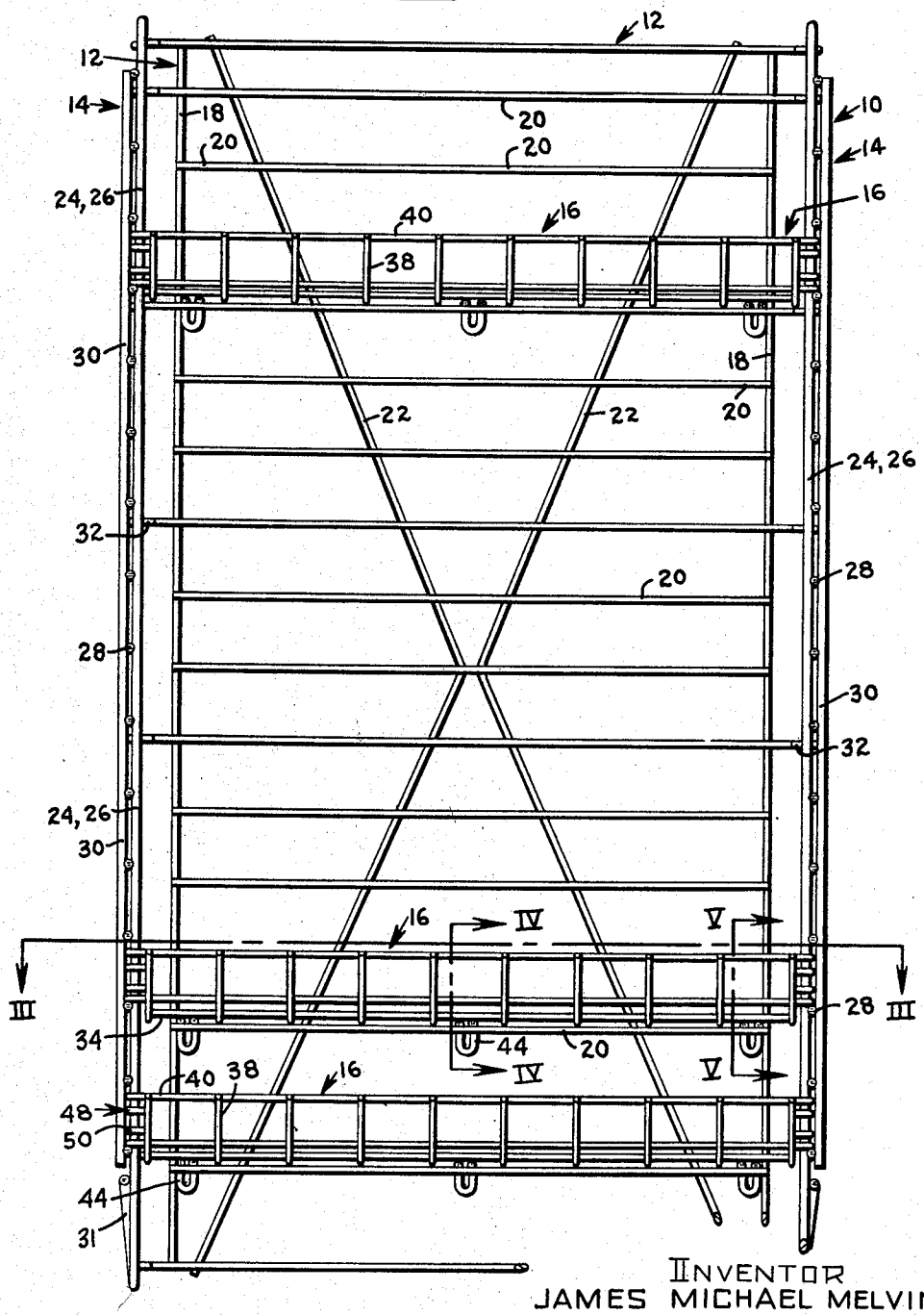
May 18, 1965 J. M. MELVIN 3,183,862

FOLDABLE DISPLAY DEVICE

Filed Dec. 10, 1963 3 Sheets-Sheet 1

FIG. 1

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FOLDABLE DISPLAY DEVICE

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FIG.- 2

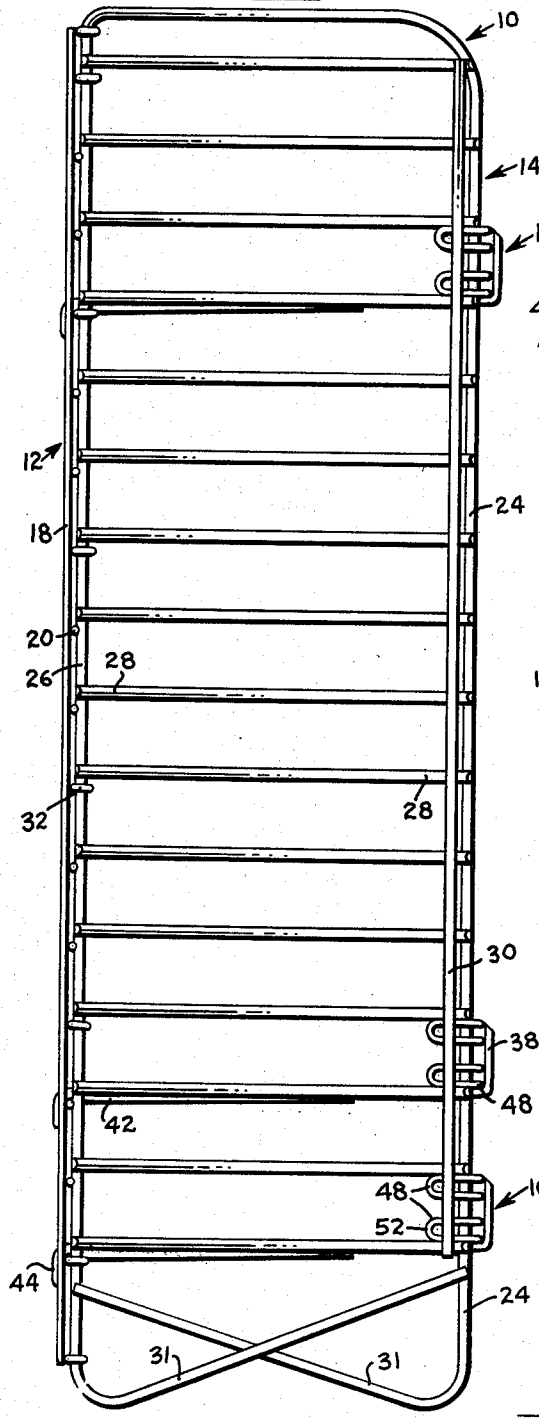
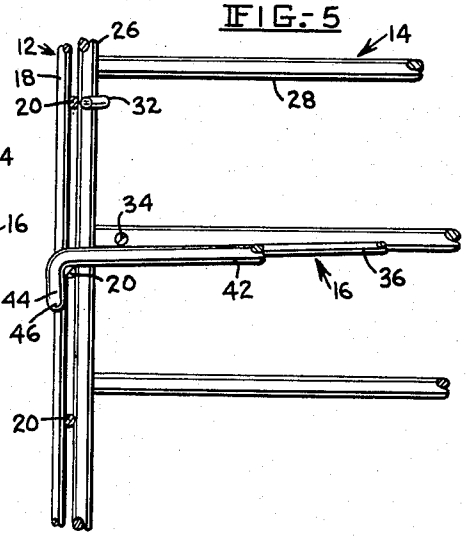



FIG.- 5



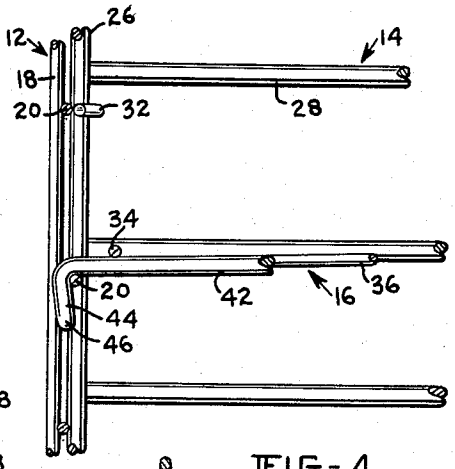




FIG.- 4

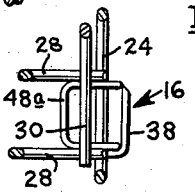



FIG.- 6

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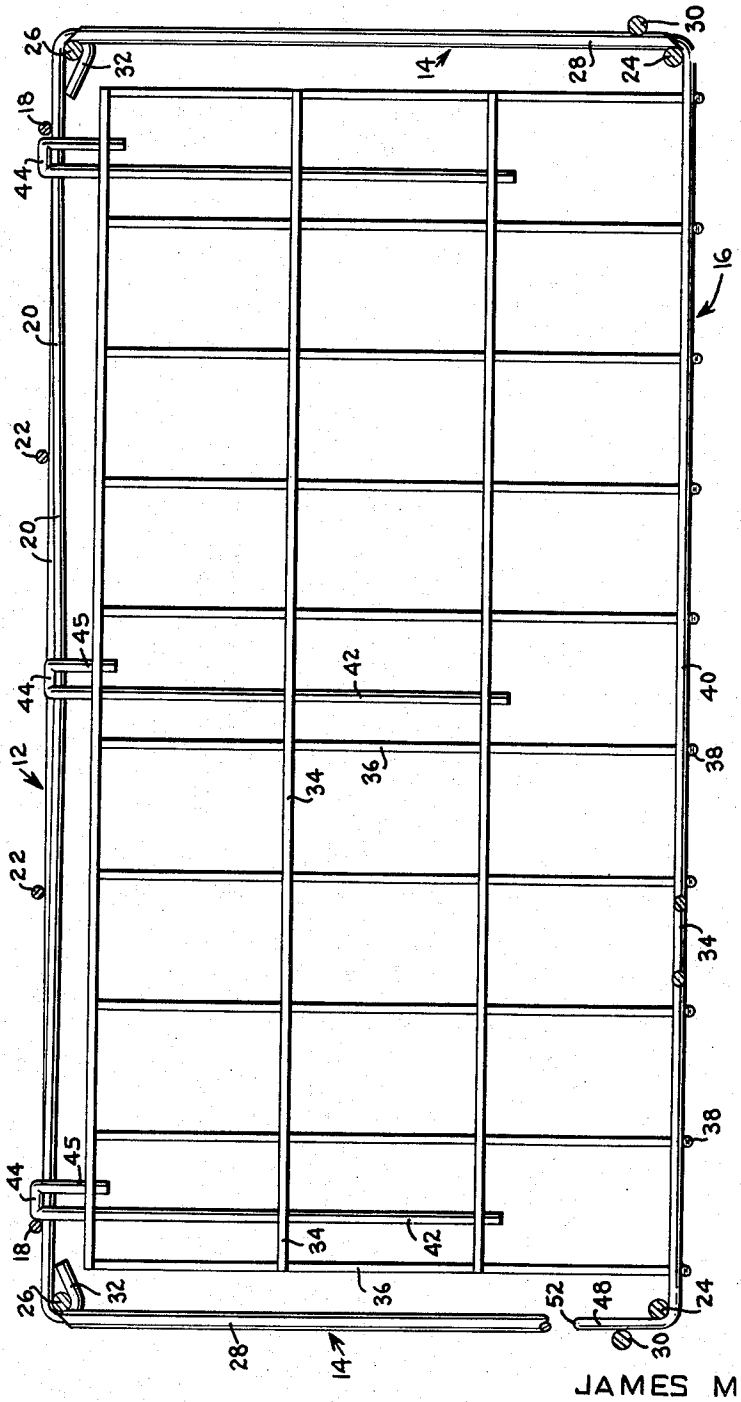


FIG. 3

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3,183,862

# FOLDABLE DISPLAY DEVICE

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6 Claims. (Cl. 108—144)

This invention relates to display devices commonly referred to as display racks, and more particularly to display racks made from heavy wire or rod stock.

An object of the present invention is to provide a novel and advantageous display rack which may be readily and conveniently assembled from a flat or collapsed condition for shipping and storage, into an extended or rack-forming condition, and which may likewise be readily and conveniently disassembled.

A further object is to provide a foldable display rack which is sturdy and rigid when arranged into rack-forming position, without requiring movable latch- or holding-members other than the interengaging portions of the rack members, and without requiring auxiliary holding means such as screws or straps.

A further and general object of the invention is to provide a new and advantageous display rack which is light in weight and economical in formation, which is sturdy in use, and which is readily and conveniently assembled or disassembled quickly and without tools, and which provides for ready and convenient change of shelf-placement, without tools.

In carrying out the invention in an illustrative embodiment, there is provided a display rack including a back panel having side panels hinged thereto, and a plurality of shelves optionally locatable to provide the desired spacing of shelves when the rack is used. The panels and shelves are advantageously formed of wire or rod, providing lightness of weight and openness of display of the articles supported on the rack; and integrally-formed holding-features provide sturdiness and rigidity, with the means which secure the shelves in position also co-operating to maintain the perpendicular relationship of the back and side panels. The parts are adapted to be shipped and stored in a collapsed or knocked-down condition, and the holding-features co-operate to maintain a securely-held rigid assembly when the parts are arranged into rack-forming condition without auxiliary holding means such as screws.

The above description of a display rack of the present invention is introductory and rather general; and the above-mentioned and other objects, concepts, features, and advantages of the present invention will be further apparent from the following more detailed description of an illustrative embodiment thereof, reference being had to the accompanying somewhat diagrammatic drawings, in which:

FIG. 1 is a front elevational view of a display rack according to an illustrative embodiment thereof, arranged in extended or rack-forming condition;

FIG. 2 is a side elevational view thereof;

FIG. 3 is a cross-sectional view taken generally along section-line III—III of FIG. 1, on enlarged scale, showing a plan view of a shelf component of the rack;

FIGS. 4 and 5 are detail views taken generally along section lines IV—IV and V—V, respectively, of FIG. 1; and

FIG. 6 is a detail view of interengaging shelf and side-panel members of a modified embodiment.

As shown in the drawings, a novel display rack **10** of the present invention comprises the general components of an upright back panel **12** and side panels **14**, and a plurality of shelves **16**.

The back panel **12** is shown as comprising a pair of spaced vertical members **18**, several horizontal members **20** in a vertically spaced series, and a pair of vertically-extending braces shown as V-shaped members **22**, all shown as formed of heavy wire or rod stock and suitably joined as by welding to provide a unitary frame.



The side panels **14** are each shown as comprising a pair of spaced vertical members, front and rear ones of which are respectively identified by reference numerals **24** and **26**, several horizontal members **28** in a vertically spaced series, and another vertical member **30** adjacent the front vertical member **24** but shown (see FIGS. 1 and 3) as laterally spaced therefrom by the thickness of the horizontal members **28**, providing both strength and an assembly feature yet to be described. Lower portions of the vertical members **24** and **26** are laterally-turned to provide a base or feet **31** for the rack; and the members of the side panels **14**, like those of the back panel **12**, are shown as formed of heavy wire or rod stock, and are suitably joined as by welding to provide each side panel **14** as a unitary frame.

Permanent but relatively movable interconnection of the back panel **12** and side panels **14** is shown as advantageously provided by having certain of the horizontal members **20** of the back panel **12** integrally extended and hooked over, as shown by the bights or hooks **32**, which loosely hook around the rear vertical members **26** of the side panel **14**, hingedly interconnecting the back panel **12** and side panels **14**, and permitting hinged relative movement of the panels **12** and **14** between a flat or collapsed condition (not shown) and the rack-forming position illustrated.

The shelves **16** are also shown as formed of heavy wire or rod stock, suitably welded to provide each shelf **16** as a unitary frame. Each shelf **16** as shown comprises an article-supporting grid of horizontally-extending lateral members **34** and fore-and-aft members **36**.

The forward portion of the fore-and-aft shelf-member **36** is shown as integrally extended and upturned to provide risers **38**, and transversely along the top of the risers **38** there is passed an upper horizontal member **40**, the risers **38** and member **40** thus advantageously providing a front rim or wall for the shelf, preventing display articles from falling therefrom and providing a location for signs such as for advertising or price.

Now will be described the advantageous means which provide convenient installation of the shelves **16** in optionally-selectable positions, and which provide sturdiness and rigidity to the assemblage, all without auxiliary holding means such as screws or bands or movable lathes, but utilizing interengaging portions of rack components integrally provided thereon.

Thus, according to concepts of the present invention, latch-rods **42** are carried by each shelf **16**, running fore-and-aft along the rear portion of the shelf, and shown as providing a downwardly-extending finger **44**. Three fingers **44** are shown for each shelf **16**; and each is shown as advantageously formed by an integral extension of latch-rod **42**, successive portions being formed to run downwardly, then laterally, then upwardly, then forwardly along the latch-rod **42** where the terminal portion **45** of the extension is secured to a shelf-member **34**. The finger **44** thus formed is both strong and inherently provides smooth entry-portion **46** by the smoothness of the rod. The fingers **44**, when the shelf is installed on the rack, overlie a horizontal member **20** of the back-panel, thus supporting the rear portion of the shelf and restricting forward movement thereof; and (see FIGS. 1 and 3) the fingers **44** abut vertical members **18** of the back panel **12**, thus restricting lateral movement of the rear portion of the shelf **16**.

Snugness of assemblage is enhanced by having at least one of the fingers **44** being formed (see FIG. 4) to have a slight forward inclination, and with its location on the

shelf 16 being such that a slight resilient deformation of the back-panel member 20 is necessary to effect engagement of the finger 44 thereover, as is apparent in the drawing in FIG. 3, and from the location of member 20 being slightly displaced with respect to vertical member 18 in FIG. 4 when compared to FIG. 5.

Forward support of the shelves 16 is shown by fingers 48 extending from the forward portions of the shelves 16 and snugly fitting (see FIG. 3) into the recess slot or space between the slightly-laterally-displaced vertical members 24 and 30 of the side panels 14. This displacement of members 24 and 30, as mentioned above, is provided by the thickness of side panel horizontal members 28, such members 28 thus integrally providing locating means establishing the desired spacing for sung reception of the finger 48. More specifically, in the embodiment shown, the spacing is also dependent upon the type of welding operation; for as shown in the right portion of FIG. 3, the welding of members 24 and 30 onto member 28 locates them at a spacing slightly less than the thickness of member 28.

The fingers 48 are shown as advantageously provided by integral extensions of the forward one of the horizontal shelf-members 34 and the upper horizontal shelf-member 40, portions of such extensions being formed to run rearwardly, then vertically, then forwardly, then laterally inwardly where a terminal portion 50 is secured to a riser-member 38.

The fingers 48, like fingers 44 previously described, are both strong and inherently provide a smooth entry-portion 52, by the smoothness of the rods from which members 34 and 40 are formed. This smoothness provides ease of insertion of fingers 48 between members 24 and 30.

Fingers 48 rest upon horizontal members 28 of the side-panels, thus supporting the front portion of the shelf 16, and, interfitting between members 24 and 30; fingers 48 restrict lateral movement of the front portion of the shelf and maintain a perpendicular orientation of side panels 14 with respect to the back panel 12; moreover, since fingers 48 abut the front of vertical members 24 of the side panels 14, the fingers 48 restrict rearward movement of the shelf 16 and thus co-operate with the fingers 44 to restrict all fore-and-aft movement of the shelf.

It will also be observed in FIG. 2 that the height of fingers 48 is such as to substantially fill the space between adjacent horizontal members 28, the upper of such members 28 thereby acting to block upward movement of the shelf 16, further adding to the snugness of the assembly.

FIG. 6 illustrates a modification wherein a finger 48*a* replaces the finger 48 of the other embodiment, and comprises a unitary member shown of generally U-shape, the ends of which extend respectively from the front horizontal member 34 and the upper horizontal member 40 of the shelf 16 as in the first embodiment.

A further advantage is achieved by the nature of the holding means effected by the fingers 44 and 48, in that the fore-and-aft movement of fingers 48 for releasement thereof requires a prior releasing of fingers 44. The fingers 44, however are relatively inconspicuously located at the rear of the rack; and thus it is unlikely that unauthorized personnel will be able to disarrange or disassemble the shelves or rack.

It will be noted that a location and spacing co-operation exists throughout, for purposes mentioned above, and achieving desired advantages. Thus, the depth (fore-and-aft) of the shelves 16 and the spacing of the shelf-fingers 44 and 48 or 48*a* are related to the width (fore-and-aft) of the side panels 14 when the thickness of backmember 20 is considered; the thickness of fingers 48 or 48*a* is related to the spacing of members 24 and 30 as established by members 28; the position of fingers 44 is related to the location of back panel members 18; the lateral spacing of back panel hooks 32 is related to the lateral spacing of shelf-fingers 48 and 48*a*; the horizontal members 28 of the two side panels 14 are at elevations the same for both side



panels, thus providing supports for the shelf, and are slightly above the associated horizontal member 20 of the back panel 12, member 20 providing a co-operating support for the shelf; and the vertical spacing between the side panel horizontal members 28 is such as to accommodate the shelf-fingers 48 and 48*a*.

It is thus seen that concepts and features of the present invention provide advantages and economy of fabrication and assembly, achieving desirable results of sturdiness and rigidity of a foldable rack by advantageous formation of the components, and economically utilizing a co-operation of location and spacing of features thereof. Assembly and disassembly of the rack, and change of shelf-location, are ready and convenient, requiring no tools, and requiring little or no mechanical aptitude on the part of the user.

It will thus be seen that the foregoing description of the invention according to the illustrated embodiments, considered with the accompanying drawings, that the invention provides a novel and advantageous display rack, having desired advantages and characteristics, and accomplishing its intended objects, including those hereinbefore pointed out and others which are inherent in the invention.

It will be understood that modifications and variations may be effected without departing from the scope of novel concepts of the invention; accordingly the invention is not to be considered limited to the specific form or arrangement herein described and shown, or specifically covered by the claims.

The claims of the invention are:

1. A display rack, comprising
an upright panel including a series of vertically spaced members,
means providing a recess in said panel adjacent each of said vertically spaced members;
a shelf;
a finger carried by said shelf and adapted to engage one of said recesses to restrict the shelf against lateral movement and to rest on one of said vertically spaced members to support said shelf;
said finger being provided by heavy wire or rod extending from said shelf and formed to run rearwardly, then forwardly, providing a smooth entry-portion for entering into said recess;
said shelf including a laterally extending member from which said finger is formed as an integral extension thereof.

2. A display rack, comprising
an upright panel including a series of vertically spaced members,
means providing a recess in said panel adjacent each of said vertically spaced members;
a shelf;
a finger carried by said shelf and adapted to engage one of said recesses to restrict the shelf against lateral movement and rest on one of said vertically spaced members to support said shelf;
said finger being provided by heavy wire or rod extending from said shelf and formed to run rearwardly, then forwardly, providing a smooth entry-portion for entering into said recess.

3. A display rack, comprising:
a back panel including a plurality of horizontally extending members;
a shelf;
means rearwardly extending from the shelf and providing a downwardly extending and forwardly facing finger adapted to operatively hook over one of said horizontally extending members of the back panel to support the rear portion of the shelf and to restrict forward movement of the shelf with respect to the back panel;
means supporting the shelf at not less than a certain distance in front of the back panel, the distance being such that resilient deformation must be imparted to effect operative engagement of the finger and the horizontally extending member, thereby imparting

stress therebetween which maintains a tight relationship thereof.

4. A display rack, comprising:

a back panel including a plurality of horizontally extending members;

a shelf;

means rearwardly extending from the shelf and providing a downwardly extending and forwardly facing finger adapted to operatively hook over one of said horizontally extending members of the back panel to support the rear portion of the shelf and to restrict forward movement of the shelf with respect to the back panel;

the back panel also including a vertically extending member;

the finger being disposed on said shelf to abut said vertically extending back panel member to restrict lateral movement of the rear portion of the shelf with respect to the back panel.

5. A display rack, comprising:

a back panel;

side panels;

a shelf;

a first releasable holding means, interengaging between the shelf and the back panel;

a second releasable holding means, interengaging between the shelf and the side panels;

the said second holding means being non-releasable until said first holding means has been released.

6. A collapsible display rack comprising

a back panel having vertical end members and a plurality of horizontally disposed elastic members fixedly interconnecting the vertical members;

a pair of end panels having front and back vertically disposed members and horizontally extending cross members fixedly interconnecting across the outsides of said panel vertical members;

hinge means interconnecting a back panel vertical member with an end panel vertical member, permitting both of said end panels to swing about the back panel ends;



a shelf having a length to loosely fit between said end panels when positioned at approximately right angles to the back panel;

at least one hook carried by said shelf, downturned to engage over one of said back panel horizontal members;

a third vertically disposed member fixed to the outer sides of said panel horizontally extending cross members and located a distance along said panel cross members to the rear of the panel front vertical member, defining an opening between the front panel vertical member and its said third vertical member, the opening being limited vertically to be between adjacent panel cross members; and

a shelf supporting finger carried by and at opposite front end portions of said shelf turned approximately horizontally into said opening approximately filling said opening,

said fingers retaining said panels against ends of said shelf when said hook is engaged over said one back panel horizontal member.

**References Cited by the Examiner**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 1,961,391 | 6/34 | Reedy et al. | 211—153 |
| 2,315,595 | 4/43 | Chappory | 211—149 |
| 2,680,522 | 6/54 | Temple | 211—181 X |
| 2,894,643 | 7/59 | Maslow | 211—148 |
| 3,007,708 | 11/61 | Ochs | 211—181 X |
| 3,091,345 | 5/63 | Hoose et al. | 211—181 X |
| 3,093,261 | 6/63 | Salat | 211—181 X |
| 3,115,106 | 12/63 | Gersch | 211—181 |
| 3,127,215 | 3/64 | Hubbard | 211—149 X |

FOREIGN PATENTS

| | | |
|---|---|---|
| 663,326 | 5/63 | Canada. |
| 731,996 | 6/55 | Great Britain. |

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