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FASTENER FOR METALLIC TUBULAR FURNITURE

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FIG. 1.

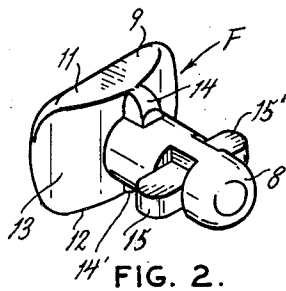
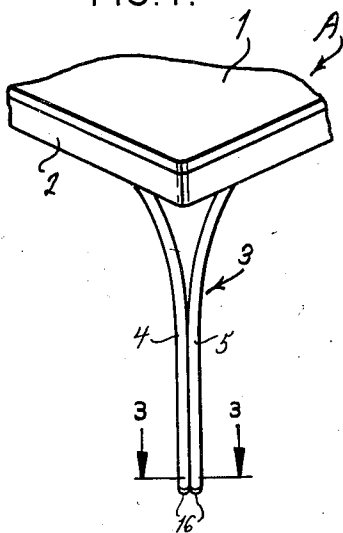


FIG. 2.

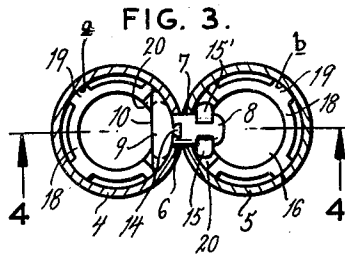


FIG. 3.

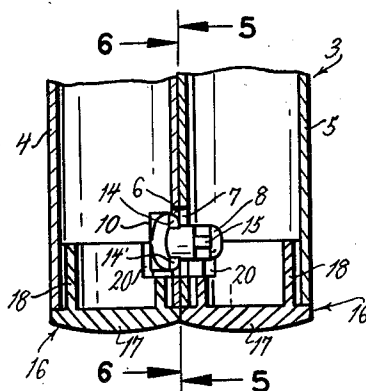


FIG. 4.

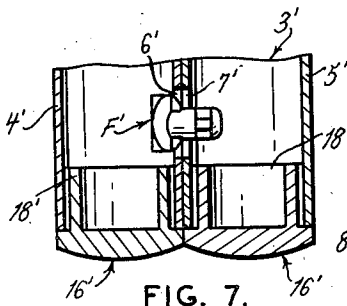


FIG. 7.

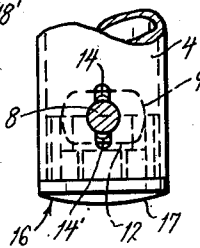
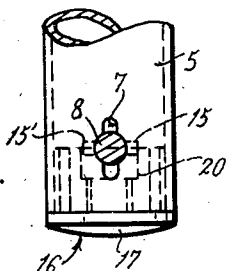


FIG. 5.

FIG. 6.



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FASTENER FOR METALLIC TUBULAR FURNITURE

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5 Claims. (Cl. 285-188)

This invention relates in general to certain new and useful improvements in metallic tubular furniture and, more particularly, to a knockdown table leg construction and fastener element therefor.

In the manufacture of furniture and particularly furniture in which the legs and related structural parts are made from metallic tubing, it is highly desirable to make provision for shipment in as compact form as possible to minimize transportation costs and breakage. However, tables must have sturdy, rigid legs and, consequently, existing types of knockdown constructions are complicated and difficult to assemble without tools. Furthermore, considerable mechanical skill is ordinarily required to assemble such leg constructions properly.

It is, therefore, the primary object of the present invention to provide a unique type of knockdown table leg construction and fastener element for use in conjunction therewith which is simple, inexpensive, convenient, and can be readily assembled or disassembled without special tools and without technical skill.

It is another object of the present invention to provide a table leg construction by which a table of the metallic tubular type can be packed for shipment and shipped with legs removed and can thereafter be quickly set up for ultimate use and will result in a table having sturdy, rigid legs which are highly attractive in appearance.

With the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawing (one sheet)—

Figure 1 is a fragmentary perspective view showing a corner of a table having a leg-construction embodying the present invention;

Figure 2 is a perspective view of a fastener element forming a part of the present invention;

Figure 3 is a transverse sectional view taken along line 3-3 of Figure 1.

Figure 4 is a fragmentary vertical sectional view taken along line 4-4 of Figure 3;

Figures 5 and 6 are fragmentary vertical sectional views taken respectively along lines 5-5 and 6-6 of Figure 4; and

Figure 7 is a fragmentary vertical sectional view of a modified form of leg-construction embodying the present invention.

Referring now in more detail and by reference characters to the drawing, which illustrates a preferred embodiment of the present invention, A designates a table having a somewhat rectangular top 1 and a depending marginal flange 2 or "apron" as it is called. Detachably fastened in any suitable or conventional manner to the under side of the table top 1 in each corner is a leg-assembly 3 consisting of two companion-shaped tubular members 4, 5, which are curved upwardly and divergently with respect to each other at their upper ends for engagement with the securement means by which the leg-assembly 3 is fastened to the table top 1. As seen by reference

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to Figure 3, the tubular members 4, 5, each have cylindrical interior surfaces *a*, *b*, respectively. Since the table top 1 and the securement means by which the leg-assembly 3 is attached thereto are conventional, they are not shown or described in particular detail herein.

At approximately one-third to one-half the way downwardly from their upper ends, the leg-forming tubular members 4, 5, come together and continue downwardly to the floor in parallel contiguity, as shown in Figure 1. On their tangent or touching faces, and adjacent their lower ends, the tubular members 4, 5, are respectively provided with registering apertures 6, 7, having central circular openings and diametrically opposed slot-like portions extending in a substantially vertical direction, that is to say, along an axial line of the tubular members 4, 5.

Provided for co-operation with the tubular members 4, 5, is a fastener element F formed from metal rod-stock in an upsetting machine or by any other suitable metal-working procedure and integrally including a rod-like shank 8 having a head 9, the latter being formed with a flat back face 10, flat top and bottom faces 11, 12, and an abutment face 13, which is a cylindrical section in shape and is adapted to conform snugly against the inner face of one of the tubular members 4, 5. The shank 8 is provided, adjacent to the region of juncture with the head 9, with diametrically opposite upstruck ears 14, 14', which are more or less perpendicular to the faces 11, 12, and are of such size and shape as to fit snugly within the slot-like portions of the aperture 6 and adjacent its outer end, the shank 8 is similarly provided with upstruck ears 15, 15', of the same shape and size as, but located at 90° around the periphery of the shank 8 with reference to, the ears 14, 14'. It will, of course, be understood that the ears 14, 14', 15, 15', will fit either the aperture 6 or the aperture 7 so that the shank is interchangeable with respect to the tubular members 4, 5.

Also provided for co-operation with the tubular members 4, 5, are end-plugs 16, preferably molded from styrene resin and integrally including a button-shaped glide-portion 17 and a tubular collar 18 having outwardly presented radial flutes 19 for jam-fitted retentive engagement within the otherwise open ends of the tubular members 4, 5. As will be seen by reference to Figures 4 and 5, the collar 18 is cut away along its upper margin to provide a rectilinear recess 20 adapted to fit around the head 9 of the fastener F and hold the latter from shifting longitudinally when the tubular members 4, 5, are in assembled relation.

Assuming that the table A has been shipped in knockdown condition and is being assembled by the furniture dealer or purchaser as the case may be, the leg-assemblies therefor are set up by placing the fastener F in the tubular member 4, for instance, so that the head 9 initially lies in a direction aligned with the longitudinal axis of the tubular member. In this position, the shank 8 and ears 15, 15', can be pushed through the aperture 6 and rotated 90° until the abutment face 13 is pressed tightly against the interior surface of the tubular member 4 and the ears 14, 14', are retentively locked in the slot-like portions of the aperture 6. Thereupon, one of the end-plugs 16, with its recess 20 in proper alignment, is pushed up into the end of the tubular member 4 to engage the head 9. The ears 15, 15', are now at right angles to the longitudinal axis of the tubular member 4, and thus the two tubular members 4, 5, are swung into a position at right angles to each other so that the ears 15, 15', will line up with the slot-like portions of the aperture 7, whereupon, the protruding portion of the shank 8 will pass through the aperture 7. Thereupon, the tubular members, 4, 5, are swung back into the aligned position shown in Figure 1 and the ears 15, 15', will extend chordwise across the interior of the tubular member 5 and bite slightly thereinto

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to form a tight frictional engagement therewith. It should be pointed out in this connection that the dimensions of the ears 15, 15', and the distance thereof from the ears 14, 14', must be such that the ears 15, 15' will have a "squeeze-fit," so to speak, and will also place the shank 8 in substantial tension drawing the tubular members 4, 5, tightly together.

It should also be pointed out that, notwithstanding the foregoing description, the leg-assembly 3 can be shipped with the fastener F and the end-plugs 16 in place, so that the user needs only to insert the protruding end of the shank 8 into the aperture 7 and swing the tubular members 4, 5, into alignment in order to have a tightly connected, rigid leg-assembly which can be attached to the table top.

If desired, it is possible to provide a modified form of leg-assembly 3', as shown in Figure 7, which is substantially identical with the leg-construction previously described and includes legs 4', 5', having apertures 6', 7', which are similar to the previously described apertures 6, 7, except that they are located higher up. The legs 4', 5', are held together by a fastener F' identical in all details with the previously described fastener F. Press-fitted in the lower ends of the legs, 4', 5', are end plugs 16', which are similar to the end plugs 16 and include a glide portion 17' and a tubular collar 18'. The collar 18', however, is not cut away to provide the recess 20 which is employed in the previously described fastener F, but the head of the fastener F' is, instead, spot-welded in place after assembly.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the metallic tubular furniture may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A fastener for use with pieces of hollow tubing which are adapted when in assembled relation to extend in side-by-side contiguity for a substantial portion of their length and are provided in such contiguous portions with matching apertures each having a pair of diametrically opposite relatively narrow slots extending axially along the pieces of tubing; said fastener having a shank sized and shaped for disposition through said apertures, a head element formed integrally on one end of the shank and having its under face convex and conforming to the section of a cylinder, a first pair of oppositely projecting protuberances formed on the shank adjacent to the head element, said protuberances extending along a line substantially parallel to the axis of the cylindrical section forming the under face of the head element for engagement in the slots of one of the pieces of tubing, and a second pair of oppositely projecting protuberances formed on the shank in axially spaced relation to the first pair of protuberances and disposed along a line at right angles to the line of the first pair of protuberances for tight frictional engagement with the interior surfaces of the other piece of tubing adjacent to the apertures thereof and substantially at right angles to the slots of said last-named aperture when the pieces of tubing are in assembled relation.

2. A fastener for use with pieces of hollow tubing of circular cross-section adapted, when in assembled relation, to extend in side-by-side contiguity for a substantial portion of their length and being provided in such contiguous portion with matching apertures each having a pair of diametrically opposite relatively narrow slots extending axially along the pieces of hollow tubing, said pieces of tubing also having opposed diverging arcuate interior surface portions; said fastener having a shank sized and shaped for disposition through said apertures, a head element formed integrally on one end of the shank and having its under face matching and conforming to the arcuate interior surface of one of the pieces of tubing,

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a first pair of oppositely projecting protuberances formed on the shank adjacent the head element, said first pair of protuberances extending along a line substantially parallel to the axis of the arcuate section forming the under face of the head element for engagement in the slots of said one of the pieces of tubing, and a second pair of oppositely projecting protuberances formed on the shank in axially spaced relation to the first pair of protuberances and disposed along a line at right angles to the line of the first pair of protuberances, whereby rotation of the pieces of tubing from a position at right angles to each other to the side-by-side assembled relation will cause said second pair of protuberances to extend chordwise across and frictionally engage the arcuate interior surface portion of the other piece of tubing adjacent the aperture thereof, and substantially at right angles to the slots therein, to place said shank in tension and draw said pieces of tubing together.

3. A fastener for use with pieces of hollow tubing of circular cross-section adapted, when in assembled relation, to extend in side-by-side contiguity for a substantial portion of their length and being provided in such contiguous portions with matching apertures each having a pair of diametrically opposite relatively narrow slots extending axially along the pieces of hollow tubing, said pieces of tubing also having opposed diverging cylindrical interior surface portions; said fastener having a shank sized and shaped for disposition through said apertures, a head element formed integrally on one end of the shank and having a cylindrical under face matching and conforming to the cylindrical interior surface of one of the pieces of tubing, a first pair of oppositely projecting protuberances formed on the shank adjacent the head element, said first pair of protuberances extending along a line substantially parallel to the axis of the cylindrical section forming the under face of the head element for engagement in the slots of said one of the pieces of tubing, and a second pair of oppositely projecting protuberances formed on the shank in axially spaced relation to the first pair of protuberances and disposed along a line at right angles to the line of the first pair of protuberances, whereby rotation of the pieces of tubing from a position at right angles to each other to the side-by-side assembled relation will cause said second pair of protuberances to extend chordwise across and frictionally engage the cylindrical interior surface portion of the other piece of tubing adjacent the aperture thereof, and substantially at right angles to the slots therein, to place said shank in tension and draw said pieces of tubing together.

4. A fastener for use with a pair of table leg members of circular cross-section adapted, when in assembled relation, to extend in side-by-side contiguity for a substantial portion of their length and being provided in such contiguous portions with matching apertures each having a pair of diametrically opposite relatively narrow slots extending axially along the leg members, said leg members also having opposed diverging arcuate interior surface portions; said fastener having a shank sized and shaped for disposition through said apertures, a head element formed integrally on one end of the shank and having its under face matching and conforming to the arcuate interior surface of one of the leg members, a first pair of oppositely projecting protuberances formed on the shank adjacent the head element, said first pair of protuberances extending along a line substantially parallel to the axis of the arcuate section forming the under face of the head element for engagement in the slots of said one of the leg members, and a second pair of oppositely projecting protuberances formed on the shank in axially spaced relation to the first pair of protuberances and disposed along a line at right angles to the line of the first pair of protuberances, whereby rotation of the leg members from a position at right angles to each other to the side-by-side

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assembled relation will cause said second pair of protuberances to extend chordwise across and frictionally engage the arcuate interior surface portion of the other leg member adjacent the aperture thereof, and substantially at right angles to the slots therein, to place said shank in tension and draw said leg members together.

5. A fastener for use with pieces of hollow tubing of circular cross-section adapted, when in assembled relation, to extend in side-by-side contiguity for a substantial portion of their length and being provided in such contiguous portions with matching apertures each having a pair of diametrically opposite relatively narrow slots extending axially along the pieces of hollow tubing, said pieces of tubing also having opposed diverging arcuate interior surface portions; said fastener having a shank sized and shaped for disposition through said apertures, a head element formed integrally on one end of the shank and having its under face matching and conforming to the arcuate interior surface of one of the pieces of tubing, a first pair of oppositely projecting protuberances formed on the shank adjacent the head element, said first pair of protuberances extending along a line substantially parallel to the axis of the arcuate section forming the under face of the head element for engagement in the slots of said one of the pieces of tubing, and a second pair of oppositely projecting protuberances formed on the shank in axially spaced relation to the first pair of protuberances and disposed along a line at right

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angles to the line of the first pair of protuberances, whereby rotation of the tubular members from a position at an angle to each other to the side-by-side assembled relation will cause said second pair of protuberances to extend chordwise across and frictionally engage the arcuate interior surface portion of the other piece of tubing adjacent the aperture thereof, and at an angle to the slots therein, to place said shank in tension and draw said pieces of tubing together.

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