United States Patent [19]

Jensen et al.

[11] **3,750,894**

[45] **Aug. 7, 1973**

[54] **BINNING ARRANGEMENT**

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[73] Assignee: **Enterprise Wire Products, Inc.,** Bell Gardens, Calif.

[22] Filed: **Oct. 14, 1971**

[21] Appl. No.: **189,159**

[52] **U.S. Cl.** ..... **211/184,** 24/81 C, 24/84 C, 312/140.3

[51] **Int. Cl.** **A47f 5/14**

[58] **Field of Search** ..... 211/184, 43, 86, 211/181, 182; 312/140.4, 140.3; 287/189.35; 24/84 B, 84 C, 81 B, 81 C

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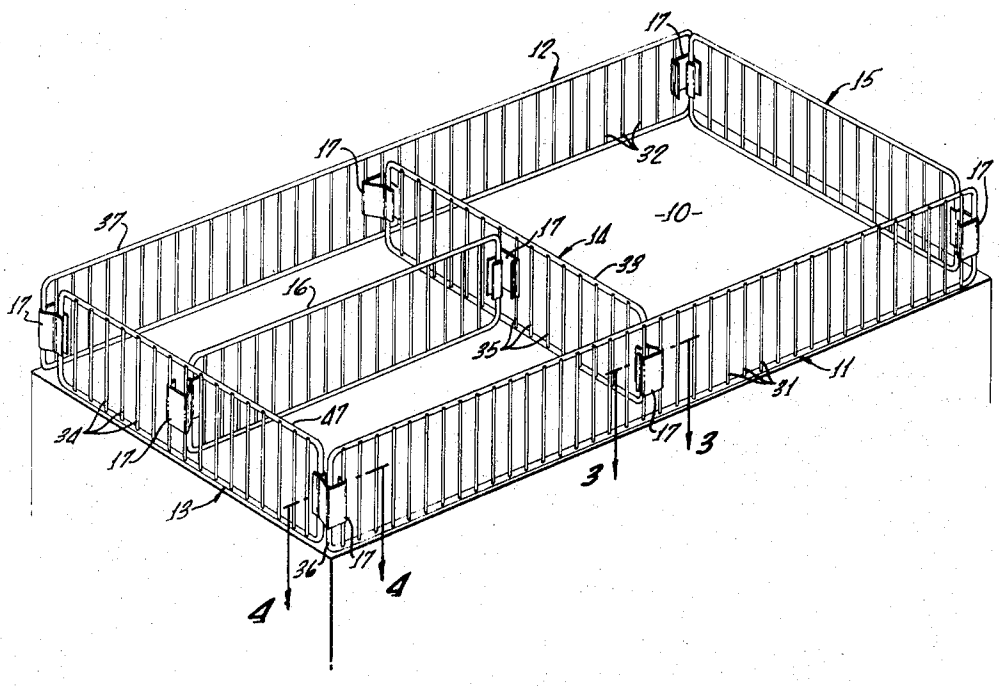
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Primary Examiner—Ramon S. Britts
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[57] **ABSTRACT**

A binning arrangement in which a sheet metal clip having two U-shaped sections is used to hold the binning dividers to front and back fences made of wire, the fences being held to the shelf by prongs on the mesh wires which extend beneath the shelf or by separate clips. The back fence may be eliminated with the ends of the dividers held by separate clips having wires defining a slot to receive the ends of the framing wires of the dividers, or the dividers may have a framing wire with a resilient back portion having an outwardly bent end adapted to fit through an opening in the shelf to exert a force in holding the back portion of the divider.

8 Claims, 22 Drawing Figures



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SHEET 1 OF 5

FIG. 1.

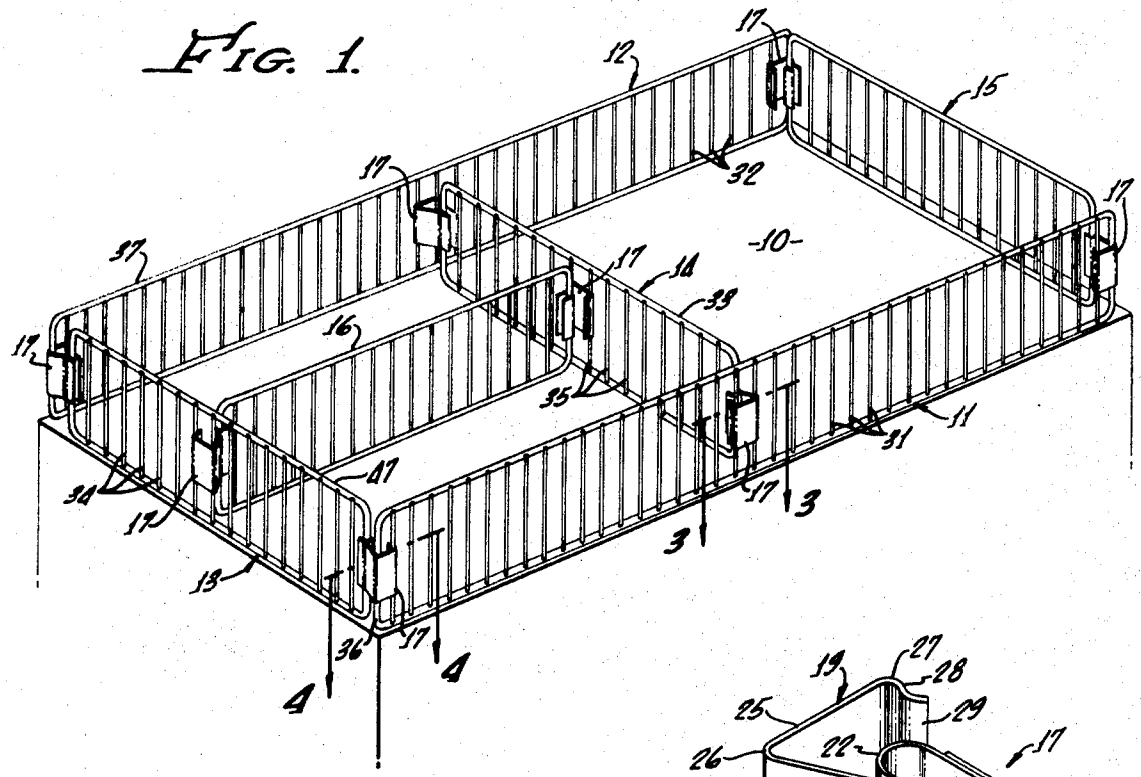


FIG. 4.

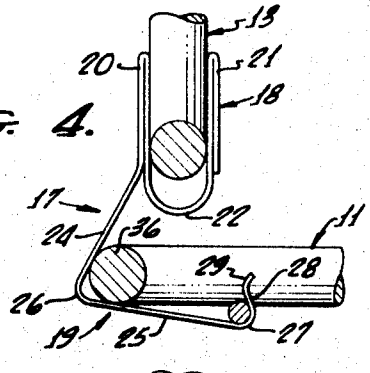
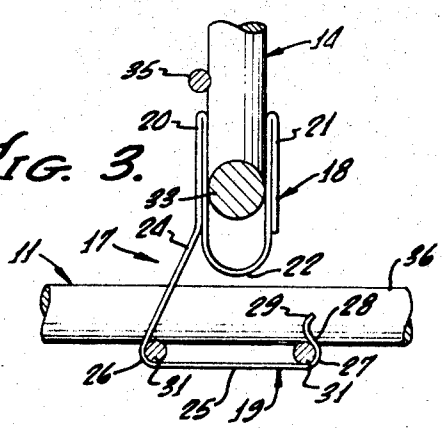


FIG. 3.



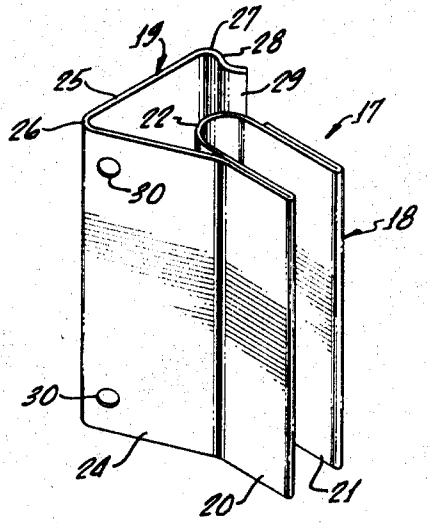


FIG. 2.

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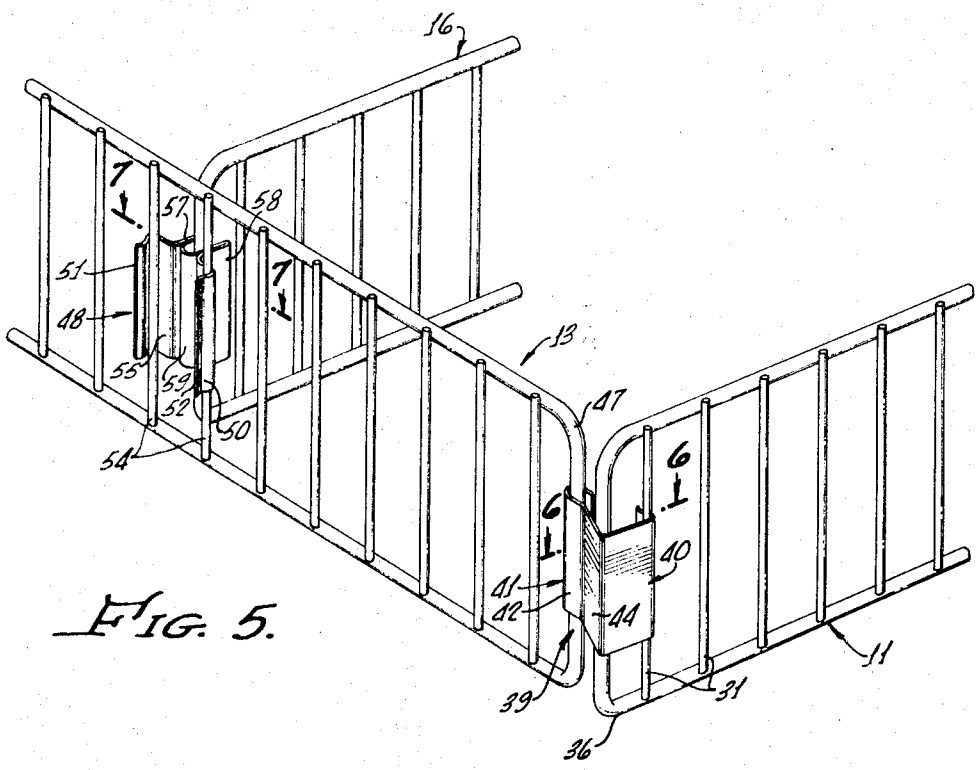


FIG. 5.

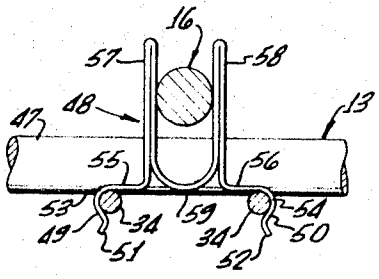


FIG. 7.

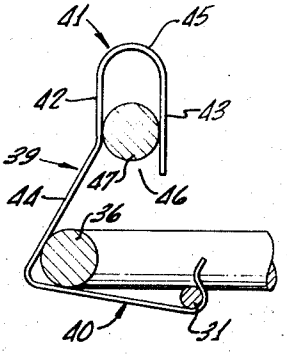


FIG. 6.

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FIG. 8.

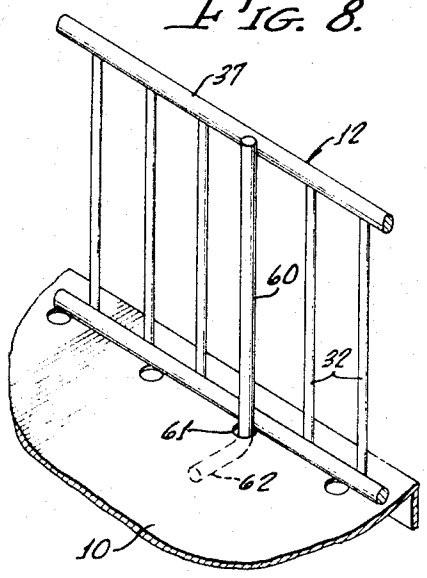


FIG. 9.

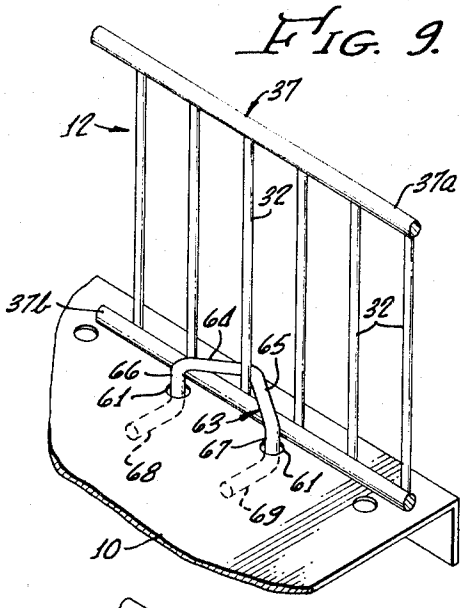


FIG. 11.

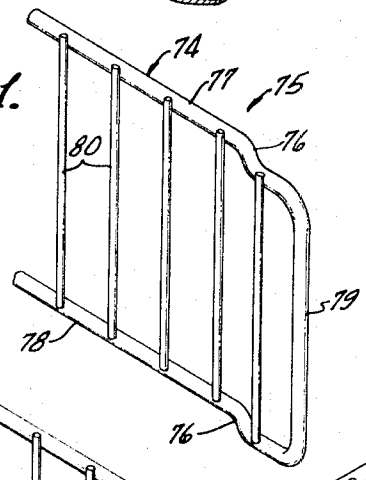
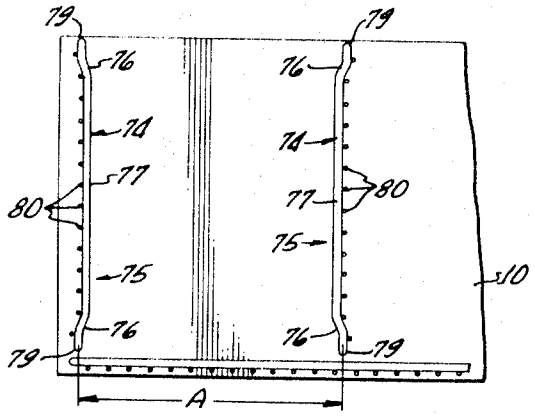


FIG. 12.



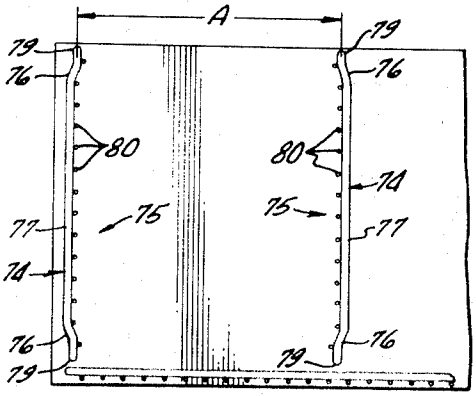


FIG. 13.

FIG. 15.

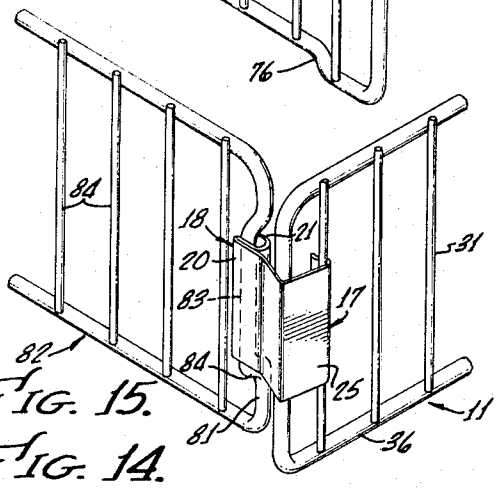
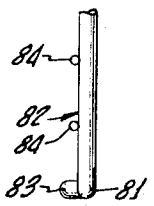
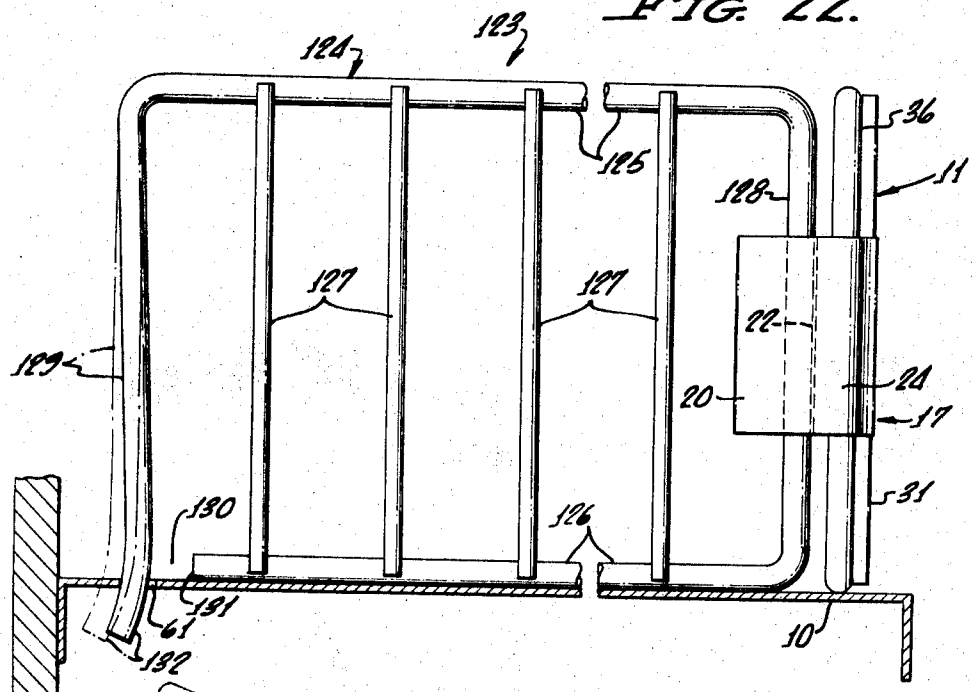


FIG. 14.



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FIG. 22.



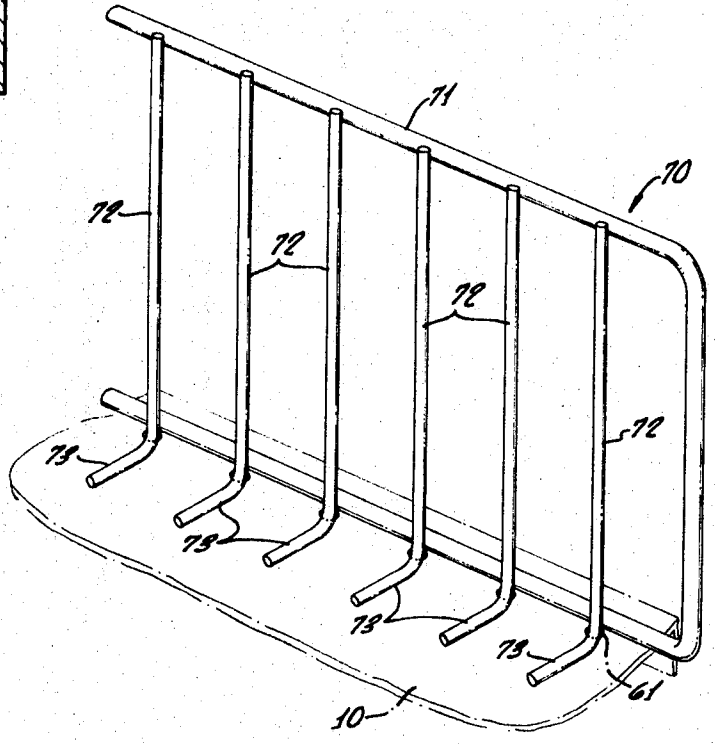


FIG. 10.

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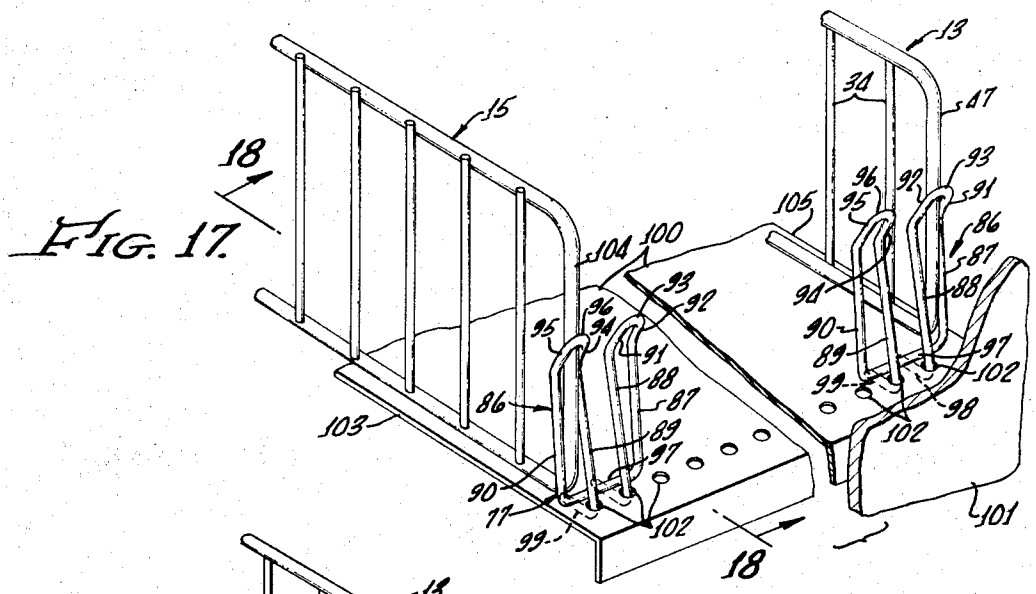


FIG. 17.

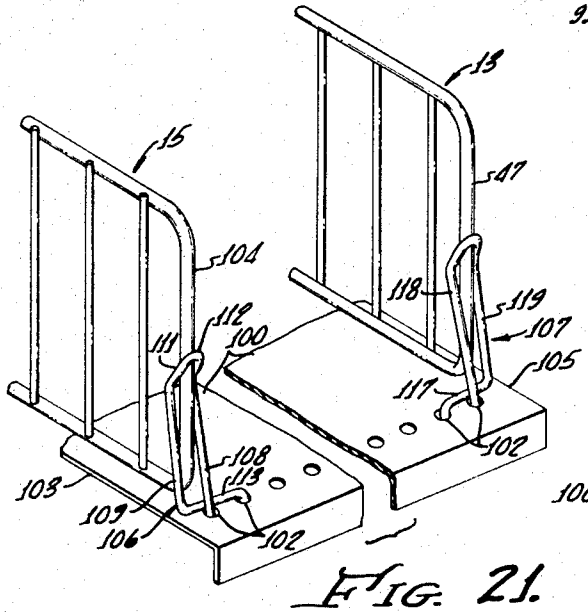


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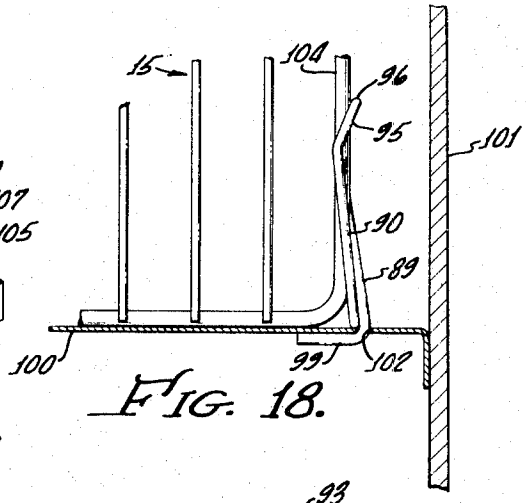


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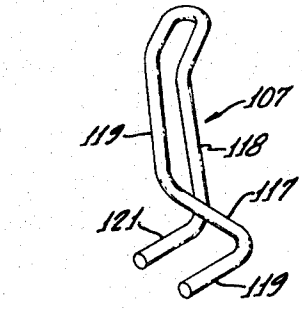


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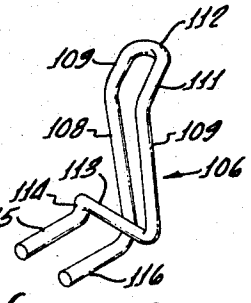


FIG. 19.

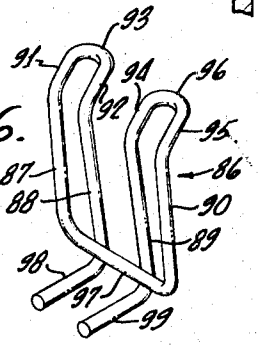


FIG. 16.

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BINNING ARRANGEMENT

BACKGROUND OF THE INVENTION:

1. Field of the Invention

This invention pertains to a binning arrangement for merchandise display.

2. Description of Prior Art

For merchandise display shelves, it has been customary to use glass binning dividers in making up the compartments for receiving the merchandise. In accomplishing this, glass strips are cut to length and held in position by metal clips. Several problems have been encountered with this binning system. The glass is vulnerable to breakage during shipment, while being prepared for use and after it is positioned on the shelf. It must be cleaned regularly because it soon receives fingerprints and otherwise becomes soiled when in use. Maintenance becomes expensive. Several different types of metal clips are needed in supporting the glass dividers on the shelf to produce the binning arrangements. This adds to the complexity of the installation of the dividers and the level of skill required by the personnel making the installation. Also, with various styles of clips being needed, costs become higher and inventory requirements are increased.

With all the shortcomings of the glass binning divider system, however, there has been no satisfactory prior design for permitting the dividers to be made of wire or of some other material more suitable than glass.

SUMMARY OF THE INVENTION

The present invention provides a simplified and improved binning arrangement in which wire members are used in defining the binning compartments. This binning arrangement is more versatile and cheaper to install and maintain than those of the prior art. The wire fences and binning dividers are virtually indestructible and do not require continual cleaning. They are securely attached to the shelf and to each other, possessing significantly improved strength. Only a single design of clip is required for holding the fences and dividers together. The back fence may be eliminated, yet the ends of the dividers can be fully supported, either by separate wire clips or integral attaching elements.

The clips for holding the fences and dividers together are of sheet metal and include two generally U-shaped sections. One of these is relatively narrow and deep for receiving the framing wire of a binning divider. The other U-shaped portion is shallow and wider, and engages two adjacent wires of a fence or divider to hold the clip in place. The front and back fences may include a prong projecting from each of the vertical mesh wires to be fitted through the perforations in the shelf and thereby hold the fence to the shelf. Even though made of relatively light gauge wires, the use of a prong at the end of each of the mesh wires results in a unit of exceptional strength. Alternatively, a separate simple one-piece wire clip may be used. this device including a V-shaped portion at the ends of which are prong elements to fit through the perforations in the shelf.

When the shelf is enclosed at the back, the back fence may be eliminated, while still providing adequate support for the binning dividers. This may be accomplished by providing one end section of the framing wire of the binning divider with a downwardly extending part, which at its end flares away from the remainder of the fence and is adapted to fit through one of the

perforations in the shelf. The parts are dimensioned so that this leg of the framing wire is deflected when it is installed, thereby providing a resilient force which securely holds the free end of the divider. Alternatively, the divider may have a conventional, generally rectangular framing wire which is supported by a wire clip having an upstanding portion defined by two spaced wires which receive the framing wire of the divider and which are provided with downwardly directed prongs to extend through the perforations in the shelf and fit beneath it for providing a support. The clip may be made for right- and left-hand ends of the shelf, or may be universal by providing two pairs of spaced wires, one of which is used at a time in supporting the end of the binning divider.

The spacing of the mesh wires may be kept constant irrespective of the positioning of these wires on one side or the other of the framing wire of the divider. This can be accomplished by providing a jog in the framing wire so that the end portion of the framing wire falls in the same plane as the mesh wires intermediate the end portions. With the end part of the framing wire being held by the retention clips, the mesh wires then necessarily fall in a predetermined location.

BRIEF DESCRIPTION OF THE DRAWINGS:

FIG. 1 is a perspective view of a display shelf utilizing the invention;

FIG. 2 is an enlarged perspective view of one of the clips for holding the binning dividers;

FIG. 3 is an enlarged transverse sectional view taken along line 3—3 of FIG. 1;

FIG. 4 is an enlarged transverse sectional view taken along line 4—4 of FIG. 1;

FIG. 5 is an enlarged fragmentary perspective view of a binning arrangement using modified retention clips;

FIG. 6 is an enlarged transverse sectional view taken along line 6—6 of FIG. 5;

FIG. 7 is an enlarged sectional view taken along line 7—7 of FIG. 5;

FIG. 8 is a fragmentary perspective view showing one means of holding the fence to the shelf;

FIG. 9 os a fragmentary perspective view showing the retention of the fence with a separate clip;

FIG. 10 is a fragmentary perspective view of an arrangement for holding the fence by prongs on the mesh wires;

FIG. 11 is a fragmentary perspective view of an end portion of a divider constructed to cause the mesh wires always to fall in the same plane;

FIGS. 12 and 13 are top plan views illustrating how the mesh wires fall in the same plane when the dividers are made in accordance with the design of FIG. 11;

FIG. 14 is a fragmentary top plan view of another type of divider which will cause the mesh wires always to fall in the same plane;

FIG. 15 is a fragmentary perspective view showing the divider of FIG. 14 attached to an adjacent fence;

FIG. 16 is a perspective view of a clip for holding the back portions of the dividers when the back fence is eliminated;

FIG. 17 is a fragmentary perspective view showing the clips of FIG. 16 in use;

FIG. 18 is a sectional view taken along line 18—18 of FIG. 17;

FIG. 19 is a perspective view of a clip for holding the back portion of a divider positioned at one end of the shelf;

FIG. 20 is a perspective view of a clip for holding the back portion of a divider positioned at the opposite end of the shelf;

FIG. 21 is a fragmentary perspective view showing the clips of FIGS. 19 and 20 in use; and

FIG. 22 is a side elevational view, partially in section, showing the use of a binning divider which requires no separate support member for its back end.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

As shown in FIG. 1, the arrangement of this invention is used in providing a binning arrangement for a display shelf 10. The assembly includes a front fence 11, a back fence 12 and binning dividers 13, 14 and 15. There is, in addition, a binning cross divider 16 extending between the binning dividers 13 and 14. The members are held together in the relationship shown by means of metal clips 17.

The clips 17 are of one-piece, resilient sheet metal construction, defining two aligned U-shaped sections 18 and 19 which face in the same direction (see FIG. 2). The U-shaped section 18 is relatively narrow and deep, while the U-shaped portion 19 is much wider and more shallow. The sidewalls 20 and 21 of the U-shaped portion 18 are of doubled-over construction and parallel to each other. An arcuate inner end 22, defined by a semicylinder, interconnects the sidewalls 20 and 21.

The U-shaped portion 19 connects to the section 18 by means of a flat sidewall 24, which extends from the outer layer of the wall 20 of the section 18. The sidewall 24 is at an obtuse angle to the section 18, inclining outwardly away from its closed end. The back wall 25 of the U-shaped portion 19 connects at an acute angle to the outer end of the wall 24 by a rounded corner 26. At the opposite edge of the back wall 25 is a similarly rounded corner 27 from which extends a short wall 28. The latter element inclines inwardly toward the wall 24 and at the same angle as that of the wall 25. The wall 28 merges into an outer edge portion 29 that is bent away from the central axis of the clip.

At two spaced locations 30, the wall 24 is deformed inwardly to provide protuberances which are adjacent the corner 26.

The clips 17 may be installed both at the corners of the binning assembly and at its intermediate portions. For the latter situation, as seen in FIG. 3, the U-shaped portion 19 of the clip 17 engages two adjacent vertical mesh wires 31 of the front fence 11. The clip 17 is installed on the mesh wires 31 by snapping it around an adjacent pair of these wires so that one is received in the corner 26 and the other in the corner 27. The attachment is accomplished easily by first positioning one of the wires 31 adjacent the sidewall 24, while the outwardly inclined entrance flange 29 permits the other wire to be engaged at the wall 28 by bending the wall slightly as the wire enters the corner 27. The protuberances 30 keep the other wire 31 at the corner 26. This positions the clip 17 so that the narrow U-shaped portion 18 faces inwardly perpendicular to the front fence 11.

Opposite from the forward clip 17, there is an additional clip 17 engaging a pair of vertical mesh wires 32 of the back fence 12. The opposite clip 17, of course, is attached to the back fence 12 in a manner similar to that of the attachment of the front clip.

The binning divider 14 then is installed by merely extending the end parts of its framing wire 33 downwardly into the slots defined by the sidewalls 20 and 21 of the opposed clips 17. No other attaching means is necessary. The divider 14 is securely held, yet may be removed as desired by lifting it out of the clips 17.

In the example illustrated, the binning dividers 13, 14 and 15 are of wire mesh construction, which is desirable because of the strength, durability and low maintenance of wire dividers, as contrasted with those of glass or other materials. However, if it should be desired to use s glass divider or one of some other material, it can be used as readily, fitting in the opposed slots defined by the walls 20 and 21 of the two clips in the same manner as the wire divider.

The clips 17 are attached to the binning dividers 13 and 14 to hold the cross divider 16 in the same way the clips hold the binning divider 14. Thus, the clips 17 engage any adjacent pair of vertical mesh wires 34 of the end binning divider 13 and an opposed pair of wires 35 on the binning divider 14. The cross binning divider 16 fits in the slots that the clips 17 provide to hold it in position.

At the corners of the assembly, the clips 17 engage one of the mesh wires and the framing wire of the front fence 11 or the back fence 12. The vertical mesh wires 31 and 32 are placed closer to the end portions of the heavier gauge framing wires 36 and 37 of the front and rear fences 11 and 12, respectively, than they are to each other. This permits the clip 17 to be used at the corners as well as at the intermediate portions of the assembly because the framing wire and the adjacent mesh wire will fit within the U-shaped section 19. The clip 17 is installed at the corners of the front fence 11, as shown in FIG. 4, by engaging the framing wire 36 adjacent the corner 26 of the clip. The other corner 27 then engages the adjacent mesh wire 31 in the manner previously described. Again, the clip is securely held in place, yet is easily installed in only a few moments. The binning divider fits in the slot defined by the U-shaped portion 18 of the clip to secure the end binning dividers 13 and 15 to the assembly.

The installation of the clips 17 at the back fence 12 is the same, with the clip engaging the framing wire 37 and the mesh wire 32 next to it.

In some instances, it is preferred not to allow the easy removal of the divider by merely lifting the divider out of the opposed slots that the clip provides. This may be the case, for example, when goods are being displayed which, when lifted off the display shelf, might tend to catch on the divider and pull it loose. The clip 39 of FIGS. 5 and 6 will hold the divider against such loosening. The wider U-shaped portion 40 of the clip 39 is identical to the corresponding portion 19 of the clip 17. The relatively narrow U-shaped portion 41, however, is reversed and faces inwardly toward the section 40. The narrower part 41 includes opposed parallel walls 42 and 43, the former of which connects to the outer edge of the longer wall 44 of the clip section 40. The walls 42 and 43 are interconnected by an arcuate portion 45 at the outer edge of the clip. Consequently, the entryway 46 to the narrow clip section 41 is at the inner edges of the walls 42 and 43.

The clip 39 is installed by fitting the outer portion 41 around the vertical framing wire of the divider which

is to be secured. In the example of FIGS. 5 and 6, the framing wire 47 of the divider 13 is engaged in this manner, being positioned between the sidewalls 42 and 43. The clip section 40 is attached to the vertical mesh wires, or to a framing wire and one of the vertical mesh wires in the same way as the attachment of the section 19 of the clip 17. As illustrated, the clip portion 40 engages the vertical framing wire 36 and the adjacent mesh wire 31 of the front fence 11.

Because the divider 13, as the other dividers, has a framing wire of generally rectangular configuration, the divider cannot be removed from the clip 39 by merely pulling it upwardly relative to the clip. The lower horizontal portion of the framing wire 47 will strike the end part 45 of the section 41 of the clip 39 to prevent removal of the divider 13. Thus, the installation, though readily accomplished, is of more permanent nature than that of the previously described embodiment.

Another form of clip 48 is shown in FIG. 7 as well as in FIG. 5. This clip includes two short outwardly convergent walls 49 and 50 at the outer edges of which are divergent entrance flanges 51 and 52. Rounded corners 53 and 54 are at the inner edges of the walls 49 and 50. These elements correspond in shape and dimension to the corner 27 and the walls 28 and 29 of the clip 17. Short transverse walls 55 and 56 extend from the corners 53 and 54 to doubled-over parallel walls 57 and 58 that are perpendicular to them. The inner layers of the walls 57 and 58 are interconnected by an arcuate section 59. This provides a slot between the walls 57 and 58 to receive the framing wire of the divider which is to be retained. The resulting clip again provides two aligned generally U-shaped sections, one wider than the other, but, in this instance, the two sections face outwardly in opposite directions.

The clip 48 is attached to the supporting member by fitting the vertical mesh wires in the corners 53 and 54, these being the wires 34 of the divider 13 in FIGS. 5 and 7.

This version of the clip cannot be attached to the framing wires because the short open corners 53 and 54 will mate only with wires of smaller mesh and will not accommodate the larger diameter framing wires. Consequently, the clip 48, while it functions well at the intermediate portions of the unit, does not have the versatility of the clips 17 and 39 which can be used either at intermediate portions or at the corners.

The front and back fences can be held on the shelf 10 by intermittent pronged wires 60, as shown in FIG. 8. The wires 60 are of heavier gauge than the individual mesh wires 31 and 32, and are welded to the opposite side of the framing wires. The heavier wires 60 project downwardly below the bottom part of the framing wire and through one of the perforations 61 in the shelf 10. An end prong 62, which is at right angles to the vertical portion of the wire 60, fits beneath the shelf 10 and holds the fence in place.

The need for the wires 60 may be eliminated by wire clips 63, as shown in FIG. 9. This permits all of the vertical mesh wires to be of a relatively light gauge. The clip 63 includes legs 64 and 65 which meet at an obtuse angle and form a shallow V. At the outer ends of the legs 64 and 65 are short vertical sections 66 and 67, as a result of which the V-shaped part is intermediate the sections 66 and 67 and laterally to one side thereof. At the lower ends of the vertical sections 66 and 67 are end prongs 68 and 69 which are at right angles to the vertical parts and extend forwardly away from the V-shaped pattern formed by the legs 64 and 65. In use of the clip 63, the V-shaped part 64 and 65 is fitted above the framing wire and around one of the narrow vertical mesh wires, this being a mesh wire 32 of the back fence 12 in the example illustrated in FIG. 9. The vertical portions 66 and 67 fit downwardly through an adjacent pair of the openings 61 in the shelf 10, while the forwardly extending prongs 68 and 69 extend beneath the shelf. This arrangement effectively holds the front and back fences stationary in an upright position.

As the fence 12 is shown in FIG. 9, the framing wire 37 includes top and bottom horizontal portions 37*a* and 37*b*, with one of the mesh wires 32 serving as the vertical element at either end. In the various fence and divider constructions shown in the drawing, the framing arrangement may be of this type rather than formed from a single length of wire.

Another arrangement for positioning the fences is shown in FIG. 10, providing a unit of exceptional strength and an ability to support heavy loads. The fence 70 generally resembles the fences 11 and 12, having a substantially rectangular framing wire 71 and parallel vertical mesh wires 72 of lighter gauge than that of the framing wire. The mesh wires 72 all are welded to one side of the framing wire 71 and extend downwardly below the lower horizontal portion of the framing wire. There, the mesh wires are bent laterally outwardly to provide integral prongs 73 at the lower ends of all of the mesh wires. The prongs 73 project away from the side of the framing wire 71 to which the mesh wires 72 are attached, and are perpendicular to the framing wire.

When the fence 70 is installed, the lower ends of the mesh wires 72 extend through the perforations 61 of the shelf 10, positioning the prongs 73 beneath the shelf. Each prong 73 thereby helps to hold the fence 70 in an upright position in proper relationship to the edge of the shelf. Because the fence 70 includes a multiplicity of the mesh wires 72, the combined supporting strength of the prongs 73 is very large. It is considerably greater than the supporting strength of the arrangement of either FIG. 8 or FIG. 9, irrespective of the fact that each mesh wire 72 and its prong 73 is of relatively light gauge.

Because the vertical mesh wires are necessarily welded to one side of the framing wire of the binning dividers, different tolerance conditions in their ultimate positioning on the shelf can result, depending upon the way the dividers are installed. In other words, if the binning dividers are positioned such that the vertical mesh wires are located on adjacent sides, the mesh wires are relatively close to each other. If the binning dividers are installed with the mesh wires on opposite sides, the mesh wires are relatively far apart. The significance of this is that it changes the relative positions of the slots defined by the clips that are attached to the mesh wires. Therefore, unless these slots have adequate depth, conditions can exist where the dividers will not extend far enough into the slots of the clips to be held securely when the mesh wires are on opposite sides and space the clips a maximum distance apart. Conversely, unless the slots of the clips are sufficiently deep, there can be an interference when the mesh wires are on adjacent sides so that the clips are relatively close to each other.

This difficulty is avoided by constructing the binning dividers as shown in FIGS. **11, 12** and **13.**

The framing wire **74** of the divider **75** is given a jog **76** in both its upper and lower horizontal portions **77** and **78** at a position close to the vertical end sections **79** of the framing wire. This means that the end vertical portions **79** of the framing wire are laterally offset. The jogs **76** are proportioned such that the vertical end portions **79** fall in the same plane as that of the intermediate vertical mesh wires **80.** Therefore, irrespective of which way the divider faces when installed, the spacing between the adjacent vertical mesh wires **80** is the same. This may be seen in FIGS. **12** and **13** where in one instance the dividers are positioned such that the vertical mesh wires **80** are on the outside away from each other, and in the other they are on adjacent sides of the binning dividers. In both cases, the spacing between the vertical mesh wires is the same. This is indicated by distance A. As a result, the distances between the attaching clips for the cross binning dividers will be identical in all instances.

A similar effect may be realized by the arrangement shown in FIGS. **14** and **15,** which has the added advantage of retaining the dividers against undesired vertical movement. In this construction, the vertical end portions **81** of the framing wire of the divider **82** are jogged to result in laterally offset sections **83** intermediate their ends. The length of each offset section **83** is slightly greater than the corresponding dimension of the clip **17,** so that the offset section **83** is adapted to be received in the U-shaped portion **18** of the clip **17,** as shown in FIG. **15.** The amount of offset of the section **83** is such that it is aligned with the vertical mesh wires **84** of the divider **82.** As a result, the mesh wires **84** always fall in the same plane, irrespective of how the divider is positioned. The spacing between the vertical mesh wires **84** of adjacent dividers **82** will remain constant whether the mesh wires are adjacent, or whether they are on the opposite sides of the framing wires of the dividers.

The offset section **83** also prevents the divider from being lifted upwardly inadvertently. The lower bend **85** for the offset **83** will engage the lower edge of one of the sidewalls **20** or **21** of the U-shaped portion **18** of the clip **17** to prevent such movement. COnsequently, the embodiment of FIGS. **14** and **15** not only realizes the advantage of the design shown in FIG. **11,** but also effectively positions the divider so that it is retained in a fixed position on the shelf, held against vertical movement. This is accomplished with the use of the clip **17** and without the need for the modified clip **39** of FIG. **6.**

Under some circumstances, such as where the back of the shelf is positioned against a vertical back panel or wall of solid or perforated material, there is no need for a back fence because the back panel will serve as the means to retain the merchandise at the rearward portion of the shelf. However, in the previously described embodiments, the back fence not only served as a means to retain the merchandise on the shelf, but also supported the back ends of the binning dividers. This may be accomplished by one-piece wire clips **86,** as illustrated in FIGS. **16, 17** and **18.** The clip **86,** seen in perspective in FIG. **16,** includes first and second pairs of upstanding wires **87** and **88,** and **89** and **90,** respectively. The wires **87** and **88** are bent intermediate their ends so that their top portions **91** and **92** tilt backwardly. An arcuate section **93** connects the top ends of the wires **87** and **88.** Similarly, there is a rearward tilt to the upper sections **94** and **95** of the wires **89** and **90,** with an arcuate loop **96** connecting them. The two sets of wires are parallel, while, in each pair, the two wires fall in parallel planes. At the bottom ends of the outer wires **87** and **90** is a transverse connecting member **97** that extends across in front of the lower ends of the inner wires **88** and **89.** From the bottoms of the latter wires, extending beneath the transverse wire **97,** are forwardly projecting prongs **98** and **99.**

In FIGS. **17** and **18,** the clip **86** is installed on a shelf **100** adjacent a vertical back panel **101** and used in holding the rearward ends of binning dividers **13** and **15.** The clip **86** is positioned on the shelf **100** with the lower ends of the upstanding wires **88** and **89** extending downwardly through two adjacent openings **102** in the surface of the shelf next to the rear panel **101.** The prongs **98** and **99** project forwardly beneath the lower surface of the shelf **100,** while the transverse member **97** rests on the top of the shelf. One of the pairs of wires of the clip **86** then is used in engaging the framing wire of the binning divider to hold the rearward portion of the binning divider.

In FIG. **17,** the shelf is seen in perspective from the rear. Therefore, the edge **103** of the shelf is the right-hand edge when seen from the front, but appears at the left in this view. At the edge **103,** the clip is holding the binning divider **15,** with the framing wire **104** fitted in the slot provided by the two wires **89** and **90,** which are at the edge **103** of the shelf **100.** The other pair of wires **87** and **88** is not used in this instance. The rearward tilt at the upper wire sections **94** and **95** means that the framing wire **104** can be received between the two wires and held against lateral displacement. Also, the interconnecting segment **96** prevents the binning divider **15** from moving rearwardly. Thus, the binning divider is securely held to the shelf, yet is readily removable as before. Installation is quite easily accomplished by merely inserting the prongs of the clip **86** beneath the shelf **100** and then positioning the binning divider to be received in the parallel wires of the clip.

At the opposite edge **105** of the shelf, the clip **86** is used to hold the binning divider **13.** However, when the clip **86** is at this end of the shelf, the wires **87** and **88** become positioned adjacent the edge **105,** while the wires **89** and **90** are inwardly of this edge. Therefore, the framing wire **47** of the binning divider **13** is fitted between the two outside wires **88** and **89,** where it is held in a way comparable to that of the retention of the binning divider **15** by the wires **89** and **90.**

At intermediate portions between the edges, either the wires **87** and **88** or the wires **89** and **90** may be utilized in holding the intermediate binning divider, such as the binning divider **14.** Thus, the clip **86** is of universal applicability and will hold the rearward edge of any binning divdier.

Instead of the universal clip **86,** individual clips **106** and **107** may be used at the edges **103** and **105,** respectively, of the shelf, as illustrated in FIGS. **19, 20** and **21.** Each of these clips is, in effect half of the clip **86.** The clips **106** and **107** are not universal and so must be at the proper edges of the shelf in order to position the binning divider correctly along the edges. On the other hand, the clips **106** and **107** are smaller and a little cheaper to make than the universal clip **86.**

The clip 106 includes a pair of upstanding wires 108 and 109, with rearwardly tilting upward portions 110 and 111 interconnected by an arcuate portion 112. At the bottom of the wire 109 is a transverse wire 113, which crosses over the forward lower portion of the wire 108 and extends past it. There is a short downward jog 114 at the end of the transverse wire section 113, from which extends forwardly a prong 115. An additional prong 116 projects forwardly from the lower end of the wire 108. The clip 106 is installed by fitting the two prongs 115 and 116 through an adjacent pair of openings 102 and beneath the surface of the shelf 100, so that they project forwardly. The transverse wire 113 engages the upper surface of the shelf. The framing wire 104 of the binning divider 15 then fits between the two wires 108 and 109 in the same manner as the binning divider 15 fitted between the wires of the clip 86. Again, the binning divider is securely held and the installation is very rapidly and easily accomplished.

The clip 107 is similar to the clip 106 but of opposite hand construction. The transverse wire section 117 of the clip 107 extends to the right as the clip is viewed from the front, instead of to the left as for the clip 106. This causes it to pass in front of the lower portion of the upstanding wire 118, as it extends away from the lower end of the other upstanding wire 119. Prongs 120 and 121 extend from the wires 117 and 118, respectively. When the clip 107 is installed, with the prongs projecting forwardly beneath the surface of the shelf 100, the transverse wre rests upon the shelf, and the upstanding wires 118 and 119 are positioned at the edge 105 of the shelf and receive the framing wire 47 of the binning divider 13.

At intermediate parts of the rearward edge of the shelf, either the clip 106 or 107 may be used in retaining the intermediate binning dividers 14.

The need for separate clips in holding the rearward portions of the dividers is eliminated when the divider is constructed as illustrated in FIG. 22. The divider 123 shown in this view includes a framing wire 124 having upper and lower horizontal portions 125 and 126, respectively. Conventional vertical mesh wires 127 are welded to and extend between the upper and lower portions 125 and 126 of the framing wire 124. At the forward end of the divider 123 (the right-hand end as it is illustrated in FIG. 22), the vertical portion of the framing wire 124 is integral with the upper and lower sections 125 and 126 and generally corresponds to the end construction of the dividers 13, 14, 15 and 16. The vertical framing wire 129 at the rearward end, however, connects to the upper horizontal portion 125 of the framing wire, but not to the lower section 126. Instead, there is a gap 130 between the end 131 of the lower portion 126 of the framing wire and the lower end portion 132 of the end framing wire 129. The section 132 of the framing wire 129 is bent outwardly away from the remainder of the frame at a shallow angle, and extends downwardly beyond the level of the lower framing wire 126.

The divider 123 is installed by inclining its rearward portion downwardly and inserting the angled lower end 132 of the end framing wire 129 in one of the perforations in the shelf, such as an opening 61 in the shelf 10. The opposite end of the divider 123 then is pivoted downwardly to bring the vertical portion 123 within an attaching clip, such as the clip 17, held by the front fence 11. The parts are proportioned such that, when this is done, the end vertical framing wire 129 becomes deflected slightly. In other words, the spacing between the front fence 11 and the perforation 61 that receives the end 132 of the framing wire is such that, when the end 128 of the framing wire engages the end surface 22 of the outer U-shaped portion 18 of the clip 17, there is a compression on the divider 123. This causes a slight flexing of the vertical end framing wire 129, which possesses resilience especially at its connection to the upper horizontal framing wire portion 125. As a result, the lower end part 132 of the rearward end of the framing wire 129 presses outwardly on the wall of the opening 61, and the free end of the divider 123 is securely held to the shelf 10. By requiring no auxiliary clip or other means for holding its rearward end, the divider 123 is particularly simple to install.

The foregoing detailed description is to be clearly understood as given by way of illustration and example only, the spirit and scope of this invention being limited solely by the appended claims.

We claim:

1. A clip for holding binning dividers or the like comprising

an integral member of resilient material, said member defining a first substantially U-shaped portion having a duality of first sidewalls interconnected by a first end wall, and a second substantially U-shaped portion having a duality of second sidewalls interconnected by a second end wall,

said first and second U-shaped portions facing in the same direction,

said first and second end walls being substantially opposite from each other in spaced but overlying relationship such that a single plane extending longitudinally of said U-shaped portions intersects both of said end wall,

said first substantially U-shaped portion being realtively narrow and deep so that said first sidewalls define a slot adapted to receive the edge of a binning divider,

said second substantially U-shaped portion being relatively shallow and wide,

said second sidewalls having portions converging away from said second end wall for receiving the wires of a supporting device adjacent said second end wall and intermediate said second sidewalls,

one of said second sidewalls being longer than the other of said second sidewalls and extending from said second end wall to one of said first sidewalls.

2. A device as recited in claim 1 in which said first and said second substantially U-shaped portions are substantially aligned.

3. A device as recited in claim 1 in which the other of said second sidewalls has an outer edge portion inclined relatively away from the central axis of said second substantially U-shaped portions.

4. A device as recited in claim 1 in which said clip is an integral member of sheet metal, said first sidewalls each including a double thickness of said sheet metal so as to have an inner layer and an outer layer thereof.

5. A device as recited in claim 1 in which each of said second siewalls includes only a single thickness of said sheet metal.

6. A device as recited in claim 4 in which said one of said second sidewalls connects to the outer layer of said one of said first sidewalls.

7. A device as recited in claim 1 in which the other of said second sidewalls includes protrusion means on the inner surface thereof in spaced adjacency with said second end wall for holding a wire in the corner between said other second sidewall and said second end wall.

8. A device for holding together wall members for display shelves or the like comprising

an integral member of resilient material,

said member including two substantially U-shaped sections,

the first of said substantially U-shaped sections being relatively narrow and adapted to receive the edge portion of a wall member,

the second of said substantially U-shaped sections being relatively wide,

one side portion of said second section connecting to one side portion of said first section and extending outwardly at an angle therefrom,

the outer end of said one side portion of said second section connecting through a first rounded corner to an intermediate portion of said second section,

said intermediate portion extending laterally to an opposite edge thereof,

said opposite edge of said intermediate portion connecting through a second rounded corner to a second side portion of said second section,

said second side portion having a first part extending away from said intermediate portion and being inclined inwardly toward said first side portion,

said second side portion having a second part at the outer edge of said first part thereof extending away from said intermediate portion and being inclined outwardly away from said first side portion,

whereby said second section is adapted to engage spaced members of a wall means to which said clip is to be attached with one of said members being at the junction between said one side portion and said intermediate portion, the other of said members being at the junction between said second side portion and said intermediate portion.

* * * * *

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,750,894 Dated August 7, 1973

Inventor(s) Jens S. Jensen; Edward M. Hamrock; Clair E. Lookabaugh

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 10, line 36, "wall" should read ---walls---.

Column 10, line 37, "real-" should read ---rela---.

Column 10, line 62, "1" should read ---4---.

Signed and sealed this 1st day of October 1974.

(SEAL)
Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents