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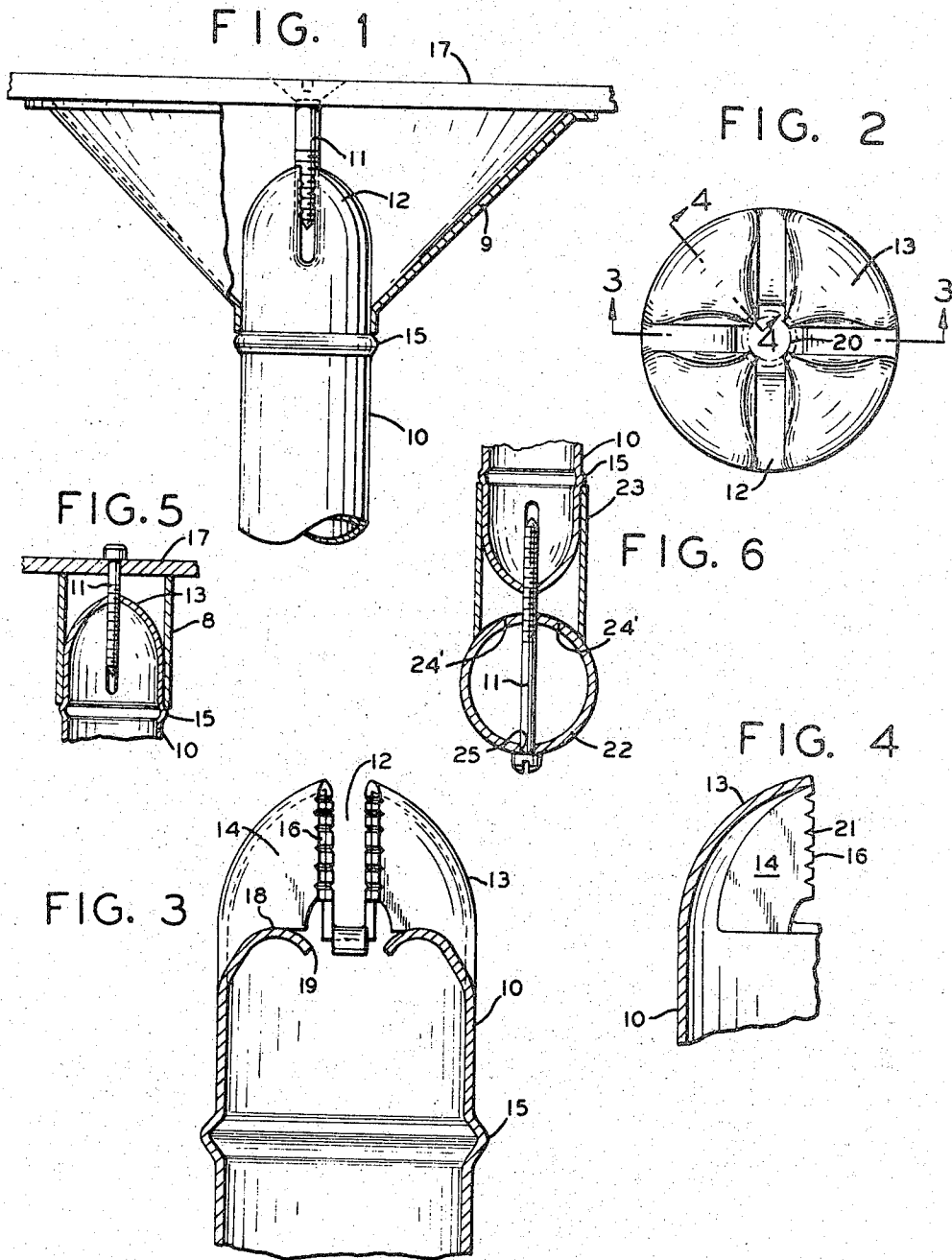
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LEG STRUCTURE

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2 Sheets-Sheet 1



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FIG. 7

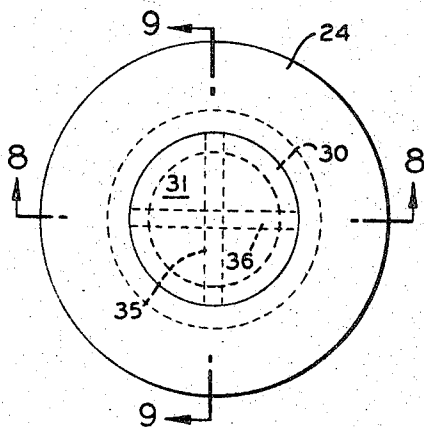


FIG. 8

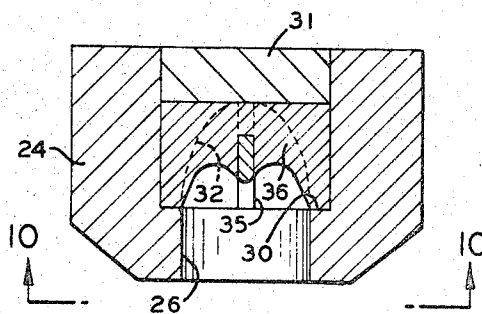


FIG. 9

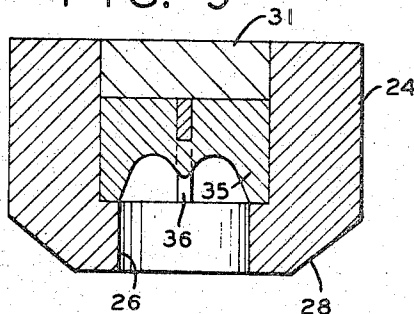


FIG. 11

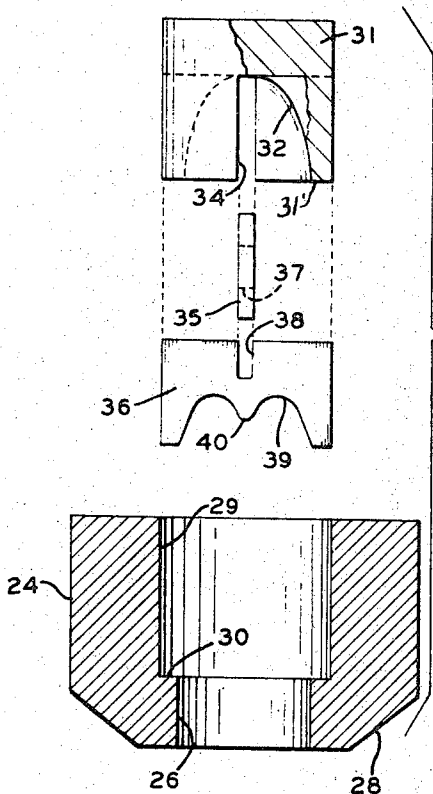
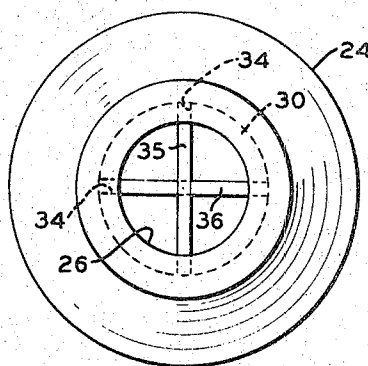


FIG. 10



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**LEG STRUCTURE**

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8 Claims

**ABSTRACT OF THE DISCLOSURE**

A tubular leg, the leg being upset at its upper end with a die, forming a plurality of jaws spaced from each other and from the leg axis, and providing a central vertical recess to receive a thread cutting screw to secure the leg to a table top, each jaw having an outer face which is curved upwardly and inwardly, and walls extending radially inwardly from each side of the jaw, providing vertical edges for the thread cutting screw.

This invention relates to leg structures for charcoal grills, furniture made from metal and other materials, folding ironing boards, and a variety of other articles, and relates more particularly to a tubular metal leg formed with a special end configuration by a single blow from an upsetting die, which is readily attached to a table top, another tubular structure or otherwise by a single thread cutting screw. The invention is the leg and leg assembly, the novel die used to form the leg end, and in the method.

**SUMMARY OF THE INVENTION**

The tubular leg is struck with a die of special configuration which crushes the metal of the leg end inwardly and forms a plurality of jaws, usually four, which are spaced from each other and from the leg axis, forming eight generally straight radial walls with inner edges, two on each jaw, which receive the screw which cuts its own thread and secures the leg to the table top or other article with no reasonable possibility of pull out.

**OBJECTS OF THE INVENTION**

An important object of the invention is to provide an inexpensive leg attaching construction formed by a single blow from a die and having great resistance to pull out from the attaching screw. The leg end with its multiple jaw formation has a coned rather than flat end face and, in one application, it is used in conjunction with a cone shaped cup of the kind disclosed in Patent No. 3,111,337 wherein the cup has a central hole that receives the leg. This leg has an annular stop or rib below the top of the leg a distance slightly less than the height of the cone. The top of the leg is accordingly spaced from the lower face of the table top, or bowl of a charcoal grill, while the upper annular rim of the cone engages this lower face. A screw passes downwardly through a hole in the top and into a nut element at the upper end of the leg, and, upon being tightened, pulls the top of the leg upwardly but the parts are so proportioned that it never quite touches the bowl. The upper rim of the cone provides an annular brace clear around the top of the leg but spaced far enough from the central screw to provide a very effective support, when the screw is tightened full up, against forces directed horizontally against the lower end of the leg.

In the event that the use is such that there are no forces tending to disrupt this leg from its position normal to the table top, or in the event that the leg is braced by other means, a goodly measure of support against lateral displacement may be provided by a simple tubular adapter received in the leg end, limited on downward travel by the annular bead earlier mentioned, and having

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a square upper end lying above the coned upper end of the leg. When the screw is tightened, the square end of the adapter is drawn tightly against the underside of the table top.

Another object of the invention is to provide a firm and secure joint, right angular or otherwise, between two tubular members, as in tubular metal furniture construction. The short adapter, instead of having a square end, has a concave end which receives the right angular member with a screw passing through both walls of the latter tube and into the central thread section of the jaws. This construction is especially adapted for securing a horizontal foot to the vertical leg of a folding ironing board. The entire joint is neat and trim in appearance, it is stronger than a welded construction, and if looseness ever develops the trouble is corrected by tightening this screw.

In the drawings:

FIG. 1 is a broken side elevation of a leg embodying the present invention as secured to a table top;

FIG. 2 is a top plan view of the leg structure;

FIG. 3 is a section taken on line 3—3 of FIG. 2;

FIG. 4 is a section taken on line 4—4 of FIG. 2;

FIG. 5 is a section taken through a modification of the present invention;

FIG. 6 shows another modification;

FIG. 7 is a plan view of the die used in forming the leg structure;

FIG. 8 is a section taken on line 8—8 of FIG. 7;

FIG. 9 is a section taken on line 9—9 of FIG. 7;

FIG. 10 is a lower plan view of the die structure, the view being taken on line 10—10 of FIG. 8;

FIG. 11 is an exploded view showing the component parts of the die.

The tubular leg 10 of the present invention with its upset upper end, forming jaws, to receive therebetween a thread cutting screw 11 is shown in FIG. 1. The construction of the upsetting die, later to be described, lends itself to the formation of four jaws. By modifying the die any number can be formed. The jaws have slots 12 between them. Each jaw has an outer face 13 which is curved upwardly and inwardly and the opposed edges of each jaw are bent radially inwardly forming radial walls 14 and at their inner ends two generally straight edges 16 which are parallel with the axis to receive the thread cutting screw that secures the leg to a horizontal member such as a table top 17 or a bowl for a charcoal broiler. Each pair of edges 16 are in substantial meeting engagement and have no preformed notches for the threads.

Between each pair of adjoining jaws 12 there is a curved lower wall 18 which extends inwardly from the outer periphery of the tube and which terminates in a short edge 19, the several edges forming a central opening indicated by broken lines 20 to receive the lower end of the screw 11. There would be no objection to tapping this opening and thus providing pre-formed threads for the screw. This is not necessary, however, and the eight untreated edges provide excellent stock for the forming of the thread, shown at 21 as the screw it rotated. The jaws with their radial walls 14 do not bend rearwardly as the screw enters the hole, thus insuring against pull-out.

The leg has an annular bead or rib 15 forming a stop for the cone 9. This bead is so located on the leg, in relation to the height of the cone that the upper ends of the jaws are always spaced from the lower face of the table top and this permits as much tightening of the screw as the strength of the parts permit.

In the modified leg joint of FIG. 5, a short tubular section 8 replaces the cone shaped cup 9. This arrangement does not give as much lateral support to the lower end of the leg but is nevertheless quite effective.

In the second modification shown in FIG. 6, the tubular member 10 with the jaws 13 formed as just described

is to be secured in rigid relation to another tubular member 22 at right angles to tube 10. A short tubular section or adapter 23 is carried on member 10 and engages the annular bead 15 at its upper end and the opposed lower edges of the round adapter are concavely curved as shown at 24', the curvature fitting the outside of tubular member 22. When screw 11 located in aligned holes 25 in tube 22 cuts threads in the jaws and is tightened there is provided a very firm right angular connection between the members. By modifying the shape of concave edges 24, the angularity between tubes 10 and 22 are varied. In such case, the holes 25 will be offset from each other an approved distance.

The die assembly includes a ring-like die carrier 24 having a central bore 26 of such size as to snugly receive the leg 10. The lower face of the die carrier is externally bevelled at 28. The bore has a counterbore 29 forming a shoulder 30 and the lower end 31' of the forming die 31 rests upon this shoulder. The forming die has a solid upper section which is substantially plane with the upper face of the die carrier and has a concave recess 32 to shape the outer curved faces of the jaws 13. The lower end of the forming die has cross slots 34 extending clear across and about 2/3 of the distance towards the top and which receive a pair of die blades 35 and 36 to form the slots in right angular relation with complementary lower and upper slots 37 and 38 in which the central land portions of the blades are received. The lower edges of the die blades have a pair of arcuate edges 39 extending to a central V-shaped portion 40.

While there have been described herein what are at present considered preferred embodiments of the invention, it will be obvious to those skilled in the art that many modifications and changes may be made therein.

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

1. A tubular leg which is upset at its upper end with a die, forming a plurality of jaws spaced from each other and from the leg axis, and providing a central vertical recess to receive a screw to secure the leg to a table top or the like, each jaw having an outer face which is curved upwardly and inwardly, and walls extending radially inwardly from each side of the jaw, thus providing two vertical edges on each jaw which are in substantially meeting relation and on which threads to receive the screw are formed.

2. The leg structure of claim 1 wherein short walls connect each pair of jaws at the ends thereof.

3. The leg structure of claim 1 wherein said vertical edges are initially substantially straight and the screw is a thread cutting screw which forms notches for threads by said screw.

4. The leg of claim 1 wherein an annular bead is formed on the leg at a point spaced from its upper end.

5. The leg of claim 4 for securing to said table top or the like wherein said screw passes through said table top and into the central vertical recess and a cone of greater height than the distance from the annular bead to the upper end of the leg receives the leg and braces it in a position normal to the table top when the screw has been tightened within the vertical recess and against the table top.

6. The leg structure of claim 4 for securing to a table top or the like wherein said screw passes through said table top and into the central vertical recess and a tube of greater height than the distance from the annular bead to the leg top receives the leg and braces it in a position normal to the table top when the screw has been tightened within the recess and against the table top.

7. The tubular structure of claim 4 and another tubular structure lying at an angle to the first structure is secured thereto, a relatively short tube contoured at one end to fit the exterior of the fixed tubular structure is carried on said first tubular structure and engages the bead at its opposite end and wherein the short tube has a length greater than the distance from the attaching end of said first tubular structure to said bead and a screw passes through the short tube and into said central recess.

8. The structure of claim 4 wherein the two tubular structures have a right angular relation to each other.

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U.S. Cl. X.R.

85—32; 287—20