July 3, 1934. B. F. LILLARD 1,965,245

AUTOMATIC EXTENSION TABLE LEAF ADJUSTMENT

Filed Oct. 7, 1933 2 Sheets-Sheet 1

Fig. 1

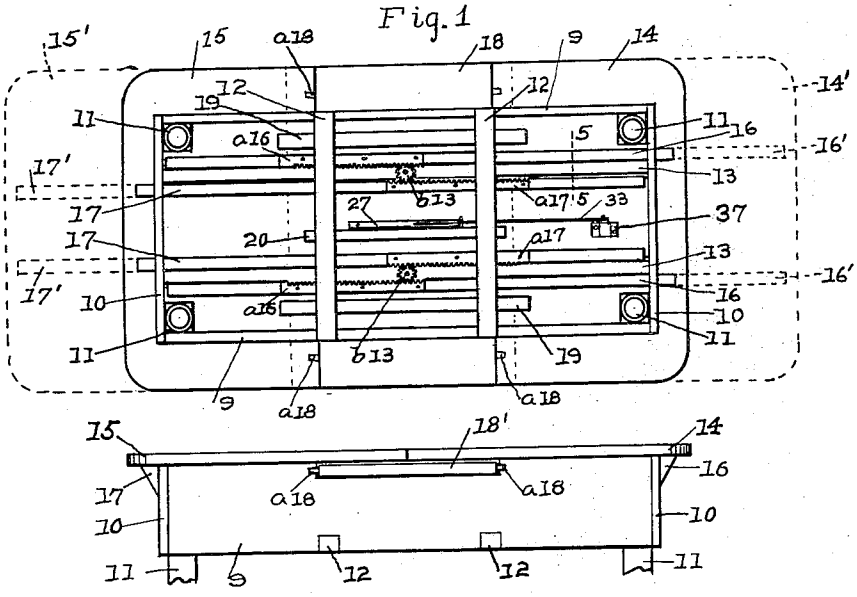


Fig. 5

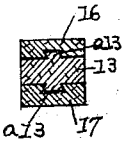


Fig. 2

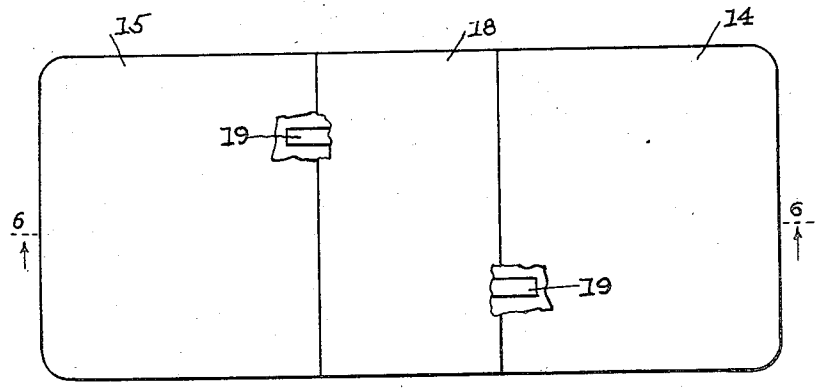


Fig. 3

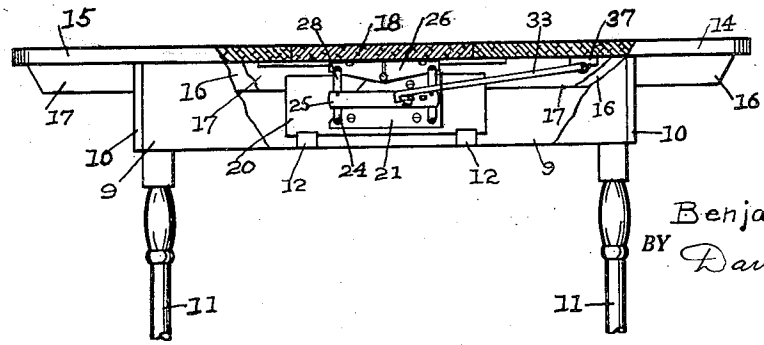


Fig. 4

INVENTOR,
Benjamin F. Lillard.
BY David E. Lain,
ATTORNEY.

July 3, 1934. B. F. LILLARD 1,965,245

AUTOMATIC EXTENSION TABLE LEAF ADJUSTMENT

Filed Oct. 7, 1933 2 Sheets-Sheet 2

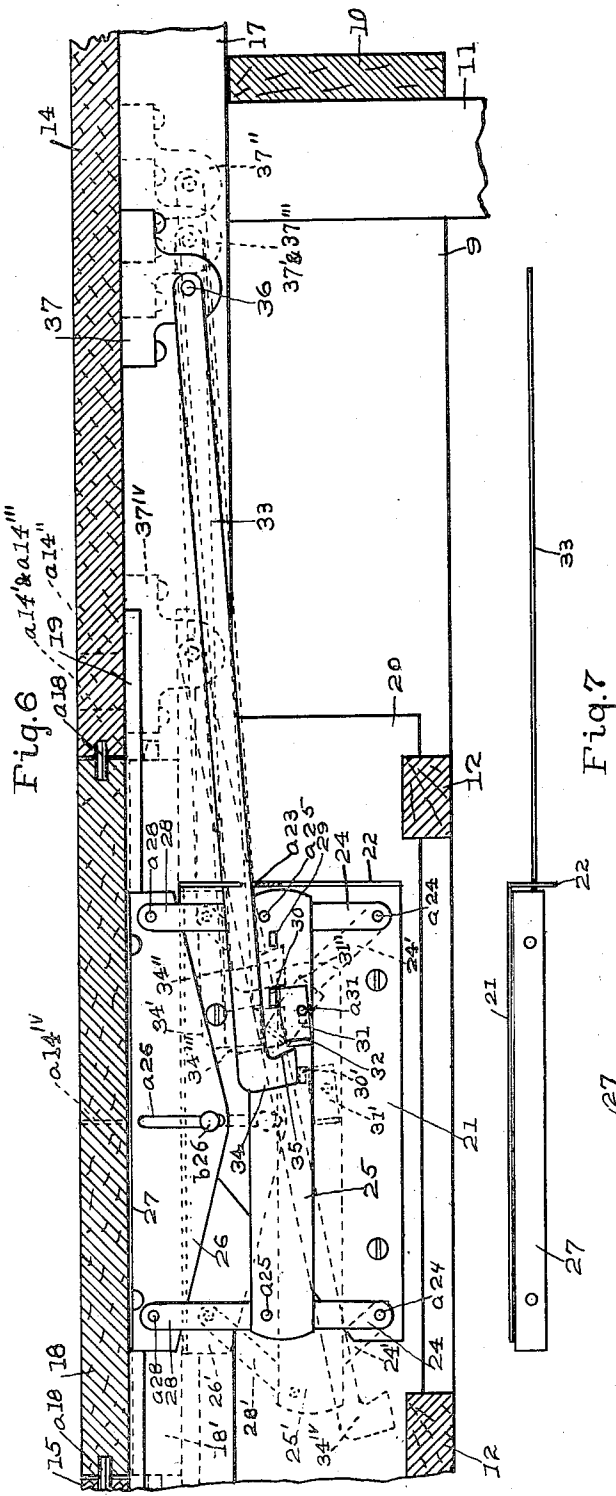


Fig. 6

Fig. 7

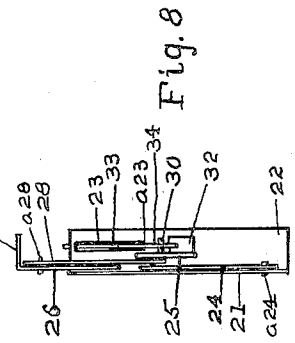


Fig. 8

INVENTOR,
Benjamin F. Lillard.
BY David E. Lain,
ATTORNEY.

Patented July 3, 1934

1,965,245

UNITED STATES PATENT OFFICE

1,965,245

AUTOMATIC EXTENSION-TABLE LEAF ADJUSTMENT

Benjamin F. Lillard, Bellingham, Wash.

Application October 7, 1933, Serial No. 692,629

2 Claims. (Cl. 45—112)

My invention relates to improvements in automatic leaf adjusters for extension tables, and has for an object to provide mechanism for removing and replacing the intermediate leaf of extension tables which is fully operable automatically by the usual manual movements of the end leaves apart from and toward each other.

Another object of my improvement is to provide automatically operating means for retaining control of the intermediate leaf during its downward movement out of the table top.

Other objects of my improvement will appear as the description proceeds.

I attain these and other objects of my improvement with the mechanism illustrated in the accompanying two sheets of drawings, which form a part of this specification, in which Figure 1 is a bottom plan view of my extension table in its fully retracted shape, Fig. 2 is a side elevation of the table in its fully retracted shape, Fig. 3 is a top plan view of the table in its extended shape with the intervening leaf in operative position in the table top, Fig. 4 is a side elevation of Fig. 3, Fig. 5 is a cross section on the line 5—5 of Fig. 1 of a portion of the equalizer, drawn on a larger scale, Fig. 6 is an elevation view of a fragmentary part of the table in longitudinal section on the line 6—6 of Fig. 3, drawn on a larger scale, Fig. 7 is a top plan view of the leaf adjuster shown by itself, drawn on a larger scale, and Fig. 8 is an end elevation of Fig. 7.

Similar characters refer to similar parts throughout. Certain parts are broken away to show other parts hidden thereby.

With more particular reference to the designated parts: The usual parts of the table are the front and rear frame pieces 9, 9, the end frame pieces 10, 10, the four table legs 11 each fastened in an angle of the frame 9, 10, the transverse frame bars 12, 12 fastened to the bottom edges of the side pieces 9, the longitudinal fixed equalizer bars 13, 13 the ends of which are fastened to the frame end pieces 10, each having on each side a dovetailed tongue *a*13, the two pairs of movable equalizer bars 16, 17, each having a dovetailed groove in one side thereof engaged by one of the said dovetailed tongues, the two spur gears *b*13, *b*13 centrally mounted for revolution on the bottom surfaces of the fixed bars 13, the spur racks *a*16, *a*17 fastened on the bottom surfaces, respectively, of the movable equalizer bars 16, 17 disposed to engage the said spur gears, and the end table leaves 14, 15 fastened to the movable equalizer bars 16, 16 and 17, 17 respectively, and the middle table leaf 18, disposable centrally beneath the adjacent edges of the said end table leaves or in the table top between the said end leaves.

The end frame pieces 10, 10 are notched in their upper edges for the extension therethrough of the movable equalizer bars 16 17, and the side pieces 9, 9 are notched in their upper edges to receive the middle leaf 18 when the same is beneath the table top. The construction provides for the simultaneous outward and inward movements of the end leaves 14, 15 over the table frame 9, 10 by pressure applied to either of the said leaves. No novelty is claimed for those parts of the structure detailed above.

To the bottom surface of the middle leaf 18 are fastened the two transverse bars 19 having their ends extended beyond the edges of the leaf to bear on the bottoms of the end leaves 14, 15 even when the same are farthest apart.

The base board 20 is disposed vertically, centrally and longitudinally in the table frame with its lower edge fastened to the frame bars 12. To the base 20 is fastened the frame plate 21 of the central-leaf operating mechanism. The front edge flange 22 of the frame plate is disposed vertically and near its upper end has slot opening 23 disposed vertically with its bottom end accurately located at *a*23. A pair of bottom parallel link bars 24, 24 have their lower ends pivoted to the plate 21 at *a*24, *a*24. The horizontal longitudinally reciprocating link bar 25 is pivoted to the parallel oscillating link bars 24, 24 at *a*25, *a*25 for arcuate reciprocation thereon. The horizontal vertically reciprocating bar 26 has the transverse vertical slot *a*26 therein through which is extended the headed stud *b*26. The stud *b*26 is fastened in the upper part of the frame plate 21. To the upper part of the bar 26 are pivoted the upper ends of the bars 28, 28 at *a*28, *a*28. Bars 28 constitute a pair of parallel links and have their lower ends pivoted to the lower parallel links 24, 24 and the horizontal bar 25 at *a*25, *a*25. The construction provides for the rearward oscillation from their vertical solid-line positions of the links 24, 24 and 28, 28 to their dotted-line positions at 24′, 24′ and 28′, 28′, the vertical reciprocation of the bar 26 from its highest solid-line position to its lowest dotted-line position at 26′, and the longitudinal reciprocation rearwardly of the central bar 25 through arcs about the pivots *a*24, *a*24 from its solid-line position to its dotted-line position to its lowest position shown in dotted lines at 25′.

The top edge of the bar 26 is flanged at 27 and is fastened to the central leaf 18 being disposed

transversely and centrally thereof, resulting in the vertical downward movement of the leaf 18 and the bars 19, 19 thereon from their upper solid-line position to their lower dotted-line position at 18', 19' in Fig. 6, when the said bar 26 is caused to descend by the rearward and downward movement of the bar 25, and conversely in the upward movement of the said leaf 18 and bars 19, 19 thereon from their said lower position to their said upper position by the forward and upward movement of the bar 25.

On the bar 25 are two lugs 29 and 30 spaced apart and disposed in horizontal relation near the front end of the bar.

A tumbler consisting of a plate 31 and flanged end 32 thereon is mounted for limited oscillation on a pivot at $a31$ on the plate 25 beneath the lug 30 disposed to bear on the said lug both in its lower solid-line position and in its upper dotted-line position at 31''. The said position of the tumbler at 31'' is attained by oscillation on the pivot $a31$ and is relative to the bar 25, while another illustrated position of the tumbler at 31' is due to the downward and rearward operative movement of the said bar 25.

A hook having a shank 33 and bill 34 is extended through the slot 23 in the frame plate flange 22 with its bottom shank edge bearing on the bottom $a23$ of the slot to limit the lowest position in oscillation of the hook. Bearing block 37 is fastened on the end table leaf 14 disposed on the bottom surface thereof in a central position longitudinally of the leaf. The end of the hook shank 33 is pivoted to the bearing block 37 at 36.

In operation: The extended table with the middle leaf in operative position in the table top is illustrated in solid lines in Figs. 3, 4 and 6. In Fig. 6 this shape of the table is shown to require the bill of the hook to be at 34 adjacent the flange 32 of the tumbler 31. Withdraw the end leaves by pulling outward on either of them and the bearing block is moved to 37' causing the hook bill to turn the tumbler to its position at 31'' lifting the said bill to its highest position at 34' and the inner edge of leaf 14 is shown to be at $a14'$ causing the leaf 15 to be at a corresponding and equal distance from the center of the table. Continuing the outward movements of the end leaves till the bearing block is at 37'' causes the hook bill to pass over the lug 30 and drop to a position at 34'' between the lugs 29 and 30, disposing the inner edge of the leaf 14 at $a14''$ and the inner edge of the leaf 15 at a corresponding location. In practice, the two movements referred to last above are really combined in a single continuous movement but are shown separately for the sake of the description. The mechanism is now in position to move the middle leaf downward out of the table top. To drop the middle leaf, the outer leaves are moved centerward by shoving on one of them causing the hook bill to bear against the forward edge of the lug 30 and pushing the bar 25 rearward and downward, thus starting the downward movement of the middle leaf 18. As soon as the links 24, 24 and 28, 28 are angular relatively the weight of the leaf 18 will tend to move the bar 25 downward and rearward causing the rear surface of the lug 29 to bear against the inclined edge 35 of the hook bill. Owing to the rearward inclination of the hook edge 35 and the rearward pressure of the lug 29 against the same the engagement of the hook with the lug 29 is retained preventing the bar 25 from being moved rearward by the weight of the descending leaf 18 faster than the leaves 14 and 15 are moved toward each other. In this way the middle leaf is automatically prevented from falling from its highest to its lowest position which, otherwise, it would do as soon as the links 24, 24 and 28, 28 are out of position to support it. Before the leaves 14 and 15 have reached their positions shown in solid lines in Figs. 3, 4 and 6 the leaf 18 has reached its lowest position at 18' and the leaf control mechanism has reached its lowest position, disengaging the lugs 29, 30 from the hook the shank of which continues to bear on the bottom end of the slot 23 at $a23$.

The centerward movement of the leaves 14 and 15 is continued by pressure on either of them till the inner edge of the leaf 14 is at $a14^{iv}$ and the inner edge of the leaf 15 is adjacent thereto above the leaf 18 as shown in solid lines in Figs. 1 and 2. Now the bearing block is at 37^{iv} and the hook bill is at 34^{iv}.

To extend the table top and return the leaf 18 to its position therein the outer leaves are separated by pulling on either one of them. This separating movement, if continued, causes the hook bill to engage the lug 30 while in its lowest and most rearward position at 30' and draw the same forward and upward till the hook bill is at 34''', the bearing block is at 37''', the inner edge of the leaf 14 is at 14''', the inner edge of the leaf 15 is in a corresponding position and the leaf 18 and supporting mechanism are in their solid-line positions. Now the leaves 14 and 15 are moved toward each other by shoving on either one till they are in their solid-line positions shown in Figs. 3, 4 and 6, engaging the leaf pins $a18$ in registering holes in the inner edges of the leaves 14 and 15 and returning the bearing block and hook to their solid-line positions shown in Figs. 4 and 6. Thus, the table top is restored to its operative extended position.

Having thus disclosed my invention, what I claim as new therein and desire to secure by Letters Patent is,—

1. An extension table consisting of a table frame, end table leaves mounted on the table frame for lateral movements thereon in opposite directions simultaneously, a middle leaf mounted on an elevator and depressor mechanism, the frame plate of the said mechanism fastened to the said table frame, a horizontal bar fastened to the bottom side of the middle leaf mounted on the frame plate for vertical reciprocation, a horizontal link bar mechanically connected with the said frame plate for arcuate reciprocation between a forward and a rearward position and mechanically connected with the horizontal middle leaf bar retaining the same in its top position when the link bar is in its forward position and moving the leaf bar to its bottom position as the link bar moves to its rear position, a front lug and a rear lug on the said link bar spaced apart and disposed in horizontal relation, a hook shank pivotally mounted on the bottom side of one of the said end table leaves, a hook on the free end of the hook shank engageable with the rear edge of the said rear lug elevating the said middle table leaf as the said end leaves are separated and engageable between the said lugs bearing on the front edge of the said rear lug to lower the middle leaf as the end leaves approach each other and bearing on the rear edge of the said front lug to restrain the middle leaf from dropping by gravity as the end leaves approach each other, and means to cause the said

hook to pass over the said rear lug as the end leaves are being separated from the middle leaf.

2. An extension table having a table frame, a removable middle leaf and end leaves simultaneously movable in opposite directions on the table frame in combination with mechanism for automatically removing the middle leaf from the top of the table and returning it to the said table top including, the mechanism frame plate fastened to the said table frame, a flange on the frame plate having a slot therein, a bar fastened to the bottom of the middle leaf mounted on the frame plate for vertical transverse reciprocation, a link bar mounted on the frame plate for arcuate longitudinal reciprocation from a top forward position to a bottom rearward position mechanically connected with the leaf bar retaining the leaf bar in its top position when the link bar is in its top position and moving the leaf bar to its bottom position as the link bar moves to its bottom position, a forward lug and a rearward lug spaced apart on the link bar, a tumbler pivoted on the link bar adjacent and below the said rear lug, a hook shank pivoted at one end on one of the said end table leaves extending through the said frame plate flange slot, and a hook on the other end of the hook shank movable by separating the said end leaves to engage the rear edge of the rear lug when in its rearward bottom position and move the link bar to its forward top position and to engage and oscillate the said tumbler lifting the hook over the rearward lug to fall between the lugs engaging therewith when the lugs are in their top position and moving the link bar to its rearward bottom position by causing the end table leaves to approach each other.

BENJAMIN F. LILLARD.