April 19, 1960 J. FIZDALE 2,933,359

DROP-LEAF TABLE CONSTRUCTION

Filed Feb. 3, 1958

Fig. 1

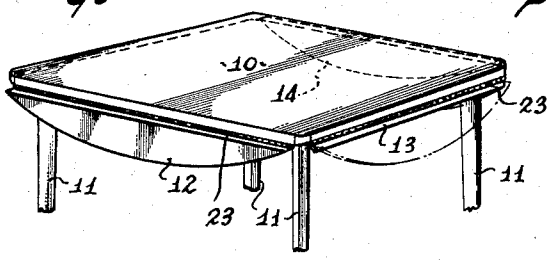


Fig. 3

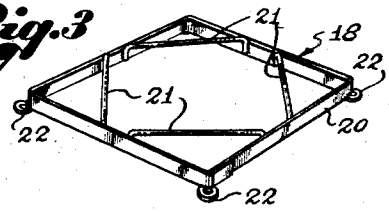


Fig. 2

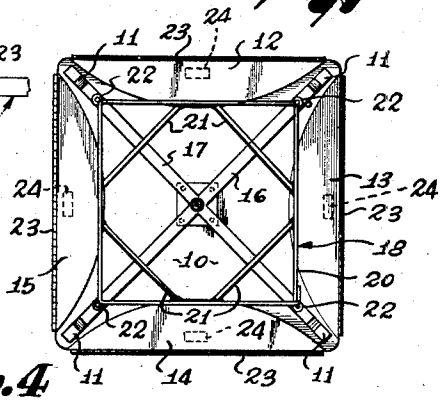


Fig. 7

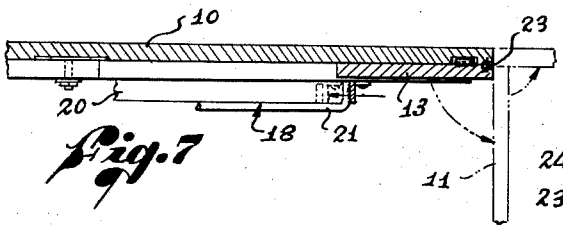


Fig. 4

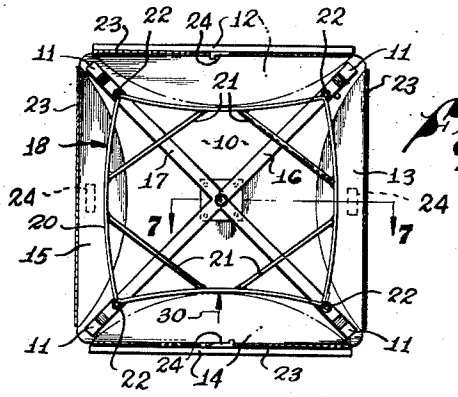


Fig. 5

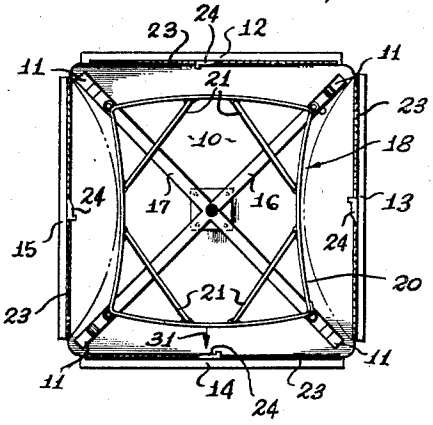
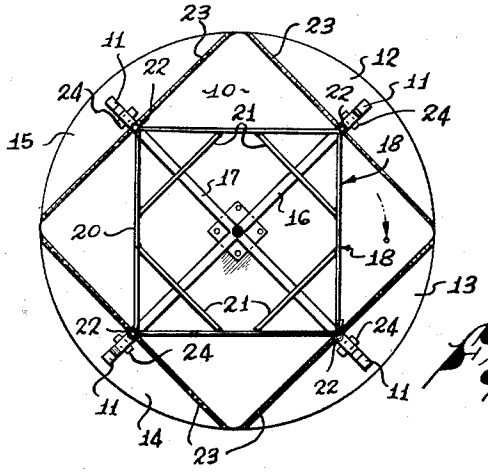


Fig. 6



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DROP-LEAF TABLE CONSTRUCTION

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5 Claims. (Cl. 311—60)

The present invention relates generally to tables, and more particularly to a construction for drop-leaf tables in which the leaves are releasably held in a position folded under the table top.

Tables of this type are often used in restaurants and other public or semi-public eating places where it is often desirable to quickly enlarge the top surface of a table. In such places, it is frequently necessary to increase the available table area while people are waiting to be seated. Drop-leaf tables that have heretofore been proposed generally require that each leaf be individually released and then rotated from its folded position beneath the table top to an extended position coplanar with the top. For example, when it is desired to extend the area of a square or rectangular table of the prior art, it is necessary for an operator or waitress to release each segmental leaf individually and secure it in its raised or horizontal position to form a circular table. Where this is to be done in a crowded restaurant, it is extremely difficult to extend the leaves on such prior art tables without disturbing other patrons.

It is an object of the present invention to provide an improved drop-leaf table construction in which the leaves are normally held under the table and out of the way of anyone seated at the table, but may readily be released and extended to a horizontal position in which the leaves form an extension of the top.

Another object of the invention is to provide a latching means for such a table which is of very simple design and can readily be adapted to tables of different sizes and shapes.

It is a further object of this invention to provide a drop-leaf table construction in which all four leaves of a rectangular table may be quickly and easily released by an operator standing at a single place.

It is a still further object of the invention to provide a table construction of simple and rugged character that can withstand the severe use to which restaurant equipment is put.

A still further object of the invention is to provide a latch and table construction that is simple and economical to manufacture.

These and other objects and advantages of the invention will become apparent from the following description of a preferred form thereof, and from the drawings illustrating that form in which:

Figure 1 is a perspective view of a square table constructed according to the present invention, with the pivoted segmental leaves shown in their released or vertical position, preparatory to being raised to their extended position;

Figure 2 is a bottom view of the table shown in Figure 1 with the leaves of the table shown in their usual or folded position beneath the table top, and generally parallel thereto;

Figure 3 is a bottom perspective view of the latching assembly used to retain the leaves in their folded position;

Figure 4 is a bottom view, generally similar to Figure 2, but with two of the leaves released from their folded position, and with the latching assembly operated to permit such release;

Figure 5 is a bottom view generally similar to Figures 2 and 4 but with all of the leaves dropped to their vertical position, and with the latching assembly operated in the other manner to release the leaves not released by the operation shown in Figure 4;

Figure 6 is a bottom view with the table top and attached leaves rotated with respect to the table support, and with the latching assembly in its normal position; and

Figure 7 is a fragmentary cross sectional view of the table top, support therefor, and latching assembly.

Referring now to the drawings, and particularly to Figure 1 thereof, the numeral 10 indicates generally a table top, here shown as square, provided with supporting means here shown as a plurality of legs 11. Along each of the edges of the square top 10 is a pivotally connected segmental leaf, there being four such leaves, designated as 12, 13, 14, and 15. Leaves 12 and 14 are opposite each other, and leaves 13 and 15 are likewise opposite each other, and the leaves are so shaped and positioned that when they are in their extended position, with their upper surfaces coplanar with the upper surface of the table top 10, they cooperate with the table top to form a circular table top. To hold the leaves 12, 13, 14, and 15 in their extended position, the table top 10 is rotated with respect to the supporting means 11, and, as hereinafter explained, diagonally extending arms beneath the table top engage the lower surfaces of the leaves and act as cam means to extend and lock the leaves.

It will be appreciated that in a crowded restaurant it is at least inconvenient for an operator to go to all four sides of the table and individually release each of the segmental leaves 12, 13, 14, and 15 from its folded position, parallel to and beneath the table top 10. Consequently, the present table is provided with a novel latching assembly that may be operated from a single position to release all four of the leaves. This latching assembly is shown in Figures 2 and 3, where it will be seen that the table top 10 is rotatably connected to cross members 16 and 17, and these in turn support the latching assembly 18. In their folded position beneath the table top 10, the leaves 12, 13, 14, and 15 fit or nest between the diagonally extending supporting members 16 and 17, as shown in Figure 2, and these supporting members space the latching assembly 18 from the table top 10 so that the assembly engages the finished or working surface of the leaves to hold them against rotation from their folded position. It will be appreciated that the finished surface of the leaves 12, 13, 14, and 15 is the surface that is coplanar with the upper surface of the table top 10 when the leaves are in their extended position, this finished surface being the upper surface when the leaves are in their extended position, and being the lowermost surface when the leaves are rotated 180° to their folded position.

As best seen in Figure 3, the latching assembly 18 consists of a generally rectangular frame 20 of a resilient material, such as strap iron, bent to form a smaller rectangle having the same proportions as the table top 10. Across each corner of the rectangular frame so formed is a diagonally positioned reinforcing bar or member 21, the reinforcing bars being rigidly connected to the frame so that an essentially rigid triangular section is formed in each corner of the latching assembly 18.

Extending outward from each corner of the frame 20 is an ear 22 having a hole therein through which a screw or bolt may be passed to anchor the latching assembly 18 to the diagonal supporting members 16 and 17.

As will hereafter become apparent, the diagonal stiff-

ening members 21 transmit movement of one side of the frame 20 to an adjacent side, and the movement of that adjacent side is transmitted to the side opposite the first side. The movement of one side acts to pivot the adjacent triangular sections about the anchoring means holding the ears 22, so that inward movement of the center of one side causes the far corners of the adjacent triangular sections to be swung outwardly. These triangular corner sections must thus be of an appreciable size, but cannot extend half-way across each side. By way of example, in the case of square frames, the diagonal stiffeners 21 may be anchored at points approximately 7/16 of the distance between the corners of the frame 20. When this is done, approximately 1/8 of each side of the frame 20 is free to bend and move, this unbraced portion being in the middle of each side.

When the unbraced portion of one side of the frame 20 is pushed inwardly, the adjacent triangular portions pivot outwardly, and consequently the adjacent sides of the frame are bowed outwardly. This outward bowing of the adjacent sides of the frame 20 causes the remaining triangular portions of the frame to likewise be swung outwardly, and consequently the opposite side of the frame is bowed inwardly, toward the side that is being pressed inwardly. By similar means, when one side of the frame is bowed outwardly by being pulled, the adjacent sides are bowed inwardly and the opposite side is also bowed outwardly. While there is sometimes a tendency for the sides of the frame 20 to bow throughout their length, instead of having all of the bowing occurring between the cross braces 21, this is a matter that is relatively unimportant, and if desired, solid triangular portions such as may be formed of triangular pieces of plywood, may be suitably mounted and joined together with flexible members to provide the desired latch assembly 18. Alternatively, the diagonal braces 21 may be replaced by the same triangular pieces of plywood, as will be clearly understood.

As indicated, the latch assembly 18 is mounted to the underside of the supporting members 16 and 17 by means of bolts or screws passing through the ears 22, and the assembly is so proportioned that the central flexible portion of each side of the frame is slightly outwardly from the innermost edge of the leaves 12, 13, 14, and 15, when the latter are in their folded position. This arrangement is clearly shown in Figure 2, and by referring to Figure 7, it will be seen that the upper surface of the sides of the frame 20 bear against and support the finished surfaces of the leaves 12, 13, 14, and 15. The sides of the frame 20 need be located only a slight distance outwardly from the innermost edge of the leaves 12, 13, 14, and 15, and if they are mounted too far outwardly, an excessive movement of the sides is necessary to release the leaves.

The leaves 12, 13, 14, and 15 are hinged to the table top 10 in any suitable manner, and while a continuous hinge 23 has been shown in the drawings, this is not essential. The important feature of the hinge is that it should be installed so that when the segmental leaves 12, 13, 14, and 15 are in their extended positions, they are coplanar with the table top 10 and form a continuous, unbroken surface. The hinges 23 should, of course, be easily operated, so that when the leaves 12, 13, 14, and 15 are released from their folded position, they will immediately drop to a vertical position, indicated in Figure 7, and by the same token, when the leaves are released from their extended position, they again drop to their vertical position.

To move the leaves 12, 13, 14 and 15 to their extended positions after they have been dropped to a vertical position, the table top 10 is rotated with respect to the supporting means, and the diagonally extending supporting members 16 and 17 act as cam means to engage the under or unfinished sides of the leaves and rotate the latter upwardly toward their extended positions. The table top 10 is rotated approximately 45°, so that the diagonal members 16 and 17 thus provide the greatest support for the segmental leaves 12, 13, 14, and 15. Shortly before the rotation of the table top is completed, the diagonal members 16 and 17 encounter wedgelike stop members 24 mounted on the undersurface of the leaves 12, 13, 14, and 15, and these members act to force the leaves firmly upwardly, so that the upper surface of the leaves are coplanar with the table top 10.

In use, and assuming that the table has all of its leaves folded under the top 10, in their normal folded position, the surface of the top is extended by pushing and pulling the closest side of the frame 20 of the latch assembly 18, and then rotating the table top 10. Clearly, this operation can be performed quickly, and with a minimum of effort. The table can be returned to its original size almost as quickly, by reversing the rotation of the table top, and then individually swinging the leaves 12, 13, 14, and 15 back to their folded position. The actions that have occurred during these very simple operations are seen in Figures 4, 5, and 6.

Considering first Figure 4, the first operation, wherein two opposite leaves are released from folded position, is illustrated. In this operation, a force 30 is shown as being applied to the center of one side of the frame 20, thereby forcing that side inwardly, forcing the adjacent sides outwardly, and forcing the opposite side inwardly. The two inwardly directed sides release their correspondingly held segmental leaves 12 and 14, so that these drop to the vertical position, as shown. The remaining leaves 13 and 15 are not released by this operation. The side is then pulled, as by a force 31, indicated in Figure 5, whereupon the pulled side of the frame 20 is bowed outwardly, the adjacent sides are bowed inwardly to release the leaves 13 and 15, and the opposite side is bowed outwardly, all as shown. The frame 20 is then released, and it returns to its original position, shown in Figure 2, and the leaves 12, 13, 14, and 15 are now all hanging vertically from the edges of the table top 10. The table top 10 is then rotated approximately 1/8 of a turn, and in so doing, the diagonal cross members 16 and 17 engage the under surface of the leaves 12, 13, 14, and 15 and rotate the leaves about their hinges to a generally horizontal position, with the wedgelike stop members 24 being engaged by the diagonal support members and forcing the leaves to their final position. By this sequence of operations, the square table has been converted to a round table, and is ready for use.

To restore the table to its original square condition, the table top 10 is returned approximately 1/8 of a revolution to its original position, the diagonal supporting members 16 and 17 thus being removed from beneath the leaves 12, 13, 14, and 15 and permitting these leaves to drop to their vertical position. The individual leaves 12, 13, 14, and 15 are then pressed inwardly and upwardly to their folded position, and as each leaf is so moved, it engages the lower surface of the corresponding side of the frame 20 and moves or bows that side inwardly, in a manner generally indicated in Figure 4, until the leaf has passed beyond the frame, at which point the latter returns to its original rectangular form. It would be possible for such movement of one of the leaves, such as the leaf 14, to cause the release of a previously folded leaf on the opposite side of the table, such as the leaf 12, when this operation is performed. However, there are many methods of overcoming this difficulty, one simple one being the provision of a certain amount of looseness in the mounting of the frame 20 with respect to the supporting members 16 and 17. Thus, if the ears 22 have holes in them that permit a certain amount of movement of the frame 20 with respect to the table top 10, it will be seen that the force 30 will tend to move the entire frame 20 toward the opposite side of the table top, thereby requiring less inward bowing to permit the

movement of the leaf 14 to folded position, while requiring greater movement to release the already folded leaf 12 from its folded position.

From the foregoing, it will be seen that there has been provided a table construction fully capable of achieving the objects and securing the advantages heretofore set forth. While a preferred form of the invention has been shown and described, the invention is not to be limited to the particular form or arrangement of parts herein described and shown, except as limited by the following claims.

I claim:

1. A table which includes: table top supporting means; a polygonal table top mounted on said supporting means; a plurality of leaves, each freely pivotally attached to an edge of said table top and movable between an extended position substantially coplanar with said table top, and a folded position beneath said table top; and latching means mounted on said supporting means and including a resilient polygonal frame whose plane is substantially parallel to said table top, the corners of said polygonal frame being stiffened to transmit motion from one side to the adjacent side, the central portions of said sides being distortable and normally being positioned to engage and hold said leaves in folded position, but all of said sides being simultaneously distortable by movement of one side to release a plurality of said leaves substantially simultaneously.

2. A table which includes: table top supporting means; a rectangular table top mounted on said supporting means; a plurality of leaves, each pivotally attached to an edge of said table top and movable between an extended position substantially coplanar with said table top, and a folded position beneath said table top; and latching means mounted on said supporting means and including a resilient rectangular frame whose plane is substantially parallel to said table top and mounted for limited movement relative to said table top, each of the corners of said polygonal frame being stiffened to transmit motion from one side to the adjacent side, the central portion of each of said sides being distortable and normally positioned to engage and hold a corresponding one of said leaves in folded position, but all of said sides being simultaneously distorted by movement of one side, whereby opposite leaves are substantially simultaneously released from folded position.

3. A table which includes: table top supporting means; a rectangular table top rotatably mounted on said supporting means; a plurality of leaves, each pivotally attached to an edge of said table top and movable between an extended position substantially coplanar with said table top, and a folded position beneath said table top and substantially parallel thereto; and latching means including a resilient rectangular frame whose plane is substantially parallel to said table top, each of the corners of said frame being stiffened to transmit motion from one side to the adjacent side, said stiffened corners being pivotally mounted on said supporting means for rotation about axes generally perpendicular to said table top, the sides of said frame between said stiffened corners being selectively distortable inwardly and outwardly, and normally positioned to engage and hold a corresponding one of said leaves in folded position, but all of said sides being simultaneously distorted by movement of one side, whereby opposite leaves are simultaneouly released from folded position.

4. A device as defined in claim 3 in which cam means are connected to said supporting means to engage said leaves and raise them to extended position when said table top is rotated.

5. A latching means which includes: a rectangular frame having resilient sides; means extending from one side to an adjacent side to stiffen the corner between them, said means extending less than half way along each side, whereby a central resilient portion is left in each side; and means for pivotally mounting said stiffened corners upon a support for rotation about axes generally perpendicular to the plane of said frame, whereby inward movement of a side causes outward movement of adjacent sides.

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