United States Patent

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[54] **DISPLAY FIXTURE FRAME STRUCTURE**
1 Claim, 4 Drawing Figs.

[52] U.S. Cl. 287/189.36, 211/176, 211/182, 248/220.5, 248/243, 287/54
[51] Int. Cl. E04g 3/08, E04g 7/00, F16b 5/07, F16b 7/22
[50] Field of Search ..... 211/176, 177, 148, 182; 248/243, 220.5, 157; 108/144, 107; 5/296; 287/54 B, 54 C, 54 A, 189.36 C, 189.36; 292/153, 108

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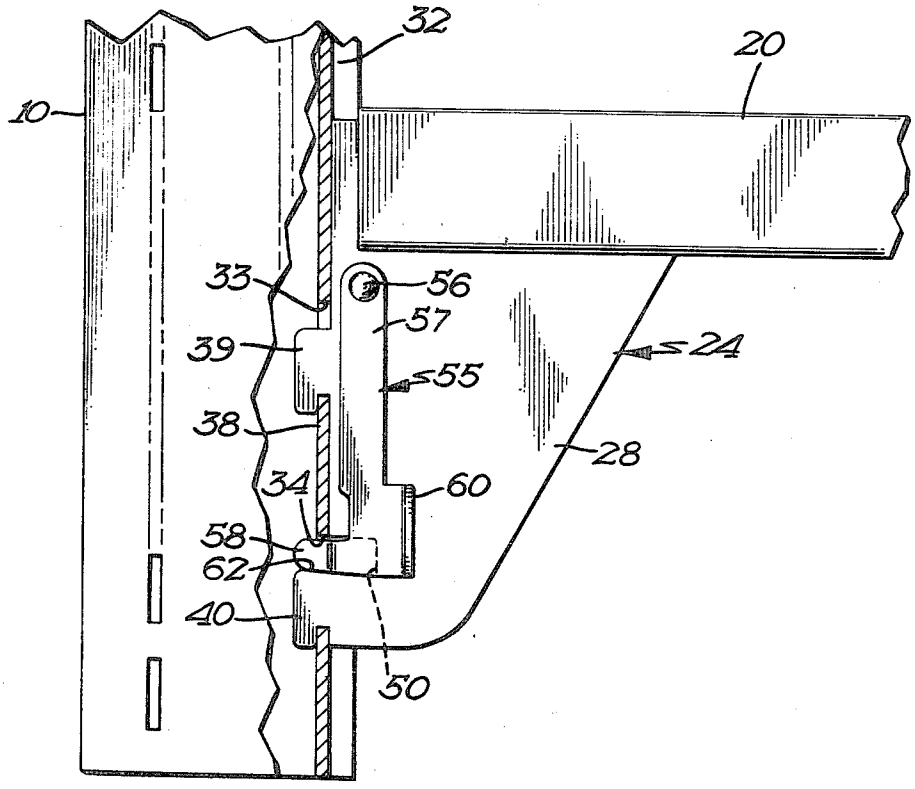
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ABSTRACT: The invention relates to a frame assembly having general utility and specific utility for a display fixture of a type commonly found in department stores. A horizontal sway brace for the fixture is connected by means of hooks to vertically extending members referred to as standards. A pivotally mounted locking device is provided for locking the hooks in their inserted position.



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SHEET 1 OF 2

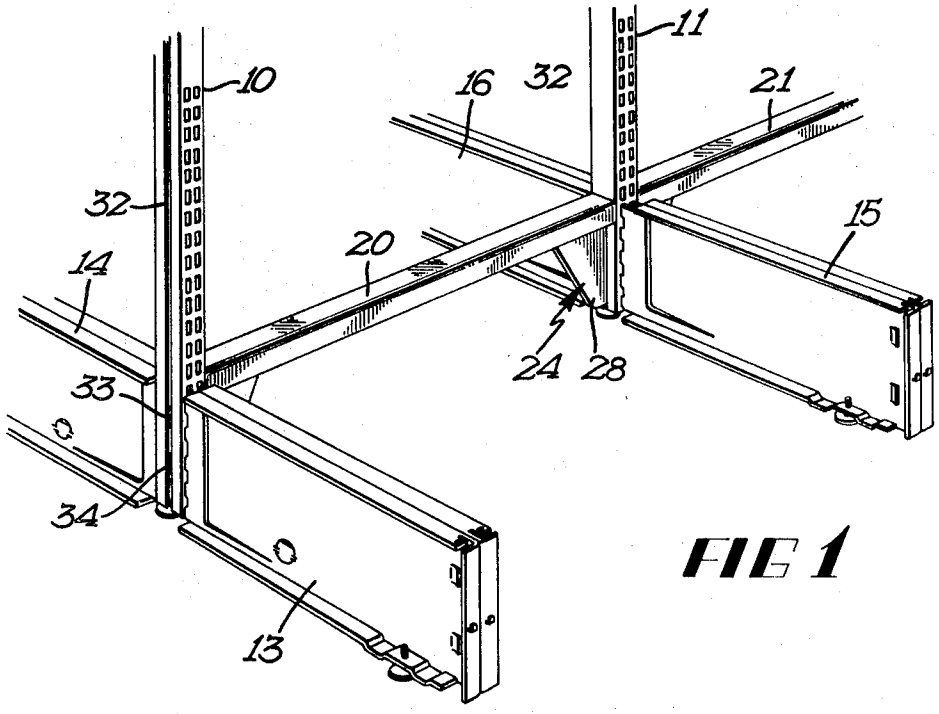


FIG 1

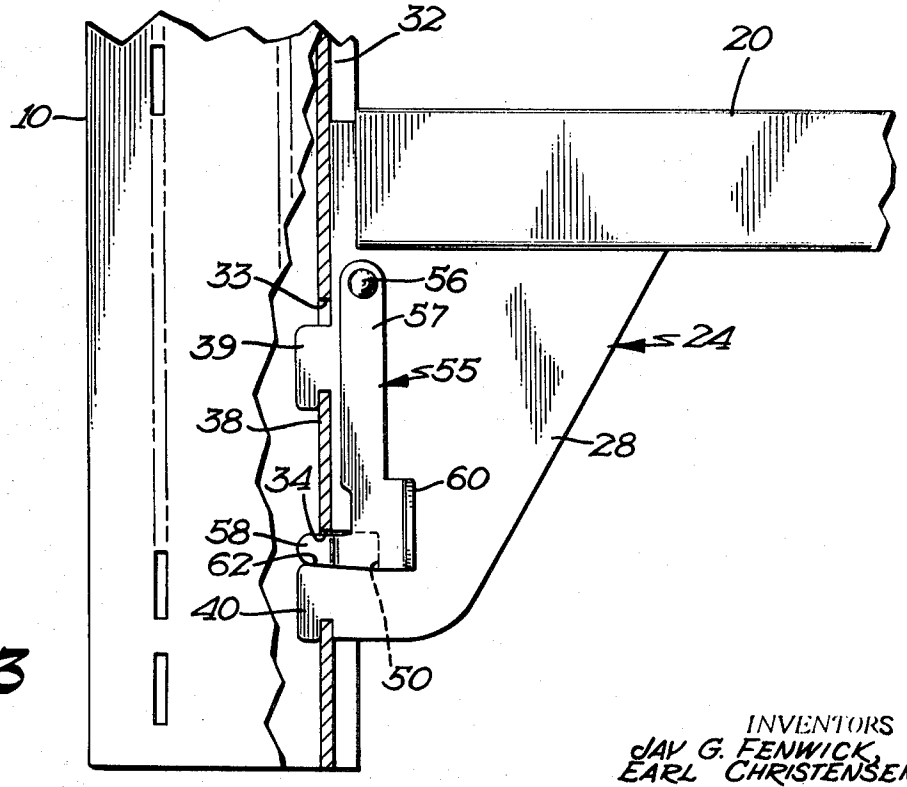


FIG 3

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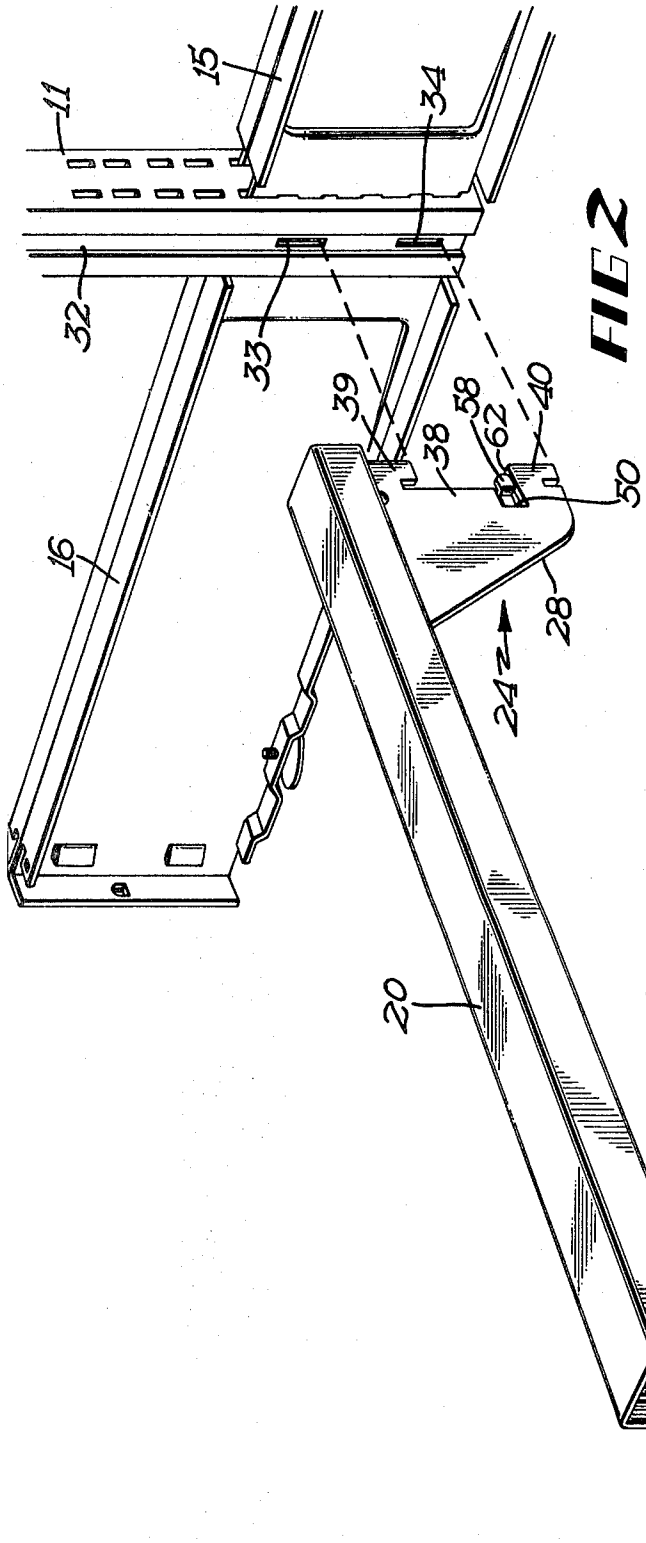


FIG 2

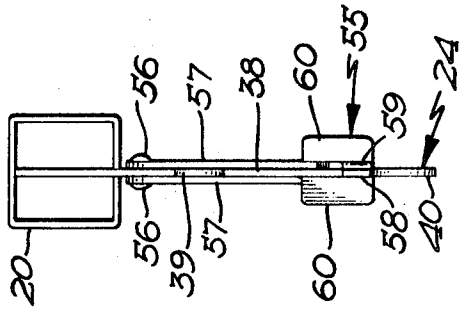


FIG 4

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DISPLAY FIXTURE FRAME STRUCTURE

The invention relates to a structural frame assembly of a type having general utility and specific utility as a frame for a department store display fixture known as a gondola.

Frame structures for certain types of display fixtures are of modular design and comprise vertically extending posts, referred to as standards, and a pair of laterally and oppositely extending base arms for maintaining each standard in a vertical position. The length of the frame structure for a display fixture of the type to which the present invention is directed is optionally dependent upon the number of standards used. Structural members referred to as sway braces are used to connect a series of standards together to complete the frame structure.

The sway braces are connected to the standards by means of a type of hook known in the art as a bed hook. This type of hook has proved its basic utility over the years by having had wide usage in a great many different types of installations.

The use of this type of hook for display fixture frames as referred to above is very advantageous because it provides a resulting strong frame assembly which can be assembled very simply without the use of hand tools. Display fixture frames are subjected to relatively heavy loading, however, and one disadvantage of prior art bed hook designs is that the clearance tolerances necessary to permit the easy assembly referred to prevents the resulting frame from being completely rigid. This disadvantage is overcome or avoided by providing locking means in accordance with the present invention which functions to lock the hooks in their hooked positions with a camming action. The camming action takes up the clearances by forcing mutually engaging parts together to eliminate relative movement between the parts and thus provide a resulting rigid frame structure.

The main object of the invention is to provide a new and improved frame structure having hooks to facilitate assembling the structure and locking means for forcing and maintaining the parts connected by the hooks into a firm and rigid engagement.

A further object is to provide new and improved locking means for hook-type fasteners of the kind referred to above in which a camming action or principle is utilized to firmly secure the hooked parts together to form a strong and rigid frame structure.

Other objects and advantages of the invention will become apparent from the following specification, drawings and appended claims.

In the drawings:

FIG. 1 is a fragmentary perspective view of a structural or frame assembly embodying the invention;

FIG. 2 is a similar view to FIG. 1 except that it is an enlarged lesser overall view with a portion thereof shown exploded;

FIG. 3 is an elevational view of a portion of the structure shown in FIG. 1 with parts broken away to show the hooking and locking arrangement of the invention; and

FIG. 4 is a vertical sectional view taken on line 4—4 of FIG. 3.

Referring to the drawings, there is shown, with reference to FIGS. 1 and 2, a fragmentary perspective view of a frame assembly of a type having general utility. The frame assembly also has specific utility for a particular type display fixture commonly found in department stores and referred to as a gondola.

The frame assembly has tubular type, vertically extending, slotted standards **10** and **11**. The number of such standards used is optional and, in the case of a gondola display fixture, depends on the desired length of the display fixture. On opposite sides of each standard **10** and **11** are laterally extending base arms **13** to **16** which hook into slots in the standards in a known manner to provide lateral vertical support for the standards.

Between each pair of standards, such as between the standards **10** and **11**, and between the standard **11** and the next adjacent standard (not shown) aligned with standards **10** and **11**, are structural members referred to herein as sway braces with sway braces **20** and **21** being illustrated. With reference to FIGS. 2 and 4, each sway brace, such as the sway brace **20**, is elongated and tubular in form and has a rectangularly shaped cross section.

Depending from opposite ends of each sway brace such as the sway brace **20** is a hook member **24**. The two hook members **24** may be and are illustrated as being identical to each other. Each hook member **24** comprises a plate **28** having the general shape of a right triangle. Sway brace **20** has a centrally located, longitudinally extending seam on the bottom side thereof which is enlarged at each end thereof to form slots through which the upper ends of the plates **28** of hook members **24** extend as illustrated. The plates **28** are fixedly attached to the sway brace **20** in the illustrated positions as by welding.

Vertically extending standards **10** and **11** each has, on opposite sides thereof, centrally located, longitudinally extending recessed grooves **32**. In the lower portion of each of the grooves **32** are a pair of vertically aligned and spaced-apart slots **33** and **34**.

Each hook member **24** has a vertical forward edge **38** from which protrudes two hooks **39** and **40**, these hooks being vertically spaced and aligned so as to be registerable with the standard slots **33** and **34**. Each of the hooks **39** and **40** has a lesser height than the height of each of the standard slots **33** and **34**. In the assembly operation, the standards **10** and **11** on the one hand, and the brace **20** on the other hand, are maintained in vertical and horizontal positions, respectively, while being joined, the joining being accomplished by the insertion of the hooks **39** and **40** into the standard slots **33** and **34**.

Immediately above the lower hook **40** and recessed rearwardly relative to the plate edge **38** is a recess **50**. The recess **50** is utilized in connection with locking the hook member in its attached position as will appear further on.

An elongated locking member **55** is pivotally mounted on each of the plates **28**, as with a rivet **56**, at a point vertically above the recess **50**. Locking member **55** has a flat, main body portion **57** which is in a general plane immediately adjacent the general plane of the plate **28** of the hook member **24**. Locking member **55** also has a tab portion **58** which has a normally unlocked position in the recess **50** and is connected to the body portion **57** with an orthogonally arranged strut portion **59**. The tab portion **58** is in the same general plane as the plate **28** of the hook member **24** and a flange portion **60** is provided to facilitate the actuation of the locking member **55**.

When the hooks **39** and **40** are in their inserted positions, as shown most clearly in FIG. 3, there remains a space in the slot **34** above the upper edge **62** of hook **40** into which the tab portion **58** may be inserted to effect a locking action. This insertion of the tab portion is accomplished by applying a force to the flange portion **60** so as to cause pivoting of the locking member **53** in a clockwise direction. Only a limited pivotal movement is possible in that the tab portion **58** can only be moved to and fro between two closely spaced positions which is the space at the top of slot **34** in the standard **10** or **11** and the recess **50** in the plate portion **28** of member **24**.

The upper edge **62** of the hook **40** is slightly inclined to provide a tightening camming action between the tab portion **58** and the hook **40** as the tab portion is moved into its locking position.

There is thus provided camming surfaces between the upper edge of hook **40** and the lower edge of tab portion **58**. These camming surfaces function to firmly secure the hooked parts together to form a strong and rigid frame structure.

We claim:

1. A structural assembly comprising, a vertically extending tubular member having vertically aligned and spaced-apart slots, a hook member having a plate portion with a vertically extending forward edge, at least two hooks protruding forwardly from said edge and being vertically spaced so as to register with two of said slots in said tubular member, said plate

portion forming a recess relative to said forward edge immediately above and inwardly relative to one of said hooks, a lock member pivotally mounted on said plate portion and being movable between locked and unlocked positions, said lock member having a tab portion in the general plane of said plate portion, said tab portion being disposed in said recess to assume an unlocked position and being movable from said unlocked position to a locked position in one of said tubular member slots above said one of said hooks, and camming surfaces between said tab portion and said one of said hooks which effects tightening of said tab portion in its locked position.