United States Patent

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[54] LOCKING DEVICE FOR MODULAR DISPLAY FIXTURE

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[52] **U.S. Cl.**.....**248/188.1,** 248/224

[51] **Int. Cl.**.....**F16m 11/20**

[58] **Field of Search** ...211/177, 176; 248/188.1, 224, 248/243

[56] **References Cited**

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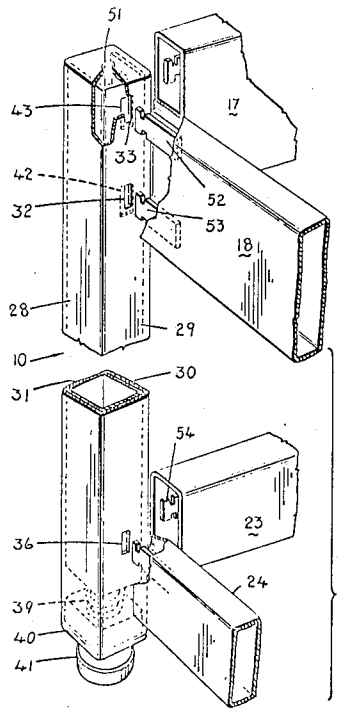
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[57] **ABSTRACT**

A locking device for modular display fixture for the storage or display of merchandise, the structure consisting of at least four tubular corner posts of rectangular cross-section connected together by at least four frame members by a connecting means which locks the frame members to the posts by a mechanism which is actuated to the locked and unlocked position by a screw-driver, allen key, or the like. To that end, each post is formed with at least one pair of first slots in each of two contiguous faces, said two pair of first slots being co-planar. A reciprocatable latch member is mounted in each post and formed with second slots corresponding to and registering with each of the first slots; the portion of the latch member contiguous to each second slot forming a latch plate. A screw member is slidably mounted within the post and connected to said latch member for moving the latch member to a position which partially obstructs its respective first slots; and spring means urging said latch member in the opposite direction. Each frame member has on each of its ends a pair of tongues which are spaced to enter one of the pairs of said first slots and the contiguous second slots; each tongue being formed with an upper latch plate receiving notch, said notch being positioned to register with the adjacent latch plate when the tongue is entered in said slots. By turning the screw, the latch member can be caused to move downwardly and engage in the notch and firmly lock the structure together. Opposite rotation of the screw releases the lock.

8 Claims, 6 Drawing Figures



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SHEET 1 OF 2

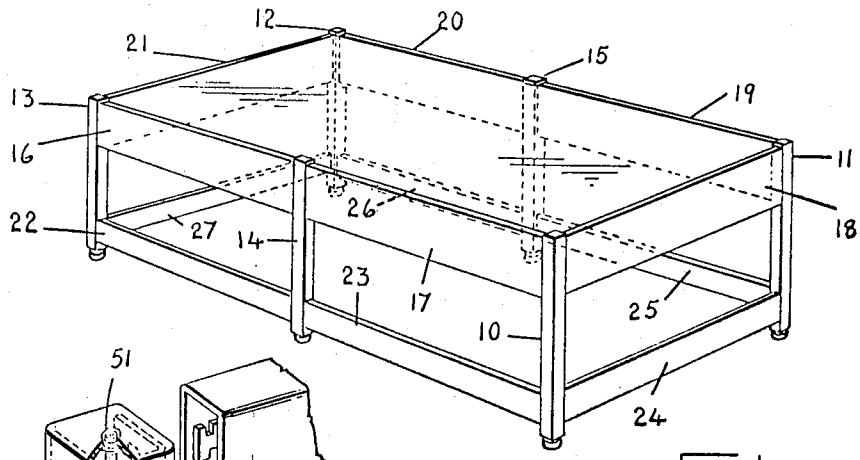


Fig. 1.

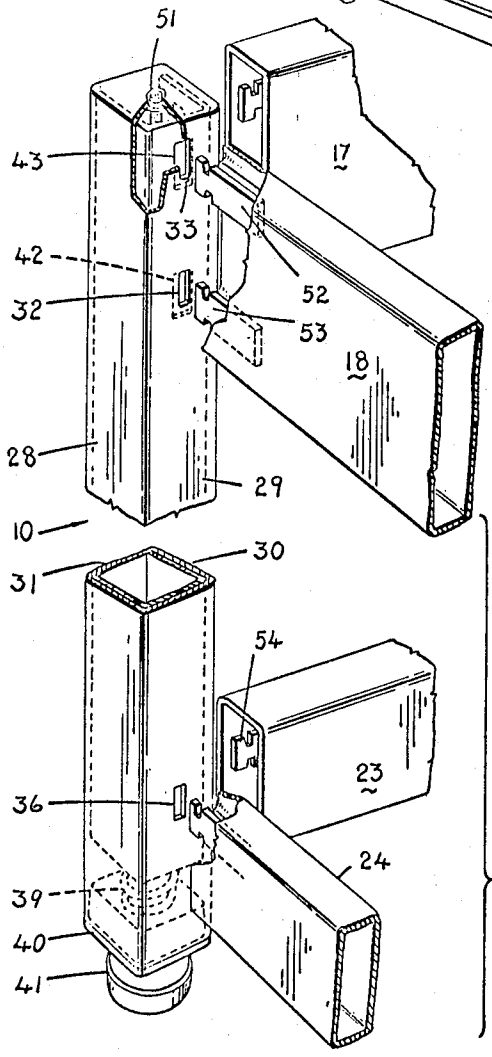


Fig. 2.

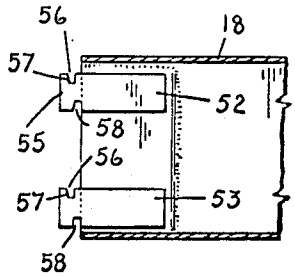


Fig. 6.

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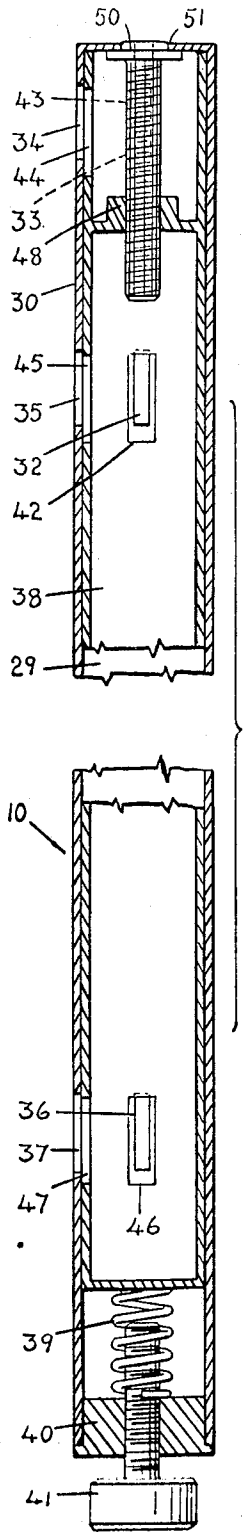


Fig. 3.

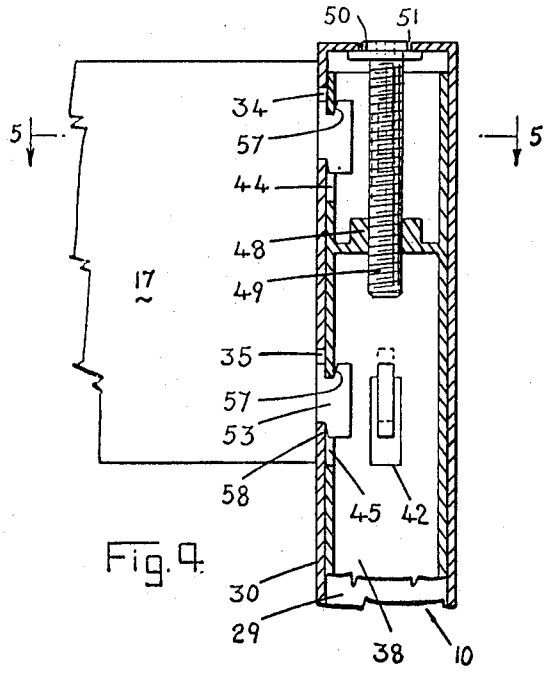


Fig. 4.

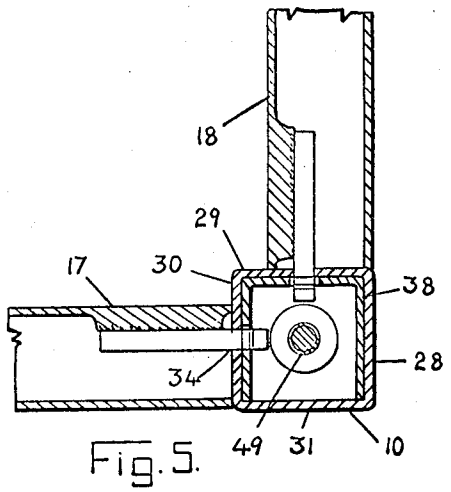


Fig. 5.

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LOCKING DEVICE FOR MODULAR DISPLAY FIXTURE

This invention relates to a locking device for modular display fixture for the storage or display of merchandise.

In particular, the invention has to do with a simple means for connecting the posts and the frame members together and then locking them together. The locking mechanism also provides for a means whereby the members are locked together so that the structure can be shifted from place to place or lifted without becoming disconnected.

The prior art discloses many structures for providing a sectional unit which can be quickly disconnected and assembled. Many of those provide, either no means for locking the unit together or, in cases where such provision is made, the locking means is quite complicated and expensive to manufacture, and unlocks when the unit is lifted.

An object of the present invention is to improve prior art structures and provide a simple structure for connecting the posts and the frame members together and provide a simple locking means which can be operated and actuated by an allen wrench, screw-driver or other simple tools.

For an understanding of the invention, reference is made to the following description and the accompanying drawings which illustrate a preferred embodiment of the same.

IN THE DRAWINGS

FIG. 1 is a perspective view of a table which employs the subject matter of the present invention.

FIG. 2 is a fragmentary perspective view illustrating the mechanism and members by which the frame members are connected to the post.

FIG. 3 is a vertical cross-section through one of the posts to show the details of construction.

FIG. 4 is a fragmentary view of the top end of the post shown in FIG. 3 with a section of a frame member connected thereto.

FIG. 5 is a cross-section on the line 5—5 of FIG. 4.

FIG. 6, on same sheet as FIG. 1, is a detail of one of the tongues.

Referring first to FIG. 1, there is therein illustrated, a table which comprises four corner posts **10, 11, 12, 13**; a pair of intermediate posts **14, 15**; all posts being joined together to form a unitary structure by upper frame members **16, 17, 18, 19, 20, 21** and lower frame members **22, 23, 24, 25, 26,** and **27**. The intermediate posts **14, 15** are used when it is desired to extend the table. If it is desired to have a small table, the posts **14, 15** are not used, and only posts **10, 11, 12, 13** are used.

As the structure for connecting the frame members to their respective post are identical for all posts, the invention will be described with reference to corner posts **10, 11** and related parts, except that the intermediate posts **14, 15** are provided with slots in three faces, with the third set of slots being provided for intermediate rail members, not shown, between the intermediate posts.

Post **10**, in the preferred embodiment is substantially square in cross-section and made of tubular steel or any other suitable material. The post is of table height.

Each post has four flat faces **28, 29, 30** and **31**.

The face **29** of the post **10**, near the upper end thereof is provided or formed with a pair of slots **32, 33**. The contiguous face **30** is formed with corresponding slots **34, 35**. Adjacent the bottom end of the post, the face **29** is formed with a slot **36** and the contiguous face **30** is formed with a corresponding slot **37**. Both of these slots are substantially at the same level and substantially the same as the previously mentioned slots.

Slidably mounted within the post, is a reciprocatable latch member **38** of U-shape in cross-section and of such a length as to extend from substantially the top of the post to adjacent the bottom thereof. The latch member **38** is supported on a spring **39**, the spring being held in place by the plug **40** which carries a foot **41** on which the post is supported and which can be used for levelling the table. The spring **39** is biased to constantly urge the latch member to an open position, in which position, the top end of the latch member engages the top end of the post. This position is hereinafter referred to as the unlocked position. The latch member is provided with slots corresponding in number to the post slots hereinbefore mentioned and positioned to register with each of the post slots when the latch member is in the unlocked position. The slots in the latch member are numbered **42** thru **47** respectively.

The upper end of the latch plate is formed with a screw-threaded wall **48**. An adjusting screw **49** is threaded into the threaded wall **48** and extends upwardly and has its head **50** abuting against the inner wall of the top end of the post, the upper end of the post having an orifice **51** through which the tool can be entered for turning the screw to effect a movement of the latch member as hereinafter described. The portion of the latch member contiguous to the top of each of the slots **42** thru **47** respectively, forms a latch plate. When the screw **49** is turned in one direction the latch plates are moved down to obstruct the upper and lower slots **32** thru **37** respectively.

Each end of each upper and lower frame member is provided with the same means for connecting the respective ends of the frame members to the respective posts and they will therefore be described with reference to FIG. 2. The upper frame member **16** is provided with two tongues **52, 53** and the lower frame member **22** is provided with a tongue **54**. All of these tongues are identical in cross-section and are dimensioned to fit nicely into the respective slots with the necessary clearance. Each tongue has a projecting portion **55** which is formed with a notch **56** in the upper edge thereof which when the projection is inserted into its respective slot, the notch will register with its respective latch plate. As clearly shown in FIG. 4, each notch is provided with a sloping lead-in surface **57** which co-operates with the latch plate to ensure that the lock is closed completely and that the ends of the frame members are drawn tightly against a post. A notch **58** is formed in the bottom edge of the tongue **55**, the edge of the slot engaging in the notch **58** when assembling the rails and the posts. This engagement allows complete assembly and alignment of all frames and posts before locking. A table employing the subject matter of this invention is easy to assemble and dismantle. FIG. 2 shows the frame members being brought into the assembled position. As soon as the tongues are

inserted in the respective slots, the latch member is moved downwardly by turning the screw **49**. That movement causes the latch plate to be moved downwardly and engage in each of the respective notches. When it is desired to dismantle the table, the screw **49** is turned in the opposite direction and the latch member moved to the unlocked position by the spring **39**.

It will be apparent to those familiar with the fabrication of sectional structures that modifications can be made in the preferred construction herein described without departing from the substance of the same.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. In a modular knockdown display fixture for the storage or display of merchandise having tubular corner posts of rectangular cross-section connectable together by frame members to form said structure; each post being formed with at least one pair of slots in each of two contiguous faces forming two pairs of first slots, said pairs of first slots being at substantially the same level; a locking device comprising:

a reciprocatable latch member slidably mounted in each post and formed with second slots corresponding to and registering with each of the first slots, the portion of the latch member contiguous to each second slot forming a latch plate;

a screw member within the post and connected to said latch member for rotation to move the latch member in a direction to move the latch plate to a position to partially obstruct its respective first slot upon rotation of the screw member in one direction; and spring means urging said latch member in the opposite direction;

each frame member having on each of its ends a pair of tongues spaced to enter one of the pairs of said slots in the post and the contiguous second slots in the latch member;

an upper latch plate receiving notch in each tongue, said notch being positioned to register with and receive the adjacent latch plate when the tongue is entered in said slots and the screw member rotated to move the latch plate downwardly to engage in said notch.

2. A structure according to claim **1** in which each tongue is formed with a notch in its bottom edge which receives the contiguous edge of the slot in which it is entered to retain the tongue therein during the assembly and alignment of the fixture.

3. A structure according to claim **1** wherein each upper latch receiving notch has a sloping lead-in face whereby each latch plate is guided into full engagement in the notch and draws the frame's end into tight abuting engagement against the post.

4. A structure according to claim **1** in which the screw member has one end screw-threaded into a threaded hole formed in the top end of the latch member and its opposite end abuts against the upper end of the post, said upper end having an orifice for the entry of tool to turn the screw to lock and unlock said latch member and the spring means is mounted in the bottom end of the post and yieldingly supports said latch member.

5. In a modular knockdown display fixture for the storage or display of merchandise having at least four tubular corner posts of rectangular cross-section; at least four upper frame members and four lower frame members arranged in pairs and connectable to said posts to form said structure; each post being formed with at least one pair of upper first slots in each of two contiguous faces adjacent the upper end of the post, the said two pairs of upper first slots being substantially at the same level, and at least one corresponding lower second slot in each of the same contiguous faces and located adjacent the lower end of the post; the locking device comprising:

a reciprocatable latch member slidably mounted in each post and formed with upper third slots and lower fourth slots corresponding to and registering with the first and second slots respectively, the portion of the latch member contiguous to each third and fourth slot forming a latch plate;

a screw member within the post and connected to said latch member for rotation to move the said latch member in a direction to move each latch plate to a position to partially obstruct its respective slot upon rotation of the screw member in one direction;

spring means urging said latch member in the opposite direction;

each upper frame member having on each of its ends a pair of tongues spaced to enter one of the pairs of said first slots in the post and the contiguous upper third slots in the latch member;

each lower frame member having on each of its ends a tongue positioned to enter one of the said second slots and the lower contiguous fourth slot;

an upper latch plate receiving notch in each of said tongues, said notch being positioned to register with the adjacent latch plate when the tongue is entered therein.

6. A structure according to claim **5** in which each tongue is formed with a notch in its bottom edge which receives the contiguous edge of the slot in which it is entered to retain the tongue therein during the assembly and alignment of the fixture.

7. A structure according to claim **5** wherein each upper latch receiving notch has a sloping lead-in face whereby each latch plate is guided into full engagement in the respective notch and draws the frame's end into tight abuting engagement against the post.

8. A structure according to claim **5** in which the screw member has one end screw-threaded into a threaded hole formed in the top end of the latch member and its opposite end abuts against the upper end of the post, said upper end having an orifice for the entry of tool to turn the screw to lock and unlock said latch member and the spring means is mounted in the bottom end of the post and yieldingly supports said latch member.

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