

March 16, 1954

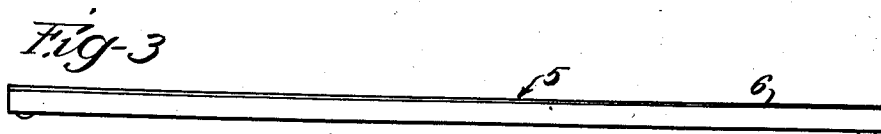
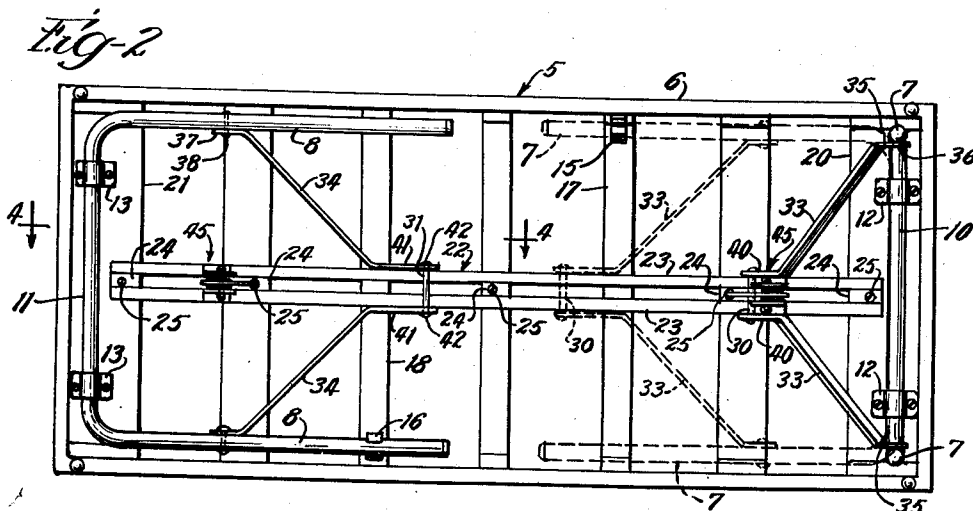
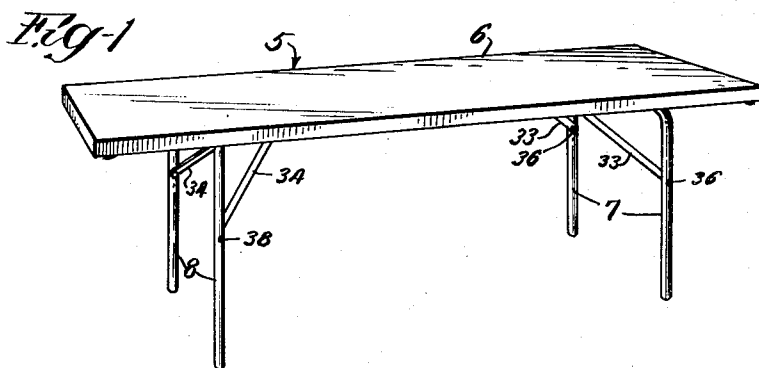
A. G. BARRICKS

2,672,387

FOLDING TABLE LEG AND LOCKING MECHANISM THEREFOR

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2 Sheets-Sheet 1



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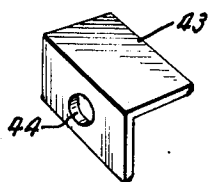
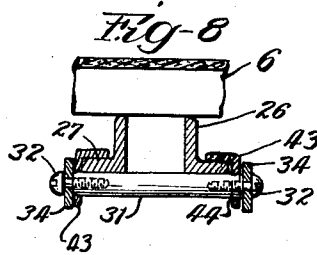
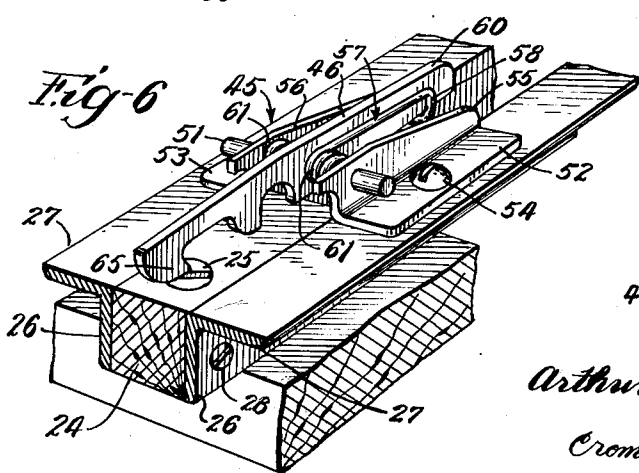
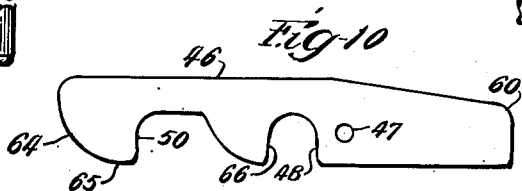
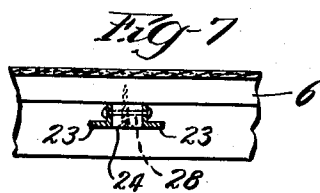
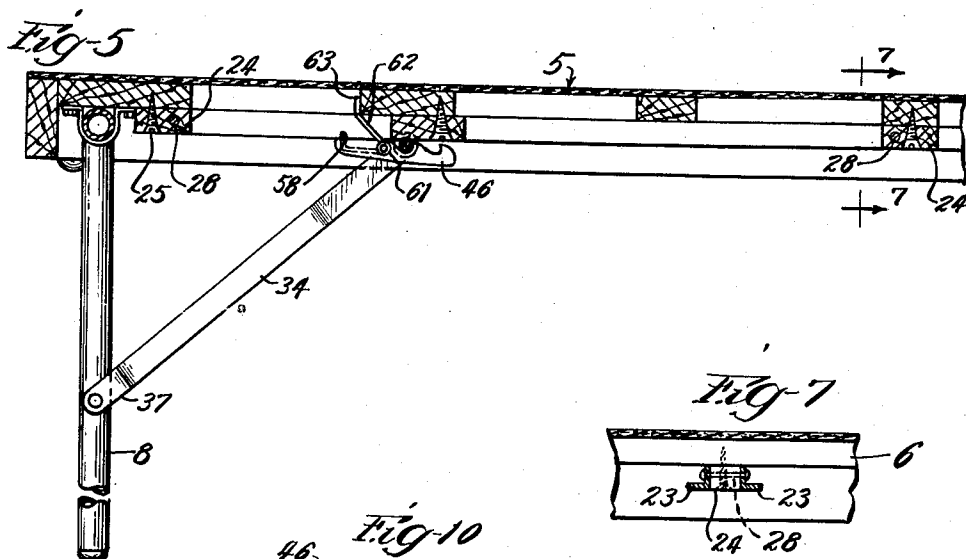
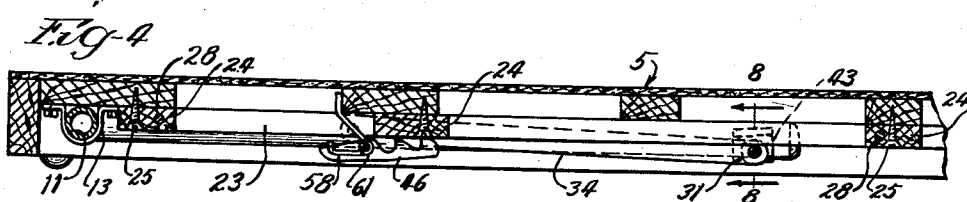
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FOLDING TABLE LEG AND LOCKING MECHANISM THEREFOR

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2 Sheets-Sheet 2



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FOLDING TABLE LEG AND LOCKING
MECHANISM THEREFOR

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5 Claims. (Cl. 311—87)

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My present invention relates, generally, to innovations and improvements in folding table legs and locking mechanisms therefor which are stronger, more rigid, longer wearing, and safer than previous folding table leg and locking mechanism units of which I am aware, as well as being more economical to maintain and more convenient to operate.

While my present invention is applicable, generally, to folding or collapsible tables of all types, it is particularly suited for large, heavy-duty tables of considerable weight and length such as are used in hotel, restaurant and institution dining rooms. Such tables are subjected to rough handling and usage and are required to sustain heavy loads.

An important object of my invention is a new and improved folding table leg and locking mechanism unit for use with a table top, or the like, and characterized by: its superior strength and rigidity; the positive and safe action of the locking mechanism; absence of free play or looseness between moving parts; ease with which the folding leg mechanism may be operated both to fold and unfold the legs; simplicity and ruggedness of design; and, ability to withstand rough usage and wear for long periods of time without developing looseness or mechanical difficulty.

A more specific object of the invention is a folding table leg unit and locking mechanism therefor for collapsible type tables, or the like, wherein a rail constitutes one of the elements thereof and is adapted to be attached to the bottom side of a table top so as to also serve as a rigidifying member or brace for the table top.

Another object of the invention is a folding table leg unit and locking mechanism therefor wherein the locking mechanism automatically compensates for wear of the moving parts so as to prevent looseness or free play from developing.

Still another important object of the invention is a folding table leg and locking mechanism unit adapted to be easily attached to all types of table tops and other flat platforms.

Certain further objects of the invention will, in part, be obvious and will, in part, appear hereinafter.

For a more complete understanding of the nature and scope of the invention, reference may now be had to the following detailed description thereof taken in connection with the accompanying drawings, wherein:

Fig. 1 is a perspective view showing a folding type table in the erected or unfolded condition,

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and which is provided with a pair of folding table leg mechanisms forming one embodiment of the invention;

Fig. 2 is a bottom plan view showing the underside of the table shown in Fig. 1 with one of the pairs of legs being shown in its folded condition and the other pair being shown in its unfolded or extended position, the latter pair of legs being also shown in the folded condition in broken line;

Fig. 3 is a side elevational view of the table of Fig. 1 with the opposite pairs of legs in the collapsed and folded condition;

Fig. 4 is an enlarged fragmentary sectional view taken on line 4—4 of Fig. 2;

Fig. 5 is a view corresponding to Fig. 4 but with the pair of table supporting legs shown locked in the unfolded vertical position;

Fig. 6 is a fragmentary perspective view taken on enlarged scale showing one of the leg locking units as it appears in Fig. 2;

Fig. 7 is a detail sectional view taken on line 7—7 of Fig. 5;

Fig. 8 is a detail sectional view taken on line 8—8 of Fig. 4;

Fig. 9 is a perspective view of a clip forming a part of the folding table leg mechanism; and

Fig. 10 is a side elevational view of a spring loaded finger which forms an element of the leg locking unit shown in Fig. 6.

In the drawings, a collapsible or foldable type table provided with a folding table leg mechanism forming one embodiment of the invention is indicated generally at 5. The table 5 includes a table top 6 which is rectangular in outline and the details of construction of which do not constitute a part of the present invention. The size and shape of the table top 6 may be other than that shown in the drawings and the invention is broadly useful in connection with table tops and platforms of any particular size, shape, or construction.

The table 5 is provided adjacent the opposite ends with two pairs of folding legs which are designated at 7—7 and 8—8 respectively. Preferably, the legs are in the form of integral U-shaped members having straight interconnecting yoke portions 10 and 11, respectively, as shown, for example, in Fig. 2. Pairs of attaching clips or straps 12—12 and 13—13, respectively, serve to pivotally attach the legs to the underside of the table top 6. The integral U-shaped members providing the legs 7 and 8 may be formed of tubular metal stock. In order to retain the legs 7 and 8 in their folded or collapsed condition underneath the table top 6, spring clips 15 and

16, respectively, are provided. The clips 15 and 16 may be attached to cross bars 17 and 18, respectively, which form part of the structure of the table top 6. Similarly, the attaching clips or straps 12 and 13 may be attached to cross members or cleats 20 and 21, respectively, located at opposite ends of the table top 6 and forming part of the structure thereof.

An important part of the folding table leg mechanism is the rail means, indicated generally at 22 in Fig. 2, which extends lengthwise of the underside of the table top 6 and is equally spaced between the opposite sides thereof. The rail means 22 comprises a pair of angle iron bars 23—23 which are attached to the underside of the table top 6 by means of a series of spaced apart spacer blocks 24—24. The blocks 24 may take the form of wooden pieces which are secured to the under structure or cross members of the table top 6 by means of wood screws 25—25, the heads of which are countersunk and flush with the bottom faces of the blocks 24. The angle iron bars 23 are attached to opposite sides of the spacer blocks 24 with the vertical legs 25—26 (Fig. 6) of the bars 23 attached to opposite sides of the spacer blocks and with the edges of the legs 26 fitting against the cross bars or cleats of the table top 6. The horizontal legs 27—27 of the angle iron bars are outwardly directed in opposite direction as shown, for example, in Figs. 6 and 8. Screws 28—28 serve to secure the vertical legs 26 to the opposite sides of the blocks 24.

In addition to functioning as a rail means as will be explained in detail below, the rail means 22 also serves as a longitudinal rigidifying or strength imparting member for the table top 6. If desired, the rail means 22 may be divided into two sections, one for each end of the table or other platform.

So-called rail followers form part of the mechanism associated with each of the pair of folding legs 7 and 8. The rail followers may take the form of studs or bars 30 and 31 which may be formed of cylindrical rod stock. These elements have sufficient length so as to project over the opposite edges of the horizontal legs 27 of the rail means 22 when the followers are placed crosswise thereof as shown, for example, in Figs. 2 and 8. The bars 30 and 31 may be tapped from opposite ends so as to provide for the reception of screws 32—32 which serve to connect the adjacent ends of leg brace links 33 and 34 to the followers 30 and 31, respectively.

The links 33 have end portions 35—35 by which the links can be pivotally attached to the legs 7 by means of rivets 36—36 extending there-through as indicated in Figs. 1 and 2. Similarly, each of the links 34 has an end portion 37 on one end thereof by which the link may be pivotally attached by a rivet 38 to one of the legs 8 intermediate the ends thereof.

Each of the brace links 33 also has an end portion 40 on the opposite end from the end portion 35 which extends parallel to the length of the table 5 and also parallel to the end portions 35. These end portions 40 are secured to the adjacent ends of the rail follower 30 by means of the screws 32. In like manner, each of the brace links 34 is provided with end portions 41 which are attached by screws 42—42 to the adjacent ends of the rail follower 31.

The rail followers 30 and 31 are maintained at all times in sliding contact with the underside of the rails or horizontal leg portions 27 by means of L-shaped clips 43 which are shown in detail

in Figs. 8 and 9. The L-shaped clips 43 are suitably made by drilling a hole 44 in one of the legs of an angle member of the proper size. The clips 43 are applied to the followers 30 and 31 in the manner shown in Fig. 8. The leg with the hole 44 fits over the projecting end of the follower bar 31 and the other leg extends over the top side of the horizontal rail leg 27, as shown. Only one of the clips 43 is required for each of the followers 30 and 31.

When the pairs of legs 7 and 8 are in the folded or collapsed position and fitting against the underside of the table top 6, the followers 30 and 31 are in positions adjacent the middle of the table. When the legs 7 and 8 are vertically extended or turned downwardly, the followers 30 and 31 are retracted along the rail means 22 to positions closer to the respective ends of the table top 6. Thus, in Fig. 2 of the drawings, the follower 30 is shown in broken line in its position adjacent the center of the table with the legs 7 folded underneath the table top 6 and in full line the legs 7 are shown in their downwardly turned or vertical position with the follower 30 in its retracted positions.

Locking units are associated with each of the pairs of legs 7 and 8 to firmly secure and lock the legs when they are in their downwardly turned, table-supporting, position. These locking units cooperate with the rail followers 30 and 31 and are indicated generally at 45.

Each of the locking mechanisms 45 includes a spring loaded finger or trigger 46 formed of a suitable material such as steel or aluminum and provided with a pin receiving aperture 47, a locking notch 48 and a safety notch 50. The trigger 46 is pivoted intermediate its ends on a pin 51 which projects through the aperture 47 and which is supported on opposite ends in left-handed and right-handed fixtures 52 and 53. The fixtures 52 and 53 have horizontal flanges by which they may be attached to the horizontal legs 27 of the angle iron bars 23 by means of bolts 54—54. The vertical portions 55 and 56 of the fixtures 52 and 53, respectively, are provided with aligned apertures which receive the opposite ends of the pin 51 so that the trigger 46 is located midway there-between.

A coil or torsion type spring is provided for each trigger 46 so as to force the end thereof provided with notches 48 and 50 toward the table top. The spring is designated generally at 57 in Fig. 6 and is formed of spring wire stock and has an outwardly extending middle portion 58 which fits over the trigger 46 adjacent the end thereof opposite the notches 48 and 50. The end engaged by the spring portion 58 is designated at 60 and may be termed the finger portion of the trigger 46 since it is the portion which the table user touches to operate the trigger when the table 5 is to be collapsed. The spring 57 also includes coil portions 61—61 which fit over and around the pin 51 and in between the upright portions 55 and 56 of the fixtures 52 and 53, respectively, and the adjacent side of the trigger 46 as shown in Fig. 6.

The inner end of each of the coil portions 61 extends outwardly and is connected integrally with the portion 58 which engages the trigger 46 as described above. The outer end of each of the coil portions 61 is formed into a free end portion 62 (Figs. 4 and 5) the ends 63 of which fit behind one of the cross pieces or cleats of the table top 6.

Since the free ends 62—62 are anchored against rigid portions of the table top structure and are

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not free to move, the portion 58 which engages the end 60 of the trigger 46 tends to rotate the trigger 46 about the pivot pin 51 in such a way that the end carrying the notches 48 and 50 is forced towards the table top, that is, in a counter-clockwise direction as viewed in Figs. 4 and 5. The outer end of the trigger 46 adjacent the safety notch 50 has a curved or cammed contour as indicated at 64 and the end of this cam portion which is indicated at 65 in Fig. 10 engages the head of one of the screws 25 for a spacer block 24 as shown in Figs. 4 and 6. This is a desirable feature since if the end 65 engaged directly upon the wood face of a spacer block 24, it would very quickly wear a depression in the wood so as to allow the end 65 to project beyond the faces of the outwardly turned legs 27-27 and prevent the followers 30 and 31 from properly engaging with the cam surface 64 so as to automatically force themselves between the trigger 46 and the rails when the legs are unfolded.

The table leg folding mechanisms operate in a positive manner which is apparent from the foregoing description. When the legs are in the folded position, up against the underside of the table top 6, they are retained in this position by the spring clips 15 and 16. In order to set up the table 5, each pair of legs 7 and 8 is freed from the retaining clips 15 and 16, respectively, and turned outwardly as far as possible whereupon the rail followers 30 and 31 become engaged in the locking slots or notches 48 of the locking mechanisms 45. The parts are so dimensioned and arranged that the followers will be so engaged in the notches 48 when the legs are in the vertically extended position as shown in Fig. 1. During the outward turning of the legs, the followers 30 and 31 are retracted along the rails and they reach the place where they engage the cammed shaped ends 64 of the triggers 46. Continued turning of the legs causes the followers to wedge themselves under the triggers and first to engage in the safety notch 50 and then on continued movement to the full vertical position the followers are brought into the slots 48.

The purpose of the safety slots 50 is to insure that the legs will not collapse even through the table is not properly set up by reason of the legs not being extended to the true vertical position. For example, if someone fails to turn out the legs far enough, the rail followers 30 or 31 will not become fully engaged in the respective notches 48 but they will catch in the safety notches 50. If it were not for the safety notches 50, the table might collapse when a load was placed on it if it were not properly set up. Due to the presence of the safety notches 50, the legs will not in such an instance collapse but will be held in a semi-upright position until someone comes along and straightens them out so that the followers 30 or 31 are brought into the locking notches 48.

In order to fold or collapse one of the tables after it has been erected, the user in turn presses on the free end 60 of each of the triggers 46 so as to free the notch 48 from the rail follower 30 or 31 and permit the respective pairs of legs 7 and 8 to be folded.

The various parts of the leg folding mechanism should be accurately manufactured and assembled so as to provide a rigid construction which is free from looseness. This is important since if there is excessive free play or looseness, the wear on the parts is much more rapid than if the parts fit tightly without looseness or free play. In this connection, each notch 48 in a member 46 is pre-

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erably formed so that the front edge of it which is designated at 66 and which engages the respective cam followers 30 and 31, will tend to seat itself or lock the cam followers with increasing tightness after the followers have once entered the notch 48. The side 65 of each locking notch 48 is straight and tangent to the curvature at the base of the notch. The surface or edge 66 can stand considerable wear and there will still be a tight locking fit against the rail followers 30 or 31 thereby preventing any looseness or shakiness in the legs 7 and 8.

In view of the foregoing disclosure, it will be apparent to those skilled in the art wherein modifications may be made in the design of various elements and parts of the folding leg locking mechanism without departing from the spirit and scope of the invention. Accordingly, it is intended that all matter described above or shown in the accompanying drawings be interpreted as illustrative and not in a limiting sense in so far as details of design are concerned.

Having fully described my invention and a preferred embodiment thereof, what is claimed as new is:

1. For combination with a table top or the like, a folding table leg and locking mechanism unit comprising, at least one pair of supporting legs, means for pivotally attaching each of said legs adjacent its upper end to a table top whereby each leg is foldable underneath said table top and is downwardly swingable to a vertical table supporting position, said legs being swingable in parallel planes, rail means mounted underneath said table top so as to extend parallel to and be spaced between said legs when the latter are attached to and folded underneath a table top, said rail means comprising a pair of spaced angle iron bars having their vertical legs turned towards the underside of a table top and having their horizontal legs turned outwardly in opposite directions, a plurality of spacer blocks fitting in between said vertical legs in spaced relationship therealong, means for attaching said blocks to the table top, and means for attaching said vertical legs to the opposite sides of said blocks for supporting said angle iron bars on the underside of said table top, rail follower means in the form of a rod extending across the opposite edges of said outwardly turned horizontal legs of said angle iron bars and at least one clip member mounted on said rod adjacent one end thereof with an integral portion fitting against the top side of the horizontal leg of the adjacent angle iron member, a brace link for each of said legs pivotally connected thereto at one end of the link at a point intermediate the opposite ends of the leg with the other end of the brace link being pivotally connected to the adjacent end of said rail follower, and manually releasable locking means for locking each pair of said legs in their downwardly turned table supporting position comprising, a spring loaded trigger having a notch formed in the upper edge thereof for engaging said rail follower, a pin extending from opposite sides of said trigger rearwardly of said notch, fixtures attached to the underside of said rail means for supporting said pin crosswise of said rail means, and a spring one end of which engages said trigger rearwardly of said pin with the other end of the spring engaging a rigid portion of the structure, said spring being maintained under compression so as to press upwardly the forward portion of said trigger having the notch.

2. The folding leg and locking mechanism unit called for in claim 1 wherein the trigger of said locking means has two notches formed therein the rear one of said notches serving to engage and retain said rail follower when said legs are vertically extended and the front one of said notches serving as a safety notch to engage and retain said rail follower when the legs have not been fully extended to the vertical position.

3. The folding table leg mechanism of claim 1 wherein said spacer blocks are attached to the underside of said table top by screws the heads of which are flush with the bottom faces of said blocks and one of said spacer blocks is so located with respect to said spring loaded finger that the front end of said finger engages a screw head in the bottom face of said one spacer block when said rail follower is not engaged in said notch of the spring finger, the front end of said spring finger having a cammed shape so as to permit the rail follower to force its entry between the spring finger and the table top against the force of said spring.

4. In combination with a table top, a folding table leg mechanism comprising, two pair of supporting legs located at opposite ends of the table top, each of said pairs of legs being provided by an integral U-shaped member; means for pivotally attaching the yoke portion of each of said U-shaped members to the underside of said table top whereby each pair of legs is foldable toward each other underneath said table top and each is downwardly swingable to a vertical table supporting position, rail means mounted underneath said table top and extending parallel to and spaced midway between said pairs of legs when the latter are folded underneath said table top, said rail means comprising a pair of spaced angle iron bars having their vertical legs turned towards the underside of said table top and having their horizontal legs turned outwardly, a plurality of spacer blocks fitting in between said vertical legs in spaced relationship therealong, means for attaching each of said rail blocks to the table top and means for attaching said vertical legs of the angle iron bars to the opposite sides of said blocks thereby supporting said bars on the underside of said table top, rail follower means for each of said pairs of legs in the form of a cylindrical rod extending across the opposite edges of said outwardly turned horizontal legs of said angle iron bars and at least one clip member for each cylindrical rod having a loop portion fitting over the rod adjacent one end thereof with outwardly turned ends fitting against the upper side of the horizontal leg of the adjacent angle iron bar, a brace link for each of said legs pivotally connected thereto at one end of the link at a point intermediate the opposite ends of the associated leg with the other end of the brace link being pivotally connected to the adjacent end of the associated rail follower, and manually releasable locking means for each of said pairs of legs for locking the legs in their downwardly turned table supporting position, each of said locking means comprising, a spring loaded finger member having a notch formed in the upper edge thereof for engaging said rail follower, a pin extending from opposite sides of said finger

rearwardly of said notch, fixtures attached to the underside of said rail means for supporting said pin crosswise of said rail means, and a spring one end of which engages said finger rearwardly of said pin with the other end of the spring engaging a rigid portion of the table top structure, said spring being maintained under compression so as to press upwardly the forward portion of said finger having the notch.

5. For combination with a table top or the like, a folding table leg and locking mechanism unit comprising, at least one pair of table supporting legs, means for pivotally attaching said legs adjacent their upper ends to a table top whereby the legs are foldable underneath said table top and are downwardly swingable to a vertical table supporting position, rail means mounted underneath said table top so as to extend parallel to said legs and spaced therebetween, said rail means having a pair of horizontal rail flanges which are spaced from the bottom surface of the table top by means of integrally formed vertical flanges which are uniformly spaced from each other so as to form a channel therebetween, means for securing said rail means to the underside of said table top, rail follower means in the form of a rod extending across the underside of said horizontal rail flanges and provided with at least one hook means which hooks slidably over one of the edges of said rail flanges so as to retain the rail follower means in sliding contact therewith, a brace linkage for each of said pairs of legs one end of which linkage is pivotally connected to the legs intermediate the ends thereof and the other end of which linkage is pivotally connected to the adjacent rail follower rod, and manually releasable locking means for locking each pair of said legs in their downwardly turned table supporting position comprising, a spring loaded trigger having a notch formed in the upper edge thereof for engaging said rail follower, a pin extending from opposite sides of said trigger rearwardly of said notch, fixtures attached to the underside of said rail means for supporting said pin crosswise of said rail means, and an actuating spring for said trigger one portion of which engages said trigger and another portion of which engages a rigid portion of the structure, said spring being maintained under compression so as to press upwardly the forward portion of said trigger having the notch.

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