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K. H. WILSON ET AL
FOLDING TABLE CONSTRUCTION

3,276,401

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3 Sheets-Sheet 2

FIG. 3

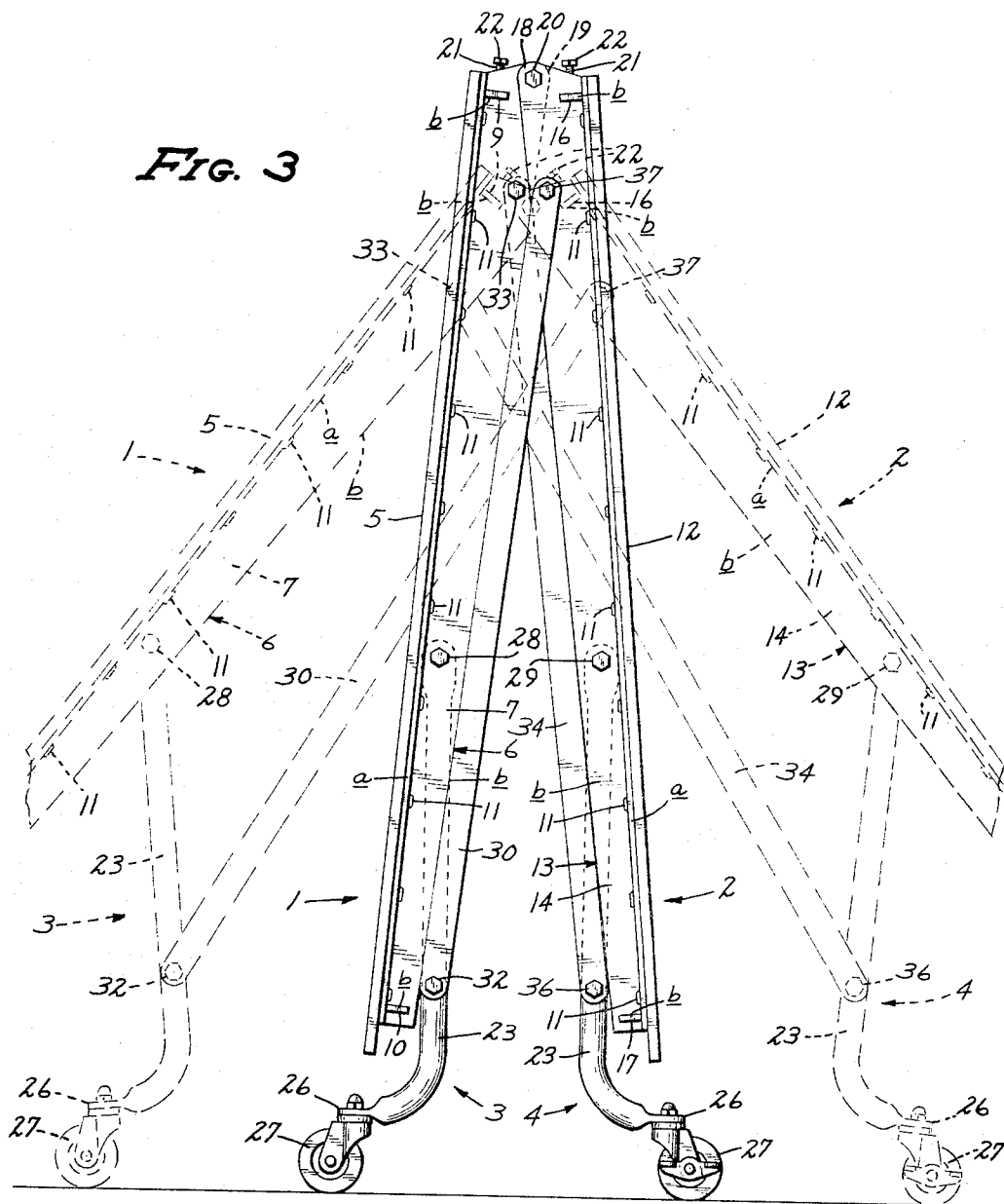
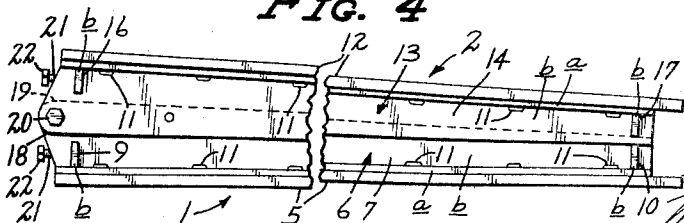


FIG. 4



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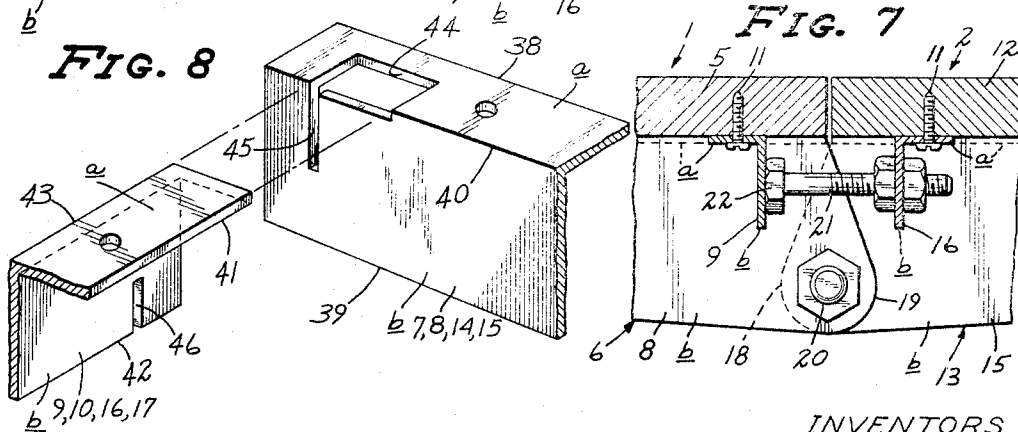
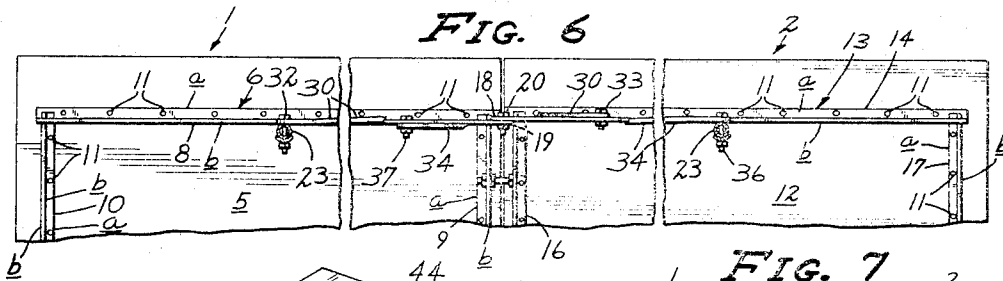
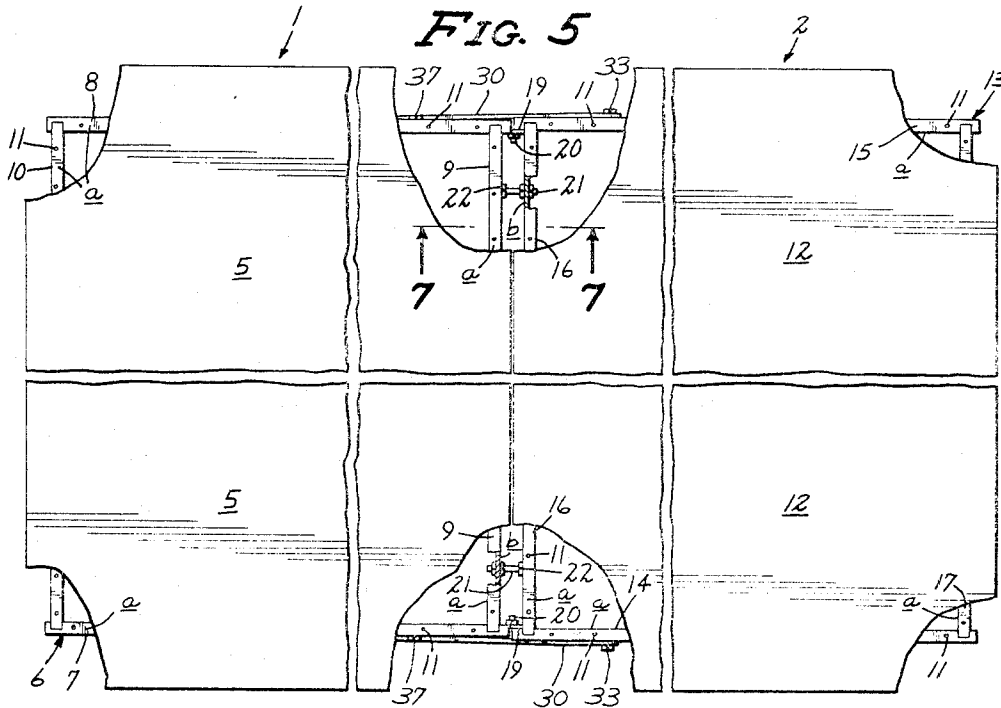
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FOLDING TABLE CONSTRUCTION

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1 Claim. (Cl. 108—113)

This invention relates generally to folding tables, and more particularly to such tables adapted to the playing of table tennis and similar games.

An important object of this invention is the provision of a folding table that may be quickly and easily folded to occupy a minimum of floor space when not in use, and which may be as quickly and easily unfolded to its operative condition.

Another object of this invention is the provision of a folding table that is light in weight and which is highly stable in both its operative and folded conditions.

Still another object of this invention is the provision of a table as set forth, having novel reinforcing frame construction which is assembled without welding or bolting of various frame members together, and in which the frame members have interlocking portions holding the frame members against movement relative to each other.

Another object of this invention is the provision of a folding table of the above type, having a pair of cooperating top sections pivotally secured together for movements between operative positions wherein said top sections are disposed in end-to-end relationship in a common generally horizontal plane, and inoperative folded generally parallel positions, and stop means limiting movements of the top sections toward their operative positions, said stop means being adjustable to vary the limits of movement of the top sections toward their operative positions.

Another object of this invention is the provision of a folding table having generally vertical supporting leg structures pivotally connected to the top sections of the table, and control linkage bracing the leg structures and maintaining the leg structures in generally vertical positions during relative movements of the top sections between the folded and operative positions thereof.

Another object of this invention is the provision of folding table structure in which the leg structures and control linkage are quickly and easily detached from the top sections, the top sections, when folded together, providing a container for the detached leg structures and control linkage for shipment or long term storage where storage space is highly restricted.

Another object of this invention is the provision of a table structure as set forth, which is relatively simple and inexpensive to produce, which is highly efficient in operation, and which is rugged in construction and durable in use. The above, and still further highly important objects and advantages of this invention will become apparent from the following detailed specification, appended claim and attached drawings.

Referring to the drawings, which illustrate the invention, and in which like reference characters indicate like parts throughout the several views:

FIG. 1 is a view in side elevation of a folding table structure produced in accordance with this invention;

FIG. 2 is a view in perspective of the table of FIG. 1, on a reduced scale;

FIG. 3 is an enlarged view corresponding to FIG. 1, but showing the table structure in different stages of folding movement thereof;

FIG. 4 is a fragmentary view in side elevation of the top sections in a completely folded state, some parts being broken away and some parts being removed;

FIG. 5 is a view in top plan of the table structure in an unfolded operative position, some parts being broken away and some parts being shown in section;

FIG. 6 is a fragmentary view partly in bottom plan and partly in horizontal section, taken substantially on the line 6—6 of FIG. 1;

FIG. 7 is an enlarged fragmentary section taken on the line 7—7 of FIG. 6; and

FIG. 8 is an enlarged fragmentary exploded view in perspective of adjacent end portions of a pair of cooperating frame members produced in accordance with this invention.

In the preferred embodiment of the invention illustrated, a table is shown as comprising a pair of cooperating table top sections 1 and 2 and supporting leg structures 3 and 4 for the top sections 1 and 2 respectively. The table top section 1 includes a flat rectangular top element 5 and an underlying rectangular top frame 6 which comprises a pair of laterally spaced parallel side frame members 7 and 8 that extend longitudinally of the top element 5, and a pair of inner and outer cross frame members 9 and 10 respectively. Each of the frame members 7—10 are cross sectionally L-shaped to provide mounting flanges *a* that are disposed in face-to-face engagement with the under surface of the top element 5, and reinforcing flanges *b* that are disposed generally normal to the mounting flanges *a*, the mounting flanges *a* being rigidly secured to the top element 5 by screws or the like 11.

The top section 2 is similar to the top section 1, comprising a rectangular flat top element 12 and a cooperating top frame 13 which includes a pair of laterally spaced parallel side frame members 14 and 15 extending longitudinally of the top section 2, and inner and outer cross frame members 16 and 17 respectively. Like the frame members of the top frame 6, the frame members 14—17 are cross sectionally L-shaped to provide mounting flanges *a* and reinforcing flanges *b*, the mounting flanges *a* of the frame 13 being rigidly secured to the top element 12 by mounting screws or the like 11.

As shown, the side frame members 14 and 15 are spaced apart a distance slightly greater than the side frame members 7 and 8, the reinforcing flanges *b* of the side frame members 14 and 15 having inner end portions 18 that overlap cooperating inner end portions 19 of the reinforcing flanges *b* of the side frame members 7 and 8. Axially aligned nut-equipped pivot bolts or the like 20 extend through suitable apertures in the overlapping portions 18 and 19, whereby to secure the top sections 1 and 2 together for relative swinging movement about a generally horizontal axis extending transversely of the top sections 1 and 2, and between operative positions wherein the top sections 1 and 2 are disposed in a common generally horizontal plane, as shown particularly in FIG. 1, and inoperative folded positions wherein the top sections 1 and 2 are disposed in generally parallel planes, as shown in FIGS. 3 and 4. Each of the cross frame members 9 and 16 is provided with a lock nut-equipped stop screw 21 that extends through the reinforcing flange thereof and which is equipped with a head 22 that abuts the reinforcing flange *b* of the opposite frame member 9 or 16 when the top sections 1 and 2 are disposed in their generally horizontal operative positions. Each of the stop screws 21 are adjustable longitudinally of their respective top section 1 and 2 to compensate for inaccuracies in assembly of various parts and for wear. It will be noted that the top elements 5 and 12 are disposed in closely spaced end-to-end relationship when moved to their operative positions of FIGS. 1, 2 and 6—8, engagement of the stop screws 21 with their opposite inner cross frame members 9 and 16 limit-

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ing swinging movement of the sections 1 and 2 beyond their generally horizontal operative positions.

The like structures 3 and 4 are identical, each comprising a pair of generally vertically disposed legs 23 and 24 and a generally U-shaped cross bar 25. The lower ends of the legs 23 and 24 are out-turned to provide mounting flanges 26 to which are secured caster wheels 27. The upper ends of the legs 23 and 24 of the leg structure 3 are detachably pivotally connected to the reinforcing flanges *b* of the side frame members 7 and 8, by means of nut-equipped bolts or the like 28. The bolts 28 are disposed on a common horizontal axis disposed intermediate the ends of the outside frame members 7 and 8 and parallel to the axis of the pivot bolts 20. In like manner, the legs 23 and 24 of the leg structure 4 are detachably pivotally secured to the depending flanges *b* of the side frame members 14 and 15 by other nut-equipped bolts 29 disposed on a common axis parallel to the axis of the pivot bolts 20.

A pair of elongated rigid control links 30 and 31 are each detachably pivotally secured to the legs 23 and 24 of the leg structure 3 and to opposite ends of the cross bar 25 of the leg structure 3 by nut-equipped bolts or the like 32 that are disposed on a common horizontal axis parallel to the common axis of the pivot bolts 20, the bolts 32 performing the dual function of securing the cross bar 25 to the legs 23 and 24 and providing pivotal mountings for the links 30 and 31. At their opposite ends, the links 30 and 31 are detachably pivotally secured to the reinforcing flanges *b* of the side frame members 14 and 15 by means of nut-equipped screws or bolts 33. The bolts 33 are disposed on a common horizontal axis parallel to the common axis of the pivot bolts 20 and intermediate the bolts 20 and the pivot bolts 29. A second pair of elongated rigid control links 34 and 35 are pivotally secured at one end to the legs 23 and 24 of the leg structure 4 by means of aligned nut-equipped bolts 36 that extend through the legs 23 and 24 and the opposite upturned end portions of the cross bar 25 associated therewith. The common axis of the bolts 36 is parallel to the common axis of the pivot bolts 20, the bolts 36 operating in the same manner as the pivot bolts 32 above-described. The opposite ends of the links 34 and 35 are detachably pivotally secured to the reinforcing flanges *b* of the side frame members 7 and 8 respectively by means of aligned nut-equipped bolts or screws 37, the common axis of the bolts 37 being parallel with the common axis of the pivot bolts 20 and disposed intermediate the axis of the bolts 20 and pivot bolts 28.

As shown in FIGS. 1-3, the table of this invention can be quickly and easily folded from its operative position shown in FIGS. 1 and 2 to its folded position shown in FIG. 3, by merely lifting the adjacent inner end portions of the top sections 1 and 2, or by exerting downward pressure on the outer end portion of either of the top sections 1 or 2, the top sections being fulcrumed on the axes of their respective pivot bolts 28 and 29. Likewise, when it is desired to unfold the table from its full line position of FIG. 3 to its operative position of FIG. 1 and 2, it is only necessary to manually move the top sections 1 and 2 apart from their full line positions of FIG. 3 toward the dotted line positions thereof. It will be noted that, during movements of the top sections 1 and 2 between their operative and folded positions, the control links 30, 31, 34 and 35 maintain their respective leg structures 3 and 4 in generally vertical positions. Thus, the table is at all times supported on the casters 27 and, when in a fold condition, may be easily moved to a place of storage. In its folded condition, the table occupies a minimum of floor space and is ready for use with a bare minimum of preparation. It will be further noted, with reference to FIG. 4, that when the leg sections 3 and 4 and links 30, 31, 34 and 35 are removed from the top sections 1 and 2, the top sections 1 and 2 may be folded together to provide an almost completely closed container in which the several

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legs and control links may be placed for storage in a highly restricted space, or for shipment. Such disassembly of the leg structures and control links is easily achieved by removing the nut-equipped bolts 28, 29, 32, 33, 36 and 37. This arrangement makes for very easy assembly and disassembly, requiring only the use of a wrench or a pair of pliers.

A feature of this invention resides in the manner in which the side frame members 7, 8, 14, and 15 are interlocked with their respective cross frame members 9, 10, 16 and 17. With reference to FIG. 8, it will be seen that, with the cross-sectionally L-shape of the frame members, the flanges *a* and *b* of the side frame members 7, 8, 14 and 15 define outer edges 38 and 39 respectively and a common inner edge 40, the flanges *a* and *b* of the cross frame members 9, 10, 16 and 17 defining outer edges 41 and 42 respectively and a common inner edge 43. At their opposite end portions, the side frame members 7, 8, 14 and 15 are formed to provide notches 44 in the anchoring flanges *a* thereof and extending transversely from the common edge 40 thereof. The notches 44 are of a width substantially equal to the anchoring flanges *a* of the cross frame members 9, 10, 16 and 17. The reinforcing flanges *b* of the side frame members 7, 8, 14 and 15 are provided with notches 45 which extend transversely from one lateral side of their respective notches 44, toward the free edge 39 of their respective side frame members, the width of the notches 45 being substantially equal to the thickness of the reinforcing flanges *b* of the cross frame members 9, 10, 16 and 17. The reinforcing flanges *b* of the cross frame members 9, 10, 16 and 17 are provided at opposite end portions thereof with transverse notches 46 that extend inwardly from the free edges 42 thereof toward the common edges 43, the width of the notches corresponding substantially to the thickness of the reinforcing flanges *b* of the side frame members 7, 8, 14 and 15. Thus, when the side and the cross frame members of respective ones of the table top sections 1 and 2 are assembled, the notches 44 receive the end portions of the mounting flanges *a* of the cross frame members, the notches 45 receiving portions of the flanges *b* of the cross frame members 9, 10, 16 and 17 between the bottoms of the notches 46 thereof and the common edges 43 thereof, the notches 46 receiving the reinforcing flanges *b* of the side frame members 7, 8, 14 and 15 between the bottoms of the notches 45 and the free edges 39 of the side frame members. Thus the side frame members and cross frame members are locked against longitudinal movements relative to each other, the mounting flanges *a* of the side and cross frame members being disposed in a common plane whereby the mounting flanges *a* lie flat against the undersurfaces of their respective top elements 5 and 12. This arrangement provides a reinforcing frame for the top elements 5 and 12, which frame can be inexpensively produced and assembled without the necessity for welding or bolting together to achieve rigidity and strength.

Our invention has been thoroughly tested and found to be completely satisfactory for the accomplishment of the objectives set forth; and, while we have shown and described a commercial embodiment of our folding table structure, it will be understood that the same is capable of modification without departure from the spirit and scope of the invention, as defined in the claim.

What we claim is:

Folding table structure comprising,

- (a) a pair of cooperating top sections each including a flat top element and a top frame underlying its respective top element,
- (b) each top frame including a pair of laterally spaced side frame members and a cross frame member,
- (c) each of said side and cross frame members being cross-sectionally L-shaped to provide a mounting flange rigidly secured in face-to-face engagement with its respective top element and a reinforcing

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flange disposed generally normal thereto, whereby said flanges have spaced longitudinal outer edges and a common inner edge,

- (d) an end portion of at least one of said frame members having a transverse notch in said mounting flange extending transversely from said common edge and a second transverse notch in the reinforcing flange opening into said first mentioned notch, said notches receiving the adjacent end portion of an adjacent frame member, 5
- (e) the reinforcing flange of said adjacent frame member having a transverse notch extending inwardly from the outer edge thereof in alignment with said second notch for reception of the reinforcing flange of said one of the members from the bottom of said second notch toward the outer edge of the reinforcing flange of said one of the frame members, whereby said adjacent frame members are interlocked, 10
- (f) means pivotally securing said top frames together for swinging movements on a horizontal axis and between operative positions wherein said top elements are disposed in a common generally horizontal plane in end-to-end relationship, and inoperative folded positions wherein said top elements approach closely spaced parallel relationship, 15
- (g) a pair of leg structures each pivotally connected to a different one of said table top sections, 20
- (h) and a pair of rigid links each pivotally connected

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to a different one of said leg structures and to a table top section associated with the other one of said leg structures.

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