

Oct. 13, 1953

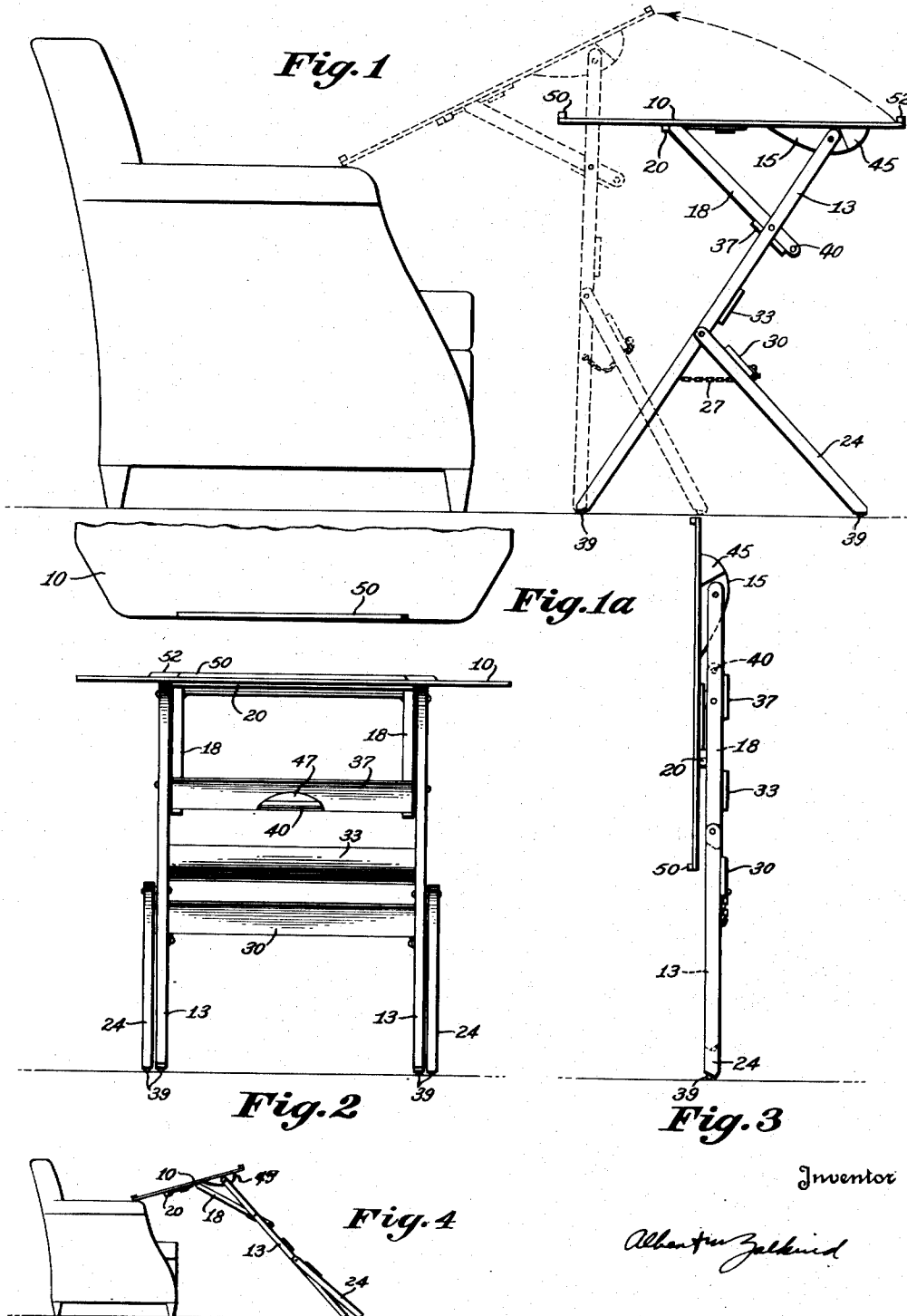
A. M. ZALKIND

2,655,417

FOLDING TABLE

Original Filed Oct. 3, 1947

3 Sheets-Sheet 1



Oct. 13, 1953

A. M. ZALKIND

2,655,417

FOLDING TABLE

Original Filed Oct. 3, 1947

3 Sheets-Sheet 2

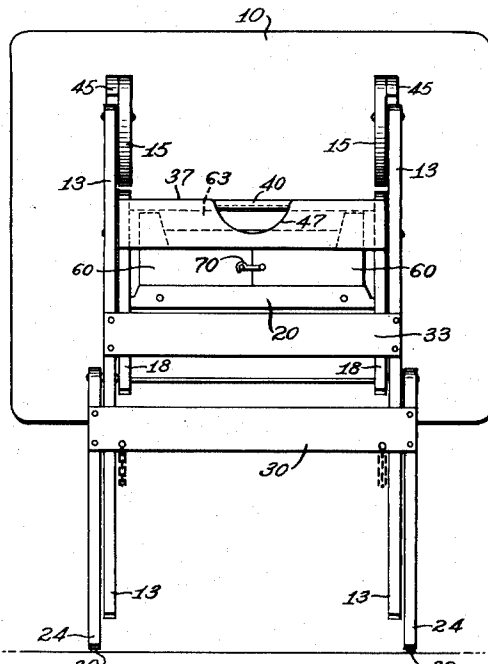


Fig. 5

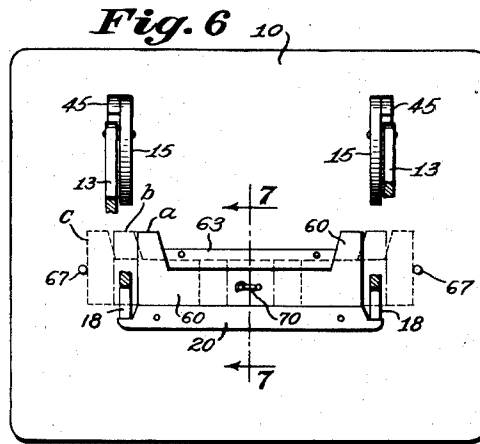


Fig. 6

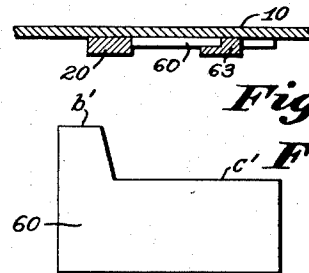


Fig. 7

Fig. 6a

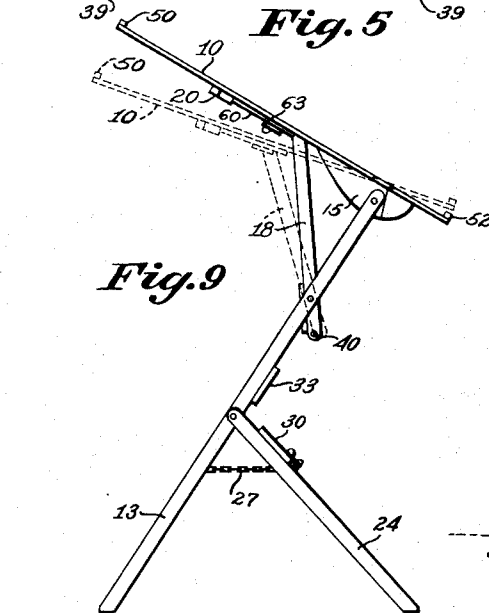


Fig. 9

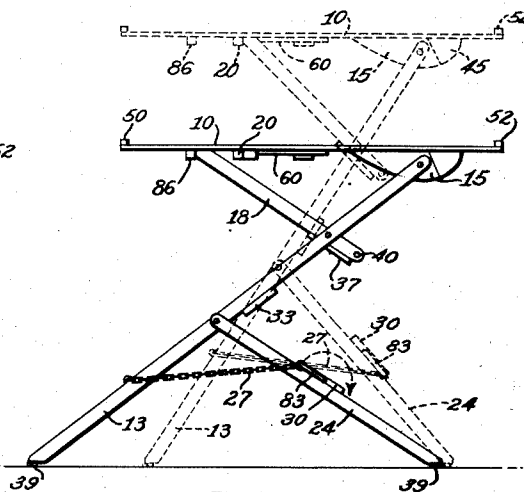


Fig. 10

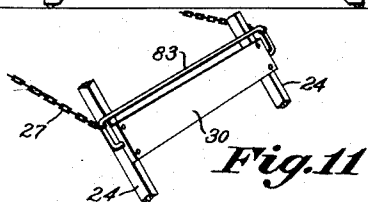


Fig. 11

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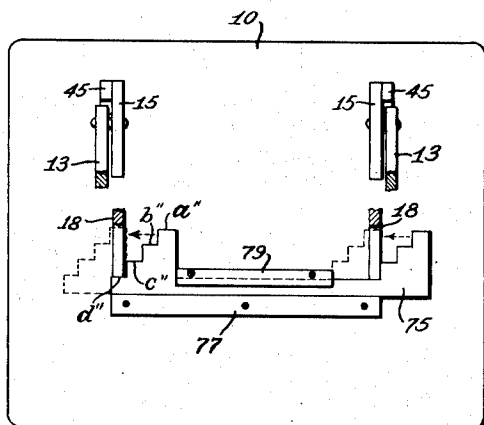
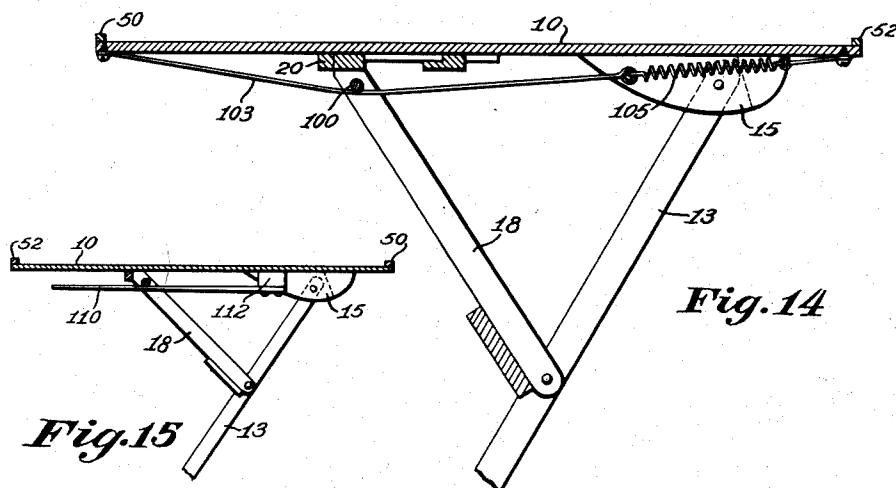


Fig. 8

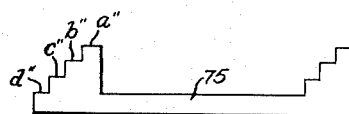


Fig. 8a

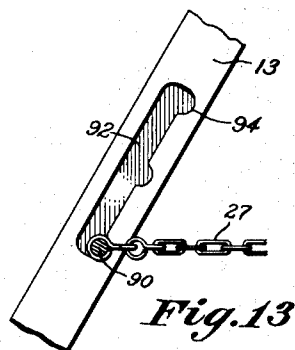


Fig. 13

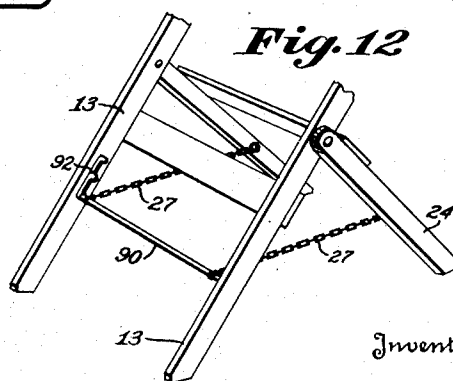


Fig. 12

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2,655,417

FOLDING TABLE

Albert M. Zalkind, Arlington, Va.

Continuation of application Serial No. 777,800,
October 3, 1947. This application June 18,
1948, Serial No. 33,701

5 Claims. (Cl. 311-93)

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This invention pertains to tables of the type disclosed in my application Serial No. 777,800, filed October 3, 1947, now abandoned, and more particularly to improved and novel features relating thereto, this being a continuing application.

In the foregoing application is disclosed a folding table so devised as to be used with a supplementary support, e. g. an armchair, the construction and arrangement being such that the table top may be motivated so as to cause one edge thereof to rest on the arms of the chair for use as an armchair desk. Conversely, the table top may be thrust away from the arms of the chair so as to resume an independently supported condition. Various means are disclosed in the prior application for automatically actuating certain legs and support members of the table during to and fro movement of the table top so as to minimize the space occupied by these members, thus eliminating objectionable protuberances fore and aft which might interfere with the knees of the user or be struck by passersby.

Whereas in the prior application I disclose means comprising a torsion spring for motivating certain support members, I have found upon further experiment that there is some advantage in substituting a counterweight for the torsion spring, as will hereinafter be pointed out, and this is one feature to which the present invention is directed.

A further feature of the present invention resides in pivoting certain leg and support members at axes which are substantially separated, rather than on a common axis as disclosed in the prior application, which enables me to devise a more readily operable structure especially where a weight bias is used instead of a torsion spring.

Other objects and features of my present invention are to provide means for selectively adjusting the angle and/or level of the table top when used independently of supplementary support; to provide means for actuating certain support members by direct linkage with the table top when it is not desired to use the torsion spring or the counterweight heretofore mentioned; and to provide simple and rugged structures for achieving these goals.

My invention will now be described in detail in conjunction with the appended drawing in which:

Fig. 1 is a side view of one form of my table in set-up condition;

Fig. 1a is a fragmentary view of a modified table top;

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Fig. 2 is a front view thereof;

Fig. 3 is a side view of the folded table;

Fig. 4 shows a view of the table used in conjunction with supplementary support;

Fig. 5 is a rear view of the folded table;

Fig. 6 shows the undersurface of the table top, disclosing certain adjusting elements for varying angularity;

Fig. 6a is a view of one of the adjusting elements;

Fig. 7 is section through 7-7 of Fig. 6;

Fig. 8 shows a modified adjusting means;

Fig. 8a is an element of the modified adjusting means;

Fig. 9 shows the table with the top thereof set at selective angles;

Fig. 10 shows a modification of the table with means for setting it up at a selected level;

Fig. 11 shows a detail of Fig. 10;

Fig. 12 shows a modification of the level adjusting means;

Fig. 13 is a detail of Fig. 12, and

Fig. 14 shows a means for actuating certain support elements of the table in response to actuation of the table top.

Fig. 15 is a further modification.

With reference to Figs. 1-4, my novel table comprises a table top 10, of plywood or the like, and main legs 13 pivoted to brackets 15 which are securely fastened to the underside of the table top. A pair of arms 18 are pivoted to the main legs 13 and have their upper extremities arranged to removably abut a cleat 20 (see Fig. 7) secured to the undersurface of the table top. A pair of rear legs 24 are pivoted to the main legs 13 and a pair of chains 27 secured to legs 13 and rear arms brace 30 serves to maintain legs 13 and 24 in fixed angular relation. Braces 33 and 37 are utilized to rigidify legs 13 and arms 18, respectively. Skid buttons 39 are affixed to the extremities of the legs. The legs, arms and braces may be suitably constructed of wood.

A counterweight 40 extends between the arms 18 exteriorly of the pivotal axis of the arms. The counterweight 40 may be a solid metal bar of sufficient weight to maintain arms 18 biased upwardly in a clockwise direction, as seen on Fig. 1, the weight of the table top, however, being sufficient to maintain the upper extremities of the arms in engagement with the ends of cleat 20. If, however, the table top is pulled forward by a seated person so as to rest its forward edge on the arms of a chair, as shown in dotted lines in Fig. 1, arms 18 swing clockwise to minimize the space taken thereby. The rear legs 24 slide along the

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floor during this forward motion, being freely pivoted to the main legs and longer from the pivotal point to the floor, assume the position shown in dotted lines, all as heretofore explained in detail in my prior application and as illustrated herein on Fig. 1.

Conversely, when the user thrusts the table top away from its position on the arms of the chair, the rear legs are forced outwardly to the extent limited by chains 27, and the undersurface of the table top, acting in sliding engagement with the upper extremities of the arms 18, force re-abutment thereof with cleat 20.

The dotted position of Fig. 1 represents the steepest table top angle, legs 13 being vertical, which is obtainable with a chair having arms of the height represented. The minimum angle is illustrated in Fig. 4, it being noted that stop cleats 45, secured to legs 13 and also to the undersurface of the table top, prevent collapse and also determine the lower angle limit. By making the pivot connection between legs 13 and brackets 15 very tight, it is possible to secure intermediate positions, owing to the friction obtained by tight pivotal relation.

The counterweight 40 may be used as a handle in carrying the table in folded condition by providing access thereto by means of the cut-out 47 in brace 37.

With particular attention to Fig. 2, it will be noted that pencil rests 50 and 52 are of unequal length, the shorter rest 50 being at the front edge. This shortening of rest 50 has the twofold purpose of eliminating interference with the forearms of a person using the table as an arm-chair desk, and also serves to permit the user to readily distinguish the front and rear edges; the front edge being usable with supplementary support whilst the rear edge is usable in a manner to be later described.

With particular attention to Fig. 3, when it is desired to set up the table from folded position, it is only necessary to push it forward to spread legs 13 and 24; the top 10 is then swung upwardly to slightly above horizontal, permitting arms 18 to swing clockwise owing to the overbalancing effect of counterweight 40, arms 18 passing cleat 20 in their rotation, whence the top 10 is dropped thus forcing engagement of the arms with the cleat. This is a very rapid action, only two seconds or so being required to set the table up. To fold the table, top 10 is lifted to release arms 18 and the arms are manually swung counterclockwise past cleat 20, whence top 10 is swung all the way down; bar 40 is then grasped and the table lifted off the floor whence legs 24 swing of their own weight into alignment with legs 13, and the table may then be leaned against a wall, resting on the lower extremities of legs 24. Folding of the table may likewise be accomplished in two seconds.

Particular attention is invited to the novel effect of counterweight 40 when the table is folded, it being noted that when arms 18 are vertical or substantially so, no torque is exerted by the counterweight which might tend to force top 10 clockwise. Thus no latch is needed, even with a very light top 10, to maintain a compact folded structure, as contracted with my prior structures in which torsion springs are used. Further, owing to the shortness of the arms, which is achieved by having a relatively high pivot point on legs 13, the arms assume a fairly large angle away from vertical when the table is set up, thus augmenting the effect of counterweight 40 to

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ensure clockwise rotation when in the supplementary support position. It necessarily follows that counterweight 40 need not be so heavy as would otherwise be the case. Further the shorter arms 18 are, the less likelihood of knee interference.

The relatively high pivot point is an important feature and is effected by substantial separation of the pivotal axes between arms 18 and legs 24, as contrasted with my prior structures, it being appreciated that the pivotal axis of legs 24 is determined by other considerations such as the length of leg required, structural strength and operability; for example, for a given length of leg 24, the pivotal axis must be such that the distance on the main leg 13 from such axis to the lower extremity thereof is less than the given length of leg 24.

It will accordingly be seen that my present structure possesses certain advantages by virtue of the use of a counterweight, short arms, and separated axes, all as heretofore pointed out. If desired, the forward portion of the top can have tapered sides to achieve a centering effect when used on the chair arms, as seen in Fig. 1a.

With reference now to Figs. 5-9, there is illustrated a means of varying angularity of a table otherwise constructed in accordance with the previous disclosure. The particular structure of Figs. 5-7 comprises a pair of stepped plates 60 (Fig. 6a) slidably disposed between cleat 20 and a rabbeted member 63 (Fig. 7). Normally, plates 60 are in the inner position *a* (Fig. 6), where they do not block access of the upper extremities of arms 18 to cleat 20. If, however, plates 60 are slid outwardly in opposite directions to position *b*, edges *b'* (Fig. 6a) thereof can be brought into abutment with the arm tips as shown in full lines in Fig. 9 to support top 10 at a relatively high angle. Thus the table is usable as a drafting board, the user sitting on a chair or stool at the rear edge as indicated by pencil rest 52. In a similar manner, if plates 60 are slid farther out to position *c* (Fig. 6), the tips of arms 18 abut edges *c'* (Fig. 6a) and a suitable writing table angle is effected as indicated by the dotted lines in Fig. 9.

Stop studs 67 may be utilized to limit outward motion of plates 60 and any suitable catch 70 may be used to lock the plates in the normal innermost position, although friction with rabbeted member 63 and cleat 20 has been found expedient.

Figs. 8 and 8a show a modification of the angle adjusting means in that a single plate 75 having two portions stepped as *a''-b''-c''-d''* is slidably arranged between members 77 and 79, member 79 being rabbeted. The normal, or level position of the table, is had when arm 18 tips about the respective steps *d''*. Angular adjustment is achieved by sliding plate to the left to effect abutment of the arm tips with any selected steps, respectively.

In Figs. 10 and 11 I disclosed means for varying the effective length of chains 27 to achieve variation in table level and/or angle. The construction consists of fastening the rear ends of the chain to a bracket 83 which is pivoted in the ends of brace 30, although the bracket ends could be pivoted in legs 24 as well. As seen in Fig. 10, in dotted lines, when bracket 83 is swung to downward position the angle between legs 13 and 24 is predetermined so that engagement with arms 18 with cleat 20 maintains the table in normal level position. If, however, bracket

83 is swung to the upper position, the angle between legs 13 and 24 is considerably increased, a cleat 86 being provided for engagement with the arm tips for obtaining a level position; or the arm tips may be left in abutment with cleat 20 whereat top 10 is maintained at a writing angle, rear edge at 52 being somewhat lower in this case than if angularity were achieved with plates 60 as heretofore described. This lowering of the rear increases the utility of the table as a writing desk for children. By comparing the full and dotted lines of Fig. 10 it will be seen that a substantial difference in level is achieved, enabling the table to be used for playing cards at the higher level, or as a coffee table at the lower level.

It will be appreciated that cleat 86 may be dispensed within the event plates 60 or plate 75 (Fig. 8a) were suitably designed and disposed to achieve both angular adjustment and leveling.

Figs. 12 and 13 show a modification of the chain adjusting means, wherein a plurality of effective chain lengths are achieved by fastening the forward ends of chains 27 to a bar 90, the ends of the bar being slidably in slots 92 mortised in legs 13. Slots 92 have oppositely related notches 94 to accommodate respective ends of bar 90, and it will be appreciated that the angle between legs 13 and 24 may be varied at will by adjustment of the bar 90 into selected notches.

Fig. 14 illustrates a further means for motivating arms 18 in response to or from motion of table top 10. The construction comprises a dowel 100 extending between the arm tips and maintained in resilient engagement with a cable or strap 103 secured at an end to top 10 and at its other end to a tension spring 105 which is likewise secured to the table. Members 103 and 105 extend for substantially the width of the top 10 and are centrally disposed with respect to arms 18. The operation is such that dowel 100 rides strap 103 at all times; thus when the top 10 is lifted upwardly from folded position, arms 18 snap past cleat 20, whence engagement is had therewith, all as heretofore described in connection with Figs. 1-5. In folding the table, top 10 is lifted slightly and arms 18 manually rotated counterclockwise past the point of engagement with cleat 20.

Fig. 15 illustrates still another mode of motivating the arms, in that a cantilever spring 110, which may be wood or metal, is secured to table top 10 in spaced relation as by a block 112. Dowel 100 rides spring 110 at all times, the operation being the same as that heretofore described in connection with Fig. 14.

Having thus described my invention, I claim:

1. In a folding table intended for use with a supplementary support such as the arms of a chair; a table top, a main leg means pivotally connected thereto and having lower tip means adapted to engage a floor, said table top and said main leg means being free to pivot with respect to each other, arm means pivotally connected

to said main leg means and having free end means arcuately movable with respect to said main leg means, including biasing means for biasing said arm means rotatably to urge the free end means toward said table top, abutment means carried by said table top on the under surface thereof and engageable with said free end means, pivotable downward motion of said table top being operative to rotate said arm means in a direction opposite to the direction of said bias of said arm means and into engagement with said abutment, the weight of said table top being sufficient to overcome the force of said biasing means, and rear leg means having a pivotal connection with said main leg means and being pivotal with respect thereto independently of said arm means, said rear leg means having extremities adapted for sliding contact with a floor and being longer than said main leg means from the pivotal connection therebetween to the floor so as to be actuatable pivotally away from said main leg means by reaction against said floor when said main leg means is pivoted on said floor in a direction away from a supplementary support.

2. A folding table as set forth in claim 1, wherein said abutment means comprises at least one movable element having stepped edges which are selectively positionable for engagement with said free end means.

3. A folding table as set forth in claim 1, wherein said biasing means comprises a weight secured to said arm means.

4. A folding table as set forth in claim 1, wherein said biasing means comprises a resilient element disposed to bear against said arm means.

5. A folding table as set forth in claim 1, wherein the pivotal axes of said arm means and said rear leg means are at spaced points on said main leg means.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
468,929	Cochrane	Feb. 16, 1892
519,655	Atzert	May 8, 1894
697,639	Lindner	Apr. 15, 1902
756,486	Fleming	Apr. 5, 1904
987,113	Cooley	Mar. 21, 1911
1,568,850	Koch	Jan. 5, 1926
1,765,514	Wetmore et al.	June 24, 1930
1,814,838	Martin	July 14, 1931
1,872,849	Townes	Aug. 23, 1932
1,875,403	Young	Sept. 6, 1932
1,881,047	Doman	Oct. 4, 1932
1,920,452	Wagner	Aug. 1, 1933
1,975,857	McKenny	Oct. 9, 1934
2,016,571	Barrett	Oct. 8, 1935
2,073,155	Ivey	Mar. 9, 1937
2,199,895	Sharp	May 7, 1940
2,539,700	Pieper	Jan. 30, 1950