TABLE WITH HIDDEN COLLAPSING MECHANISM

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This invention relates to a table with hidden collapsing mechanism and has as its principal objective the provision of a rigid table that has a unique collapsing mechanism which is hidden from view in ordinary use. The aforesaid collapsing mechanism cooperates with the legs of the table in such a manner that the assembled table possesses a rigidity approaching that on non-collapsing tables.

Over the years a variety of collapsible tables have been developed. Many of these tables operate through the utilization of a collapsible brace having one brace end secured to the table frame and the other end secured to a table leg. These prior tables have generally lacked rigidity in that they possess an undesirable degree of shiftability or play whenever a force having a sideward component is applied to the top of the table. Further, many of the foregoing, collapsible tables with the aforesaid brace arrangement have acquired a reputation, appearance-wise, of being weak or lacking in rigidity. For this reason, collapsible tables with the aforesaid brace mechanism sometimes are objectionable in commercial applications. Instead, non-collapsible tables are utilized to convey the impression of strength. However, collapsible tables afford obvious advantages, and it is therefore an object of the present invention to provide a collapsible table which will possess the rigidity and appearance of non-collapsible tables and yet which may be collapsed in a simple manner as collapsible tables herefore used.

It is, therefore, a principal object of the present invention to provide a collapsible table which will possess the rigidity of the non-collapsible tables.

Yet another object of the present invention is to provide a collapsible table which is rigid and yet can be simply collapsed in a simple, easy motion.

Still another object of the present invention is to provide a collapsible table wherein the collapsing mechanism is completely hidden from view.

The foregoing as well as other objects of the invention are achieved by providing a collapsible table with a hidden collapsing mechanism which includes a shiftable latch arm having a finger which can be seated within the leg of a table in the locked position thereof. The present invention contemplates the use of table legs which are preferably hollow and which possess a window in order to permit entry of the shiftable arm including the finger thereof. When the finger is seated tightly against the interior wall of a table leg, the leg will be held in a very rigid position by virtue of the angle and nature of contact between the seated finger and the window edge and corner of the interior wall of the table leg. Because the aforesaid shiftable latch arm is located immediately beneath the table surface and extends into the table leg, it is hidden from view by the usual peripheral skirt that extends downwardly from the table top. For this reason, the collapsible table of the present invention has the outward appearance of a non-collapsible table.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

FIG. 1 is a perspective view of a collapsible table embodying the present invention in the fully open position and showing in phantom one leg brought to the collapsed position;

FIG. 2 is an enlarged bottom plan view of the table of FIG. 1 with all legs in the fully extended position;

FIG. 3 is a fragmentary enlarged detail bottom plan view of one corner of FIG. 2;

FIG. 4 is an enlarged view partly in section taken along the lines 4—4 of FIG. 2;

FIG. 5 is a greatly enlarged sectional view taken along the lines 5—5 of FIG. 4;

FIG. 6 is a sectional view taken along the lines 6—6 of FIG. 5; and

FIG. 7 is an exploded perspective view showing the components of the novel collapsing mechanism of the present invention.

Referring now in greater detail to the various figures of the drawing wherein like reference characters refer to like parts, there is shown at 10 in FIG. 1 a table embodying the present invention. The table of FIG. 1 has the outward appearance of a non-collapsible table and generally includes a table top 12 with legs 14 extending therefrom. A peripheral skirt 16 depends from the table top 12 along each of the four sides thereof. As generally illustrated in FIG. 2, each of the legs 14 are preferably hollow and are pivotally secured by means of hinges 18 to the undersurface 20 of each of the peripheral skirts 16 with cross struts 22 being provided for additional rigidity. The legs 14 each have a collapsing mechanism 24 associated therewith and each leg may be pivoted from the extended position of FIG. 1 to the collapsed phantom position of FIG. 1 against a particular undersurface 20. The legs 14 are preferably of a magnetizable material such as steel so that the leg 14 may be each held in the collapsed position by virtue of the provision of magnets 26 that are essentially flush with the undersurface 20. Of course, other detachable connections, such as, snap means or latch means may be utilized.

As shown in FIG. 7, the collapsing mechanism 24 basically comprises lever 28 for causing shifting of the latch arm 30 with the shifting movement of arm being controlled by U-shaped guide 32. The aforesaid collapsing mechanism is operatively associated with angle bracket 34 that is secured to the bottom surface 36 of table top 12.

The attachment and operation of lever 28, latch arm 30, guide 32 and angle bracket 34 with respect to a leg 14 and the bottom surface 36 of table 10 is shown in considerable detail in FIG. 5. The lever 28 basically comprises tabs 38 and 40 which are located in parallel planes that are connected by integral inclined piece 42. The tab 38 functions as a grasping handle and the tab 40 has a cam 44 formed thereon with an eccentrically located pin 46 with a threaded end extending therefrom.

The latch arm 30 has an opening 48 formed adjacent one end thereof and a finger 50 extending from the other end thereof. The opening 48 is sufficiently large to receive cam 44 as illustrated in FIG. 5 with the eccentric pin 46 projecting beyond the opposing face of latch arm 30. The eccentricity of the pin 46 accounts for the shiftability of the latch arm 30 as will be discussed hereinafter. The finger 50 may be seated in a locked position within the leg 14 as shown in full line in FIG. 5.

The unlocked position of the latch arm 30 including the outwardly extended position of the finger 50 is shown in phantom in FIG. 5. Access to the interior 52 of a leg 14 is permitted by provision of a window 54 in the side 56 of the hollow leg 14. The interior 52 is further defined by side 58 which is parallel to the side 56, and by parallel sides 60 and 62. As shown in FIG. 5, the window 54 is formed closely adjacent to corner 64 which marks the meeting of the sides 56 and 62.
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The angle bracket 34 is comprised of perpendicular walls 66 and 68 with the wall 66 being secured to bottom surface 36 by means of fasteners 70 (FIG. 5). The wall 68 of angle bracket 34 possesses a hole 72 which receives the threaded end of the pin 48. Thus, pin 46 may be secured in a position by nut 74 with a lock washer 76 also being provided.

The guide 32 is generally U-shaped and includes legs 78 and 80 extending from bight 82. As indicated in FIG. 4, leg 78 of guide 32 is welded to wall 68 of angle bracket 34 adjacent the top thereof with lower leg 80 also being welded to the wall 68. The latch arm 30 passes through the guide 32 and is held closely adjacent but somewhat loosely with respect to the wall 68 so that shifting of the latch arm 30 between locked and unlocked positions may occur.

The assembly of the lever 28, the latch arm 30, and the guide 32 with respect to the angle bracket 34 is shown in FIG. 5. The lever 28 and the latch arm 30 are connected together by locating the cam 44 within opening 48 in the latch arm 30 with the latch arm 30 previously having been inserted within the guide 32. When this is done, the eccentrically located pin 46 may be received in hole 72 of angle bracket 34. The pin 46 is held in place by means of nut 74 and lock washer 76.

The shifting of the latch arm 30 between the locking full line position of FIG. 5 and the unlocked phantom position occurs through the manipulation of the lever 28 between the full line and phantom positions of FIG. 5. As shown in full line in FIG. 5, the lever 28 in the locked position will be in the outwardly extending position. In order to shift the latch arm 30 outwardly, it is simply necessary to rotate the lever 28 inwardly for 180° to the phantom position of FIG. 5. When this occurs the major portion of cam 44 is no longer located inwardly of the pin 46 as shown in FIG. 5 but is now located outwardly of the pin 46. This can occur only if the latch arm 30 is shifted outwardly to the phantom position of FIG. 5 and is achieved through the aforesaid eccentric nature of the pin 46.

The finger 50 of the latch arm 30 can be brought to the retracted locking full line position of FIG. 5 by simply returning the lever 28 to its inward position. When this is done, the finger 50 is tightly seated against the confines of the corner 64 of the interior of the leg 14 and particularly the combination of the side 62 of the leg 14 and an edge defining the window 54 shown in FIG. 5. The cam-like locking action of the finger 50 causes the leg 14 to be held extremely rigid in the extended position thereby approaching the rigidity of a non-collapsible leg.

As soon as the finger 50 is unseated by a manipulation of the lever 28, the leg 14 may be pivoted in the direction of arrows 84 of FIGS. 1, 5 and 6 so that the leg 14 will be brought to a collapsed position closely adjacent the undersurface 20 of the table 10. In this position, the leg 14 will come in contact with a magnet 26, and thus the leg 14 will be held in the collapsed position until it is desired to reassemble the table. This is simply done by bringing the leg to the extended position and rotating the lever 28 outwardly in order to seat the finger 50 tightly within the interior 52 of the leg 14 and more particularly against corner 64, with a camming action being achieved by virtue of the contact between finger 50 and side 62, and between the long run 86 (FIG. 5) of the latch arm 30 and edge 88 defining in part the window 54.

It is thus seen that the entire collapsing mechanism 24 is located closely adjacent the bottom surface 36 of the table top 12. Furthermore, the latch arm 30 and more particularly the finger 50 thereof extend within the leg 14, and thus the entire collapsing mechanism is essentially hidden from view by the conventional peripheral skirt 16. Thus, the table 10 has the outward appearance of a noncollapsible table, and yet it is collapsible. It is also extremely rigid because of the interaction of the finger 50 of the latch arm 30 and the interior corner 64 of the hollow leg 14, and more particularly the contact between finger 50 and side 62, and long run 86 and edge 88 defining the window 54. Furthermore, the collapsing or erection of table 10 is achieved with the simple flip or rotation of the lever 28.

Obviously, many modifications and variations of the present invention are possible in the light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

What is claimed as the invention is:

1. In a table comprising a table top with top and bottom surfaces, a peripheral skirt adjacent and along each side of said table top depending from said table top and having an undersurface, and a leg at each corner of said table, each of said legs being individually hinged to said skirt undersurface, the improvement comprising providing a plurality of individually collapsible mechanisms each associated with one of said legs and located closely adjacent the undersurface of said table top, each said collapsing mechanism including a shiftable latch arm and lever means for driving said latch arm between locked and unlocked positions, said latch arm having a locking finger extending therefrom and being adapted to lockingly engage said associated table leg, whereby each of said table legs may be locked in assembled position by manipulation of said lever means of said associated mechanism to seat said locking finger in locking engagement, and whereby said table legs may be collapsed by unseating said locking finger through reverse manipulation of said lever means.

2. The invention of claim 1 wherein each of said table legs has a window permitting said latch arm to extend therein with said latch arm being adapted to be seated in locking engagement with said table leg through said window.

3. The invention of claim 2 wherein each of said table legs is hollow with said window permitting said latch arm to have access to interior portions of said leg, and said locking finger engaging an edge of said window in the locked position of said latch arm.

4. The invention of claim 3 wherein said latch arm engages said window edge adjacent an interior corner of said leg.

5. The invention of claim 2 wherein said lever means and said latch arm are associated together.

6. The invention of claim 5 wherein said latch arm has a hole and wherein said lever means has a cam which is received in said hole.

7. The invention of claim 6 wherein said cam has an eccentrically located pin extending therefrom.

8. The invention of claim 7 including an angle bracket having first and second perpendicular walls, one of said bracket walls being secured to the bottom surface of said table top and the other of said bracket walls having an opening therein receiving said pin.

9. The invention of claim 8 wherein a U-shaped guide is secured to said angle bracket, said guide loosely receiving said latch arm.

10. The invention of claim 1 wherein a magnet is associated with said undersurface on each side of said table top and wherein said legs are of a magnetizable material whereby said legs are held against said undersurface when said legs are brought to a collapsed position.

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