July 3, 1934. H. HOWE 1,964,759

FOLDING MEANS

Filed April 30, 1932 2 Sheets-Sheet 1

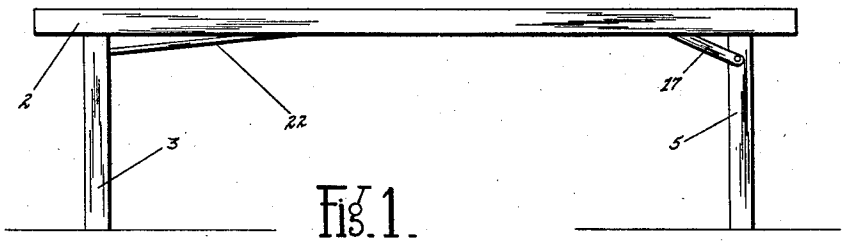


Fig. 1.

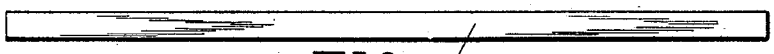


Fig. 2.

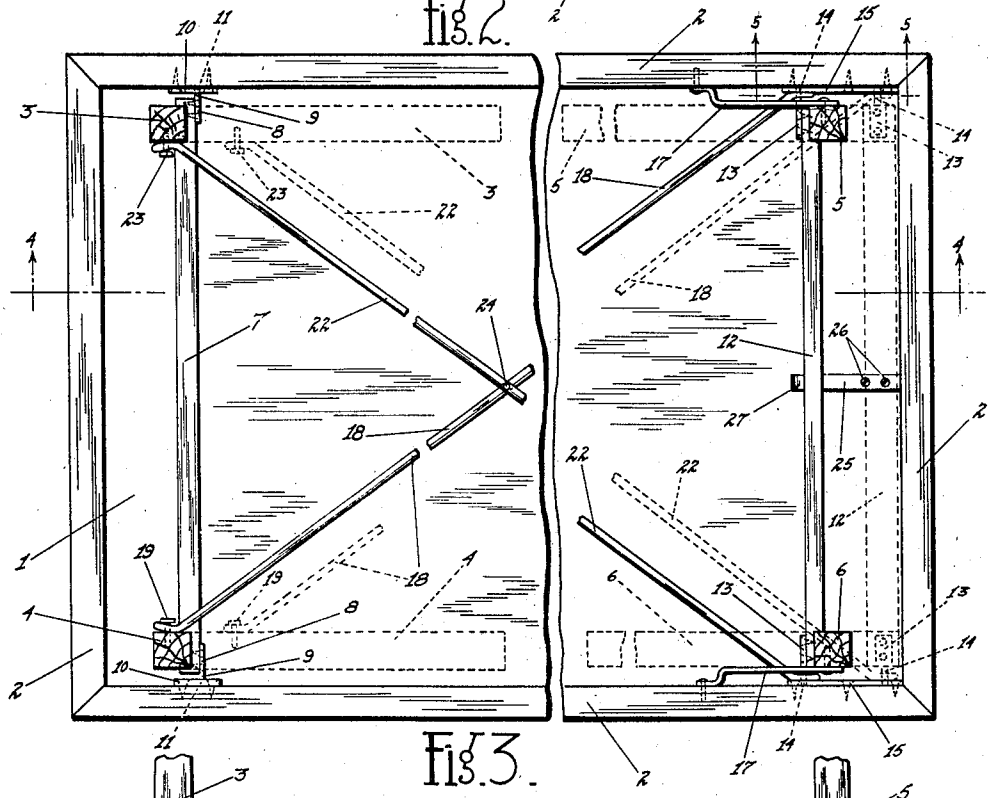


Fig. 3.

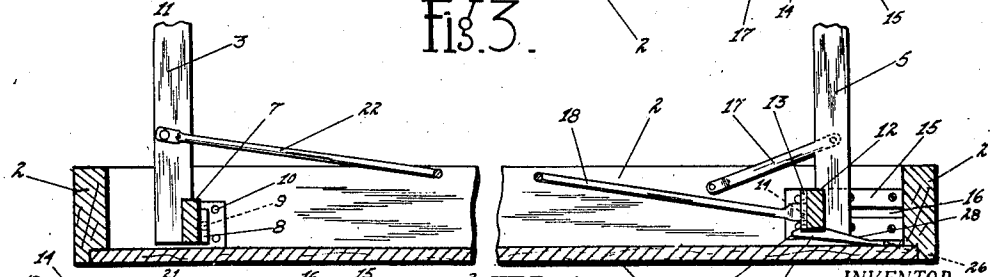


Fig. 4.

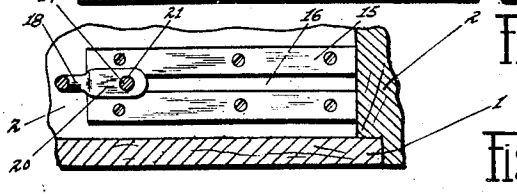


Fig. 5.

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FOLDING MEANS

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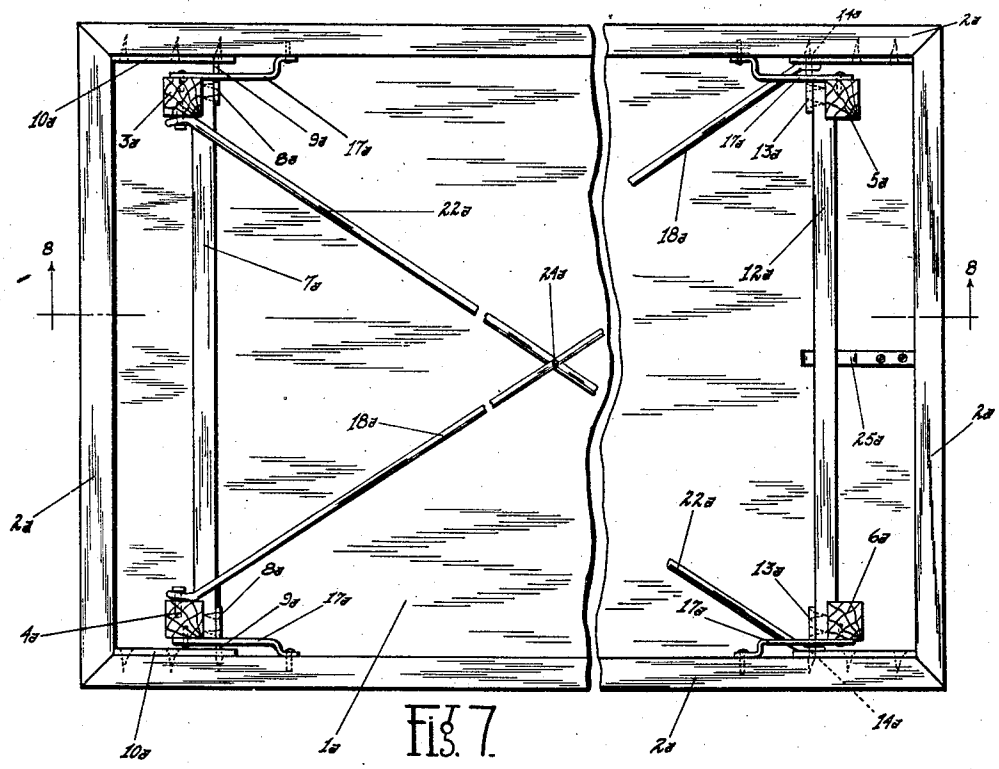


Fig. 7.

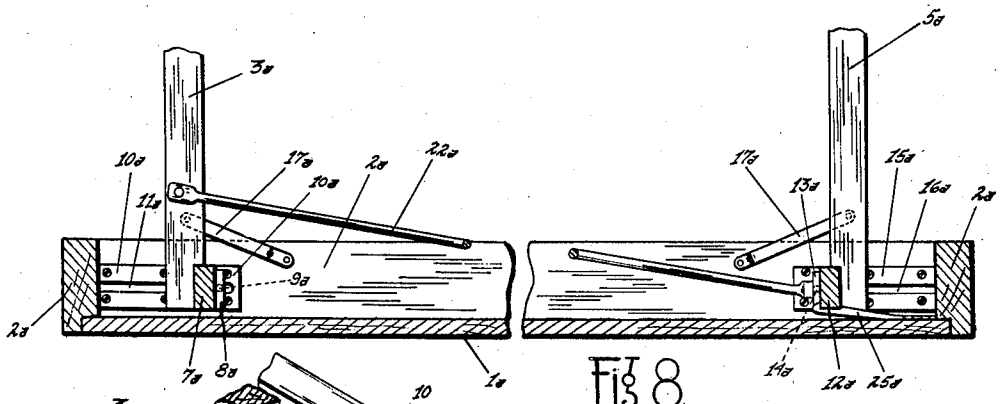


Fig. 8.

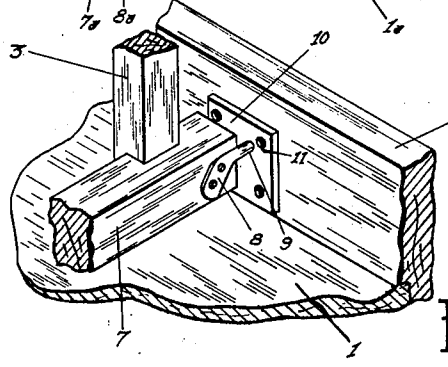


Fig. 6.

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UNITED STATES PATENT OFFICE

1,964,759

FOLDING MEANS

Harold Howe, New York, N. Y., assignor to Howe Folding Furniture Inc., New York, N. Y.

Application April 30, 1932, Serial No. 608,469

7 Claims. (Cl. 45—11)

My invention relates to a folding means and is particularly adapted for tables, benches, beds, shelves and the like, provided with legs or other supporting means for a surface which it is desired to fold and unfold for convenience.

My invention is particularly adaptable for elongated tables such as banquet tables and although the invention will be illustrated and described as applied to a banquet table, it will be understood that the folding means is equally adaptable for use with other types of tables and numerous other articles without departing from the invention.

One object of the invention lies in the provision of folding means for the legs of a table or the like whereby the movement of any one leg to or from folded position results in simultaneous and synchronous movement of all the other legs.

Another object of my invention lies in a folding means of this type so constructed and arranged that certain or all of the supporting legs retreat at their base during the folding operation, thereby conserving space, permitting the legs to be positioned in alignment with each other and to make possible a suitable bracing means for the legs in their unfolded position.

A further object of my invention lies in the provision of a novel and simple mounting means for the folding mechanism and the supporting legs of the table.

A further object lies in the provision of a folding mechanism which is of few parts, simple in construction and assembly, economical to manufacture, smooth and easy of operation, and extremely rigid as a supporting means for the legs in their unfolded position.

Other objects and advantages in details of construction will be apparent as the description proceeds, reference now being had to the figures of the accompanying drawings forming a part of this application and wherein like reference numerals indicate like parts.

In the drawings:

Figure 1 is a side view of a banquet table in open or unfolded position, illustrating the type of table with which my invention is particularly adaptable.

Figure 2 is a side view showing the table folded.

Figure 3 is a bottom plan view of the table shown in Figure 1, the parts being enlarged and the table broken for the sake of clearness.

Figure 4 is a detail cross sectional view taken on the line 4—4 of Figure 3.

Figure 5 is a detail sectional view taken on the line 5—5 of Figure 3.

Figure 6 is a detail perspective view illustrating the type of hinge used for certain of the legs in one embodiment of my invention.

Figure 7 is a view similar to Figure 3 illustrating the modified form of my invention.

Figure 8 is a sectional view taken on the line 8—8 of Figure 7.

In the modification illustrated in Figures 1 to 6 inclusive, the reference character 1 refers to the table top provided around its edges with a frame 2 and with the four supporting legs 3, 4, 5 and 6, positioned adjacent the corners of the table. The legs at each end are preferably in pairs. For instance, the legs 3 and 4 are rigidly joined together by the crosspiece 7 suitably secured to the legs adjacent the underside of the table top whereby such legs 3 and 4 are movable to and from folded position together. At each end of the crosspiece 7 there is secured in any suitable manner a pivot member 8 extending beyond the ends of the crosspiece 7 and having such extending end reduced in size and rounded as at 9 (see Figure 6) to provide a pintle. Secured to the side frame members 2 are the oppositely disposed bearing plates 10, each provided with an opening 11 to receive the pintle 9 of the pivot member 8. Thus the pair of legs 3 and 4 are pivotally mounted upon the table as a pair and adapted to be moved to and from the dotted line position in Figure 3 to fold or unfold this pair of legs. In this form of the folding means, the pivot means for the legs 3 and 4 is fixed as shown, the pintles 9 merely turning in the openings 11 in the fixed bearing plates 10.

At the opposite end of the table the legs 5 and 6 are also joined together as a pair for simultaneous movement, by the crosspiece 12. This crosspiece 12 also carries at each end pivot members 13 identical with the pivot members 8. These pivot members 13 are provided with the circular reduced extending portion 14. The side frame members 2 are provided at this end of the table with oppositely disposed guide plates 15 suitably secured thereto, such plates being provided with slots 16 into which the pintles 14 of the pivot members 13 engage for sliding and pivotal support. Obviously therefore, the pair of legs 5 and 6 may be folded to and from the dotted line position shown in Figure 3, that is, toward and away from the table top 1 and also the base of these legs, namely, the ends adjacent the table top, can be slid longitudinally of the table in the slots 16 thus permitting the legs 5 and 6 to retreat towards the adjacent end of the table as the legs are folded. Link braces 17 piv-

oted at one end to the side frames 2 and at their opposite ends to the legs 5 and 6, serve as a limiting means for the pivotal movement of the legs as well as lending rigidity thereto when the same are unfolded. The inner ends of the slots 16 in the guide plates 15, cooperating with the pintle members 14, limit the unfolding movement of the legs 5 and 6 so as to insure their proper position when the legs are unfolded.

In order that all four of the legs, that is, both pairs of legs, may be automatically folded or unfolded simultaneously and synchronously upon the movement of any one leg, I have provided a brace connecting means between the pairs of legs. This connecting means comprises a link or rod 18 pivotally connected at one end, as at 19, with the leg 4 at a point spaced somewhat below the table top 1 and extending diametrically across the underside of the table top and pivotally connected at its opposite end with the pintle 14 of the pivot member 13 adjacent the leg 5 at the opposite end and side of the table. The end of the rod 18 is, as shown in Figure 5, flattened as at 20 and provided with an opening 21 through which the pintle 14 extends between the leg 5 and the adjacent guide plate 15. A second link or rod 22 is pivoted at one end as at 23 to the leg 3 in the same corresponding position below the table top as the pivot point 19 of the rod 18. This rod 22 extends diametrically across the table to the opposite end and side and has pivotal connection with the pintle 14 of the pivot member 13 adjacent the leg 6, in exactly the same manner as above described for the corresponding end of the rod 18.

At the point where these two rods 18 and 22 cross each other, substantially centrally of the table, they are pivotally secured together as by a pivot pin or rivet 24.

Because of this connecting means between the pairs of legs at the opposite ends of the table, the said pairs are obviously foldable and unfoldable synchronously and automatically, upon such movement of either pair. Suitable latch or locking means is provided to maintain the legs in their unfolded position against inadvertent or accidental collapse. This means comprises a latch member 25 of suitable material and resilience, secured at one end as at 26 to the underside of the table top directly adjacent one end thereof and substantially centrally between the sides thereof. The opposite free end of this latch 25 is provided with a hook portion 27 adapted to receive the crosspiece 12 when the legs 5 and 6 are unfolded, and thus prevent their inadvertent folding. The surface of the latch 25 is preferably beveled from its point of fastening to the table top to the hook portion 27, as at 28, whereby the crosspiece 12 may easily and readily ride thereover during the unfolding operation until the same snaps into the hook portion in the completely unfolded position. Obviously when it is desired to again fold the legs, the operator merely releases the latch 25 from its hooked engagement with the crosspiece 12, whereupon the legs 5 and 6 can be moved toward the table top for folding.

The operation of this folding means is believed obvious for if either pair of legs is folded toward the table top, such motion will be transmitted to the other pair of legs through the rods 18 and 22 causing simultaneous and synchronous movement of the other pair of legs. During such folding movement it is obvious that the legs 5 and 6 at their base, that is, adjacent the table top, together with the crosspiece 12 connecting such ends, will retreat toward the adjacent end of the table, guided by the slots 16 in the plates 15. Such retreating movement, because of the connection with the adjacent ends of the rods 18 and 22, causes such rods to pull the legs 3 and 4 downwardly toward the table top.

In the modified form of the invention illustrated in Figures 7 and 8, the base of both the pairs of legs are caused to retreat. In this form the table top is indicated at 1*a* and the side and end frames at 2*a*. The legs 3*a* and 4*a* are secured together adjacent their base by the crosspiece 7*a* provided with the pivot members 8*a* having the extending rounded pintles 9*a*. Secured to the side frames 2*a* at opposite points adjacent these legs, are the guide plates 10*a* provided with guide slots 11*a* into which the pintles 9*a* extend and are journaled for sliding and pivotal movement. Link braces 17*a* are provided pivotally connecting the legs 3*a* and 4*a* with their adjacent side frames 2*a*.

The opposite pair of legs 5*a* and 6*a* are provided with identical pivotal and sliding connection as in the modification first described and, of course, identical with that just described for the legs 3*a* and 4*a*. The crosspiece 12*a* connects these legs and is provided at each end with the pivot members 13*a* and the pintles 14*a* engaging within the slots 16*a* in the guide plates 15*a*. These legs are also provided with the link braces 17*a* between the side frames and the legs.

The connecting rods 18*a* and 22*a* are identical in each respect with the corresponding rods 18 and 22 in the previous modification, the same being pivotally secured together at the point of their crossing as at 24*a*.

In this form, of course, the latch 25*a*, the same as described in the previous modification, may be provided in connection with either of the crosspieces 7*a* or 12*a*. The operation is the same except that in this modification both pairs of legs retreat at their bases toward their adjacent end of the table, upon the folding operation.

Of course, changes may be made in details of construction and arrangement of parts without departing from the spirit and scope of my invention. I do not limit myself, therefore, to the exact form herein shown and described other than by the appended claims.

I claim:

1. In combination, a table top, a pair of supporting legs fixedly pivoted adjacent one end thereof, a second pair of supporting legs pivotally and slidably supported adjacent the opposite end thereof, and connecting means between said pairs for synchronous folding of both pairs.

2. In combination, a table top, a pair of supporting legs fixedly pivoted adjacent one end thereof, a second pair of supporting legs pivotally and slidably supported adjacent the opposite end thereof, connecting means between said pairs for synchronous folding of both pairs, and a latch for one of said pairs in unfolded position.

3. In combination, a table top, a pair of connected supporting legs pivotally mounted adjacent one end thereof, a second pair of connected supporting legs pivotally and slidably mounted adjacent the opposite end thereof, and connecting rods pivotally connected at one end to the legs of said first pair and at their opposite end to the legs of said second pair for synchronous folding movement of said pairs, said rods crossing each other intermediate their ends and being pivoted together at their crossing point.

4. In combination, a table top, a pair of connected supporting legs pivotally mounted adjacent

one end thereof, a second pair of connected supporting legs pivotally and slidably mounted adjacent the opposite end thereof, connecting rods pivotally connected at one end to the legs of said first pair and at their opposite end to the legs of said second pair for synchronous folding movement of said pairs, said rods crossing each other intermediate their ends and being pivoted together at their crossing point, and brace links pivotally connecting the legs of said second pair with the adjacent edges of said top.

5. In combination, a table top, a pair of connected supporting legs pivotally mounted adjacent one end thereof, a second pair of connected supporting legs pivotally and slidably mounted adjacent the opposite end thereof, and connecting rods pivotally connected at one end to the legs of said first pair and at their opposite end to the legs of said second pair for synchronous folding movement of said pairs, said rods being connected to the legs of said first pair at points spaced from said top and to the legs of said second pair at points directly adjacent said top.

6. In combination a supporting surface, a pair of supporting legs fixedly pivoted adjacent one end thereof, a second pair of supporting legs pivoted at a point intermediate their ends adjacent the opposite end thereof, slidable guide means for the ends of said last named pair nearest said supporting surface, and connecting means between said pairs for synchronous folding of both pairs.

7. In combination a supporting surface, a pair of supporting legs fixedly pivoted adjacent one end thereof, a second pair of supporting legs pivoted at a point intermediate their ends adjacent the opposite end thereof, slidable guide means for the ends of said last named pair nearest said supporting surface, and connecting means between said pairs for synchronous folding of both pairs, said connecting means being attached to said second named pair between the pivot thereof and said surface.

HAROLD HOWE.