March 27, 1951 J. BENVISSUTO 2,546,816

FOLDING LEG ACTUATOR AND LATCHING MECHANISM

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Fig. 1.

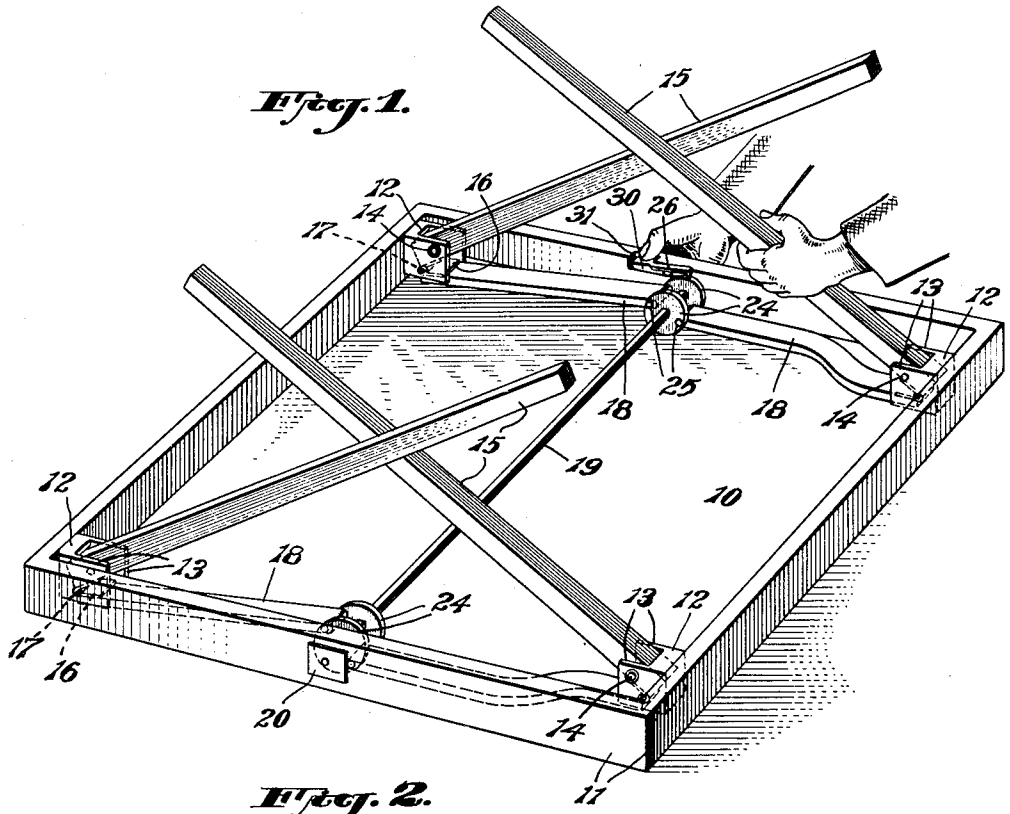


Fig. 2.

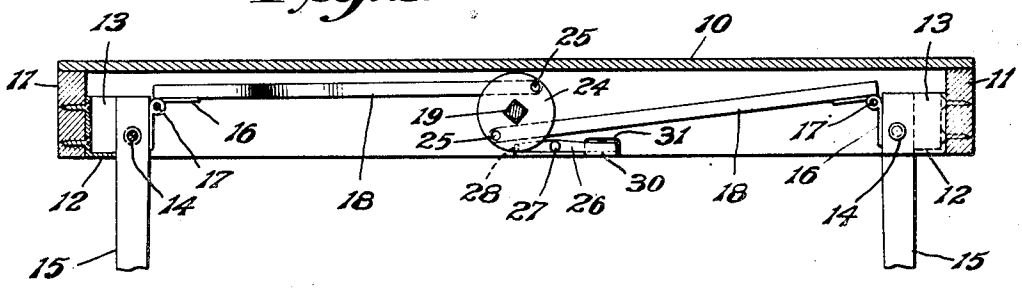
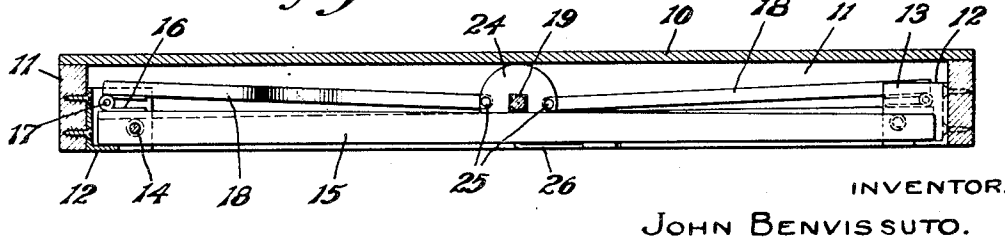


Fig. 3.



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Fig. 4.

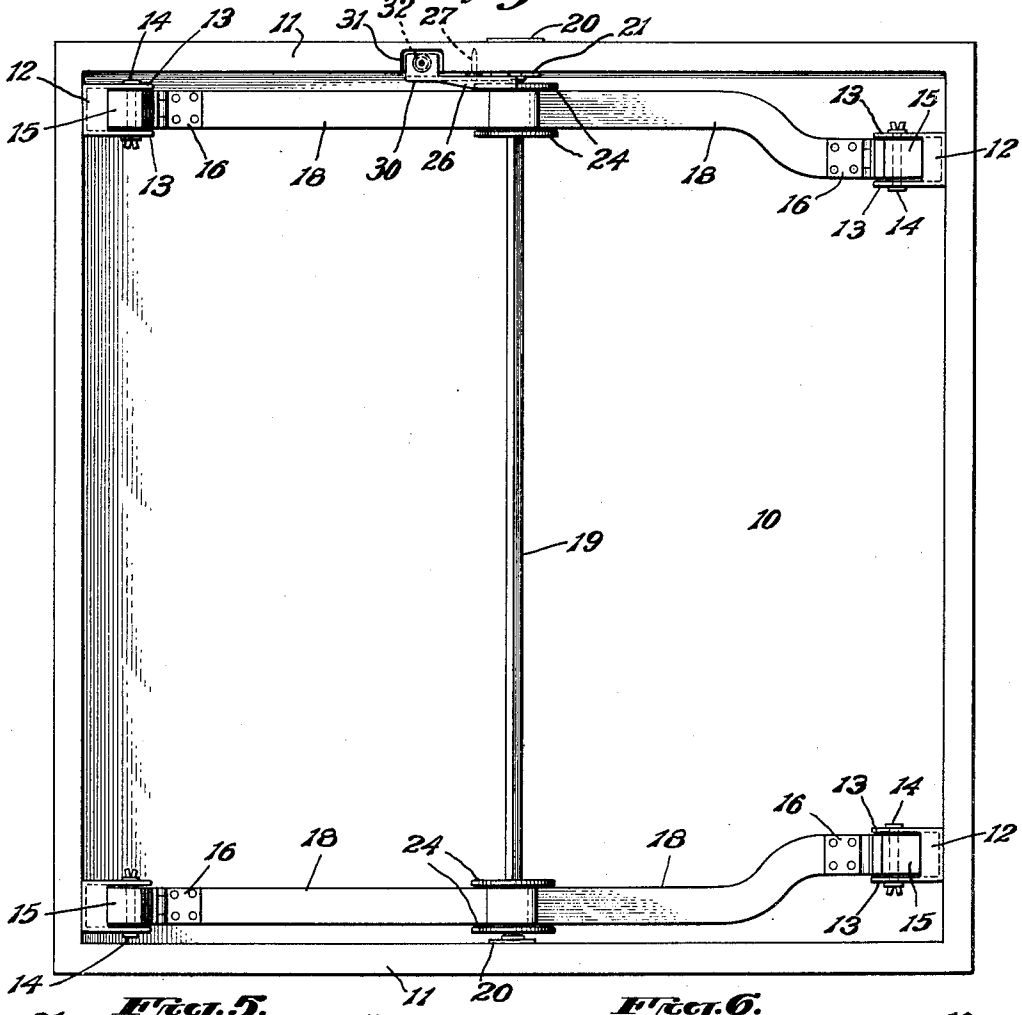


Fig. 5.

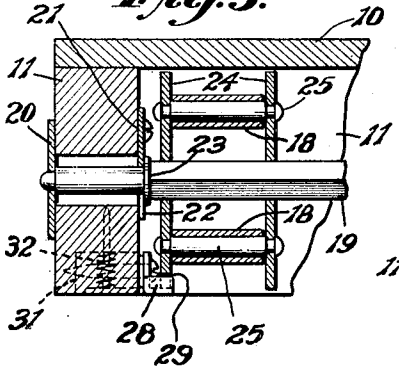
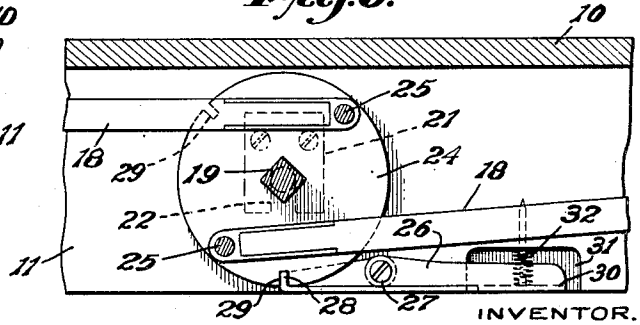


Fig. 6.



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UNITED STATES PATENT OFFICE

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FOLDING LEG ACTUATOR AND LATCHING MECHANISM

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4 Claims. (Cl. 311—85)

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This invention relates to an article of furniture and more particularly to tables of the leg-folding type.

The specific character of table to which the present invention applies is often alluded to as a card table and with respect thereto it has been customary in the prior art to construct the same as a substantially square top with a frame at the edge thereof forming a peripheral depending rim for the said top, and providing legs at each corner within said flange and foldable against the under side edge. Such a table necessitates that each leg be individually swung and secured in its extreme position so both the unfolding and folding of the legs involves separate manipulation of each leg with such attendant locking or unlocking operations as required by the particular mechanism provided for each leg.

The present invention contemplates the elimination of separate manipulation for each leg of a foldable table for either folding or unfolding the same.

Of similar character, an object of the invention is to effect folding or unfolding manipulation of all legs by operation applied to a single leg.

Again, an object of the invention is to provide locking mechanism for all the legs which may be manipulated by a single operation effective on all of the legs simultaneously.

In greater detail, an object of the invention is to provide improved simple rugged and effective means for accomplishing the desiderata expressed above.

Other objects of the invention will appear to those skilled in the art to which the invention appertains as the description thereof proceeds, both by direct recitation thereof and by implication from the context.

Referring to the accompanying drawings in which like numerals of reference indicate similar parts throughout the several views;

Figure 1 is an underneath view of a table the legs of which are in an initial stage of being unfolded;

Figure 2 is a transverse sectional view showing the legs in unfolded position;

Figure 3 is a similar sectional view with the legs folded;

Figure 4 is an underneath plan with the legs unfolded;

Figure 5 is a detail sectional view lengthwise of the control bar; and

Figure 6 is a further detail sectional view transverse to the control bar.

In the specific embodiment of the invention

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illustrated in said drawings, the reference numeral 10 designates the table top of any usual size, shape and dimensions having a frame 11 at the underside thereof the reaches whereof extend lengthwise of each side and form a peripheral depending rim around the edge of the table top. In the region of each corner of the frame 11 and beneath the top 10 are provided brackets 12 each having parallel side flanges 13 between which extends a pivot pin 14. The upper end of each leg 15 is located between the flanges of one of the brackets and is hung to swing through an arc of 90° upon the pivot pin 14. By virtue of the pivotal support of the legs, each may be swung from one extreme position flatwise of the under side of the table top to an opposite extreme position perpendicular to the first mentioned extreme position and to the table top in depending relation thereto. These extreme positions of the legs are referred to herein for convenience as the folded and unfolded positions thereof respectively.

Two legs 15 hinged next one longitudinal edge of the table top 10 have their pivot pins 14 in alignment with each other and parallel to said edge. Those two legs are referred to as a pair. Similarly the other two legs are also referred to as a pair and have their pivot pins 14 aligned with each other and parallel to the longitudinal edge of the table top opposite from and parallel to the first said longitudinal edge. Thus, in folding the legs, one pair swings inwardly toward the table top from one side of the table whereas the other pair swings oppositely inward from the opposite side of the table top. In order to avoid intereference of the legs of opposite pairs folding toward each other, the brackets 12 for the legs of one pair are not directly opposite but are offset with respect to the brackets 12 of the other pair of legs. As shown, the brackets 12 for the legs 15 of one pair are in the corner of the frame 11, whereas the brackets for the legs of the other pair are shown each a leg-width inward from the table edge in the direction toward each other. Thus all legs may nest within the table top and rim with legs of the two pairs longitudinally adjacent each other in folded position.

It is now to be observed that the upper end of each leg 15 has a short length thereof, for convenience termed the stub end, which projects on the opposite side of the pivot pin 14 from the main portion of the leg, so that each leg is substantially of the character of a first class lever. On the face of each leg of each pair of legs which looks toward the other pair, is a leaf of a hinge 16 the hinge pin 17 for which is substantially at the

extreme upper or stub end of the leg. The other leaf of said hinge 16 is secured to a pitman or link 18 which extends therefrom substantially half way across the underside of the table top in a direction perpendicular to hinge pin 17 as well as perpendicular to pivot pin 14 on which that particular leg is mounted. The arrangement shown provides that the pitman will always be at an angle considerably less than a straight angle to the plane common to or defined by the pivot pin 14 and hinge pin 16 so that a longitudinal force applied to the pitman will exert a rotational component upon the leg, and conversely, rotation or swinging of the leg will effect a longitudinal movement of the link or pitman hinged thereto.

Across the under side of the table top parallel to the several pivot pins and hinge pins of the legs and hinges, is a rotary bar 19 suitably trunnioned in opposite reaches of frame 11 as by exterior metallic trunnion plates 20 and interior metallic cleats 21 appropriately positioned and fixed on said frame. The interior cleat is shown slotted at 22 to permit ready application thereof onto the bar and the bar is provided with a shoulder 23 next said cleat for retaining said bar from longitudinal displacement.

An appropriate crank connection is made between the rotary bar 19 and the adjacent inner end of each pitman. A convenient construction accomplishing such crank connection and for effecting proper simultaneous movement for all of the pitmen and legs, comprises a pair of discs 24 coaxially upon the near each end of the bar, one disc of each pair being spaced from the other disc of that pair a distance substantially equal to the width of the pitman. Ends of two pitmen from opposite legs of opposite pairs of legs extend between said discs of a pair of discs, one pitman being above and the other one below the rod and each pivotally connected, as by wrist pins 25 to the pair of discs. Said wrist pins are parallel to the bar 19 and preferably spaced from each other through an angle of 180° with respect to the bar and discs. Rotation of the discs will therefore move the two pitmen connected therewith in opposite directions so that folding of one leg obtains corresponding folding of the opposite leg, and similarly unfolding of one leg obtains corresponding unfolding of the opposite leg. The discs are all fixed non-rotatably with respect to the bar and therefore movement applied to any one leg is transmitted through the pitmen, discs and bar to all other legs and simultaneous and corresponding movement of all legs is thus effected.

By preference, the legs are locked or positively retained in either of the extreme positions to which they are swung, and a single locking means for thus securing all legs at once is provided. The means here shown comprises a first class lever detent 26 pivoted at 27 to the inner side of one reach of frame 11 in the vicinity of one of the discs 24. An end of said detent is next the periphery of said disc and is provided with a transverse lip 28 in a radial plane of the disc and adapted to seat in one or the other of two notches 29 provided in the periphery of the disc. One of said notches 29 registers with the detent lip 28 at the position of the disc for the folded condition of the legs and the other extreme angular disposition of the disc corresponding to the unfolded position of the legs. The end portion of said detent remote from lip 28 is formed as a conveniently manipulated finger piece 30 and here shown as located in a suitable recess 31 in frame 11. A spring 32 also in said depression and bearing against the finger piece actuates the detent to inject the lip into either notch 29 with which it may register and since the discs are all secure upon the rotatable bar and in turn connect with all the legs, the locking of one disc thereby retains all legs in corresponding positions.

I claim:

1. A table having a table top and legs, said legs being pivoted to fold with respect to the table top, and each leg having a stub end beyond the pivot thereof, a single straight rotatable bar beneath the table top extending from side to side thereof, all of the pivots for said legs being parallel to said bar, stiff means pivoted to each of said stub ends and extending therefrom substantially to said bar, discs fixed on said bar, each disc having two pivots located thereon and offset from each other diametrically of the disc and each pivot connecting a different one of said stiff means with said bar and rotatable with said bar whereby swinging any one of said legs to folded or unfolded position rotates said bar and thereby simultaneously swings the other of said legs correspondingly to folded or unfolded position.

2. A table having a table top and legs, said legs being pivoted to fold with respect to the table top, and each leg having a stub end beyond the pivot thereof, a single straight rotatable bar beneath the table top extending from side to side thereof, all of the pivots for said legs being parallel to said bar, a plurality of pitmen, one for each leg, the outer ends of said pitmen being pivoted each to a different leg at the stub end of the leg, and each pitman extending from the leg to which pivoted substantially to said bar, discs fixed on said bar, each disc having two pivots located thereon and offset from each other diametrically of the disc and each pivot connecting a different one of said pitmen next said bar to said bar, said discs being rotatable with said bar whereby swinging any one of said legs to folded or unfolded position rotates said bar and thereby simultaneously swings the other of said legs correspondingly to folded or unfolded position.

3. A table having a table top and legs, said legs being pivoted to fold with respect to the table top, and each leg having a stub end beyond the pivot thereof, a single straight rotatable bar beneath the table top extending from side to side thereof, all of the pivots for said legs being parallel to said bar, a plurality of pitmen, one for each leg, the outer ends of said pitmen being pivoted each to a different leg at the stub end of the leg, and each pitman extending from the leg to which pivoted substantially to said bar, and discs next the end of said bar, each disc having diametrically opposed pivotal connection to each of a pair of said pitmen at ends of said pitmen next said bar, said discs being rotatable with said bar whereby swinging any one of said legs to folded or unfolded position rotates said bar and thereby simultaneously swings the other of said legs correspondingly to folded or unfolded position.

4. A table having a table top and legs, said legs being pivoted to fold with respect to the table top, and each leg having a stub end beyond the pivot thereof, a single straight rotatable bar beneath the table top extending from side to side thereof, all of the pivots for said legs being parallel to said bar, a plurality of pitmen, one for each leg, the outer ends of said pitmen being pivoted each to a different leg at the stub end of the leg, and each pitman extending from the leg to

which pivoted substantially to said bar, discs next the end of said bar, each disc having diametrically opposed pivotal connection to each of a pair of said pitmen at ends of said pitmen next said bar, said discs being rotatable with said bar whereby swinging any one of said legs to folded or unfolded position rotates said bar and thereby simultaneously swings the other of said legs correspondingly to folded or unfolded position, and a pivoted detent adjacent one said disc, said detent having a lip in riding engagement with the periphery of the said one disc, and said one disc having notches for reception of said lip at the extreme positions of rotation of said disc when the legs are in their folded and unfolded positions respectively.

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