Dec. 27, 1966 J. E. JOYCE 3,294,043

SHELF FRAME

Filed April 29, 1965

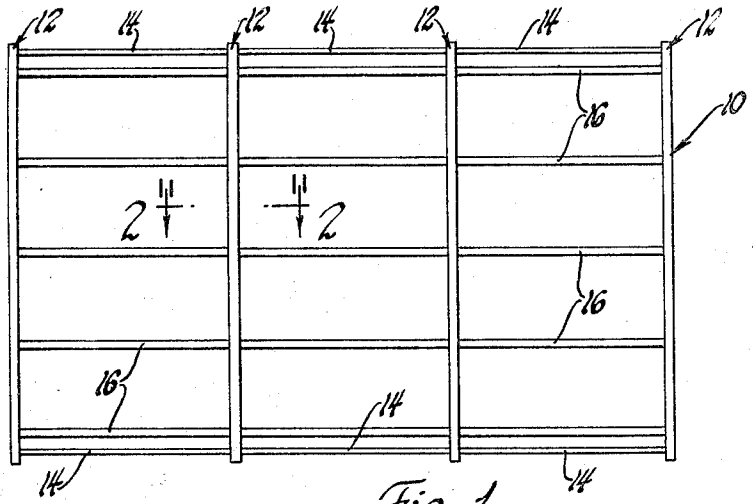


Fig. 1

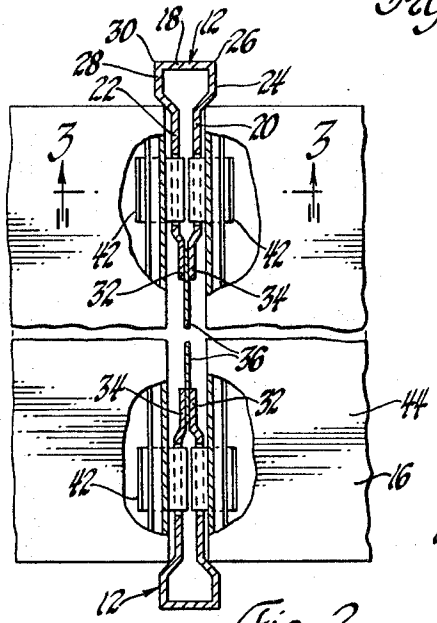


Fig. 2

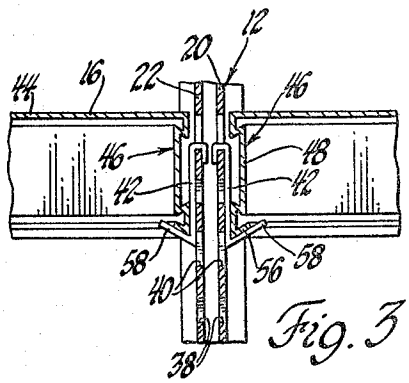


Fig. 3

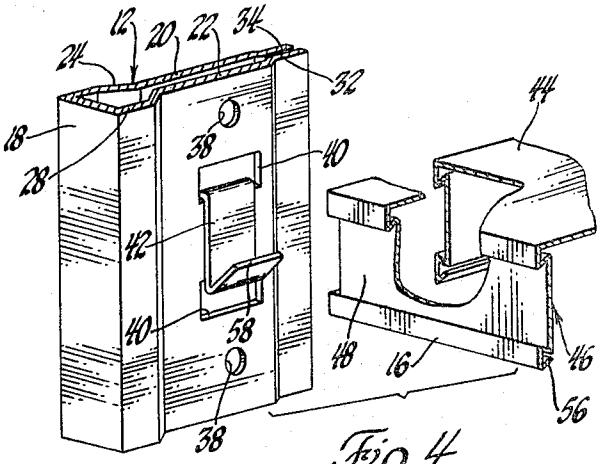


Fig. 4

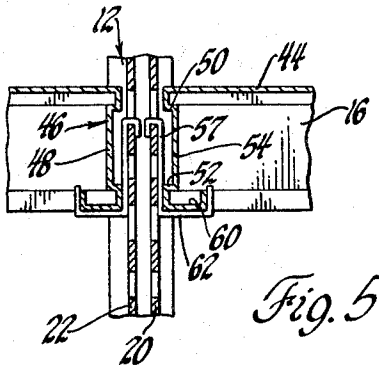


Fig. 5

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SHELF FRAME

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This invention relates to a shelf frame and, more particularly, to a shelf frame comprising a plurality of integral elongated upright post members adapted to support shelves extending intwo directions therefrom with each of the shelves having a flange extending substantially perpendicular from the edge thereof so that a recess disposed along each of the flanges adds strength characteristics to the flange and may be utilized to removably secure name tags, or the like, therein.

Facilities for the orderly storage and display of goods, articles, and merchandise usually involve the use of many shelves. These shelves are preferably quick and easy to install and remove, and are readily adjustable to compensate for differences in sizes of stored items.

One of the most common type of shelves heretofore utilized has been one having a flange extending perpendicularly downward from the surface of the shelf along the edges thereof through which bolts, screws, or the like, are disposed to secure and attach the shelf to various upright post members. Alternatively, the upright post members often have a means projecting therefrom for the flange of the shelf to rest on to thereby support the shelf.

Of the shelves heretofore utilized, two problems have been associated with the construction of shelves utilizing such flanges. The first is that often a planar flange extending downward from the edge of the upper surface of the shelf does not possess sufficient strength characteristics to support the shelf when the shelf is loaded with heavy objects. Secondly, it is often desirous and sometimes necessary to attach identifying name tags to the flange along one side of the shelf so that the particular articles or class of articles stored on the particular shelf to which the name tag is attached may be readily identified. To attach such name tags to the shelves of the type heretofore utilized, special attaching means or a bonding material, such as glue, or the like, must be utilized to secure the name tag to the flange. When such securing means are utilized to secure the name tag to the flange, the name tags are not readily removed and replaced.

There have been other types of shelves heretofore utilized which have the requisite strength characteristics necessary to support heavy loads, but such shelves are usually secured to the upright post members by screws, bolts, or the like, such that the shelf frame assembly may not be easily assembled or knocked down so that the parts thereof may be shipped to distant points and thereafter reassembled with a minimum of time and labor.

Furthermore, the shelf frames of the type heretofore utilized which have achieved high strength characteristics are for the most part very unattractive, and, in fact, usually the more strength that a shelf frame assembly possesses, the more bulky it is and consequently the more unattractive it is. One of the problems associated with the prior art shelf frames is that the upright post members are usually not configured for optimum strength in correlation with giving the shelf frame an attractive appearance. One of the problems is that usually the securing or attaching means utilized to attach and secure the various shelves to the upright post members are readily observable, thus, making the shelf frame assembly unsightly and unattractive.

Accordingly, it is an object and feature of this invention to provide a shelf which may be supported on a

flange extending from the edges thereof, which flange is formed to have high strength characteristics.

Another object and feature of this invention is to provide a shelf having a flange extending therefrom formed and adapted so that name tags, or the like, are readily attached to and removed from the flange without the need of additional means to secure such name tags to the flange.

A further object and feature of this invention is to provide an upright post member formed in such a way as to have very high strength characteristics yet is neat in appearance and hides from view the fastening or attachment means for securing the shelves to the upright members.

Yet another object and feature of this invention is to provide an upright post member formed in such a manner so as to prevent articles being removed from the shelf from catching on the upright post member.

Still another object and feature of this invention is to provide a shelf frame having high strength characteristics yet is attractive and may be readily assembled or knocked down so that the parts thereof may be shipped to distant points and thereafter be assembled with a minimum of time and labor.

A still further object and feature of this invention is to provide a shelf frame wherein the shelves are quick and easy to install and remove and may be disposed at various vertical distances along the upright post to compensate for differences in sizes of stored items.

In general, these and other objects and features of this invention may be attained by a shelf frame including a plurality of integral elongated members having means attached thereto for supporting a plurality of shelves on each of the elongated members. Each of the integral elongated members, as viewed in cross section, has a flat section with a pair of spaced legs extending substantially perpendicularly away from one side of the flat section and includes a first portion connecting one extremity of the flat section with one of the legs and a second portion connecting the other extremity of the flat section with the other of the legs. The first and second portions extend initially from the respective extremities of the flat section so as to be parallel and thereafter converge toward one another to form an obtuse angle with each of the respective legs. The legs, as viewed in cross section, each have an offset portion at the extremity thereof away from the flat section, which offset portions are in closer proximity to one another than the remainder of the legs so that brace members may be disposed between the adjacent offset portions to interconnect respective integral elongated members. Each of the shelves has a substantially planar surface with a flange extending substantially perpendicularly away from the surface at each edge thereof. The flange has a recess therealong which is disposed substantially parallel to the surface of the shelf, and the flange has a beveled portion at the extremity thereof away from the surface of the shelf for supporting the shelf. The beveled portion of the flange forms an acute angle with the flange and extends from the flange in a direction toward the surface of the shelf. Means for securing the shelves to the post are disposed along each of the legs of each of the elongated members and engage the beveled portion of each of the shelves to thereby support the shelves on respective legs of various integral elongated members.

Other objects and attendant advantages of the present invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

FIGURE 1 is an elevational view of a shelf frame constructed in accordance with the instant invention;

FIGURE 2 is an enlarged fragmentary view in cross section taken substantially along line 2—2 of FIGURE 1;

FIGURE 3 is a fragmentary view in cross section taken substantially along line 3—3 of FIGURE 2;

FIGURE 4 is an exploded view of the components illustrated in FIGURES 2 and 3; and

FIGURE 5 is a fragmentary cross-sectional view of another preferred embodiment of the present invention.

Referring now to the drawings, wherein like reference numerals indicate like or corresponding parts throughout the several views, there is shown, generally at **10**, a shelf frame including a plurality of upright post members, generally shown at **12**, interconnected by support members **14** and supporting a plurality of shelves **16**.

Each of the upright post members **12** is an integral elongated member with a cross section having a flat section **18** and a pair of spaced legs **20** and **22** extending substantially perpendicularly away from one side of the flat section **18**. A first portion **24** connects one extremity **26** of the flat section **18** with the leg **20** and a second portion **28** connects the other extremity **30** of the flat section **18** with the other leg **22**. The portions **24** and **28** extend initially from the respective extremities **26** and **30** of the flat section **18** in a parallel direction and then converge toward each other to form an obtuse angle with each of the respective legs **20** and **22**. The upright post member **12** with such a cross section has very high strength characteristics, obscures from view the attachment means securing the respective shelves **16** to the post, and because of the angularly disposed part of each of the portions **24** and **28**, prevents objects disposed on the respective shelves **16** from being locked behind the upright post **12** as they are being removed from the shelf.

The legs **20** and **22**, as viewed in cross section, also have offset portions **34** and **32** respectively at the extremity of the legs away from the flat section **18**. The offset portions **32** and **34** are in closer proximity to one another than the remainder of the respective legs **20** and **22** so that the brace **36** may be disposed between the offset portions **32** and **34** to interconnect respective integral elongated members **12**. The brace **36** may be secured between the respective offset portions **32** and **34** of each integral elongated member **12** by welding, brazing, screws, bolts, or any other appropriate means.

Each of the legs **20** and **22** has alternate substantially circular holes **38** and substantially rectangular holes **40** therein along the elongated length thereof. A circular hole **38** may be utilized to secure the shelves **16** to the upright members **12** by placing a bolt (not shown) through the shelf and through a circular hole **38**. Clips **42** and **57** may be disposed in the rectangular holes **40** and adapted to support the shelves **16**.

The shelves **16** each have a substantially planar surface **44** with a flange, generally shown at **46**, which extends substantially perpendicularly away from the surface **44** at each edge, although the flange **46** may extend away from the surface **44** at any angle. The flange **46** has a recess **48** extending therealong which is substantially parallel to the surface **44** of the shelf **16**. The recess **48** in the flange **46** may take one of various appropriate forms, one of which is a dovetail slot, as illustrated in FIGURES 3 and 4, and another being the embodiment illustrated in FIGURE 5 wherein the recess **48** has three sides, two of which, **50** and **52**, are parallel to one another and perpendicular to the third side **54**. The recesses **48** respectively illustrated in FIGURES 3 and 5 are, therefore, formed in the flange which first extends downwardly, then inwardly, then downwardly, then outwardly, and then downwardly. The recess **48**, whether it be configured as illustrated in FIGURES 3 and 4 or configured as illustrated in FIGURE 5, adds strength to the flange **46** of the shelf **16** and is adaptable for readily removably inserting name tags, and the like, therein.

In addition to the various cross-sectional configurations of the recess **48**, the extremity of the flange **46**, disposed away from the surface **44**, is utilized to engage a clip **42** or a clip **57** to support the shelf **16** and may also be of various cross-sectional configurations. As is illustrated in FIGURES 3 and 4, the extremity of the flange **46** away from the surface **44** has a beveled portion **56** which forms an acute angle with the flange **46** and extends from the flange **46** in a direction toward the surface **44**. The clip **42**, utilized to engage the beveled portion **56**, has an upturned section **58** mating the beveled portion **56** to support the shelf **16**. By upturning the clip **42** at **58** and upturning the beveled portion **56**, most of the forces transmitted from the shelf **16** to the clip **42** place the clip **42** in tension without subjecting the upturned portion **58** to substantial moment forces tending to bend the upturned portion **58** downward.

An alternative cross-sectional configuration of the lower extremity of the flange **46** is illustrated in FIGURE 5 wherein the lower extremity of the flange **46** has a base portion **60** extending substantially perpendicularly away from the upright post member **12**. The clip **57**, illustrated in FIGURE 5, has a cantilevered portion **62** mating the base portion **60** to support the shelf **16**.

As will be evident to one skilled in the art, features disclosed herein may be utilized in various combinations to construct a shelf frame falling within the scope of this invention.

The invention has been described in an illustrative manner and it is to be understood that the terminology which has been used is intended to be in the nature of words of description rather than of limitation.

Obviously, many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

I claim:

1. A shelf frame comprising: a plurality of upright post members; a plurality of shelves each having a substantially planar surface; means for securing said shelves to various ones of said upright post members; each of said shelves having an integral flange extending from said surface along at least two edges thereof; each of said flanges having a recess therein which is disposed substantially parallel to said surface; each of said flanges first extending downwardly, then inwardly, then downwardly, then outwardly, and then downwardly to form said recess in said flange and to provide a portion to engage said means.

2. A shelf frame as set forth in claim **1** wherein said recess in each of said flanges is a dovetail shaped slot extending therealong.

3. A shelf frame as set forth in claim **1** wherein said recess in each of said flanges has three sides, two of which are parallel to one another and perpendicular to the third side.

4. A shelf frame comprising: a plurality of integral elongated members with a cross section having; a flat section, a pair of parallel spaced legs extending substantially perpendicularly away from one seide of said flat section, a first portion connecting one extremity of said flat section with one of said legs, a second portion connecting the other extremity of said flat section with the other of said legs, and said first and second portions each having a part thereof disposed at an obtuse angle with each respective leg; a plurality of shelves each having a substantially planar surface; each of said shelves having a flange extending substantially perpendicularly from said surface at each edge thereof; each of said flanges having a recess therein which is disposed substantially parallel to said surface; and means for connecting each of said shelves to one of said legs of various ones of said integral elongated members; each of said flanges first extending downwardly, then inwardly, then downwardly, then outwardly, and then downwardly to form said recess in said flange and to provide a portion to engage said means.

5. A shelf frame as set forth in claim 4 wherein said recess in each of said flanges is a dovetail shaped slot extending therealong.

6. A shelf frame as set forth in claim 4 wherein said recess in each of said flanges has three sides, two or which are parallel to one another and perpendicular to the third side.

7. A shelf frame comprising: a plurality of integral elongated members with a cross section having; a flat section, a pair of parallel spaced legs extending substantially perpendicularly away from one side of said flat section, a first portion connecting one extremity of said flat section with one of said legs, a second portion connecting the other extremity of said flat section with the other of said legs, and said first and second portions each having a part thereof disposed at an obtuse angle with each respective leg; a plurality of shelves each having a substantially planar surface; each of said shelves having a flange extending substantially perpendicularly from said surface at each edge thereof; each of said flanges first extending downwardly, then inwardlly, then downwardly, then outwardly, and then downwardly to an extremity thereof to form a recess therein which is disposed substantially parallel to said surface; said flanges each having a beveled portion at said extremity for supporting said shelf; said beveled portion forming an acute angle with said flange and extending from said flange in a direction toward said surface; and means attached to said legs of various ones of said integral elongated members for supporting said shelves by engaging said beveled portion of each of said shelves.

8. A shelf frame as set forth in claim 7 wherein said recess in each of said flanges is a dovetail shaped slot extending therealong.

9. A shelf frame as set forth in claim 7 wherein said recess in each of said flanges has three sides, two of which are parallel to one another and perpendicular to the third side.

10. A shelf frame as set forth in claim 7 wherein said means includes a plurality of clips each of which is removably attached at one end thereof to one of said legs of one of said integral elongated members and is formed at the other end thereof into a substantially V-shaped pocket in which said beveled portion rests so that a plurality of said clips support said respective shelves.

11. A shelf frame comprising: a plurality of integral elongated members with a cross section having; a flat section, a pair of spaced legs extending substantially perpendicularly away from one side of said flat section, a first portion connecting one extremity of said flat section with one of said legs, a second portion connecting the other extremity of said flat section with the other of said legs, said first and second portions extending initially from said respective extremities of said flat section so as to be parallel and thereafter converging toward each other to form an obtuse angle with each of said respective legs, said legs as viewed in cross section each having an offset portion at the extremity thereof away from said flat section which offset portions are in closer proximity to one another than the remainder of said respective legs so that brace members may be disposed between said offset portions to interconnect respective integral elongated members; a plurality of shelves each having; a substantially planar surface, a flange extending substantially perpendicularly away from said surface at each edge thereof, said flange first extending downwardly, then inwardly, then downwardly, then outwardly, and then downwardly to an extremity thereof to form a recess therein which is disposed substantially parallel to said surface, said flange having a beveled portion at said extremity thereof away from said surface for supporting said shelf, said beveled portion forming an acute angle with said flange and extending from said flange in a direction toward said surface, and means disposed along the elongated length of each of said legs of each of said elongated members and engaging said beveled portion of each of said shelves for securing a plurality of shelves on each of said legs along the length thereof.

12. A shelf frame as set forth in claim 11 wherein said means includes a plurality of clips each of which is removably attached at one end thereof to one of said legs of one of said integral elongated members and is formed at the other end thereof into a substantially V-shaped pocket in which said beveled portion rests so that a plurality of said clips support said respective shelves.

13. A shelf frame as set forth in claim 12 wherein said recess in each of said flanges has three sides, two of which are parallel to one another and perpendicular to the third side.

14. A shelf frame as set forth in claim 12 wherein said recess is a dovetail shaped slot extending along said flange.

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