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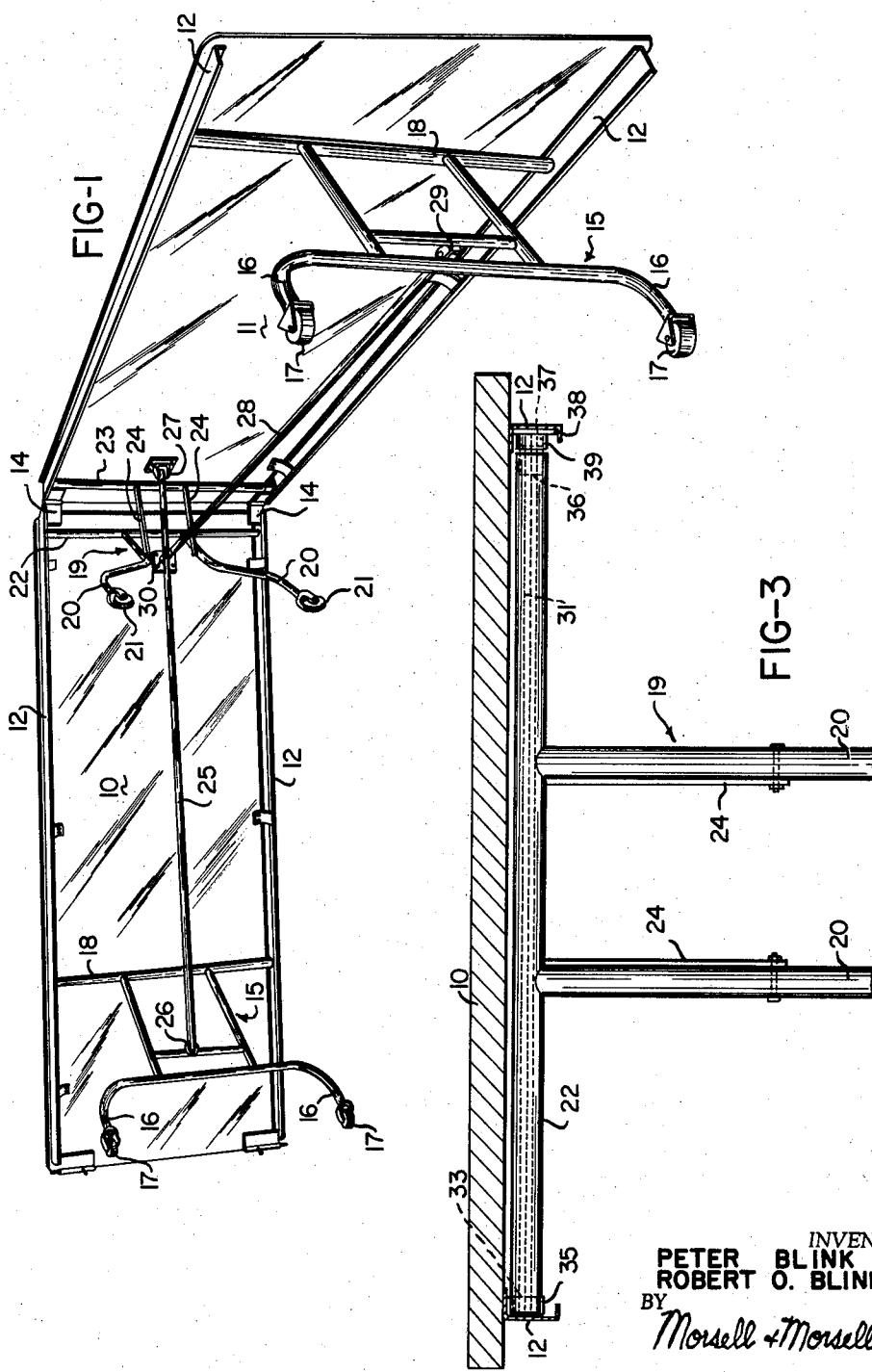
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TORSION BAR LEG STRUCTURES FOR FOLDING TABLES

Filed Feb. 15, 1963

2 Sheets-Sheet 1



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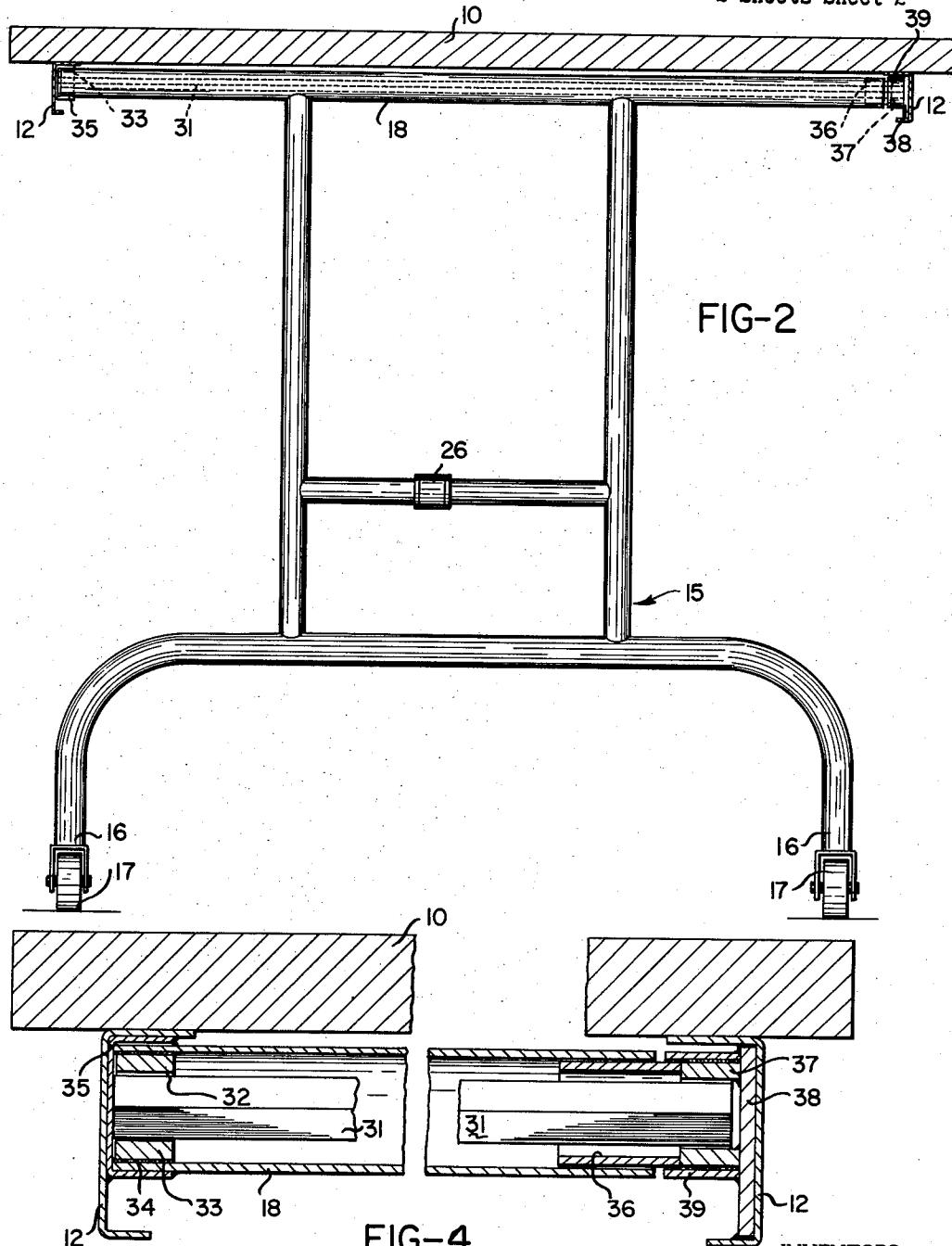


FIG-4

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TORSION BAR LEG STRUCTURES FOR FOLDING TABLES

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4 Claims. (Cl. 108—113)

This invention relates to improvements in torsion bar leg structures for folding tables.

There are in common use elongated sectional folding tables adapted to be used by large groups, and these tables customarily include a pair of elongated, endwise-adjacent and foldably-connected top or board members, each of which is supported by a foldably-associated leg structure mounted near its outer end portion, with an additional foldable leg structure positioned adjacent the transverse median of the extended top or board at the junction of the inner ends of the foldably-associated top or board sections thereof.

To collapse or fold a table of the aforementioned type it is the usual practice to fold one of the board or top sections flatly lengthwise upon the inner face of the other top or board section, and this operation simultaneously serves to collapse or fold all of the supporting leg structures against the inner faces of the board sections, with the result that the folding legs and associated brace members are compactly confined between the folded-over top or board sections. In such folding tables, the folding leg structure for each top section is so associated with the other top section through elongated brace means that the action of folding one top section onto the other will simultaneously cause, through the brace members which connect with the leg structures, the flat collapse of said leg structures for the ends of the board members, and an arrangement is also provided to similarly collapse the intermediate leg structure.

With the foregoing in mind, it is a primary object of the present invention to incorporate in the upper transverse tube portions of folding table leg structures, torsion bars so associated with their respective leg structures and with the adjacent table board sections that, when the table is unfolded and extended for use, with the leg structures being projected to their supporting positions, the torsion bars in the leg structures are twisted or placed under tension, with the result that, subsequently, when the outstretched table is folded to its collapsed position, the unwinding or expansive force of the torsion bars associated with the leg structures will greatly aid in the movement of the table to its collapsed or folded position, minimizing the manual force or effort required to so fold the table.

A further object of the invention is to provide in a folding table having foldably-associated supporting leg structures, torsion bar means incorporated in said leg structures which, when the table is being unfolded or extended, are wound or placed under tension, thereby cushioning the descent or outward projection of the table sections, whereby the same will be retarded in their opening movement so as not to open too suddenly or with a bang.

A further object of the invention is to provide a torsion bar folding leg structure with which elongated folding tables may be easily equipped without material modification to the table, which function automatically, which are relatively inexpensive, which are strong and durable, which permit the operation of the table to and from its collapsed condition with a minimum of manual manipulation and effort, and which are furthermore well adapted for the purposes described.

With the above and other objects in view, the inven-

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tion consists of the improved torsion bar leg structure for folding tables, and the parts and combinations thereof as set forth in the claims, and all equivalents.

In the accompanying drawings, in which the same reference characters indicate the same parts in all of the views:

FIG. 1 is a perspective view looking at the underside of a folding table equipped with the improved torsion bar leg structures, with the table in partially folded or collapsed condition;

FIG. 2 is an enlarged transverse sectional view through one of the top or board sections of the table showing an end leg structure foldably associated therewith;

FIG. 3 is a similar enlarged transverse sectional view through another portion of a top or board section of the table showing the center leg structure foldably associated therewith, the lower portion of the leg structure being broken away; and

FIG. 4 is an enlarged fragmentary sectional view through a table board or top section, showing in section the transverse tube member of a leg structure and the mounting therewithin of a pair of torsion bars.

Where the term "table" is used herein it is intended to include not only an elongated table of the type illustrated, but a bench, platform, stand, or other like structure or article of furniture wherein there are board or top sections foldably joined together in end-to-end relationship and which are supported in open position by foldable leg structures and braces.

With particular reference to FIG. 1 of the drawings it will appear that the article of furniture includes a pair of endwise adjacent similar flat rectangular top or board sections 10 and 11. Applied to the undersurface of each board section along the longitudinal margins thereof, and anchored thereto, are rectilinear flanged metallic angle or channel reinforcing members 12. Also, the lower flanged portions of the innermost ends of said channel members 12 have secured thereto the plate portions of hinges 14 which provide the means by which the inner end portion of one board section 10 is foldably connected to its companion board section 11 to permit the collapse or folding of one board section upon the inner face of the other.

Applied transversely to the underside of the board sections 10 and 11 toward the outer ends thereof are end supporting leg structures designated generally by the numeral 15, and which are of integral construction and include normally upright members, each carrying at its lower or outer ends a transverse bar having down-turned laterally spaced leg elements 16 with rollers or casters 17 journaled in their free extremities. With respect to each of the end leg structures 15 it will be observed that the inner ends of the upright portions thereof are rigidly connected to a transverse tube portion 18, the outer ends of which are rotatably mounted relative to the channels 12, as will hereinafter appear.

For the support of the intermediate portion of the table top when the board sections 10 and 11 are in their outstretched condition there is a center leg structure generally designated by the numeral 19 and which includes a pair of down-turned laterally-spaced leg elements 20 with rollers or casters 21 journaled in their free extremities. The upper ends of the leg elements 19 of the center leg assemblage are joined to a transverse tube 22 whose opposite end portions are rotatably associated with the channels 12 in the same manner as the tube portions 18 of the end leg structures are mounted, as will hereinafter appear. While the transverse tube 22 of the center leg structure is applied to the channels 12 of the board section 10, toward and inner end thereof, there is also applied to the inner end portions of the channels 12 of the board section 11 a

transverse shaft 23 whose opposite end portions are journaled in suitable bearing brackets carried by the channels 12. In order that the center leg structure 19 may be moved from outstretched supporting position to a collapsed position, and vice versa, upon the folding or unfolding of one of the board sections relative to the other, straps 24 (see FIG. 1) are extended between the shaft 23 and the tube 22.

The end leg structure 15 applied to the board section 10 is similarly adapted to be folded and unfolded relative to the inner surface of its board section upon folding movement of one of the board sections relative to the other, by means of an elongated rod 25 having its outer end portion pivotally connected to an intermediate portion of the leg structure 15, as at 26, and having its inner end portion pivotally mounted in a bracket 27 secured to an undersurface portion of the inner end of the board section 11. For the end leg structure 15 applied to the outer end portion of the board section 11 there is a similar elongated rod 28 having one end portion pivotally mounted in a bracket 29 on an intermediate portion of said leg structure 15 and having its other end portion pivotally carried by a bracket 30 mounted on the undersurface of the board section 10 adjacent its inner end.

The arrangement whereby torsion bar means are applied to the leg structures 15 and 19 is shown most clearly in FIG. 4 wherein there is illustrated the application of the torsion bar means to the transverse tube 18 of an end leg structure, but the identical arrangement applies relative to the transverse tube 22 of the center leg structure 19. The numeral 31 indicates a pair of elongated torsion bars which are housed within the transverse tube 18 in side-by-side arrangement and which extend lengthwise of the tube. Each torsion bar is formed of spring steel and is preferably of square cross-section. At the lefthand end of the tube relative to FIGS. 2, 3 and 4, the ends of the torsion bars 31 are passed through a slot 32 in a metallic plug 33 and the plug 33 is, in turn, brazed to the inner surface of the tube 18, as indicated at 34 in FIG. 4. This said lefthand end of the tube is covered by a cap 35 and the cap, in turn, is spot-welded to the inner surface of the channel 12 thereadjacent. The end of the tube 18 is free to turn within its cap 35, but, as the adjacent ends of the torsion bars 31 are engaged by the plug 33 and the latter is brazed to the end portion of the tube 18, the said lefthand ends of the torsion bars 31 are, in effect, fast with the leg structure.

Referring to the position end portion of the tube 18 in FIG. 4, the righthand end, it will be observed that said end portion of the leg structure tube 18 has therewithin a hollow cylinder 36 which is brazed at its outer end to a metallic plug 37, with the latter being brazed to an inner face portion of a plate 38 which fits within, and is spot-welded to, the inner face of the adjacent channel 12. The numeral 39 designates a collar which surrounds the plug 37. The righthand end portions of the torsion bars 31 extend freely through the cylinder 36 and into a rectangular opening provided therefor in the metallic plug 37. Thus, said end portions of the torsion bars 31, being engaged by the plug 37 which is, in turn, anchored to the plate 38 which is secured to the channel 12, are, in effect, anchored to the table top section. The end of the leg structure tube 18 under consideration is, through the arrangement described, free to turn on the cylinder 36. Inasmuch as the arrangement illustrated in FIG. 4 is applied to the transverse tubes of all of the leg structures, it is evident that the transverse tubes 18 and 22 of the leg structures, and, consequently, the leg structures, are free to turn relative to the channels 12 for folding and unfolding movement of said leg structure, but the torsion bars housed within the tubes 18 and 22 are at one set of ends anchored to their respective leg structures, and at the other set

of ends they are anchored to a table top section. Thus, during the hinging movement of the leg structures in a certain direction, the torsion bars therein are twisted or placed under tension, and in movement of the leg structures in the opposite direction, the torsion bars uncoil or unwind.

The operation of collapsing the table or article of furniture from its outstretched position wherein the top or board members 10 and 11 are in extended endwise adjacent horizontal position to a folded or collapsed position is extremely simple and corresponds with the operation of the table illustrated and described in the Blink Patent No. 2,730,418. When the table is unfolded from its collapsed position to its extended position for use, the torsion bars 31 in each leg structure are wound or put under tension and the tension thus created prevents the too rapid descent or unfolding of the table top sections so that they will not open up too suddenly. The table is held in its outstretched condition with the legs in their extended supporting positions by means of conventional latches (not shown) which form no part of the present invention. When the outstretched table is to be collapsed for storage, the unwinding or expansive force of the torsion bars in each leg structure aids in the movement of the table sections and the legs toward their folded collapsed position, whereby a minimum amount of manual effort on the part of the operator is required.

The improved torsion bar leg structure for a folding table is simple, enhances the ease of manipulation of the table, is easily incorporated in portions of the table legs, and is well adapted for the purposes described.

What is claimed as the invention is:

1. In a folding table assemblage wherein the table includes a pair of endwise adjacent, hingedly connected top sections with a leg structure foldably connected to an undersurface portion of a top section, said leg structure having an integral transverse tube member, the improvement which comprises a rectilinear torsion member housed within the tube member of said leg structure and anchored at one end to a top section to react directly thereagainst and at its other end to said leg structure whereby an unfolding movement of said leg structure relative to said top section will place said torsion member under tension and decelerate folding movement of said top section.

2. In a folding table assemblage wherein the table includes a pair of endwise adjacent, hingedly connected top sections with leg structures foldably connected to spaced-apart undersurface portions of the top sections, each leg structure having an integral transverse tube member at its inner end, the improvement which comprises an elongated rectilinear torsion bar housed within the tube member of each leg structure, each torsion bar being anchored at one end to a top section to react directly thereagainst and anchored at its other end to its leg structure whereby an unfolding movement of said leg structure relative to its top section will yieldingly twist the torsion member in said leg structure and decelerate folding movement of said top section.

3. In a table having a top member with depending flanges along its longitudinal margins, leg structures for supporting said top member, each leg structure including an inner transverse integral tube having its opposite ends rotatably associated with the depending flanges of the top member whereby each leg structure may fold from a collapsed position against the undersurface of the top member to an outstretched supporting position, a rectilinear torsion bar housed within said tube, and means anchoring the opposite ends of each torsion bar to its leg structure and to the top member respectively whereby said torsion bar will flex during certain folding movements of its leg structure and react directly against said top member to decelerate folding movements thereof.

4. In a table having a top member with depending flanges along its longitudinal margins, leg structures for

supporting said top member, each leg structure including an inner transverse integral tube having its opposite ends rotatably associated with the depending flanges of the top member whereby each leg structure may fold from a collapsed position against the undersurface of the top member to an outstretched supporting position, a rectilinear torsion bar housed within said tube, plugs within opposite ends of each tube to which the opposite ends of the housed torsion bar are anchored, a plug at one end of a tube being fast thereto and the plug at the opposite end of the tube being fast to the top member flange whereby said torsion bars will be wound during certain folding movements of their leg structures relative to the top member and react directly against the top member to decelerate folding movements thereof.

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