invention is not limited to the specific details of construction disclosed herein but is capable of other modifications and changes without departing from the spirit and scope of the appended claims.

Having thus described the invention, what is

claimed as new and desired to be secured by Letters Patent is:

1. In combination with a pair of shelf members, a sheet material partition member having opposed flanges on its edges, said flanges being disposed normal to the plane of said partition, said flanges having spaced apertures adapted to register with apertures in said shelf members, an elongated fastener member having a skeletal rectangular frame and an intermediate elongated floating spirit metal tongue, the width of the frame being such that when the tongue is entered into said registering perforations the adjacent one of said skeletal frame members lies juxtaposed to the partition member whereby to prevent turning of said frame member with respect to said partition member, said frame member being formed of resilient material and having an inherent curvature arranged so that when the skeletal member is bent out of its normal curvature to pass the floating tongue through the registering apertures and the skeletal frame member is placed in juxtaposition to said flange, said resilient member will grip the flat flange and maintain said floating tongue in locking position in said registering apertures.

2. In combination, at least two sheet members having flat surfaces adapted to be juxtaposed, said surfaces having registering holes, fastening means for interlocking said sheet members comprising a skeletal, rectangular frame of spring sheet metal, said frame having a normal curvature in one direction, and said frame having projecting from one side thereof an integral floating tongue disposed intermediate two side members of said frame and parallel thereto, the longitudinal axis of said tongue lying parallel to the direction of curvature of said frame, and said tongue having portions intermediate its length bent to lie on opposite sides of the normal plane of said frame, the free end of said tongue normally lying laterally of the plane of said frame.

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