Sept. 18, 1928. 1,684,653

B. E. WILLETT

FOLDABLE TABLE

Filed Feb. 15, 1924 2 Sheets-Sheet 1

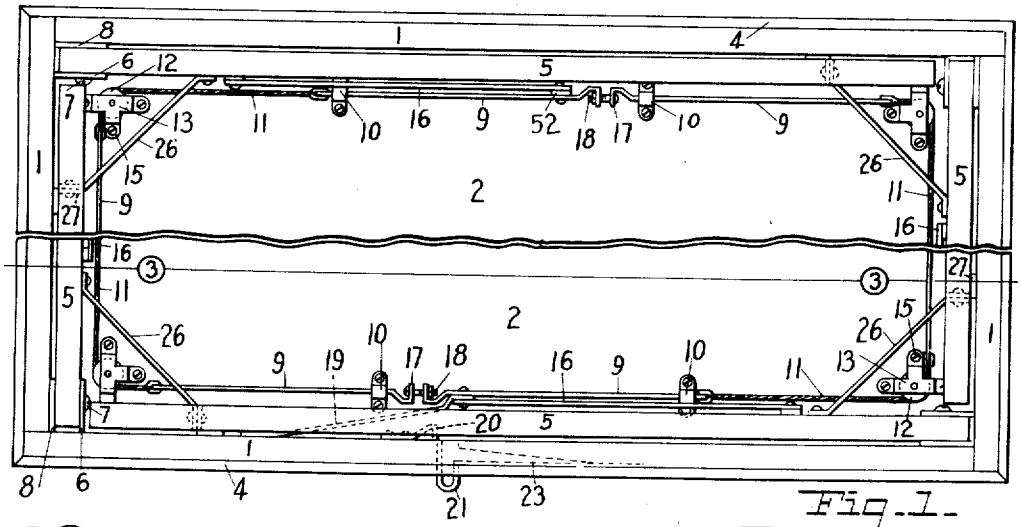


Fig. 1.

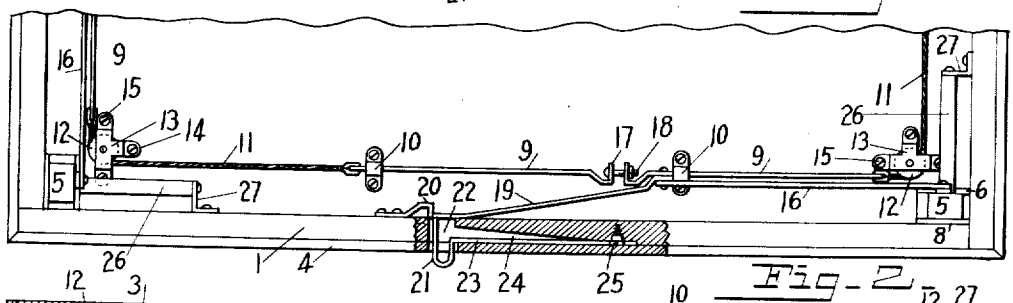


Fig. 2.

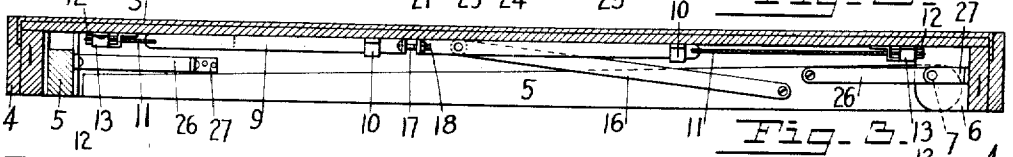


Fig. 3.

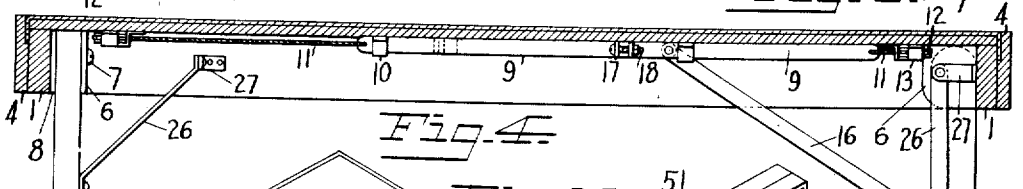


Fig. 4.

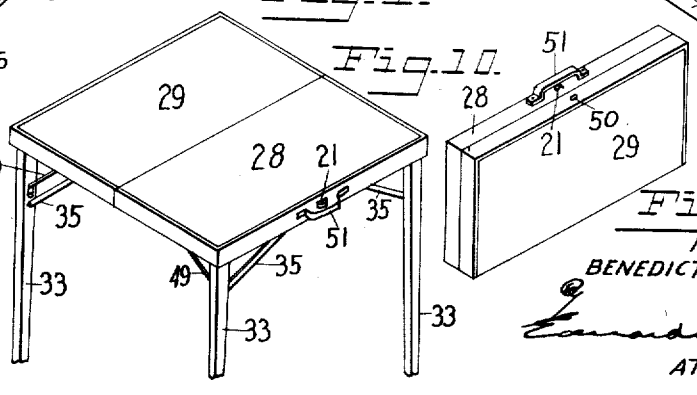


Fig. 10.

Fig. 11.

INVENTOR.
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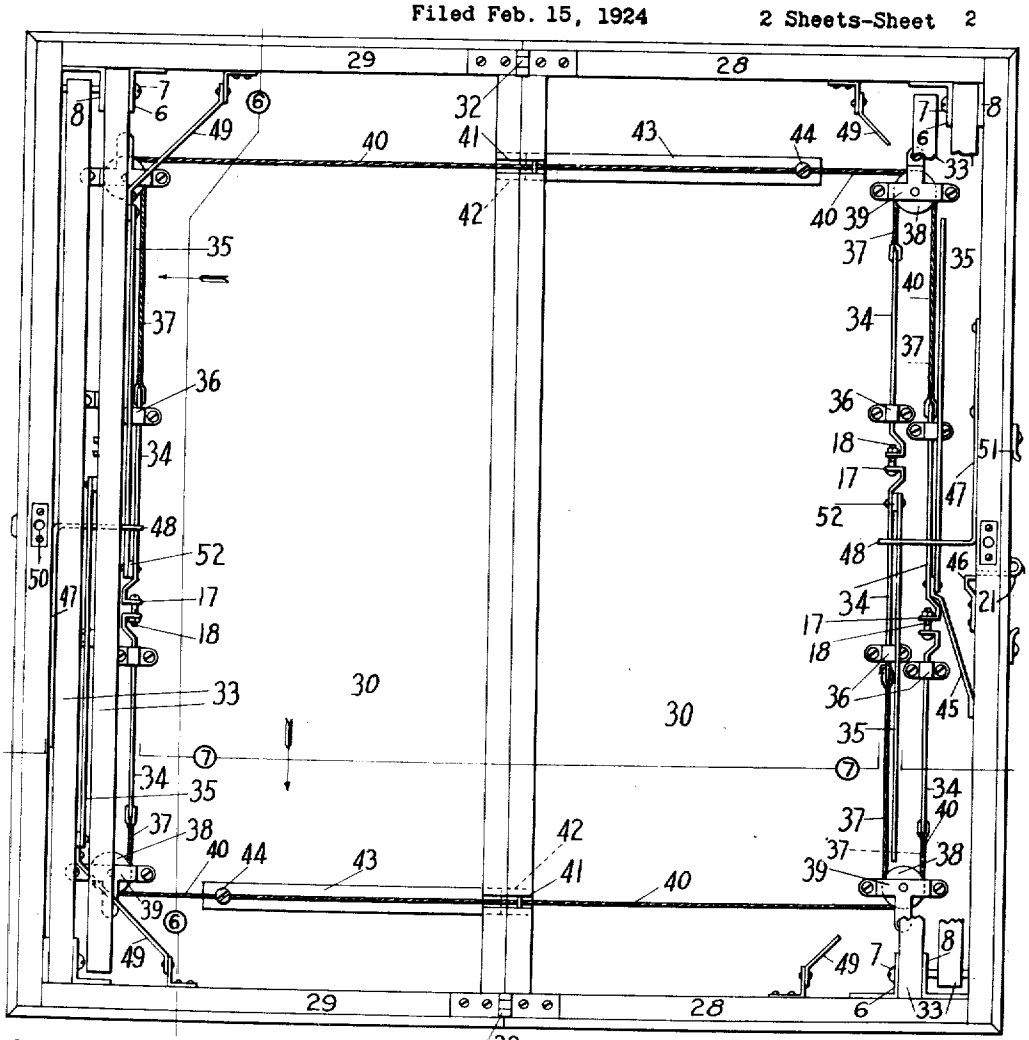
ATTORNEY.

Sept. 18, 1928. 1,684,653

B. E. WILLETT

FOLDABLE TABLE

Filed Feb. 15, 1924 2 Sheets-Sheet 2



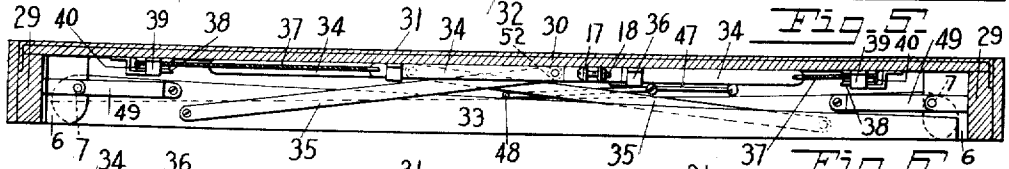


Fig. 5.

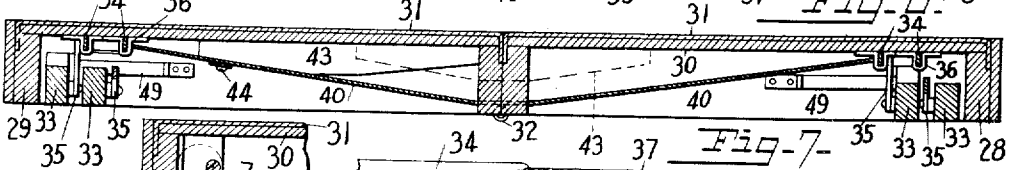


Fig. 6.

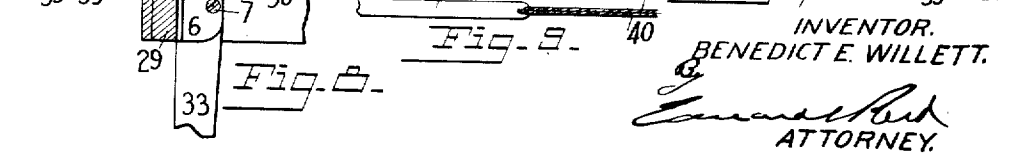


Fig. 7.

Fig. 9.

Fig. 8.

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Patented Sept. 18, 1928. 1,684,653

UNITED STATES PATENT OFFICE.

BENEDICT E. WILLETT, OF DAYTON, OHIO.

FOLDABLE TABLE.

Application filed February 15, 1924. Serial No. 692,980.

This invention relates to tables and more particularly to a table of the type commonly known as card tables. In tables of this kind it has been customary to pivotally mount the legs so that they can be folded against the top of the table, thereby facilitating transportation and storage. Each leg, however, is usually controlled independently of the others and a separate locking device is provided for retaining each leg in its extended position, so that in setting up the table it is necessary to move each leg separately to its extended position. It has been proposed to provide an actuating mechanism which would cause all of the legs to move simultaneously into or out of their extended positions but these devices have been more or less cumbersome and more or less unsatisfactory and usually embodied some part projecting beyond the edge of the table, which is very objectionable.

One object of the present invention is to provide a table of this type having a simple, efficient device for causing the legs to move simultaneously into and out of their extended positions, whereby the movement of any one leg in either direction will cause a corresponding movement of the other legs.

A further object of the invention is to provide such a table having a single locking device for retaining all the legs in their extended positions.

A further object of the invention is to provide such a mechanism in which the connecting parts are readily adjustable to take up lost motion and provide for rigidly holding the legs in their extended positions.

A further object of the invention is to provide a table of this kind having a two-part top into which the legs fold and the two parts of which can be folded one against the other with the legs within the same, thereby providing a table which can be folded into a very compact form and can be easily carried or otherwise transported from one place to another.

Other objects of the invention will appear as the device is described in detail.

In the accompanying drawings Fig. 1 is a bottom plan view of a table embodying my invention, partly broken away, and with the legs folded; Fig. 2 is a bottom plan view of a portion of the table, partly broken away, and showing the legs in their extended positions; Fig. 3 is a section taken on the line 3—3 of Fig. 1, with the legs folded; Fig. 4 is a similar section with the legs extended; Fig. 5 is a bottom plan view of a modified form of the table in which the table top itself is folded; Fig. 6 is a section taken on the line 6—6 of Fig. 5; Fig. 7 is a section approximately on the line 7—7 of Fig. 5; Fig. 8 is a sectional detail view showing the manner of mounting the legs; Fig. 9 is a sectional detail view showing a portion of the operating device for the table shown in Figs. 5, 6 and 7; Fig. 10 is a perspective view of the table of Fig. 5, showing the same fully extended; and Fig. 11 is a perspective of that table showing the same folded.

In these drawings I have illustrated one embodiment of my invention and a modification thereof to permit the table top to be folded and have shown the invention in both instances as applied to a table of the type commonly known as a card table but it will be understood that the device may take various forms and may be applied to tables of various kinds without departing from the spirit of the invention.

Referring more particularly to that form of the invention shown in Figs. 1 to 4, the table comprises a top which preferably consists of rectangular frame 1, consisting of a plurality of side members rigidly connected one to the other at their adjacent ends, and a top board 2 rigidly secured to the upper edges of the frame members, so that the frame members in effect form a depending flange extending around the edges, or the perimeter, of the top. If desired, a covering of fabric or other suitable material, as shown at 3, may be placed over the top board 2 and the edges of this covering confined between the respective frame members 1 and finishing strips 4 which are applied to the outer surfaces of the frame members. A leg 5 is pivotally mounted adjacent to each corner of the table and, as here shown, the legs are mounted between the respective frame members 1 and brackets 6 depending from the top board 2 and are held in position by means of screws 7 extending through the brackets 6 and into the frame member 1 and serving not only to secure the leg in position but to provide a pivotal support therefor. If desired, a second bracket 8 may be interposed between the leg and the adjacent frame member 1. In this form of the table the several legs are so mounted that they will fold in the same direction about the perimeter of the table so that, when folded,

one leg will lie substantially parallel with each edge of the table.

The legs may be connected one to the other to cause them to move in unison in any suitable manner but I prefer to employ a flexible actuating device which is supported beneath the table top and extends about the same in substantially rectangular form so that it has a portion extending parallel with each edge of the table. In the preferred form, which is here shown this actuating device comprises a series of actuating members or bars 9 extending parallel with the edges of the table top and connected one to the other by suitable flexible connecting members. There is an actuating member or bar 9 for each leg and, in that form of the table shown in Figs. 1 to 4, these four actuating members are arranged parallel with the respective edges of the table, the bars being slidably mounted in guides or clips 10 secured to the underside of the table top. Each actuating member or bar is connected with the adjacent end of an adjoining actuating member by means of a flexible member, such as a wire cable 11, which member extends about a guide 12 mounted adjacent to the corner of the table, so that the movement of any one of the actuating members will cause the actuating device as a whole, that is, the several actuating members and the several flexible connections, to move in the same direction and to the same extent. As here shown, the guides 12 are in the form of rollers or pulleys mounted on brackets 13 of such a character as to rigidly support the same in proper relation to the other parts of the actuating mechanism. In the present construction each bracket 13 comprises a T-shaped plate the end portions of the three arms of which are depressed, as shown at 14, to form feet, by means of which the brackets may be attached to the lower surface of the table top, by means of screws 15 or otherwise. Each actuating member 9 is operatively connected with one of the legs of the table and this connection is of such a character and so arranged that the longitudinal movement of the actuating member will impart pivotal movement to the leg. In the present instance, links 16 are interposed between the several actuating members and the legs, each link being pivoted at one end to the actuating bar and at the other end to the leg. The actuating bar lying close to the table top and the leg being spaced slightly from the table top, when in its folded position, as shown in Fig. 3, it will be apparent that the link 16 will extend at such an angle to the leg that the movement of the link with the actuating bar will move the leg outwardly about its axis. In order to maintain the flexible connections between the several actuating members taut and prevent lost motion one or more of the actuating bars may be formed in two pieces, the adjacent ends of which are bent at right angles to the length of the bar, as shown at 17, and are apertured to receive a bolt 18 by means of which the two parts of the bar are connected one to the other and by means of which the space between the two parts of the bar may be controlled. It will be apparent, therefore, that by tightening the nut on the bolt 18 the two parts of the bar may be drawn together, thereby taking up any slack that there may be in the adjacent cables 12. While it is not necessary that all the actuating bars should be adjustable in this manner I have, in the present instance, shown all of them as adjustable as this will enable the proper spacing of the actuating members to be maintained by a proper adjustment of the several bars.

A single locking device is provided for maintaining the table legs extended and this locking device is preferably interposed between the actuating device and the table top. As here shown, I have secured to one of the actuating bars 9 a resilient finger 19 which extends obliquely from the actuating bar toward the adjacent flange or frame member 1 of the table top. Rigidly secured to the inner surface of the flange or frame member 1 is a stop 20, this stop being so arranged that when the free end of the finger 19 is in engagement therewith the table legs will be locked in their extended positions. The finger 19 being resilient it may be pressed out of engagement with the stop and permitted to ride over the same when the table legs are being folded. This is accomplished in the present device by means of a releasing device consisting of a finger or plunger 21 slidably mounted in an opening 22 which extends through the frame member 1 and the finishing strip 4 just in front of the stop 20 so that when the locking finger is in engagement with the stop 20 it will extend across the inner end of the opening 22. The releasing device is yieldingly mounted and is held normally in its extended position with one end extending beyond the outer edge of the table a distance sufficient to enable it to be engaged by the thumb and pressed inwardly, thereby moving the end of the finger 19 out of line with the stop 20 and permitting the legs to be folded. As here shown the releasing device as a whole is formed from a strip of metal the body portion 23 of which lies in a recess 24 formed in the frame member 1 and opening into the transverse opening 22. That end of the bar 23 remote from the opening 22 is rigidly secured to the frame member by means of a screw 25 or any suitable attaching means. The forward end of the bar is bent outwardly into a U-shape, as shown in Fig. 2, the one side of the U extending transversely beyond the body of the bar 23 and constituting the plunger 21. The connected end of the U-shaped portion of the bar constitutes the thumb piece by which the releasing device is actuated. This lock-

ing device holds the legs rigidly against folding movement and they are held positively against outward movement beyond their extended positions by the guides 10 which constitute stops as well as guides. One guide of each pair is so arranged that when the corresponding leg is in its extended position the guide will be engaged by a part rigidly secured to the bar and will thus limit the movement of the bar. In the present instance a washer 52 is interposed between the bar and the link 16 and engages the adjacent guide or stop, on three of the bars, and on the fourth bar the end of the locking arm 19 engages the stop.

It is also desirable that the legs should be braced against transverse movement and these braces should be of such a character that they will not interfere with the folding movement of the legs. As here shown, I have interposed between each leg 5 and the table top an inclined bracing bar 26 which is pivotally connected at one end with the leg and at the other end with a bracket 27 rigidly secured to the adjacent flange or frame member 1 of the table top. The pivotal connection between the brace and the bracket 27 is substantially in line with the axis about which the leg moves so that the brace will move with the leg as the latter is moved into and out of a folded position without binding.

For certain purposes it is desirable that a table of this kind should be folded into a very compact form so that it can be easily carried or otherwise transported from one place to another, and this may be accomplished by forming the table top in two parts and folding the same one onto the other with the legs folded within the respective parts thereof. In Figs. 5 to 7 I have shown an arrangement of my flexible actuating mechanism in connection with such a foldable table top. As here shown the table top is similar in construction to that above described but instead of consisting of a single rectangular frame, it consists of two rectangular frames 28 and 29, each having secured thereto a top board 30 and a cover 31. These two sections of the table top are arranged edge to edge and pivotally connected one to the other by hinges 32 which are preferably connected with the lower edges of the frame members so that the table can be folded to bring the edges of the frame members of the two sections into contact one with the other, thereby forming between the same a pocket or compartment within which the legs are contained and which may also be used as a receptacle for papers, game apparatus or the like. In this form of the table a leg 33 is pivotally mounted at each of the four corners of the table top when the latter is in its extended position, the legs being secured to the table top in substantially the manner above described but being so arranged that the two legs mounted on each section of the table will fold parallel one with the other along one edge of the table, as clearly shown in Fig. 5. The flexible actuating device consists of actuating members or bars 34 similar to the bar 9 and the actuating members for each pair of legs are arranged parallel one with the other and parallel with that edge of the table along which the legs may be folded. Each actuating member or bar is connected with its leg by means of a link 35 similar to the link 16. These bars are slidably mounted in guides 36 and the bars of each pair are so connected one with the other that they will move in opposite directions. As here shown, the adjacent ends of the bars of each pair are connected one to the other by a flexible member, such as a wire cable 37, which extends about a guide or pulley 38 mounted in a supporting bracket 39 secured to the underside of the table top near one corner thereof. Consequently any longitudinal movement imparted to one actuating member of either pair of actuating members will be transmitted to the other actuating member of that pair, and said other actuating member will move in a direction opposite to that in which the first mentioned actuating member moves, thereby causing the adjacent pair of legs to be moved outwardly in opposite directions. The actuating members of the two pairs, that is, the actuating members on each section of the foldable table top, are also connected one to the other by flexible members or cables 40. These cables extend transversely to the extended table top across the hinged edges thereof about the adjacent guides 38 and are connected at their opposite ends with the adjacent ends of the corresponding actuating members on the two sections of the table top. In the present instance, this connection is with the outer actuating members, that is, with those nearest the flange or frame member of the table top, but this is merely a matter of convenience. Due to these flexible connections it will be obvious that when the actuating members on one section of the table are operated a corresponding movement will be imparted to the actuating members on the other section of the table top, thus causing the four legs to be moved simultaneously. The flexible connecting members or cables 40 extend across the inner flanges of the rectangular frames 28 and 29, which flanges are notched, as shown at 41, to permit the passage of the cable. With this construction the adjacent flanges of the table sections may be moved into folded positions with their edges in contact and the cable 40 will fold between these sections. In order to lock the two sections of the table top in their extended positions I have provided the inner flanges of the two sections 28 and 29 with alined openings 42 adapted to receive a slidable locking bar 43 which is connected at one end with the ad-

jacent cable 40, as shown at 44. There may, if desired, be one of these locking bars connected with each cable 40 and the arrangement of each locking bar with relation to its cable is such that when the legs are moved to their folded positions the cable will withdraw the locking bar so that its inner end will extend but part way into the opening in the adjacent flange of the frame of the table top, thus permitting the two sections to be folded. When the legs are moved into their extended positions the cable will move the locking bar through the openings in both flanges and into a position in which it will extend some distance beyond each flange, as shown in Fig. 7, thereby rigidly locking the two sections of the table. A single locking device is provided for locking the legs in their extended positions and, as here shown, this locking device consists of a resilient finger 45 and a stop 46 similar to the locking device above described. I have also provided means to prevent the legs from rattling when the table is folded and this device also serves to force the legs outwardly, whereby one leg may be readily grasped and moved to its extended position, this movement causing a simultaneous movement of all the legs. As here shown, this device consists of a resilient arm 47 secured to the outer flange of each table section adjacent to the actuating bars and having a portion 48 extending transversely to the legs 33 and so arranged that it will lie beneath those legs when they are moved to their folded positions and will exert an outward pressure thereon. When the table top is folded with the legs within the same the pressure of these springs will press the legs inwardly and hold them in firm contact so that they will not rattle. The legs are braced by braces 49 similar to those heretofore described. The two sections of the table top are preferably provided with a lock or latch 50 for securing them one to the other in their folded positions and, if desired, a handle 51 may be secured to the edge of one of the sections to provide carrying means.

While I have shown and described one embodiment of my invention I wish it to be understood that I do not desire to be limited to the details thereof as various modifications may occur to a person skilled in the art.

Having now fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A table comprising a top, legs pivotally mounted at the respective corners of said top and adapted to be folded into position substantially parallel with the edges of said top, guides arranged near the respective corners of said top, a flexible actuating device extending about said guides and comprising a series of bars, one for each leg, said bars being movable longitudinally of the adjacent edges of said top, and means for operatively connecting said bars with the respective legs.

2. A table comprising a top, separate legs pivotally mounted at the respective corners of said top and adapted to be folded into positions substantially parallel with the edges of said top, an actuating device comprising a series of separate actuating members slidably mounted on said top adjacent to the respective legs, there being one such member for each leg, means for connecting said members one to the other to cause them to move simultaneously, and means for operatively connecting said members with the respective legs.

3. A table comprising a top, legs pivotally mounted at the respective corners of said top, one pair of said legs being movable into substantially parallel positions along one edge of said top and another pair of said legs being movable into substantially parallel positions along the opposite edge of said top, an actuating bar slidably mounted on said table top adjacent to each of said legs, a link pivotally connected with each of said bars and with the adjacent legs, and flexible connections between the several bars.

4. A table comprising a top, legs pivotally mounted at the respective corners of said top, one pair of said legs being movable into substantially parallel positions along one edge of said top and another pair of said legs being movable into substantially parallel positions along the opposite edge of said top, an actuating bar slidably mounted on said table top adjacent to each of said legs, a link pivotally connected with each of said bars and with the adjacent legs, flexible connections between the bars of each pair of legs to cause said bars to move in opposite directions, and a flexible connection between a bar at one edge of said table top and the corresponding bar at the other edge of said table top.

5. A table comprising a top, legs pivotally mounted at the respective corners of said top, one pair of said legs being movable into substantially parallel positions along one edge of said top and another pair of said legs being movable into substantially parallel positions along the opposite edge of said top, a pair of parallel actuating members mounted adjacent to each pair of legs for movement in a direction substantially parallel with the adjacent edge of said table, means for operatively connecting said members with the respective legs, guides arranged near the respective corners of said table top, flexible members connecting the adjacent ends of the actuating members of each pair and extending about the respective guides, a flexible member connected with the corresponding ends of actuating members of both pairs and extending about the adjacent guides, and a flexible member connected with the other

ends of the last mentioned actuating members and extending about the guides which are adjacent to said ends.

6. In a table, a table top comprising two parts hinged together and foldable one upon the other, a pair of legs carried by each part of said table top and mounted for movement into and out of their extended positions, actuating devices for said legs, and a foldable connecting device extending across the hinged edges of said parts of said table top and connecting the actuating devices on the respective parts of said top one to the other.

7. In a table, a table top comprising two parts hinged together and foldable one upon the other, a pair of legs carried by each part of said table top and mounted for movement into and out of their extended positions, actuating devices for said legs, flexible members extending across the hinged edges of said table top and connected at their ends with the actuating devices on the respective parts of said table top.

8. In a table, a table top comprising two sections having their adjacent edges hinged one to the other, a pair of legs pivotally mounted on each section of said table top and movable into positions substantially parallel with the axis about which said sections move, an actuating device operatively connected with the several legs to move the same into and out of their extended positions, and comprising flexible members extending across the hinged edges of said sections.

9. In a table, a table top comprising two rectangular sections each having a depending flange extending about the same, said sections being hinged one to the other to permit said flanges to be moved into contact one with the other, a pair of legs pivotally mounted adjacent to the outer corners of each section and foldable into substantially parallel positions along the outer edge of said section, an actuating member slidably mounted on said table top adjacent to each of said legs and operatively connected with the respective legs, means for connecting the actuating members on each section of said table top to cause them to move in opposite directions, and flexible connecting members extending across both sections of said table top and connected with the actuating devices on both sections thereof.

10. A table comprising a table top, legs pivotally mounted near the respective corners of said table top for movement into and out of their extended positions, an actuating member for each leg slidably mounted on said table top and operatively connected with one of said legs, guides arranged near the corners of said table top, flexible members extending about said guides and connected with the respective actuating members, one of said actuating members comprising two parts, and means for adjustably connecting said parts to vary the length of said actuating member.

11. A table comprising a table top, legs pivotally mounted near the respective corners of said table top for movement into and out of their extended positions, an actuating member for each leg slidably mounted on said table top and operatively connected with one of said legs, guides arranged near the corners of said table top, flexible members extending about said guides and connected with the respective actuating members, and adjusting means for varying the length of each of said actuating members to maintain said flexible connections taut and to properly space said actuating members relatively to each other.

12. A table comprising a table top, legs pivotally mounted on said table top near the respective corners thereof, an actuating member slidably mounted on said table top adjacent to each leg, means for operatively connecting said actuating members with the respective legs, flexible members connecting said actuating members one to the other, and a locking device cooperating with one of said actuating members to lock all of said actuating members against movement.

13. A table comprising a table top, legs pivotally mounted on said table top near the respective corners thereof, an actuating member slidably mounted on said table top adjacent to each leg, means for operatively connecting said actuating members with the respective legs, flexible members connecting said actuating members one to the other, a stop secured to said table top, a yieldable member connected with one of said actuating devices and arranged to operatively engage said top when said legs are in their extended positions, and a releasing device for moving said yieldable member out of engagement with said stop.

14. In a table, a table top having a depending flange at each edge thereof, legs pivotally mounted near each corner of said table top for movement into and out of their extended positions, an actuating device mounted on said table top and operatively connected with each of said legs, a stop secured to one of the flanges of said table top, a yieldable member connected with said actuating device and arranged to engage said stop when said legs are in their extended positions, said flange having an opening therethrough adjacent to said stop, and a plunger slidably mounted in said opening to engage said yieldable member and move the same out of line with said stop.

15. In a table, a table top comprising two parts hinged one to the other, legs pivotally mounted on said table top near the respective outer corners thereof for movement into and out of folded positions substantially parallel with the outer edges of the respective

sections of said table top, a flexible actuating device mounted on both sections of said table top and operatively connected with the respective legs, and a resilient member mounted on said table top and arranged to engage said legs when in their folded positions and force the same outwardly.

16. A table comprising a table top, legs pivotally mounted on said table top near the respective corners thereof, an actuating member slidably mounted on said table top adjacent to each leg, means for operatively connecting said actuating members with the respective legs, flexible members connecting said actuating members one to the other, a locking device cooperating with one of said actuating members to lock all of said legs against folding movement, and other means cooperating with one of said actuating members to limit the outward movement of said legs.

17. A table comprising a top, legs pivotally mounted on said top and adapted to be folded onto the same, an actuating device carried by said top, means for connecting said actuating device with the respective legs to cause said legs to be moved into and out of their folded positions, and means acting on said actuating device for locking said legs against movement in either direction when in their extended positions.

18. A table comprising a top, legs pivotally mounted on said top and adapted to be folded onto the same, an actuating device carried by said top, means for connecting said actuating device with the respective legs to cause said legs to be moved into and out of their folded positions, and means associated with said actuating device for locking said legs against outward movement beyond their extended positions.

19. A table comprising a top, legs pivotally mounted on said top and adapted to be folded onto the same, an actuating bar for each leg slidably mounted on said top, means for connecting said actuating bars with the respective legs, and means cooperating with each actuating bar to lock the corresponding leg against outward movement beyond its extended position.

In testimony whereof, I affix my signature hereto.

BENEDICT E. WILLETT.

DISCLAIMER

1,684,653.—*Benedict E. Willett*, Dayton, Ohio. FOLDABLE TABLE. Patent dated September 18, 1928. Disclaimer filed April 23, 1936, by the assignee, *Ferguson Brothers Manufacturing Company*.

Hereby enters this disclaimer to claim 19 of the specification.

[*Official Gazette May 19, 1936.*]

sections of said table top, a flexible actuating device mounted on both sections of said table top and operatively connected with the respective legs, and a resilient member mounted on said table top and arranged to engage said legs when in their folded positions and force the same outwardly.

16. A table comprising a table top, legs pivotally mounted on said table top near the respective corners thereof, an actuating member slidably mounted on said table top adjacent to each leg, means for operatively connecting said actuating members with the respective legs, flexible members connecting said actuating members one to the other, a locking device cooperating with one of said actuating members to lock all of said legs against folding movement, and other means cooperating with one of said actuating members to limit the outward movement of said legs.

17. A table comprising a top, legs pivotally mounted on said top and adapted to be folded onto the same, an actuating device carried by said top, means for connecting said actuating device with the respective legs to cause said legs to be moved into and out of their folded positions, and means acting on said actuating device for locking said legs against movement in either direction when in their extended positions.

18. A table comprising a top, legs pivotally mounted on said top and adapted to be folded onto the same, an actuating device carried by said top, means for connecting said actuating device with the respective legs to cause said legs to be moved into and out of their folded positions, and means associated with said actuating device for locking said legs against outward movement beyond their extended positions.

19. A table comprising a top, legs pivotally mounted on said top and adapted to be folded onto the same, an actuating bar for each leg slidably mounted on said top, means for connecting said actuating bars with the respective legs, and means cooperating with each actuating bar to lock the corresponding leg against outward movement beyond its extended position.

In testimony whereof, I affix my signature hereto.

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