Nov. 3, 1970 D. C. DIONNE 3,537,670

ARTICLE OF FURNITURE INCORPORATING ELONGATED TUBING CLUSTER SUPPORT AND LOCKING MEANS THEREFOR

Filed May 27, 1968

FIG. 1.

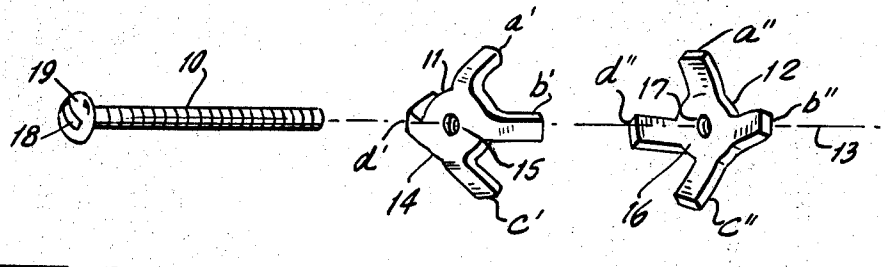


FIG. 2.

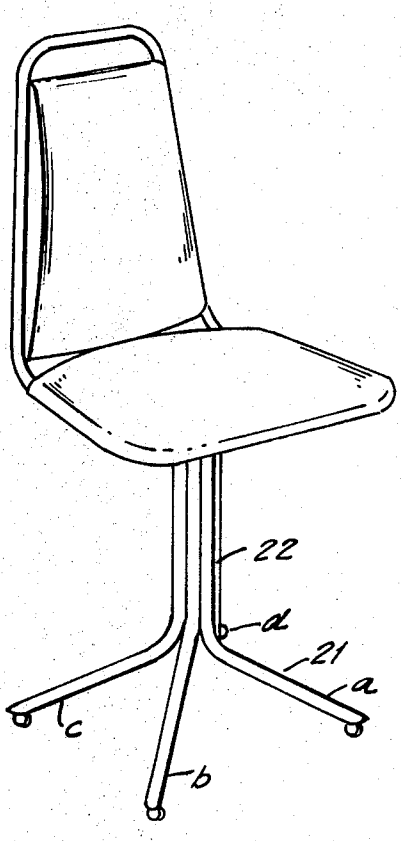


FIG. 3.

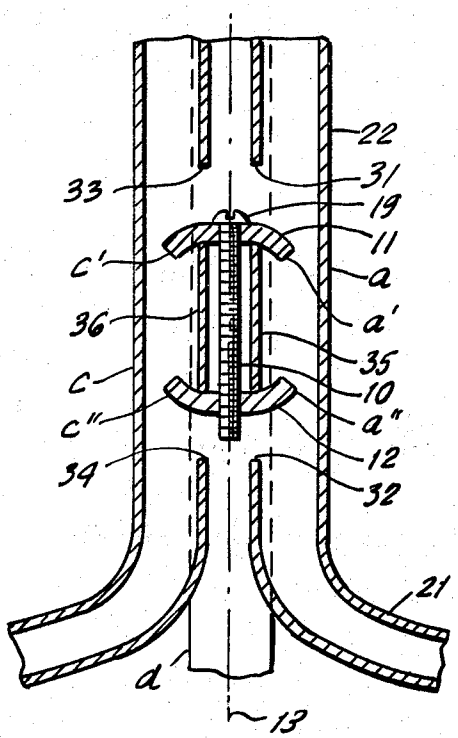


FIG. 4a.

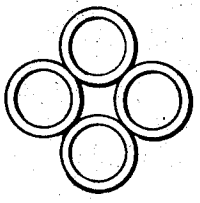


FIG. 4b.

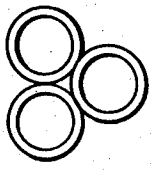
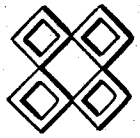


FIG. 4c.



INVENTOR.
DAVID C. DIONNE

BY

OSTROLENK, FABER, GERB & SOFFEN

ATTORNEYS

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ARTICLE OF FURNITURE INCORPORATING ELONGATED TUBING CLUSTER SUPPORT AND LOCKING MEANS THEREFOR

David C. Dionne, Mattapoisett, Mass., assignor to R & D Manufacturing Corporation, New Bedford, Mass., a corporation of Massachusetts

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ABSTRACT OF THE DISCLOSURE

An article of furniture is provided with a support or pedestal comprised of a cluster of tubes rigidly secured together by a locking device having a pair of multiprong brackets and a bolt. The two brackets are displaced from each other along the axial length of the tubes with at least one prong of each bracket sitting within an aperture in each of the tubes of the cluster. The bolt passes through one of the brackets and threadedly engages the second to cause the drawing together of the two brackets upon the tightening of the bolt. The prongs of the bracket are angled in a manner as to cause the tubes to be drawn towards the center and secured in a cluster upon the drawing together of the brackets by the tightening of the bolt.

BACKGROUND OF THE INVENTION

This invention relates to supports for articles of furniture and is more particularly concerned with the provision of supports in the form of tubing clusters.

Clusters of tubes have been found to be particularly useful and attractive for such things as legs, supports and pedestals for articles of furniture such as tables and chairs. The clusters of tubes as used for such tables and chairs generally consist of a plurality of hollow cylindrical tubes having one portion extending parallel to a central axis and having upper and lower ends which flare out away from the central axis in order to provide an upper base upon which the seat of the chair or the table top may rest and a lower base to provide a stable support for the chair or the table to stand on the floor.

In order to employ clusters of tubes as supports for articles of furniture, it is necessary that the tubes be securely held together in the cluster so that there can be no relative movement between the tubes. Prior art methods of securing the tubes in such clusters have included the welding of the tubes together or the clamping of the tubes by means of an external clamp or the use of a plurality of screws passing through each of the tubes and secured to a bracket centrally located between the tubes.

Each of these previous methods is plagued by numerous drawbacks. The welding method of securing a plurality of tubes in a cluster is not satisfactory because of the necessity of having welding facilities to assemble the tubes and because of the permanence of the connection of the tubes so that once welded the cluster cannot be disassembled for more efficient storage or shipment. The securing of the tube clusters by means of external clamps or by the plurality of screws extending through the tubes and into a centrally located bracket both require that at least a portion of the securing means be visible and hence detract from the esthetic appeal of the article of furniture.

SUMMARY OF INVENTION

The present invention overcomes the above drawbacks of the previous methods of securing tubes into clusters for use as supports for articles of furniture. In one preferred embodiment of the present invention, a tube cluster for use as a pedestal is securely fastened as an integral unit by means of a pair of multiprong brackets and a bolt. The brackets are displaced along a central axis with each bracket having at least one prong inserted in an aperture in each of the tubes. The bolt extends along the central axis and passes through one of the brackets to the second bracket which it threadedly engages. The prongs on the brackets form acute angles with the bolt whereby upon the tightening of the bolt to draw the two brackets closer together the tubes are also drawn toward the central axis. in this manner, a tube cluster suitable for use as a pedestal is provided having the characteristics of being easy to assemble and disassemble, strong and esthetically appealing.

It is, therefore, the object of the instant invention to provide a support or pedestal for articles of furniture in the form of a cluster of tubes securely held together by a locking device which is invisible so as not to detract from the esthetic appeal of the article of furniture.

The above objects, features and advantages of the instant invention along with other objects, features and advantages will become apparent upon a reading of the following description of the preferred embodiments thereof in conjunction with the drawings.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 shows an exploded perspective view of a tube cluster locking device for use in an article of furniture having a pedestal in accordance with the instant invention;

FIG. 2 is a perspective view of a chair supported by a tube cluster pedestal of the instant invention;

FIG. 3 is an enlarged partial cross-sectional view of the pedestal of FIG. 2 taken in a plane passing through the central axis of the pedestal;

FIGS. 4*a* through 4*c* are cross-sectional views of three different arrangements of tube clusters which may be rigidly secured together by means of the locking device of the instant invention.

DETAILED DESCRIPTION OF INVENTION

Referring first to FIG 1, there is shown an exploded perspective view of a locking device suitable for use in a pedestal formed as a tubing cluster having four tubes as shown in FIG. 2. The device consists of the threaded bolt **10**, a first bracket **11** and a second bracket **12**.

The brackets **11** and **12** each include four prongs thereon. The prongs on bracket **11** are labeled *a'*, *b'*, *c'* and *d'* while those on bracket **12** are labeled *a''*, *b''*, *c''* and *d''*. The prongs are arranged so that each of the respective prongs will be inserted in an aperture in one of the tubes of the tube cluster to be formed. For instance, prongs *a'* and *a''* will each be inserted in apertures in the tube *a* of the pedestal of FIG. 2. As can be seen, each of the prongs is at an angle to the central axis **13** so that corresponding prongs on each of the brackets are angled toward each other. For instance, *a'* and *a''* each form an acute angle with the portion of the central axis **13** between the two brackets **11** and **12**. The angular arrangement of the prongs serves to draw the tubes toward the

center and more rigidly secure them together in the tube cluster. The angular arrangement of the prongs may be formed either by having the prongs bent in one position near the center of the brackets or the prongs may be formed with a curvature so that the concave sides of corresponding prongs on each of the brackets face each other.

The bracket **11** includes a base **14** having bore **15**, passing through its center. The bore **15** is sufficiently large in diameter to permit the threaded portion of bolt **10** to pass therethrough without any frictional engagements. The bracket **12** has a base **16** and a threaded bore **17**. The threaded bore **17** receives the threaded bolt **10** to secure the bolt to the bracket **12** upon rotation of the bolt **10** by a screwdriver or other suitable instrument which may be inserted in the groove **18** of bolt head **19**. The head **19** of the bolt **10** may have any suitable shape permitting the bolt to be rotated by an instrument having an extended shaft and an end mating with the head **19**.

Referring next to FIGS. 2, 3 and 4*a*, FIG. 2 shows a chair having a pedestal formed by four tubes rigidly secured together in a cluster. The tubes *a*, *b*, *c* and *d*, each have a bottom portion such as **21** on tube *a*, which flares out from the central axis of the tube cluster, a central portion such as **22** on tube *a*, which is substantially parallel to the central axis of the tube cluster and a top portion (not shown) which also flares out from the central axis of the tube cluster. The lower portions of the tubes flare out to serve as the support for the chair on the floor, the upper portions of the tubes serve to secure the seat portion of the chair onto the pedestal.

The central portions of the tubes are joined together and have a cross-sectional configuration as shown in FIG. 4*a*. These tubes are rigidly secured together by the locking device of FIG. 1 to form an esthetically appealing pedestal without the locking device being visible. The locking device functions in cooperation with the tubes, as can be seen more clearly in the cross-sectional view of FIG. 3 taken of the plane passing through tubes *a* and *c* and the central axis of the pedestal of FIG. 2.

As shown in FIG. 3, the bolt **10** and the brackets **11** and **12** are centrally positioned along the central axis **13** of the tube cluster. Prong *a'* of bracket **11** and prong *a''* of bracket **12** fit within apertures **31** and **32**, respectively, of the tube *a*. Prongs *c'* and *c''* of brackets **11** and **12**, respectively, fit within apertures **33** and **34**, respectively, of the tube *c*. When the bolt **10** is tightened by the insertion of a screwdriver along the central axis **13** to rotate the bolt **10**, the brackets **11** and **12** are drawn toward each other as shown in FIG. 3. The prongs *a'* and *a''* engage the wall **35** of tube *d* and draw this wall toward the central axis **13** since the prongs *a'* and *a''* are angled toward each other. Similarly, the prongs *c'* and *c''* engage wall **36** of tube *c* to draw this wall and the tube *c* toward the central axis **13**. It should be understood that tube *b* and *d* are similarly engaged and drawn toward the center by prongs *b'* and *b''* and *d'* and *d''*, respectively. By reason of the four tubes being drawn together toward central axis **13** by the operation of the prongs, the tubes frictionally engage each other at their abutting surfaces and they are rigidly held together to prevent any relative movement therebetween.

As can be seen in FIG. 3 the locking device engages portions intermediate the ends of the tubes so that the tubes are permitted to flare out from the cenral axis and thereby provide necessary bases for the pedestal to rest on the floor and for the seat portion of the chair to rest on the pedestal. Furthermore, since the locking device cooperates with the tubes of the cluster in a manner such that it need not be secured to the end of the tubes, the locking device is completely removed from visibility once the tube has been secured in the cluster.

FIGS. 4*b* and 4*c* show the cross-sectional areas of tube clusters having a different configuration of the tubes of

the pedestal of FIG. 2. It should be apparent that the brackets **11** and **12** shown in FIG. 1 would be suitable for use with the configuration of FIG. 4*c*. On the other hand, for the rigid securement of the tubes of FIG. 4*b*, it would be necessary to use brackets having only three prongs. If additional tubes are used, it would be necessary for the bracket to have one prong for each additional tube.

From the above description it can be seen that a new and novel support for articles of furniture has been provided in the form of a tube cluster by a locking device which remains invisible when the tube cluster is assembled, thereby enhancing the esthetic appeal of the tube cluster. Furthermore, the tube cluster may be easily assembled and disassembled whereby the pedestals may be stored or shipped with greater efficiency and less chance of damage to them.

It should be additionally realized that pedestals for articles of furniture assembled in accordance with the instant invention will have great strength as a result of the prongs of the locking device exerting an inward radial force on the tubes drawing them towards the central axis of the pedestal to prevent their movement radially outward from the central axis. In addition, by the prongs drawing the tubes inward toward the central axis the tubes are caused to abut against each other and provide a frictional engagement whereby the tubes are prevented from rotating relative to each other.

While the locking device and pedestal formed therewithin accordance with the instant invention have been described with respect to several preferred embodiments thereof, many modifications and variations will now become apparent to those skilled in the art. It is, therefore, requested that the scope of the instant invention not be limited by the foregoing disclosure but rather by the appended claims.

I claim:

1. In a chair, table or similar article the furniture having a support defined by an elongated hollow tubing cluster, the improvement comprising a locking means for said cluster constituted of:

(a) a pair of multi-pronged brackets wholly disposed within the hollow of said tubing cluster in facing alignment, the prongs of the respective brackets being received in corresponding internal apertures formed in the walls of each of the tubes defining said cluster; and

(b) internal connecting means extending wholly within and substantially along the central axis of the tubing cluster, said means drawing said brackets toward one another and bringing the prongs thereof into engagement with the walls of the respective tubes through said apertures to lock said tubes together in alignment with said central axis.

2. In an article of furniture as set forth in claim **1** wherein said prongs of said respective brackets each forms an acute angle with said connecting means whereby upon the drawing together of said brackets, said prongs bear against the walls of said respective tubes to draw said tubes together toward said central axis.

3. In an article of furniture as set forth in claim **2** wherein said connecting means is a threaded bolt; a first of said brackets includes a hole centrally located therein permitting said bolt to pass therethrough; and the second of said brackets includes a threaded hole centrally located therein for threadedly engaging said bolt whereby upon rotation of said bolt relative to said second bracket said second bracket is drawn along the axis of said bolt toward said first bracket to clamp said tubes together.

4. In an article of furniture as set forth in claim **3** wherein each of said tubes includes a top portion and a bottom portion which flare out from said central axis and a central portion which is substantially parallel to said central axis.

5. In an article of furniture as set forth in claim

4 wherein said elongated hollow tubing cluster tubes are of substantially circular cross section.

6. In an article of furniture as set forth in claim 5 wherein the internal apertures formed in the walls of each of the tubes defining said cluster and into which is brought engagement of the prongs of said pair of brackets are positionable substantially along the entire length of said tubes.

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MARION PARSONS, JR., Primary Examiner