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**3,289,993**

SUPPORT ELEMENT OR THE LIKE FOR PERFORATED PANELS

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2 Sheets-Sheet 1

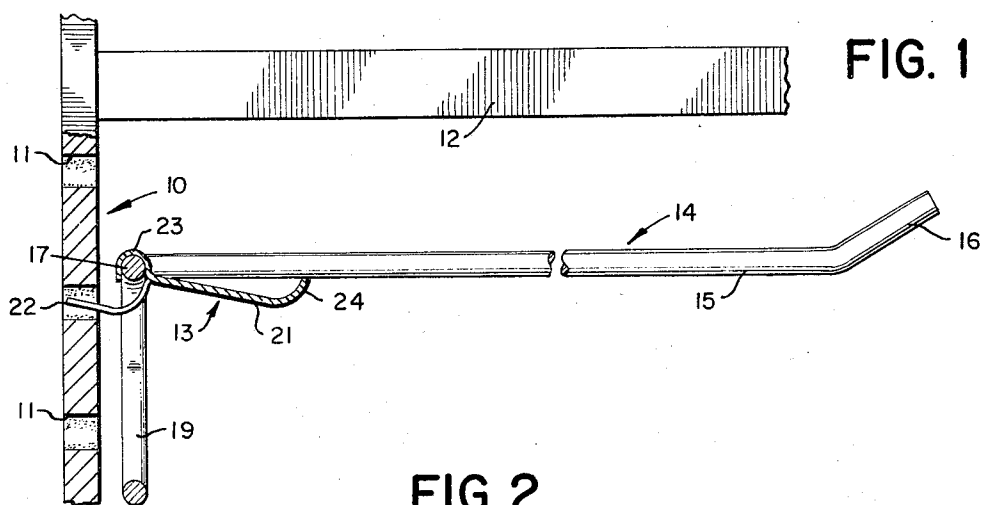


**FIG. 2**

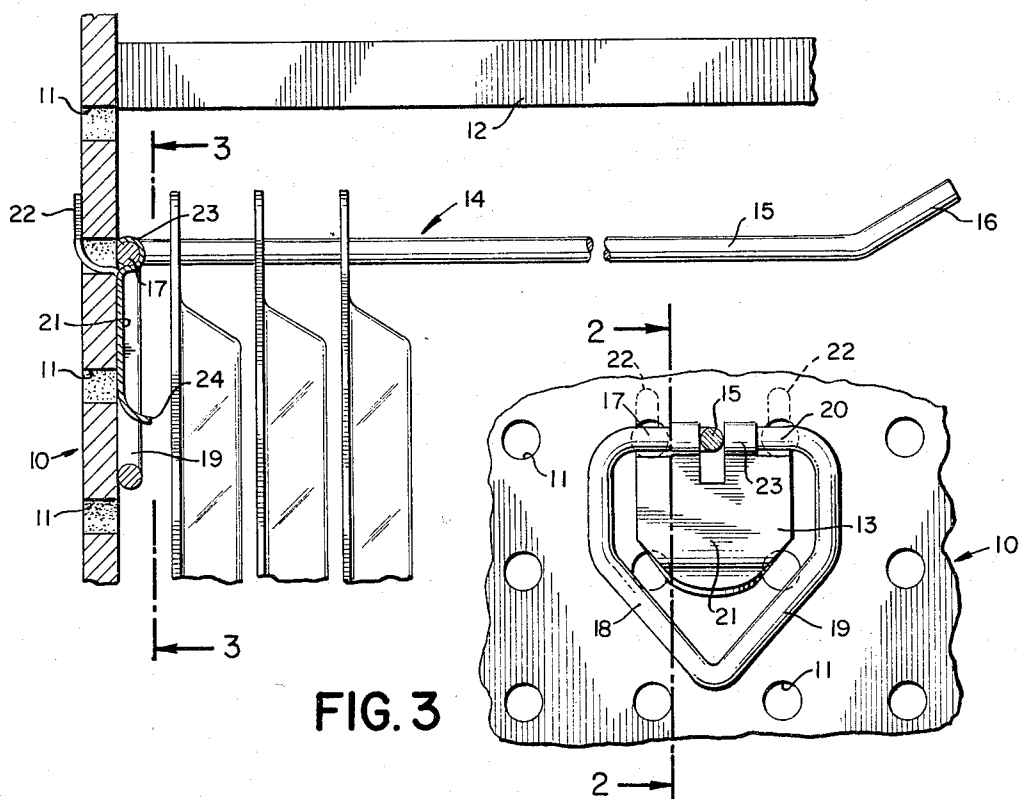


**FIG. 3**

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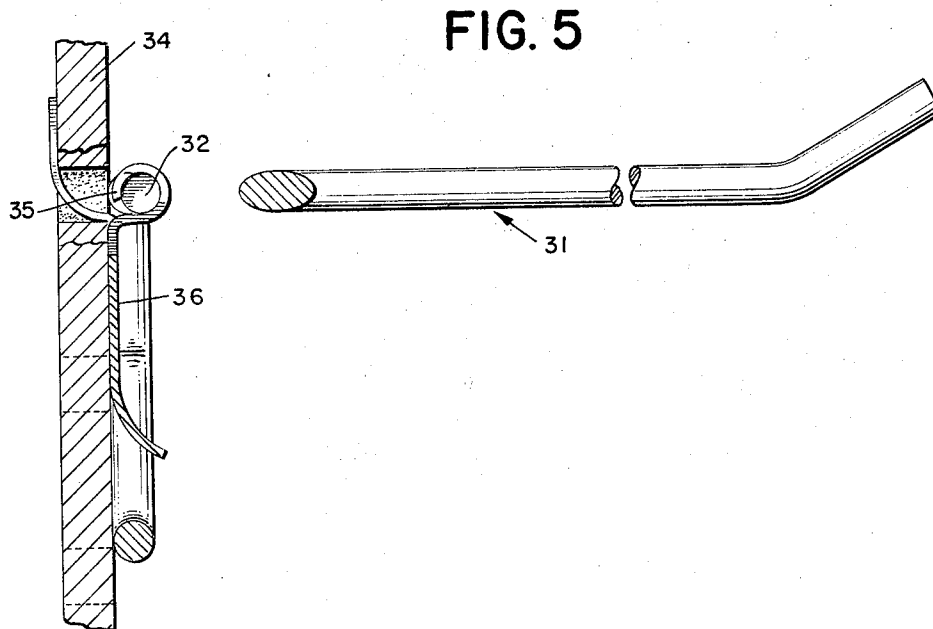
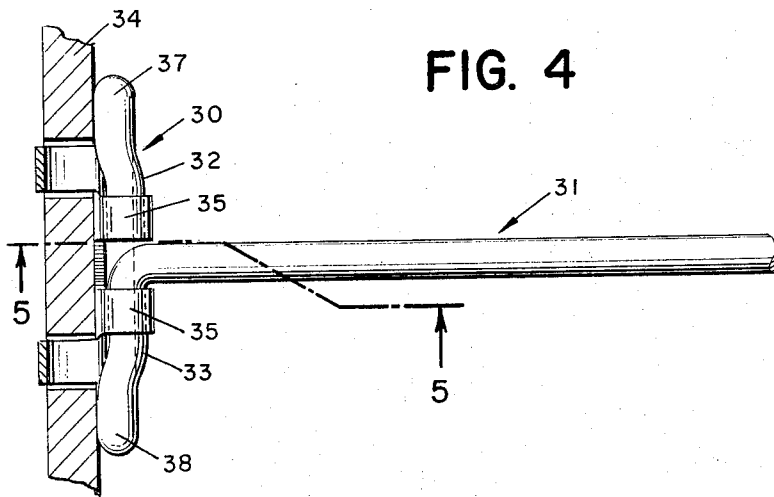
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**SUPPORT ELEMENT OR THE LIKE FOR  
PERFORATED PANELS**

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The present invention relates to merchandise display racks, shelf supports, and the like, and is directed more specifically to novel and advantageous improvements in support elements for use in connection with perforated display panels.

Display, storage, and like facilities in current use make frequent use of perforated display or support panels, which typically may be formed of metal or of a hard composition board material of  $\frac{1}{8}$  inch or  $\frac{1}{4}$  inch thickness, in individual panel units of, for example, 4 feet by 8 feet. These panels are provided with a large number of openings or perforations, arranged in horizontal and vertical rows. Typically, the perforations might be spaced on 1 inch centers, over the entire usable area of the panel.

In a typical display or storage installation, one or more perforated panels are appropriately arranged, and special support elements are located in selected openings of the panel array. The support elements are provided with suitable lugs and/or projections, by means of which the units are locked to the panels.

Particularly in connection with merchandise display racks and shelf supports, for example, a typical support element may include an elongated portion which projects outward from the display panel a distance of as much as 6 to 8 inches (in the case of a merchandise display hanger) or 18 to 24 inches (in the case of a shelf support bracket). At the inner end of the support element, there is provided a base portion usually including a pair of upwardly turned lugs arranged to be received in a pair of adjacent holes in a horizontal row of the perforated panel. In order to install the support element, initially, on the panel, the element is tilted upward, until it is almost parallel with the panel. This permits the upturned base lugs to be inserted in a pair of panel openings, after which the element is pivoted downward to bring the unit into locked and supported relation to the panel.

As may be understood, conventional support elements, as described above, have certain inherent disadvantages which tend to reduce the efficiency of the overall display assembly. For example, a 6 or 8 inch, or sometimes even an 18 to 24 inch, marginal area at the top of the perforated panel is unusable when the panel is disposed directly beneath a shelf or other overhead protrusion, as often is the case in connection with merchandise display. Further, when rack-displayed merchandise is arranged in closely spaced vertical rows, it is difficult and sometimes impossible to install or remove a support element in a lower level without first removing some or all of the elements which are at higher levels in a given vertical row.

The difficulties mentioned above have been recognized by others in the trade, and a number of attempts have been made to obviate the problems presented, as by forming the overall support element in two or more pieces, arranged so that a small base piece can be installed on the perforated panel with minimum overhead clearance, after which a larger support portion is connected to the base in a manner which obviates the need for substantial overhead clearance. Despite the theoretical adequacy of these prior proposals, however, none are known to have achieved any widespread commercial acceptance, possibly due in part to the additional cost and complication necessitated by prior designs and in part to the incon-

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venience of having to store and handle separate parts for each support element.

In accordance with the present invention, a novel and improved support element is provided for perforated panel displays and the like which, while accommodating installation on the perforated panel with minimum overhead clearance requirements, is characterized by economy of manufacture and convenience of handling and use. More specifically, the support element of the invention comprises a novel two-piece articulated assembly, the individual components of which are permanently connected for maximum convenience in handling, storage, and utilization.

According to one of the significant concepts of the invention, the new support element, while being comprised of a base part and a supporting part as in more conventional units, is so constructed and arranged that both the base and supporting parts separately engage the perforated panel and conjointly and cooperatively serve to secure the supporting part in a desired, highly stable manner. The advantageous construction according to the invention is such as to provide a functionally superior unit, while simplifying manufacturing procedures, minimizing material requirements, and facilitating installation and removal.

As a more specific aspect of the invention, the support element of the invention comprises a supporting member, including an outwardly extending hook or shelf support and a base member which is pivotally connected to the supporting member. The base member includes one or more hooklike locking lugs arranged to project through and lock behind a perforated display panel substantially in the manner of the locking lugs of conventional hanger assemblies. However, in accordance with the significant aspects of the invention, by advantageously associating the base member for pivotal movement relative to the supporting member about a horizontal axis, the base member may be pivoted relative to the supporting member into a "release" position. When the base member is in its release position, the normally upwardly extending portions of the locking lugs are disposed in a horizontal or near horizontal position, permitting insertion and removal of the assembly as a whole while the outwardly extending supporting member is retained in a substantially horizontal position. In other words, the unit as a whole can be applied to and removed from a perforated display panel without tilting the supporting member to any significant extent.

As will be more fully appreciated, the basic principles of the present invention may be incorporated in a variety of specific devices. In one particularly advantageous form of the invention, however, the supporting member of the assembly advantageously may be formed of wirelike material, bent to form an outwardly extending merchandise hook, for example, and provided at its base end with an integral stabilizing element disposed generally at right angles to the outwardly extending hook. The base part of the assembly advantageously may be of sheet metal construction, stamped to provide two pairs of lugs, one of the pairs being projected rearward and upward to form L-shaped locking lugs, and the other pair being wrapped around horizontally disposed portions of said wirelike supporting member to form a pivotal connection. The specified arrangement affords maximum convenience of utilization while maintaining manufacturing costs at a practical minimum. As will be made apparent, however, the elements of the new support element may be constructed of a variety of materials and formed in a variety of ways, of which the present description is only illustrative.

For a better understanding of the invention, reference

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should be made to the following detailed description and to the accompanying drawing, in which:

FIG. 1 is a cross-sectional view taken on a vertical section line through a perforated panel display arrangement incorporating a support element according to the invention, the support element being illustrated in its "release" condition, ready for application to or removal from the perforated display panel;

FIG. 2 is a cross-sectional view similar to FIG. 1, illustrating the support element of the invention in an installed, locked condition, supporting display merchandise;

FIG. 3 is a cross-sectional view taken generally along line 3—3 of FIG. 2;

FIG. 4 is a top plan view of a modified form of support element according to the invention; and

FIG. 5 is a cross-sectional view taken generally along line 5—5 of FIG. 4.

Referring now to the drawing, the reference numeral 10 designates generally a typical perforated display panel which may be of conventional construction. Commercially available perforated panels typically may be of sheet metal or of composition board of  $\frac{1}{4}$  inch or  $\frac{1}{2}$  inch thickness (the illustrated panel being a board of  $\frac{1}{4}$  inch thickness) which is provided over most or all of its surface with openings 11 spaced on 1 inch centers. In the illustrations of FIGS. 1 and 2, the perforated panel 10 forms part of a display panel assembly which includes a forwardly extending overhead shelf 12.

A support element according to the invention is comprised of a base member 13 and a supporting member 14. Advantageously, the supporting member is formed of wirelike material (but could be formed of sheet metal or other suitable material) and comprises a generally horizontal, outwardly extending portion 15, typically having an upturned outer end extremity 16. At its base or inner end, the supporting member 14 advantageously is bent horizontally and at right angles to the outwardly extending part 15 to form a pivot element 17 (see FIG. 2). The wirelike material is then bent generally downward in a vertical plane and then generally upward in a vertical plane, to form spaced stabilizing portions 18, 19, and then horizontally and in aligned relation to the pivot element 17, to form a second, opposed pivot element 20. As shown clearly in FIG. 3, the pivot elements 17, 20 and the stabilizing portions 18, 19 advantageously are in a closed configuration, with the outwardly extending part 15 extending generally horizontally outward from the top of the closed figure, between the pivot element such that the pivot elements and the stabilizing portions serve to stabilize the supporting member in both its vertical and horizontal directions. The specific configuration of the stabilizing portions is not considered to have particular significance, and it is contemplated that a wide variety of configurations may be utilized.

As one of the specific and significant aspects of the invention, the base member 13 is pivotally connected to the supporting member 14 and includes locking lugs 22 arranged to be inserted into the openings 11 of the perforated panel and to be brought into locked position relative thereto by pivoting movement of the base member. In a specific, advantageous embodiment, the base member 13 is formed of sheet metal, or other suitable material, and is formed to provide a manipulating lever 21 and pairs of locking and pivot lugs 22, 23, respectively. As shown in FIG. 3, the base member 13 of the illustrated device is of a shape and size to be received conveniently within the opening or area outlined by the stabilizing portions of the supporting member, and the pivot lugs 23 advantageously extend upward from the body of the manipulating lever 21 in generally straddling relation to the outwardly extending portion 15. In the illustrated arrangement, the pivot lugs 23 are bent outwardly from the principal plane of the base

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member and are warped around the pivot elements 17, 20 of the supporting member to form an effectively permanent pivotal connection. Most advantageously, the pivot lugs 23 are so disposed relative to the flat plane of the manipulating lever 21 as to permit the manipulating lever to lie flat against the front surface of the perforated display panel while holding the pivot elements and stabilizing portions of the hanger part in flat relation against the front surface of the panel, substantially as illustrated in FIG. 2. To this end, the horizontal pivot axis defined by the pivot lugs 23 is spaced forwardly of the back surface of the manipulating lever 21 a distance substantially equal to the radius of the wirelike material forming the supporting member 14.

The locking lugs 22, formed as an integral part of the base member 13 and disposed in straddling relation to the pivot lugs 23, are bent rearwardly and then upwardly, to have a generally L-shaped configuration. As shown in FIG. 2, the vertical legs of the L-shaped lugs are spaced rearward of the pivot elements 17, 20 of the supporting member a distance of approximately  $\frac{1}{4}$  inch, sufficient to accommodate between the pivot elements and the locking lugs the maximum thickness of perforated panel to be accommodated.

In accordance with significant aspects of the invention, the base member 13 is adapted to be pivoted between a locking position, illustrated in FIG. 2, and a release position, illustrated in FIG. 1. In the release position, the manipulating lever 21 is pivoted forward and upward into substantially horizontal disposition. In the illustrated arrangement, the manipulating lever has a lifting tab 24 at its lower extremity to facilitate engagement of the lever when the assembly is locked on the perforated display panel, as illustrated in FIG. 2. Accordingly, in the release position shown in FIG. 1, the manipulating lever of the base member is disposed at a small angle relative to the generally horizontal, outwardly extending portion 15, by reason of engagement of the lifting tab 24 with the bottom of the portion 15. Further upward movement could be accommodated, of course, by notching out the lifting tab 24, as will be understood.

When the base member 13 is in its release position, the normally vertical legs of the L-shaped locking lugs 22 are in a generally horizontal disposition. Thus disposed, the locking lugs may be inserted directly into the openings 11 in a perforated panel upon horizontal movement of the overall support element. Thus, in the mounting of a support element of the invention, the locking lugs 22 are inserted in predetermined openings of the display panel, as illustrated in FIG. 1, until the stabilizing portions 18, 19 of the hanger part are seated against the outer face of the display panel. Thereupon, the manipulating lever 21 of the base member is pivoted downwardly into flat relation to the surface of the panel, as illustrated in FIG. 2, swinging the locking lugs 22 into upright position to lock the assembly in place on the panel.

In accordance with one aspect of the invention, the pivot axis of the base member 13, as defined by the pivot lugs 23, ideally is located above the lowest point of contact between the vertical legs of the locking lugs 22 and the back of the display panel 10, and essentially is disposed at a level not substantially below that point. In a practical embodiment of the invention, however, considering applicable friction effects, the pivot axis conveniently may be located, as shown in FIG. 2 of the drawing, above the horizontal or bottom leg of the locking lug and perhaps just slightly below but immediately adjacent the lowest level of contact between the vertical legs of the locking lugs and the back of the display panel. The arrangement is such, according to the invention, that, taking into consideration the location of the pivot axis and the applicable friction forces in effect, the support element in its locked position, as shown in FIG. 2, is inherently stable to downward forces applied to its outer

end. In this respect, it will be understood that, if the pivot axis is too far below the illustrated level, downward forces applied to the outer end of the hook will tend to pivot the base member 13 upward toward its release position. On the other hand, if the pivot axis is raised significantly above the level illustrated, difficulty will be experienced in pivoting the base member to its locked position, at least when utilizing conventionally available perforated display panels with conventionally dimensioned locking lugs. Thus, in general, in a support element suitable for conventional perforated panel boards, the pivot axis should be disposed in the immediate vicinity of the lower or horizontal leg of the locking lug and advantageously slightly above the level of that leg.

One of the unique advantages of the support element of the invention resides in the ability to install and remove the unit while at all times retaining the outwardly extending portion 15 thereof in its substantially horizontal disposition. Thus, the support element may be installed at a location immediately beneath a shelf 12, with an absolute minimum of overhead clearance. In contrast, commonly available conventional units, which have to be bodily tilted upward for installation and removal, require clearance below an overhead obstruction of 6 to 8 inches for merchandise hangers and up to 18 to 24 inches for shelf brackets, resulting in significant waste of space on the display panel. More important, perhaps, the support element of the invention may be installed and removed from an established display panel, which includes filled support elements above the location from which a support element is to be installed or removed. The support element of the invention may be installed in or removed from an area no larger than that required to accommodate the displayed merchandise. In contrast, with conventional equipment, it is almost always necessary to remove or at least unload one or more support elements above a location from which a unit is to be removed or in which one is to be installed.

In the modified form of the invention illustrated in FIGS. 4 and 5, provisions are made for imparting increased strength and stability to the support element. To this end, the inner or base portion 30 of the supporting member 31 is so formed as to provide wirelike pivot elements 32, 33 which include portions offset slightly from the principal plane of the base portion 30. As particularly illustrated in FIG. 4, the portions of the pivot elements 32, 33 immediately adjacent the supporting member are offset in a direction outward from the perforated panel 34 a distance at least equal to, and advantageously slightly somewhat greater than, the thickness of the pivot lugs 35 of the pivoting base member 36.

In the above-described arrangement for the modified device of FIGS. 4 and 5, the pivot lugs 35 may be of such length as to be wrapped substantially around the wirelike pivot elements 32, 33, such that, when the supporting member is installed, portions of the pivot lugs lie between the perforated panel 34 and the wirelike pivot elements 32, 33, substantially as indicated in FIG. 5. By reason of the outwardly offset portions of the pivot elements, however, there is no substantial contact between the pivot lugs and the perforated panel. Rather, the principal contact is at the outer end extremities 37, 38 of the pivot elements 32, 33, as clearly illustrated in FIG. 4. This arrangement provides for advantageous side-to-side stability of the support element, as will be understood.

A significant advantageous feature of the present invention resides in the fact that the supporting member itself need be manipulated only in inward and outward directions for installation, and locking and release are effected quickly and easily by a simple pivoting movement of the base member. Coupled with this, the base and supporting members of the assembly are permanently connected so that the user need not be concerned with the management of separate, loose parts, and is not re-

quired to perform assembly operations in order to complete an installation.

The specific, illustrated form of the invention is particularly advantageous in that it may be formed of a continuous length of wirelike material. The pivot elements and stabilizing portions form a closed figure which stabilizes the supporting member against both vertical and horizontal swinging movement and neatly accommodates the base member. The completed device thus combines optimum functional advantages with a pleasing and modern appearance. At the same time, the device of the invention is capable of mass production manufacture at a cost level which is economically advantageous.

A collateral advantage of the device of the invention resides in the fact that, where desirable or expedient and where adequate overhead clearance is available, the larger part may be pivoted upward without releasing the base part from the perforated display panel.

It should be particularly understood, however, that the specific form of the invention herein illustrated and described is intended to be representative only, as many variations may be made therein without departing from the clear teachings of the disclosure. By way of example only, the elements of the support element may be formed of any suitable material, in a variety of shapes and for a variety of purposes. Typical end uses of the new support element include: display merchandise hanger, shelf support bracket, tool rack, cabinet support, and many others. Accordingly, reference should be made to the following appended claims in determining the full scope of the invention.

I claim:

1. A support element for use with a perforated display panel or the like, comprising
  - (a) a base member including at least one upturned locking lug,
  - (b) a supporting member connected to said base member for pivotal movement of the base member,
  - (c) said supporting member being connected to said base member on a horizontal pivot axis and having a stabilizing portion extending below said axis,
  - (d) said base member being pivotable relative to said supporting member from a locking position, in which said locking lug is upright, to a release position, in which said lug is adapted to be substantially at right angles to the display panel.
2. A support element according to claim 1, further characterized by
  - (a) said base member having generally L-shaped lugs adapted to be inserted through and locked behind a perforated display panel,
  - (b) said pivot axis being disposed adjacent and not substantially below the level of the lower leg of the L-shaped lugs.
3. A support element according to claim 1, further characterized by
  - (a) said supporting member being formed of wirelike material and having an outwardly extending portion and wirelike pivot element disposed at right angles to the base end of the outwardly extending portion,
  - (b) said base member being pivoted to said pivot elements on opposite sides of said outwardly extending portion.
4. A support element according to claim 3, further characterized by
  - (a) said base member being of sheet metal construction and having a flat portion and two pairs of integral lugs formed on the top of said flat portion,
  - (b) a first pair of said lugs being formed around the pivot elements of said hanger member and constituting pivot lugs,
  - (c) a second pair of said lugs being formed in L-shaped configuration and forming said locking lugs.
5. A support element according to claim 4, further characterized by

- (a) said supporting member comprising a single, integral length of wirelike material formed to provide
- (1) an outwardly extending portion,
  - (2) a stabilizing portion disposed generally at right angles to the outwardly extending portion, and
  - (3) a pair of pivot elements,
- (b) said pivot elements and said stabilizing portion being disposed substantially in a plane and being arranged in generally circumscribing relation to said base member.
6. A support element according to claim 1, further characterized by
- (a) said locking lug being of generally L-shaped configuration,
  - (b) said pivot axis being disposed a predetermined limited distance above the lower leg of said locking lug.
7. A support element for use with a perforated display panel or the like, comprising
- (a) a supporting member,
  - (b) a locking lug in the form of an upstanding hook of L-shaped configuration,
  - (c) means connecting said locking lug to said supporting member for pivotal movement of the locking lug about a predetermined axis disposed immediately adjacent and above the lower leg of said L-shaped lug, between locking and release positions, and
  - (d) means being provided for stabilizing said supporting member in a predetermined position when said locking lug is in said locking position.
8. A support element according to claim 7, further characterized by
- (a) a supporting member,
  - (b) a locking lug, and
  - (c) means connecting said locking lug to said supporting member for pivotal movement of the locking lug about a predetermined axis, between locking and release positions, and
  - (d) said supporting member including an outwardly extending portion and laterally extending pivot elements at its base end,
  - (e) limited portions of said pivot elements immediately adjacent said outwardly extending portion being offset in an outward direction relative to lateral extremities of said pivot elements,

- (f) said connecting means including pivot lugs embracing the outwardly offset portions of said pivot elements,
- (g) the lateral extremities of said pivot elements providing for side-to-side stabilization of said supporting member.
9. A fixture for use with a perforated display panel or the like, comprising
- (a) a first element having portions adapted to bear against front surfaces of a perforated display panel and portions adapted to extend generally perpendicularly outwardly of the front surfaces of a display panel in a fixed generally horizontal plane;
  - (b) said outwardly extending portions being adapted to provide support for an object;
  - (c) a second element including at least one locking lug means adapted to be engaged with rear surfaces of a display panel;
  - (d) means inseparably connecting said first and second elements for manipulative movement in a manner whereby said second element may be moved, from a release position in which said lug means will be substantially parallel to said outwardly extending portions of said first element to a lock position in which said lug means will be perpendicular to said outwardly extending portions of said first element;
  - (e) said second element being movable between said locking and release positions in the absence of substantial movement of said outwardly extending portions of said first element from said fixed plane.
10. A fixture in accordance with claim 9, in which
- (a) said outwardly extending portions of said first element extend outwardly beyond said second element; and
  - (b) said locking lug means is disposed substantially immediately adjacent said means inseparably connecting said first and second elements.

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