Aug. 7, 1928.

1,679,426

H. HOWE

FOLDING TABLE

Filed June 11, 1925

3 Sheets-Sheet 1

Fig. 1,

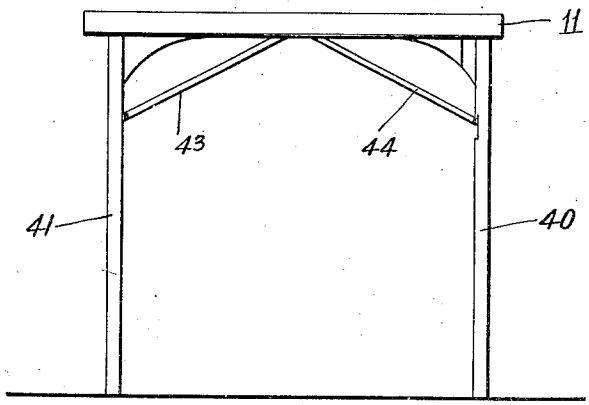
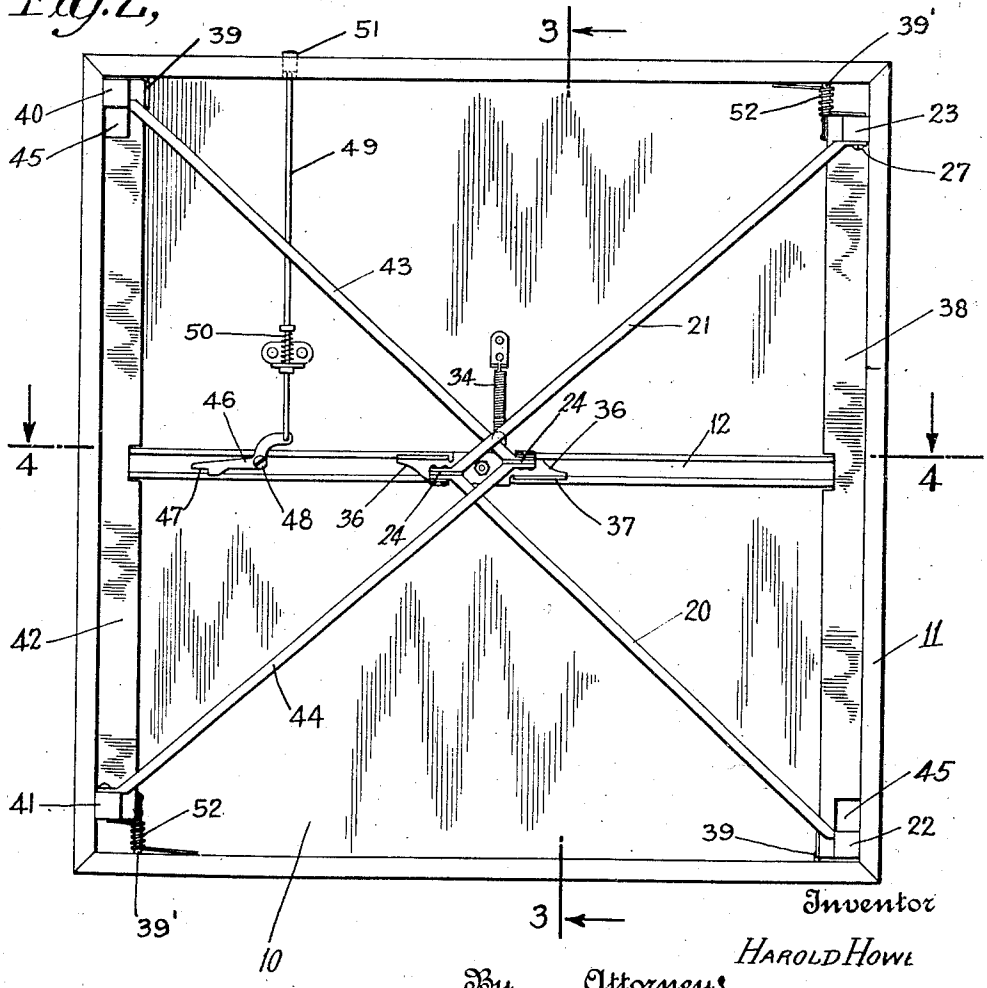


Fig. 2,



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Fig. 3,

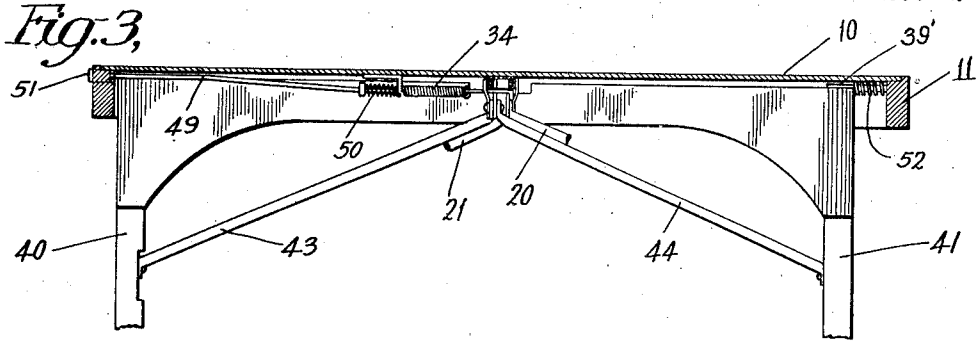


Fig. 4,

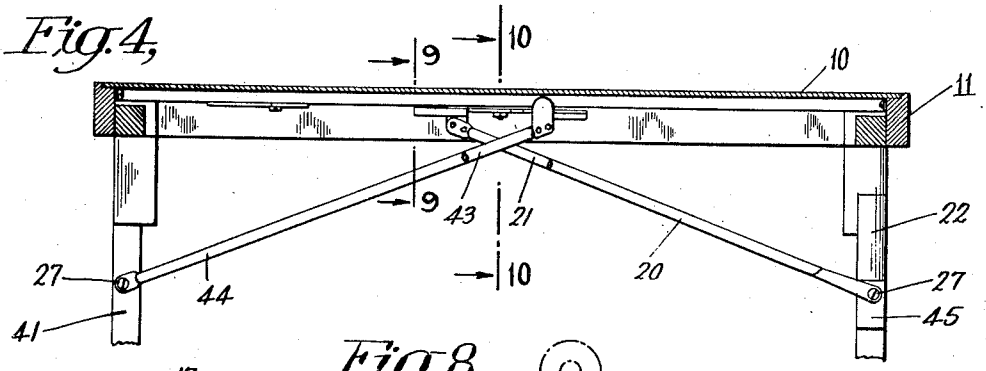


Fig. 8,

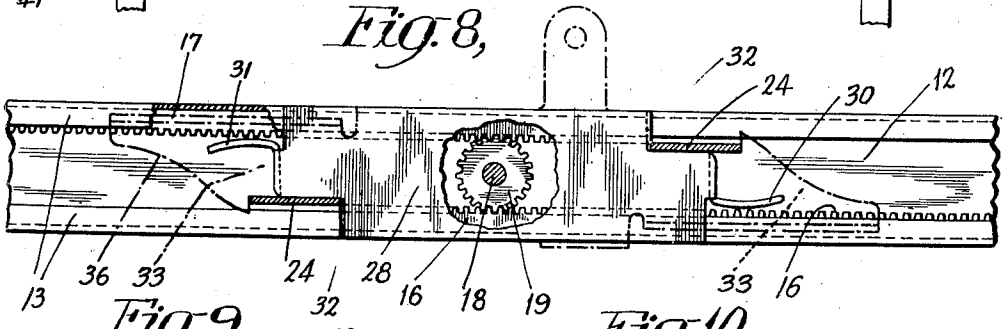


Fig. 9,

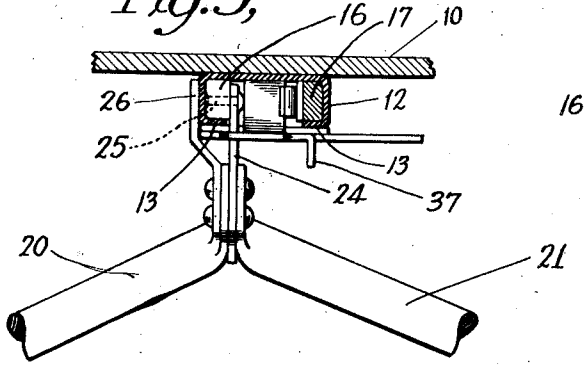
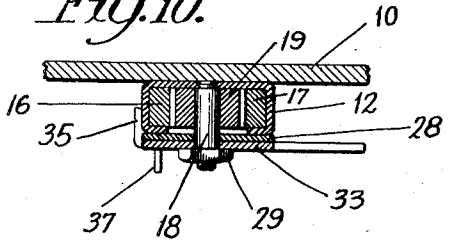


Fig. 10.



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Fig. 5,

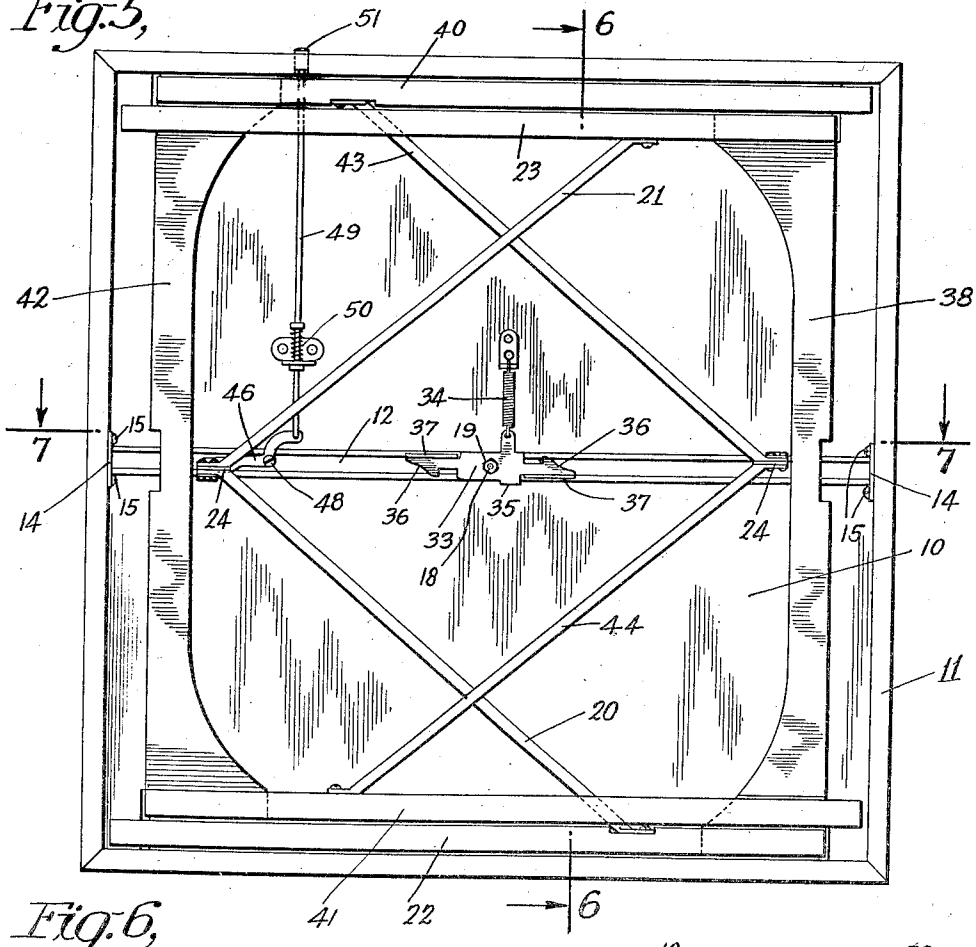


Fig. 6,

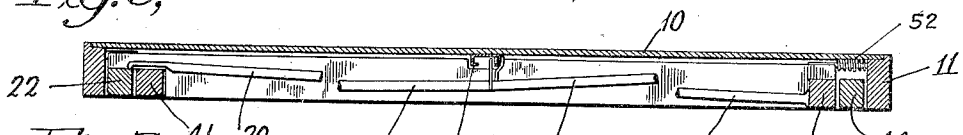
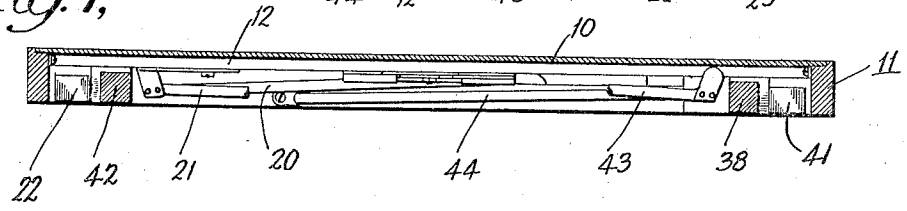


Fig. 7,



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Patented Aug. 7, 1928. 1,679,426

UNITED STATES PATENT OFFICE.

HAROLD HOWE, OF ORANGE, NEW JERSEY, ASSIGNOR TO HOWE FOLDING FURNITURE, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

FOLDING TABLE.

Application filed June 11, 1925. Serial No. 36,325.

This invention relates to folding tables, and more particularly to folding tables which are of light construction and adaptable to be folded or collapsed while not in use and may be easily and quickly opened when the occasion necessitates.

The principal object is to produce a folding table of the class described which is durable and steady on its feet while at the same time being of such light construction as to make the burden of handling it as little as possible.

Another object resides in providing a leg bracing and brace supporting structure which takes up all of the stress exerted from the legs through their respective braces when the table is in use thereby relieving the table top proper from any strain.

Another object is to simplify the process of opening by having the various legs positively related to one another so that a force exerted upon any one of them with a tendency to draw it to an open position will automatically be transmitted to the remaining legs to cause their opening to an extent substantially equivalent to that of the leg to which the force is being exerted.

Another object is to so design the bracing for the legs that by the mutual cooperation of the bracing for each set of legs, any force or pull exerted on one of the legs to open it will be transmitted through its own bracing to the bracing of one of the other legs to supply an additional force thereto that will materially facilitate the entire operation of opening all of the legs.

Another object is to provide a folding table which will be compactly closed and so maintained when in storage condition and whose legs will open to their standing position when released by their own action and lock themselves in a most rigid manner.

Other and incidental objects will be pointed out hereinafter in the following description of what I now consider to be the preferred embodiment of my invention, and in the claims and drawings, in which:

Fig. 1 is a general view indicating the appearance of the table when ready for use.

Fig. 2 is a view from underneath the table with the legs extended.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1, showing the interlying relation of the bracing members of each pair of legs.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 1, showing the locking features which maintain the legs in their open position.

Fig. 5 is a view similar to Fig. 1, with the legs in their collapsed positions ready for storage.

Fig. 6 is a sectional view on line 6—6 of Fig. 5.

Fig. 7 is a sectional view on line 7—7 of Fig. 5, illustrating the compactness of the folded or collapsed condition of the table.

Fig. 8 is a detail of the channel member guiding rail midway between its ends and is illustrative of the manner by which the legs are maintained rigidly in their open relation.

Fig. 9 is a detailed view taken on line 9—9 of Fig. 4.

Fig. 10 is another detailed view taken on line 10—10 of Fig. 4.

The table in its open or useful condition, as seen in Fig. 1, consists of a table top 10 of light and rigid material whose edges fit into notches (Fig. 3) in rectangular frame member 11. This top may have a cloth or other cover, if desired, and it is held in place in its frame by any suitable means, such as small nails or clips, not shown.

Resting firmly against the under surface of the top 10 is a channel guiding member 12 having horizontally extending edges 13 and turned over ends forming clips 14 by which it is fastened to frame 11. Screws 15 may be used to secure this fastening. This channel guiding member not only gives rigidity to frame 11 and supports the center of the table top, but it forms tracks in which racks 16 and 17 travel. The channel is independent of the table top and is of sufficient strength and stiffness to take up all of the forces exerted by the legs of the table when the table is in use. Mid-way between the ends of this channel member is a stud 18 on which pinion 19 revolves when the legs are opened and closed. Pinion 19 meshes with both racks 16 and 17 at all times.

Braces 20 and 21 for one pair of legs 22, 23, are fastened together at one end and are pivotally connected with rack 16 by means of plate 24 and pin 25, Fig. 9. These joined ends of braces 20 and 21 also carry a runner 26 which prevents the connected end of the rack from moving laterally in the channel guiding member. Each of the brace members 20 and 21 are pivotally connected to

legs 22 and 23 respectively by any suitable means 27, such as bolts, rivets or screws.

Resting against the open side of channel member 12 is a plate 28 held in place by a nut 29 on stud 18 and by two curved portions 30 and 31 which bear lightly against the racks 16 and 17 respectively. Plate 28 has a cut out portion 32 into which plates 24 of the leg braces run and by which they are maintained from lateral displacement when the legs are open. These cut out portions limit the travel of the free end of the leg braces and may be of any desired length, but the open position illustrated in Figs. 2, 3 and 4 has been found to give satisfactory results, for the vertical components of the forces transmitted through the braces from the legs when the table is pushed in a direction lengthwise of channel member 12 are neutralized. Therefore, by the centralization of the points of force application the table top can never be called upon to stand any strain and it will not bulge at its center.

Completely covering plate 28 is a latch plate 33 pivoted about stud 18 and continually urged counter-clockwise Fig. 5, by spring 34. In its normal position this latch is maintained from rotation by means of legs 35 which extend therefrom over the outside edge of channel member 12. This latch has two noses having sloping edges 36 by which it is rocked by plates 24 at the ends of racks 16 and 17 when they approach each other in preparing the table for use. The resistance offered by spring 34 when plates 24 encounter the sloping edges 36, serves to cushion the opening effort of the legs and thereby eliminate jar and noise. Upstanding edges 37 are provided for rotating the latch member when it is desired to release the latch from locking relation to free plates 24 in order that the legs may be folded.

Legs 22 and 23 are set into or are attached to a cross-piece 38 which is pivoted along its inner edge and at its ends to frame 11 by means of pins 39 and 39′. In the present embodiment these pins are each fastened to the cross-piece by means of a plate integral therewith and they rotate in sockets or bearings in the frame, but a reverse relation could be used with the plates fastened to the frame without entailing any change in my concept of invention.

Leg 22 is situated close to a corner so that it will lay along one edge of frame 11 when it is folded, as seen in Fig. 5. Leg 23 is a short distance away from its corner in order to allow leg 40 opposite it space between itself and the frame when the table is closed.

Legs 40 and 41 and cross-piece 42 are mounted and placed on their side of the table similar to legs 22 and 23 and cross piece 38, so that both pair of legs assume a close and compact relation when the table is closed, as clearly shown in Figs. 5, 6 and 7.

Braces 43 and 44 for legs 40 and 41, respectively, are connected to rack 17 in a manner similar to the connection of braces 20 and 21 with rack 16, and they are identical in construction and shape to braces 20 and 21, respectively. Legs 22 and 40 have cut-out portions 45, that may be of sufficient depth to accommodate the outer ends of braces 20 and 43, respectively, and the pivot screws 27 are placed preferably near the outer edge of the legs, as are also the pivot screws 27 in legs 23 and 41 for braces 21 and 44, respectively. The advantage of this arrangement is readily apparent from an inspection of Figs. 6 and 7, which show that the angle described by the table top and a line drawn through pivot points 25 and 27 is of maximum magnitude for the size of table illustrated. To further aid in opening the table, braces 20 and 43 are placed underneath braces 44 and 21, respectively, so that when any one of the legs is raised the legs on the other side of the table will have an additive prying force applied to them through the sliding contact of the braces, and the process of opening the table is rendered more easy.

When the table is fully opened the braces are in close contact, as seen in Fig. 3, and this creates a very stable condition.

The two pairs of braces are positively connected by means of their racks 16, 17 and pinion 19 so that any movement of one pair of legs will produce a corresponding movement of the other pair of legs. While this is a desirable result, it is obvious that similar corresponding movements would be produced if the racks were merely plain slides instead of toothed slides, for the cooperative relation of the braces would produce substantially the same results.

When the legs are closed as shown in Fig. 5, they are locked from displacement by means of a latch 46 which has a projection 47 that bears against plate 24. This latch is pivoted on a lug 48 and may be moved out of the path of plate 24 by depression of rod 49. This rod has two collars fixed thereto and a spring 50 serves to continually urge the latch into latching position. To prepare the table for use, it is only necessary to hold it in a position with its legs on the under side and press on button 51 and the legs will immediately be released and assume the position shown in Fig. 4 and be then locked by latch 33.

Springs, such as those designated by numeral 52, may be provided to help accelerate the opening of the legs if such expedient is thought useful, and for the purpose of simplicity I have chosen to illustrate such springs as being mounted on pivot pins 39′.

The particular angle of the braces and distance of connection with the legs from the frame of the table is a matter of design and

convenience and may be varied to suit the aesthetic or practical requirements of the trade, but the proportions illustrated have been found to give satisfactory results and to allow people to sit close to the edge of the table without interference with the leg braces.

In this respect as well as in many others my invention is capable of a wide variation and relationship of parts without departure from the nature and principle thereof and I do not restrict myself unessentially in the foregoing or other particulars, but contemplate such alterations and modifications within the scope of the appended claims as may be found advisable.

What I claim is—

1. A folding table comprising in combination, a table top, a frame for said table top, legs adapted to fold within said frame, guiding means, racks guided by said guiding means, braces pivotally connected with said legs and with said racks, and a pinion engaging said racks so that the movement of all of the braces will be substantially of the same magnitude.

2. A folding table comprising in combination, a table top, a frame for supporting said top, a pair of legs on opposite sides of said table, means at their upper ends for pivotally supporting said legs, a brace for each pair of legs, each brace having two members at an angle to each other and joined at their free ends with their other ends pivotally connected with the legs of their respective pair of legs, each member being of such length as to extend to the side of the center of the table opposite its associated leg when the legs are extended, a rack pivotally connected to each brace, means to guide said racks in sliding relation, and a pinion meshing with both of said racks.

3. A folding table comprising in combination, a table top, a frame for supporting said top, a pair of legs on opposite sides of said table, means at their upper ends for pivotally supporting said legs, a brace for each pair of legs, each brace having two members at an angle to each other and joined at their free ends with their other ends pivotally connected with the legs of their respective pair of legs, a rack pivotally connected to each brace, means to guide said racks in sliding relation, a pinion meshing with both of said racks, and a latch to prevent movement of said racks in any direction when the legs are in definite position.

4. A folding table comprising in combination, a table top, a frame for supporting said top, a pair of legs on opposite sides of said table, means at their upper ends for pivotally supporting said legs, a brace having two rods joined together at their free ends and having one of each of their other ends pivotally connected with one of each of the legs of a single pair of legs, another brace for said other pair of legs one rod of which passes under one of the rods of said first mentioned brace and the other rod of which passes over the other rod of said first mentioned brace, a sliding member pivotally connected to one of said braces, another sliding member pivotally connected to the other of said braces, and means intermediate said two sliding members permitting equal movement of said sliding members.

5. A folding table comprising in combination, a table top, a frame for supporting said top, a pair of collapsible legs interconnected by a cross-piece, another pair of collapsible legs interconnected by a cross-piece, an angular brace having two members pivotally connected with said first pair of legs, a second angular brace having two members pivotally connected with said second pair of legs, one of the members of the second brace overlying one of the members of the first brace and the other member of the second brace underlying the other member of the first brace, a slide connected to said first brace, a second slide connected to said second brace, and means for guiding said slides to allow the pairs of legs and the angular braces to be folded within the confines of the frame of the table substantially as described.

6. A folding table comprising in combination, a table top, a frame for supporting said top, a pair of collapsible legs, another pair of collapsible legs, an angular brace having two members pivotally connected with said first pair of legs, a second angular brace having two members pivotally connected with said second pair of legs, one of the members of the second brace overlying one of the members of the first brace and the other member of the second brace underlying the other member of the first brace, a rack pivotally connected to said first brace, a second rack pivotally connected to said second brace, a pinion engaging both of said racks, and a guiding member for guiding said racks in sliding relation to each other to permit the braces to be folded close to said table top.

7. A folding table comprising in combination, a table top, a frame for supporting said top, a pair of collapsible legs, another pair of collapsible legs, an angular brace having two members pivotally connected with said first pair of legs, a second angular brace having two members pivotally connected with said second pair of legs, one of the members of the second brace overlying one of the members of the first brace and the other member of the second brace underlying the other member of the first brace, a rack pivotally connected to said first brace, a second rack pivotally connected to said second brace, a pinion engaging both of said racks, a guiding member for guiding said

racks in sliding relation to each other to permit the braces to be folded close to said table top, and a latch for locking said braces in folded position.

8. A folding table comprising in combination, a table top, a frame for supporting said top, a pair of collapsible legs interconnected by a cross-piece, another pair of collapsible legs interconnected by a cross-piece, an angular brace having two members pivotally connected with said first pair of legs, a second angular brace having two members pivotally connected with said second pair of legs, one of the members of the second brace overlying one of the members of the first brace and the other member of the second brace underlying the other member of the first brace, a slide connected to said first brace, a second slide connected to said second brace, and a channel member at right angles to said cross-pieces and located at the center line of the table for guiding said slides when the legs are permitted to be collapsed.

9. A folding table comprising in combination, a table top, a frame for supporting said table top, legs adapted to fold within said frame, guiding means independent of said table top, sliding members adapted to slide in said guiding means, leg braces, each having pivotal connection with one of said sliding members, and a latch member adapted to resiliently absorb the opening effort of said legs and braces just prior to the legs reaching their open position.

10. A folding table comprising in combination, a table top, a pair of legs on opposite sides of the table, means for pivotally mounting said legs so as to permit placing them substantially parallel to said top, a brace for each of said legs, a sliding member for each pair of legs, each sliding member being connected by two of said braces to its respective pair of legs, and guiding means for guiding said sliding members away from each other when the legs are closed and toward each other when the legs are opened.

11. A folding table comprising in combination, a table top, a pair of legs on opposite sides of the table, means for pivotally supporting said legs, a brace connected to each of said legs, the two of said braces connected to respective pair of legs being joined, two sliding members, one for each pair of braces and each being pivotally connected to said respective pair of braces, means for communicating the motion of one of said sliding members to the other one of said sliding members, said means comprising a pinion and guide rails supported beneath the table top, and means at the mid-portion of said rails for locking said joined ends of said braces in close proximity to each other when the legs of the table are in extended position.

12. A folding table, comprising in combination, a table top, legs adapted to fold close to said top, two racks, a pinion engaging both of said racks, guides for said racks, a brace pivotally secured to each of said legs, two braces for one pair of legs being connected to one of said racks and two braces for the other pair of legs being connected to the other of said racks, and means to lock said two racks in fixed position when said legs are in open position.

13. A folding table comprising, in combination, a table top, legs adapted to fold toward said table top, a guiding channel extending beneath the central portion of said table top and parallel to the plane in which one of the legs fold, sliding members confined by said guiding channel during a sliding movement thereof, braces pivotally connected to said legs and to said sliding members, one set of said braces extending from one sliding member to a pair of legs and another set of said braces extending from another sliding member to another pair of legs, the major portion of each of the sliding members being confined when the legs are folded by a portion of the length of said guiding channel lying beyond the center of the table top and in the half of the table top opposite the half of the table top nearest the pair of legs with which it is directly connected by associated braces, and means associated with said sliding members for transmitting the motion of one set of braces to the other set of braces.

14. A folding table comprising in combination, a table top, legs adapted to fold toward said table top, braces pivotally connected to said legs and having the free ends of each set of said braces extending opposite the center of the table top in respect to the position of its associated legs when the legs are unfolded and away from the table top, a member pivotally connected to one set of braces and another member pivotally connected to another set of braces, a guiding channel for said members, and a latch disposed intermediate the paths of travel of said members whereby both of said members may be held immovable by said latch when said legs are unfolded to their extended positions.

In testimony whereof I hereto affix my signature.

HAROLD HOWE.