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P. MEYER

2,099,450

ARTICLE OF FURNITURE

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Fig. 1.

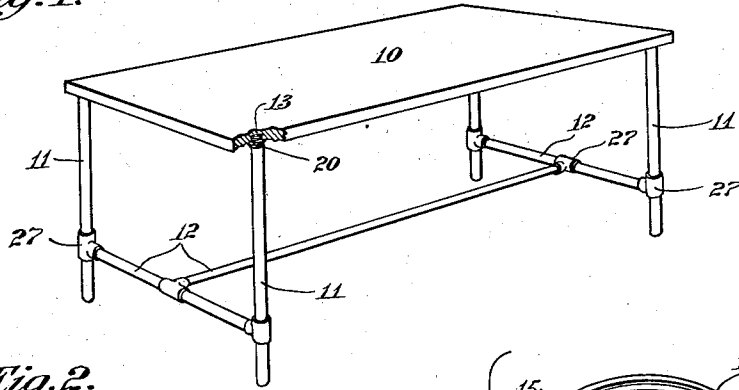


Fig. 2.

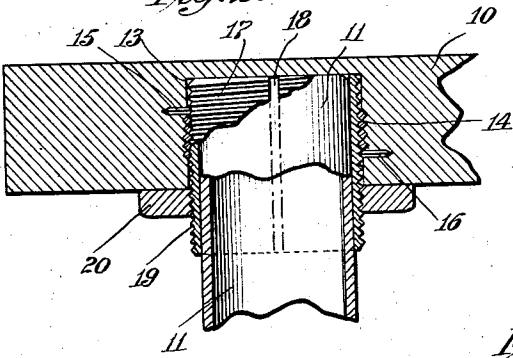


Fig. 3.

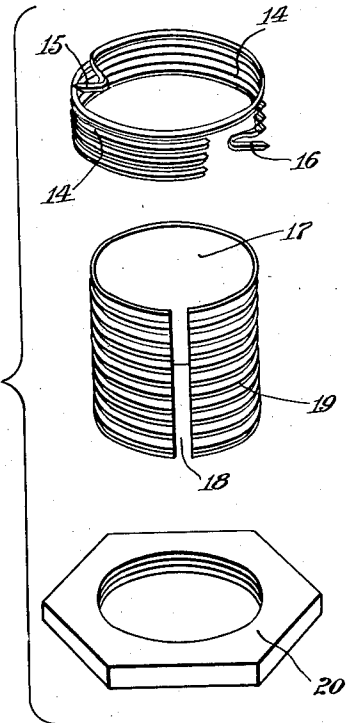


Fig. 4.

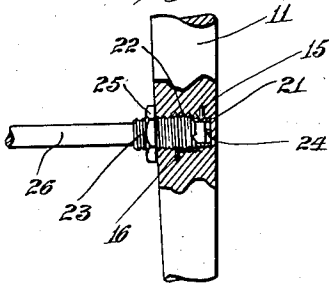
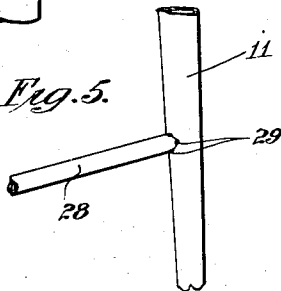


Fig. 5.



Paul Meyer

INVENTOR

Frank J. Weinstock
his ATTORNEY.

UNITED STATES PATENT OFFICE

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ARTICLE OF FURNITURE

Paul Meyer, New York, N. Y.

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10 Claims. (Cl. 311—111)

The invention relates to articles of furniture such as work benches, tables and chairs, and more particularly to a construction in such articles permitting a rapid and convenient assembly of the legs or rungs in relation to the top and to each other, and a proper adjustment of these parts to ensure a firm structure throughout.

The invention is particularly adapted for use in the production of work benches or tables and specialties in household tables and chairs. In work benches or tables, the legs are commonly made of metal tubing or rods, and in household tables and chairs, the legs and rungs are ordinarily made of wood, either round or polygonal, although such legs and rungs may be made of metal or of a combination of metal and wood as to different parts of the chair. The invention, however, is limited to use with the production of benches, tables and chairs having wooden tops or wooden seats.

In an article of furniture embodying the invention, the construction of the various parts is such as to permit the assembly of the legs and the rungs without any turning thereof in relation to the part to which they are to be connected, and to permit an adjustment of the parts in relation to each other so as to ensure a bench or table top, or a chair seat, to be brought and maintained at a proper horizontal level.

In an article of furniture embodying the invention, extreme accuracy as to the length of the legs before assembly of the article is unnecessary, and if the same attaching means be used between the legs and the rungs of chairs, or between rung and rung, as are used for securing the legs in relation to the top or seat, there may be considerable variation in the length of the various rungs and still permit a proper fitting of parts.

The use of glue, drive fits, dowels or screws is unnecessary in assembling articles of furniture embodying the invention, since the manner of securing the various parts together is such as to ensure not only permanency in the connection, but a high degree of rigidity in the structure as a whole. The form of connection used permits the manufacturer to take advantage of the full strength of materials used, and the attaching means itself serves to reinforce the material of the parts of the furniture with which it is associated.

Furniture embodying the invention may not only be economically produced, so far as the labor item is concerned, but the manner of as-

sembling the various parts is such as to permit the shipping of articles of furniture in "knock-down" form, the simplicity of the attaching means permitting the assembling of the article by dealers in furniture or, if desired, even by purchasers or ultimate users thereof. This attaching means also permits that slight adjustment of parts necessary in truing up an article of furniture.

The invention consists in an article of furniture having a top slab provided with a plurality of sockets therein, a spirally wound wire having inclined surfaces, imbedded in and secured to the wall of each socket whereby wedge-like surfaces are provided within the socket, a constrictible tubular member having exterior wedge-like surfaces adapted to co-operate with the wedge-like surfaces within each socket, and having a screw threaded portion exposed outwardly of said socket, a leg adapted to penetrate each tubular member, and a nut engageable with the screw threads upon each tubular member, whereby longitudinal movement may be imparted to said member to cause the contraction of said member upon said leg; and in such other novel features of construction and combination of parts, as are hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawing,

Fig. 1 is a perspective view of a table embodying the invention;

Fig. 2 is a cross sectional view of the attaching means between one of the legs of the table and the top slab thereof;

Fig. 3 is an exploded view of the parts shown in Fig. 2;

Fig. 4 is a sectional view showing one manner of attaching a rung to a leg or a rung to a rung when the legs are formed of wood; and

Fig. 5 is a view of the union of a rung with a leg by means of a welded joint when metal legs are used.

Like numerals refer to like parts throughout the several views.

While, in the accompanying drawing, the invention is shown as applied to a table having a wooden top slab 10, it is obvious that it may also be applied to chairs having a wooden seat. The invention will be described more particularly in connection with a table having a metal under-frame including legs 11 and rungs 12, as shown in Fig. 1 of the drawing.

In the production of such articles, considerable difficulty is encountered in properly leveling up

the table. If wooden legs be used, it is customary to attach the legs to the top slab by means of glue and a mortise and tenon joint, doweling sometimes being resorted to to ensure permanency in the joint. The various parts entering into the table have fixed predetermined dimensions, and a very slight variation in such dimensions will result in instability in the table, since adjustment of these parts when assembling them in the completed article of furniture is not possible.

In a table or other article of furniture constructed in accordance with the invention, a joint between the legs and the top slab is provided which will permit a limited adjustment of the legs in relation to the top slab, or vice versa, thus permitting the levelling of a table.

To permit a convenient assembly of the legs and the top slab of a table, I provide the under side of the top slab 10 with a socket formed by boring at each point where a leg is to be located. One of these sockets is shown at 13.

Secured within this socket in a manner to be more particularly referred to hereinafter, is a square wire helix 14 forming a screw thread presenting a series of cam-like projections. This helix not only reinforces the material of the top slab, but constitutes a wear resisting member preventing the development of looseness in the parts of the connecting means between a leg 11 and the top slab from shrinkage of parts or wear.

The form of this wire helix is shown in detail in Fig. 3 of the drawing, the helix being secured in place in the wood of the top slab by forcing substantially one-half of the square wire into the wood of said slab and forcing end prongs 15 and 16 in the material of the slab to prevent turning movement of the helix or its constriction to an extent to permit the development of looseness or the separation of the helix from the slab.

Positioned within the socket 13 in engaging relation with the screw threads provided by a helix 14 is a constrictible tube or sleeve 17, split longitudinally thereof as shown at 18, and having exterior screw threads 19, these threads, at one end of the tube, engaging the screw threads formed by the helix 14. The screw threads 19 are V-threads or modified V-threads, so as to provide within the socket and upon the split tube, co-operating abutting cam surfaces which will serve to constrict the tube in a manner and for the purpose to be referred to.

While in the drawing I have shown a tube 17 which is constrictible by reason of its being split longitudinally thereof as described, it is obvious that any other form of tube permitting its constriction to the limited extent required, may be used.

While in mounting the tube 17 in the socket, it may be screwed into place, it is obvious that if desired, the tube may be manually constricted to an extent to permit it to be merely pushed into the socket and then allowed to expand into engagement with the cam-like surfaces afforded by the helical wire fitting 14. In other words, while the co-operating cam surfaces within the socket and upon the tube are, as shown, in the form of co-operating screw threads, this is largely a matter of convenience of manufacture, since relative adjustment of these parts is unnecessary when assembling a table. One end of the tube or sleeve 17 projects beyond the helix 14 and preferably beyond the lower face of the top slab, it being essential that this end of the tube

be provided with exterior screw threads so as to receive a clamp nut 20 utilized in attaching a leg having a tubular portion positioned within the split tube 17 to the top slab.

When assembling a leg in relation to the top slab, the upper tubular end thereof is inserted in the sleeve 17 and the nut 20 is then turned upon the sleeve 17 until it engages the lower face of the slab about the socket 13. After this initial engagement of the nut with the top slab, a continued turning of the nut will impart downward movement to the sleeve sufficient to cause relative movement of the cam surfaces or threads thereon in relation to the cam surfaces or threads afforded by the wire helix 14. This camming action will constrict the tube 17 upon the tubular portion of the leg and at the same time form a string frictional joint between the tube and the top slab through the medium of the wire helix 14. While ordinarily it is desirable to have the top end of the legs engage the bottom of the socket 13, this is not material, so that when all of the legs have been connected with the top slab in the manner described, any leg may be adjusted longitudinally of the sleeve to compensate for any slight irregularity in the lengths of the different legs or in the surface upon which the table rests. To permit this adjustment, the nut adjacent the leg requiring adjustment may be loosened slightly to permit the development of a close sliding fit between the tubular portion of the leg and the split sleeve.

It will be noted that the table top is supported from the legs as a result of the frictional engagement between same and the split tube, and between the tube and the screw threads formed by the helix 14, and that the nut 20 is not relied upon to support the table top in any way beyond the development of constricting pressure as a result of the turning of the nut while in contact with the under face of the top slab.

When the invention is applied to a table in which the legs are unconnected by rungs, each leg may be mounted in relation to the top slab independently of the other legs, and if rungs are to be used, they may be connected with the legs after the assembly of the legs with the top slab. If desired, however, the rungs may be applied to the legs prior to the assembling of the latter and the top slab, in which case all of the legs will be simultaneously fitted to the tubes 17 and the table top adjusted in relation to the legs prior to the final development of longitudinal stresses upon the tubes by the lock nuts 20.

Where metal legs are employed and rungs are used, these rungs may be connected with the legs and with each other, as shown in Fig. 1, by ordinary T-fittings commonly used for this purpose, or the rungs may be spot welded to the legs. The former construction permits the shipment of the table in "knock-down" form, the latter does not, although both forms permit the adjustment of the table top. If wooden legs be used, whether they be cylindrical, or polygonal with one end formed for co-operation with the tube or sleeve 17, the rungs may be connected therewith by connections corresponding with those used in affixing the top slab to the legs.

Such a construction is shown in Fig. 4 of the drawing, in which the socket in the legs is shown at 21, the helical coil forming the cam surfaces or screw threads at 22, the constrictible tube at 23, the slot therein at 24 and the lock nut at 25. The tubular portion of the rung entering the tube is shown at 26.

With this construction, adjustment of the rung in relation to its co-operating member, such as the leg or other rung, is permitted in the same manner as the table leg and table top may be adjusted. By unscrewing the lock nuts 25 the rungs may be separated from the legs or other rungs, thus permitting the table in its entirety to be shipped in "knock-down" form.

Referring to Fig. 1 of the drawing, the various T-fittings are indicated by the reference numeral 27 and the rungs co-operating therewith at 12.

Referring to Fig. 5 of the drawing, the rung connecting the table leg is shown at 28 and the welded joint between same and the leg at 29.

The top slab 10 is of wood or a wood substitute, made of compressible material permitting the attachment of the helix 14 thereto by expanding this helix to drive the spur ends 15 and 16 and a portion of the square wire into the material.

The legs 11 are preferably formed of tubular metal or cylindrical wood throughout, or, as to the portion thereof co-operating with the split sleeve 17. Rungs may be used or not in accordance with the design of the article of furniture.

The outer configuration of the legs and rungs must be such as to conform to the inner configuration of the split sleeve, which is subject to wide variation.

Glue or other adhesive, with or without dowels, cannot be used in the connection between the legs and the table top.

It is not my intention to limit the invention to the precise details of construction shown in the accompanying drawing, it being apparent that there may be a wide variation in the design of the article of furniture without departing from the spirit and scope of the invention, the essential characteristic of which resides in the use of a table top of wood or other substitute material having sockets in the under face thereof, a wire helix secured to the material of the top within said sockets, the wire of this helix being of a form to provide cam surfaces, as described, a constrictible tube having co-operating cam surfaces exteriorly thereof, a leg having its upper portion conforming to the inner configuration of, and penetrating said sleeve, and a clamp nut carried by said sleeve for the purpose of imparting longitudinal movement thereto to develop a camming action sufficient to close said tube upon the portion of said leg within same.

Having described the invention, what I claim as new and desire to have protected by Letters Patent, is:—

1. An article of furniture having a top slab provided with a plurality of sockets therein, a spirally wound wire having inclined surfaces, embedded in and secured to the wall of each socket whereby wedge-like surfaces are provided within the socket, a constrictible tubular member having exterior wedge-like surfaces adapted to co-operate with the wedge-like surfaces within each socket, and having a screw threaded portion exposed outwardly of said socket, a leg adapted to penetrate each tubular member, and a nut engageable with the screw threads upon each tubular member, whereby longitudinal movement may be imparted to said member to cause the constriction of said member upon said leg.

2. An article of furniture having a wooden top slab provided with a plurality of sockets therein, a spirally wound wire, said wire being substantially square in cross section, imbedded in and secured to the wall of each socket whereby

wedge-like surfaces are provided within the socket, a longitudinally split tube having exterior wedge-like surfaces adapted to co-operate with the wedge-like surfaces within each socket, and having a screw threaded portion exposed outwardly of said socket, a leg adapted to penetrate each tube, and a nut engageable with the screw threads upon each tube, whereby longitudinal movement may be imparted to said tube to cause the constriction of said tube upon said leg.

3. An article of furniture having a wooden top slab provided with a plurality of sockets therein, a spirally wound wire having outwardly directed spurs at the opposite ends thereof, said wire being substantially square in cross section, portions of said wire adjacent one corner thereof and said spurs being imbedded in and secured to the wall of each socket whereby wedge-like surfaces are provided within the socket, a longitudinally split tube having exterior wedge-like surfaces adapted to co-operate with the wedge-like surfaces within each socket, and having a screw threaded portion exposed outwardly of said socket, a leg adapted to penetrate each tube, and a nut engageable with the screw threads upon each tube, whereby longitudinal movement may be imparted to said tube to cause the constriction of said tube upon said leg.

4. An article of furniture having a top slab provided with a plurality of sockets therein, a spirally wound wire having inclined surfaces, imbedded in and secured to the wall of each socket whereby wedge-like surfaces are provided within the socket, a constrictible tubular member having exterior wedge-like surfaces adapted to co-operate with the wedge-like surfaces within each socket, and having a screw threaded portion exposed outwardly of said socket, a cylindrical metallic leg adapted to penetrate each tubular member, and a nut engageable with the screw threads upon each tubular member, whereby longitudinal movement may be imparted to said member to cause the constriction of said member upon said leg.

5. An article of furniture having a wooden top slab provided with a plurality of sockets therein, a spirally wound wire, said wire being substantially square in cross section, imbedded in and secured to the wall of each socket whereby wedge-like surfaces are provided within the socket, a longitudinally split tube having exterior wedge-like surfaces adapted to co-operate with the wedge-like surfaces within each socket, and having a screw threaded portion exposed outwardly of said socket, a cylindrical metallic leg adapted to penetrate each tube, and a nut engageable with the screw threads upon each tube, whereby longitudinal movement may be imparted to said tube to cause the constriction of said tube upon said leg.

6. An article of furniture having a wooden top slab provided with a plurality of sockets therein, a spirally wound wire having outwardly directed spurs at the opposite ends thereof, said wire being substantially square in cross section, portions of said wire adjacent one corner thereof and said spurs being imbedded in and secured to the wall of each socket whereby wedge-like surfaces are provided within the socket, a longitudinally split tube having exterior wedge-like surfaces adapted to co-operate with the wedge-like surfaces within each socket, and having a screw threaded portion exposed outwardly of said socket, a cylindrical metallic leg adapted to penetrate each tube, and a nut engageable with the screw threads upon

each tube, whereby longitudinal movement may be imparted to said tube to cause the constriction of said tube upon said leg.

7. An article of furniture having a wooden top slab provided with a plurality of sockets therein, a square wire spirally wound at a pitch to form substantially V-shaped screw threads, and having its ends provided with outwardly directed spurs, said wire having a portion thereof adjacent opposite sides of one corner and said spurs imbedded in the wall of each socket, a longitudinally split tube having substantially V-shaped screw threads exteriorly thereof of a pitch to co-operate with the screw threads formed by said wire, said tube being of a length to project beyond the screw threads formed by said wire and to be exposed outwardly of said socket, a leg corresponding in contour with the interior of said split tube and having a free sliding fit therein when the tube is enmeshed with said wire threads, and a clamp nut engageable with the screw threads upon said tube and with the under side of said top slab about said socket, whereby tightening of said nut upon said tube and against said slab will impart longitudinal movement to said tube and cause it to be constricted and clamped upon said leg.

8. An article of furniture having a top slab provided with a plurality of sockets therein, a spirally wound wire having inclined surfaces, imbedded in and secured to the wall of each socket whereby wedge-like surfaces are provided within the socket, a constrictible tubular member having exterior wedge-like surfaces adapted to co-operate with the wedge-like surfaces within each socket, and having a screw threaded portion exposed outwardly of said socket, a leg adapted to penetrate each tubular member, a nut engageable with the screw threads upon each tubular member, whereby longitudinal movement may be imparted to said member to cause the constriction of said member upon said leg, and rungs connecting said legs.

9. An article of furniture having a wooden top slab provided with a plurality of sockets therein, a spirally wound wire, said wire being substantially square in cross section, imbedded in and secured to the wall of each socket whereby wedge-like surfaces are provided within the socket, a longitudinally split tube having exterior wedge-like surfaces adapted to co-operate with the

wedge-like surfaces within each socket, and having a screw threaded portion exposed outwardly of said socket, a wooden leg adapted to penetrate each tubular member, each leg having a socket therein, a square wire spirally wound at a pitch to form substantially V-shaped screw threads and having its ends provided with outwardly directed spurs, said wire having a portion thereof adjacent opposite sides of one corner and said spurs, imbedded in the wall of the socket in each leg, a longitudinally split tube having substantially V-shaped screw threads exteriorly thereof of a pitch to co-operate with the screw threads formed by said wire, said tube being of a length to project beyond the screw threads formed by said wire and to be exposed outwardly of a socket in a leg, a rung corresponding in contour with the interior of said split tube and having a free sliding fit therein when the tube is enmeshed with said wire threads, and a clamp nut engageable with the screw threads upon said tube and with the outside of said leg about said socket, whereby tightening of said nut upon said tube and said leg will impart longitudinal movement to said tube and cause it to be constricted and clamped upon said leg.

10. An article of furniture having wooden legs, each leg having a socket therein, a square wire spirally wound at a pitch to form substantially V-shaped screw threads and having its ends provided with outwardly directed spurs, said wire having a portion thereof adjacent opposite sides of one corner and said spurs, imbedded in the wall of the socket in each leg, a longitudinally split tube having substantially V-shaped screw threads exteriorly thereof of a pitch to co-operate with the screw threads formed by said wire, said tube being of a length to project beyond the screw threads formed by said wire and exposed outwardly of a socket in a leg, a rung corresponding in contour with the interior of said split tube and having a free sliding fit therein when the tube is enmeshed with said wire threads, and a clamp nut engageable with the screw threads upon said tube and with the outside of said leg about said socket, whereby tightening of said nut upon said tube and said leg will impart longitudinal movement to said tube and cause it to be constricted and clamped upon said leg.

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