Aug. 11, 1936. U. K. JOHANNSEN 2,050,846

FOLDING TABLE

Filed May 29, 1935

Fig. 1.

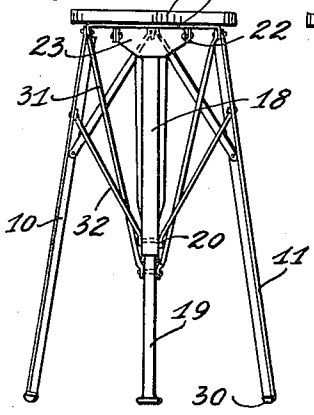


Fig. 2.

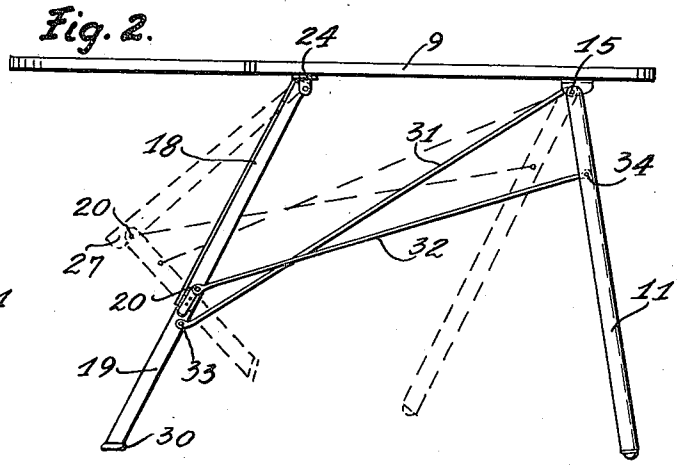


Fig. 3.

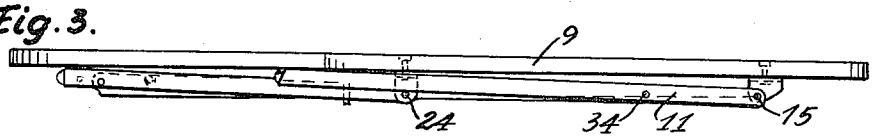


Fig. 4.

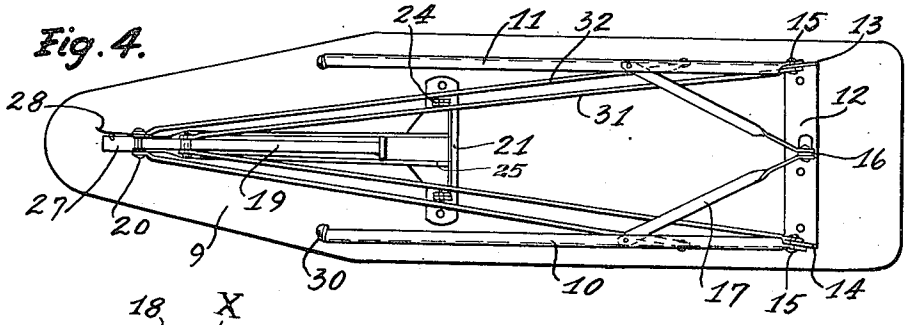


Fig. 5.

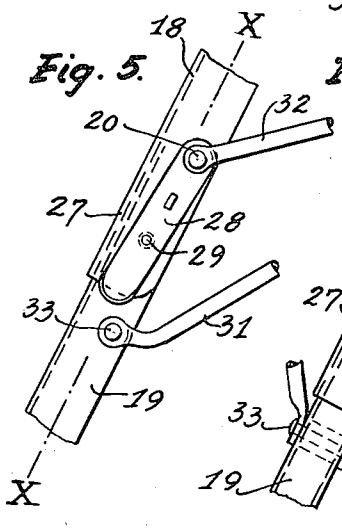


Fig. 6.

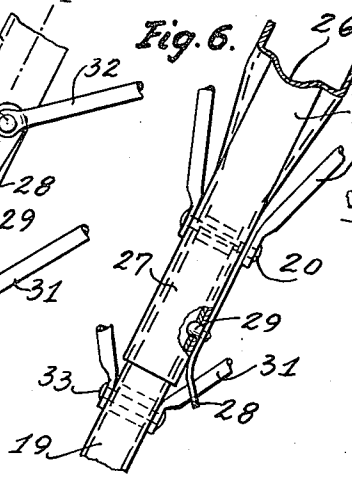
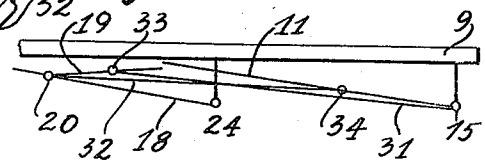


Fig. 7.



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FOLDING TABLE

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Application May 29, 1935, Serial No. 24,093

9 Claims. (Cl. 38—117)

My invention broadly relates to portable folding tables, and is more particularly directed to a collapsible ironing board stand of the three-legged chassis type in which metal legs are adapted to compactly fold flatwise underneath the table board when not extended for use.

A pair of complementary rear legs have one end thereof pivotally attached under the top board and the single front leg is of the foldable bipartite or knuckle jointed type. The leg actuating linkage herein comprises companion guide and brace rods which are pivotally attached in a novel manner to bring about a controlled leg movement in unison between erected and collapsed positions. By manipulating the free end of my front leg to fold the sections thereof about a knee fulcrum, the several linked table legs may be positively brought into their respective extreme travel positions with comparatively little muscular exertion. When erected for use, my ironing board provides for adequate leg rigidity while having a heavy downward pressure imposed thereon. The cross-sectional profile of each such table leg is preferably given an angle shape to combine ample stiffness with an inherently low chassis weight that for prescribed loading requirements, shall not prove burdensome to women when transported for storage purposes.

The object of my improvements is to provide for a sturdy, foldable metal understructure of the character indicated that possesses the minimum of articulated fulcrum points and one that can be fabricated on a large productive scale at a relatively low cost of manufacture by the elimination of all except essential pivot joints. To this end, the front leg knee fulcrum is doubly utilized in that it has one end of a brace rod directly connected thereto for pivotal purposes.

Embodied herein are also features designed to collapse the chassis members within the superficial length and width confines of the board and to automatically retain the folded legs in place by merely thrusting them toward one side face of the ironing board through a certain dead center toggle position. Reference is had to the accompanying one sheet of drawings which are illustrative of a preferred embodiment, and in which drawing:

Fig. 1 represents an elevational front end view of an erected ironing board assembly equipped with my devices, and Fig. 2 is a side view thereof.

Figs. 3 and 4 respectively show a side and a bottom view of my chassis when fully collapsed.

Figs. 5 and 6 detail in enlarged scale, certain structural aspects of my knuckle jointed front leg when the sections thereof are erected into alignment.

Fig. 7 diagrammatically illustrates in exaggerated scale, the self-locking toggle action by which all of my collapsed legs are retained inwardly toward one side face of the ironing board.

Referring more specifically to the drawing, 10 and 11 respectively designate reversely mounted rear legs as made from relatively thin angle irons, each shaped to provide for a flat hinge leaf end that may be formed by extending the respective side flanges of such angle irons outwardly beyond their mated transverse flanges, as shown. A sheet metal bracket 12 is disposed crosswise of the table top or board 9 and secured thereto by screws or the like fastenings. Each bracket end is provided with oppositely upturned ears such as 13 and 14 of which the outer faces are relatively inclined to converge toward the front board end as shown in Fig. 4. One end of each rear leg is slightly tilted and pivotally attached to its inclined ear by the bracket rivet 15 or pintle bearing, the disposition being such that when collapsed, both rear legs will fall into substantial alignment. By virtue of said ear inclination, the swinging leg ends are made to spread apart in their erected Fig. 1 position. An apertured lug 16 is struck up out of the flat medial region of said bracket stock in a rearwardly offset relation to the aligned axes of the pintles 15. Complementary brace straps of the twisted type, such as 17 are fixedly secured to each rear leg and may be loosely pivoted to said common lug to allow of unobstructedly infolding the erected braces toward the ironing board.

The front leg is of the bipartite type comprising the high section 18 and a shank section 19 that are pivotally adjoined in an approved manner by the knee fulcrum 20. The other end of said thigh section is attached to the lug strap 21 (see Fig. 1), which latter is provided with a pair of relatively spaced ears as 22 having a leg plate 23 of polygon profile that is pivotally suspended between a pair of primary rivets or bearings such as 24. Said other end of the thigh section may be welded to said leg plate and thereby impart adequate lateral rigidity to my single depending front leg, when erected for use.

As is indicated in Fig. 6, said thigh section 18 is preferably stamped up from sheet metal into a cross-sectionally tapered trough shape comprising a pair of flanges such as 25 and an interconnecting web member 26. One end of the leg shank section 19 is then interposed within said flange confines and pivoted therebetween by

the knee fulcrum **20**. This fulcrum rivet is made relatively long to reach outwardly beyond the outer side faces of the flanges **25** for the reception of complementary link or brace rods that will presently be defined.

In order to provide for proper lateral rigidity when my bipartite front leg is operatively thrown into alignment, I purposely prolong the erected thigh section onwardly and downwardly beyond the knee fulcrum to constitute a depending extension **27** as shown in Fig. 5. Said jointed front leg may be additionally retained in alignment by a manipulative resilient latch strip **28** which carries a liftable locking pin **29** in the region of the aforesaid leg extension and which pin is adapted to be received into a registering hole formed in the overlapped section **19** in the manner fragmentally detailed in Fig. 6.

The shank section **19** may or may not be given a cross-sectionally trough shaped profile so that the erected bipartite front leg as a whole may be kept relatively wider at its board end and made to continuously taper toward its floor contacting end, which normal disposition properly braces and otherwise enhances the appearance of the leg structure with the minimum of material requirements. The respective floor contacting ends of all such legs are shown inturned and equipped with a rubber shoe or other silencing means **30**.

It now remains to describe the linkage or actuating gear whereby the several legs are made to fold or unfold in unison about their respective board bearings **15** and **24**. To this end, I preferably resort to a pair of guide rods **31** and also a pair of brace rods **32**. One end of each guide rod may be pivotally attached to a corresponding ear rivet **15** or the like turning point supported by the board, while the respective opposite rod ends are carried to a common leg or toggle pivot **33**, which latter extends through the flanges of the shank section **19** and has said opposite rod ends mounted exteriorly of a contiguous flange surface (see Fig. 6).

The toggle rivet **33** is preferably located closely beneath the end of the depending leg extension **27**, as shown. The use of this single through rivet is herein permissible without folding interference because of telescoping the leg section **19** within the channel shaped section **18**. Upon collapsing my bipartite front leg, the pivot **33** falls inside the confines of and is embraced within the flange width of the section **18**.

The other pair of brace rods **32** are directly attached to the knee fulcrum **20** and respectively carried upwardly therefrom as in Fig. 2 to their supplementary rear leg pivots such as **34**, that are respectively located radially beyond a contiguous ear pivot **15**. The front leg may be partially collapsed into the broken jointed position shown in dotted outline in Fig. 2, and finally folded into the fully collapsed position represented in Fig. 3, when all the chassis parts will fall into substantial alignment with the bottom face of the table board.

The front leg fulcrum **20** and the pivot **33** are preferably shifted rearwardly in an offset relation to the erected leg center line designated X—X (see Fig. 5). Such disposition in part facilitates the desired self-retaining leg action by forcing or buckling the described linkage through its position of toggle alignment without the need of supplementary tie straps. This arrangement is clarified in Fig. 7 where the interposed toggle pivot **33** has been passed through the dead center of its cooperating toggle link elements **19** and **31**, when the distance between the pivots **20** and **15** becomes somewhat shorter than the combined component lengths of said link elements. These elements are in turn guided by a fixed length of the thigh section **18** and it will be observed that the toggle pivot **33** now lies inwardly of an imaginary reference line when projected forwardly through the front and rear leg pivots **15** and **24**. As a result, the fulcrumed end of the inturned leg section **19** will be pressed inwardly toward and flatwise against the ironing board so that it may, as a unit, be carried about without inadvertent unfolding.

By lifting the floor contacting end of the collapsed leg section **19** away from the board **9**, the respective link elements may readily be sprung through their toggle alignment position which then allows the chassis structure to be freely unfolded. The rods **32** are so disposed that such manipulation of the front leg simultaneously actuates the rear legs into erected position. When erected, the free ends of the rear legs spread apart because of the inclined bracket ears and thereby impart augmented lateral stiffness to the superstructure; said leg set-up is likewise kept thoroughly rigid lengthwise of the board. When collapsed, the legs are drawn together to lie substantially parallel alongside their respective longitudinal board edges as in Fig. 4.

In the described chassis construction, all parts are kept extremely simple and its mode of operation should be obvious even to those housewives who are not mechanically inclined. An outstanding feature of the present innovation resides in the use of rolled metal stock and easily fabricated stampings for producing a high class, competitive board stand and in attaching the forward ends of my brace rods **32** directly to the knee fulcrum. Certain rivet pivots such as **15** and **20** have been made to do double duty in order to reduce fabrication and assembly costs to a minimum which enables my folding table to be profitably sold at a correspondingly low retail price as a household commodity through chain stores and the like large scale distributors.

Other advantages inherent in my chassis assembly are believed apparent to those skilled in this art, it being obvious that the same underlying structural principles may be utilized in associations other than for ironing board stands and that various modifications in design may readily be resorted to in likewise carrying out my illustrative embodiment, all without departing from the spirit and scope of my invention heretofore described and more particularly pointed out in the appended claims.

I claim:

1. A collapsible table comprising a top board, a pair of rear legs pivoted to one side face of said board, a foldable bipartite front leg including a thigh section, a shank section and an interposed knee fulcrum with the free end of the thigh section pivoted to said one side face, a supplementary pivot disposed between the respective ends of each rear leg, and rod means including a pair of brace rods that directly connect the respective supplementary pivots to said knee fulcrum and which rod means further include means pivotally inter-connecting the shank section at a point displaced from the knee fulcrum with the aforesaid one side face of the board, said rod means serving to guide the front and rear legs in unison between erected and collapsed positions and to

fold the front leg sections about said knee fulcrum when the table is collapsed.

2. A collapsible table adapted to unfold into erected position, said table comprising a top board, a rear leg structure pivotally mounted on one side face of said board, supplemental pivot means disposed between the respective ends of said rear leg structure, a foldable bipartite front leg pivotally attached to the aforesaid side face and which front leg includes a thigh section and a shank section having one end of the shank section adjoined to the thigh section by a knee fulcrum located intermediate the ends of the thigh section to provide for a thigh extension disposed to extend below said fulcrum and engage the shank section when the table assumes erected position, and rod means including means that directly connect the supplementary pivot means to said knee fulcrum and further including means pivotally interconnecting said one side face of the board with the shank section at a point displaced from the knee fulcrum and thereby guiding the several table legs in unison between their erected and collapsed positions with respect to the board, the front leg sections when collapsed being folded about said knee fulcrum and the thigh extension then projecting onwardly beyond the knee fulcrum lengthwise of the board.

3. In a collapsible table, a top board, a bipartite front leg composed of a thigh section and a shank section that are fulcrumed together and having one end region pivoted to the board, a guide rod pivotally connected to the board and to the shank section at a point displaced from the front leg fulcrum, a rear leg structure having one end thereof pivoted to the board, supplementary pivot means disposed between the respective ends of said structure, and brace rod means extending directly from the supplementary pivot means to the thigh section at a point coincident with the front leg fulcrum.

4. A collapsible table adapted to unfold into erected position, said table comprising a top board, a rear leg structure having one end thereof pivoted to one side face of the board, a foldable bipartite front leg comprising a cross-sectionally channeled thigh section including complementary flanges that are more widely spaced apart at one section end and of which the divergent shank end is pivoted to said side face and the convergent end is fulcrumed to a relatively narrower shank section, said shank section when folded about said fulcrum flatwise into substantial alignment with the board side face being adapted to nest within the flange width confines of the thigh section, supplementary pivot means located between the respective ends of the rear leg structure, guide rod means pivotally connected to the board and to the shank section at a point displaced from said fulcrum, and brace rod means extending from the supplementary pivot means to a front leg section.

5. A collapsible table adapted to unfold into erected position, said table comprising a top board, a rear leg structure pivotally mounted on one side face of said board, a supplementary pivot disposed between the respective ends of the rear leg structure, a foldable bipartite front leg also pivoted to said one side face and which front leg includes a thigh section and a shank section and which thigh section intermediate its ends is fulcrumed to the shank section to provide for a thigh extension, rod means including means directly connecting the supplemental pivot to the front leg fulcrum and further including means pivotally interconnecting said one side face of the board with the shank section at a point displaced from said fulcrum and which rod means actuate the several table legs in unison and thereby unfold the shank section into substantial alignment with the thigh section in erected table position, and latch means serving to interlock said thigh extension with the unfolded shank section when the front leg sections are brought into substantial alignment.

6. A collapsible table adapted to unfold into erected position, said table comprising a top board, a rear leg structure pivotally mounted on one side face of the board, a longitudinally tapered bipartite front leg of which the larger end is pivotally attached to said one side face and which front leg includes a shank section and a thigh section provided with spaced complementary thigh flange means, said sections being hinged together by a knee fulcrum, a toggle pivot interposed between said fulcrum and the free end of the shank section, brace rod means pivotally connected to the knee fulcrum and to the rear leg structure, and guide rod means pivotally connecting the aforesaid toggle pivot with said one side face of the board and which toggle pivot is received between said complementary thigh flanges when the front leg is collapsed against said one side face of the board.

7. A folding table comprising a top board, a collapsible bipartite front leg pivoted to one side face of said board and having a knee fulcrum interposed between the respective leg sections, a toggle pivot located between said fulcrum and the extremity of the front leg, and guide rod means pivotally interconnecting said board with said toggle pivot to fold the front leg sections about the knee fulcrum and which rod means cooperate with the front leg sections to constitute a toggle linkage having a dead center position which is approached when said front leg is partially collapsed, said toggle pivot being buckled through said dead center position to releasably retain the fulcrum region of the fully collapsed bipartite front leg toward said one board face.

8. A collapsible table comprising a top board, pintle bearing means, a rear leg structure mounted upon the bearing pintle means, a foldable bipartite front leg pivoted to said one side face, said front leg including a thigh section and a shank section which are hinged together by a knee fulcrum, a toggle pivot located intermediate the ends of the shank section, a supplementary pivot for the rear leg structure, a brace rod directly interconnecting said knee fulcrum with the supplementary pivot, and a guide rod pivotally interconnecting the bearing pintle with said toggle pivot, said legs and the several rods being cooperatively disposed to provide for a toggle linkage of which certain elements pass through an aligned dead center toggle position when the legs are actuated between erected and collapsed positions and which toggle linkage serves to retain the respective free leg extremities toward said one board face when the table is fully collapsed.

9. A collapsible table comprising a top board, a pair of rear legs pivoted on one side face of said board, a lug strap provided with a pair of spaced ears, a leg plate pivotally suspended between said ears, a foldable bipartite front leg that is longitudinally tapered to include a relatively wide thigh section fixedly secured to said plate and which leg further includes a relatively narrower shank section fulcrumed to said thigh section in-

wardly of the free end of the last named section, a toggle pivot located intermediate the ends of the shank section, a supplementary pivot for each rear leg located between the respective ends thereof, a pair of brace rods directly interconnecting the front leg fulcrum with the respective supplementary pivots, and a pair of guide rods operatively interconnecting the aforesaid one side face of the board with said toggle pivot, the respective front leg sections being folded upon each other about their interposed fulcrum and toward said one side face when the table is collapsed.

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