Aug. 16, 1966 C. O. LARSON 3,266,445

FOLDING LEG ASSEMBLY

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FIG. 1

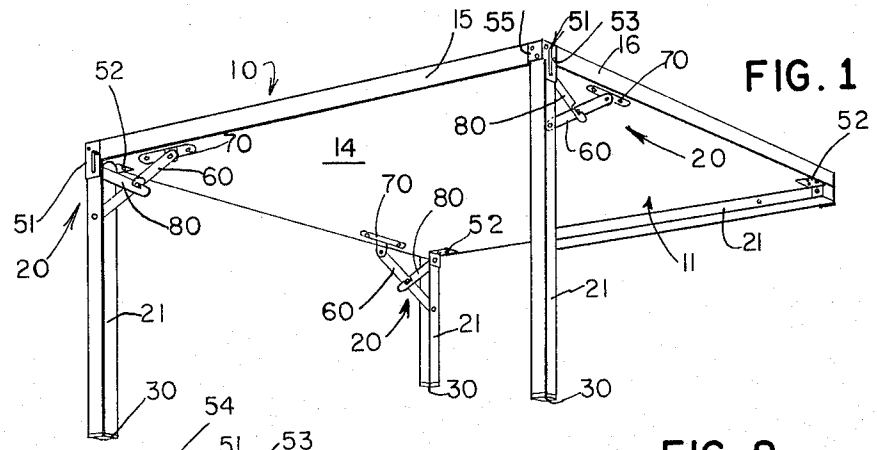


FIG. 2

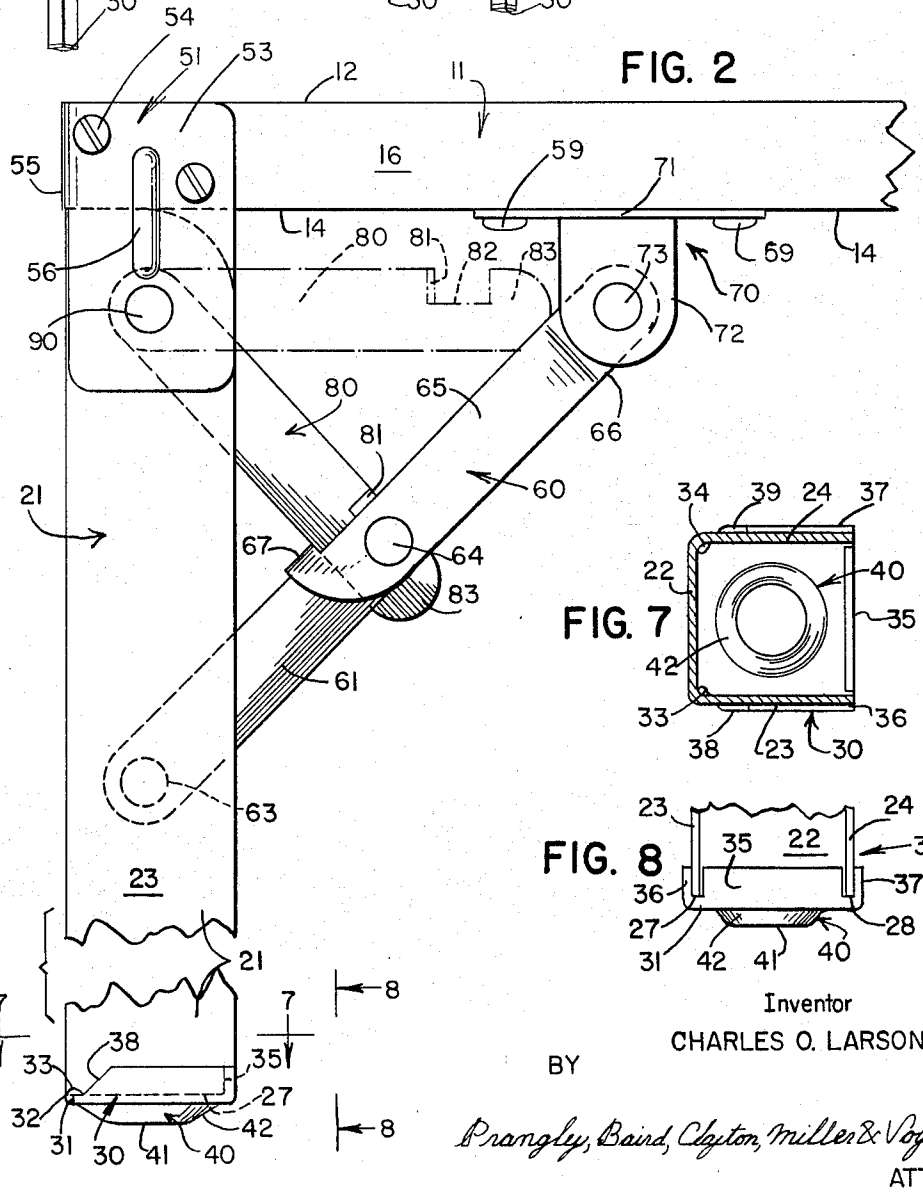


FIG. 7

FIG. 8

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FIG. 5

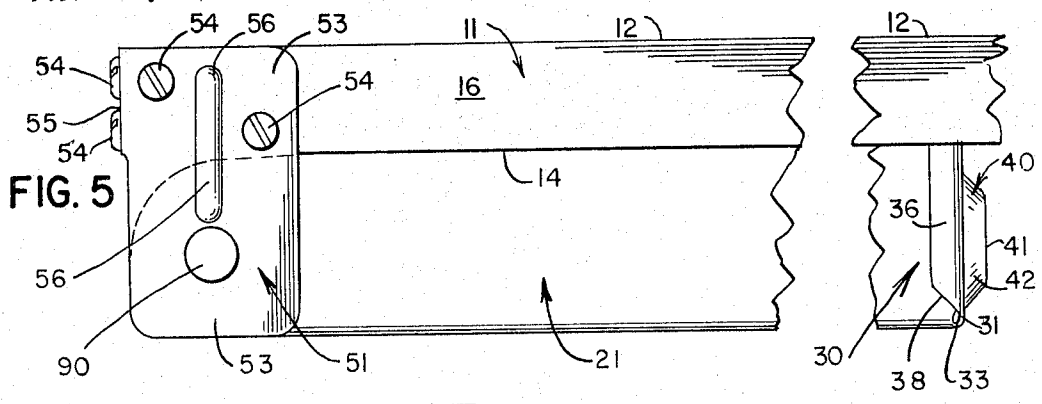


FIG. 3

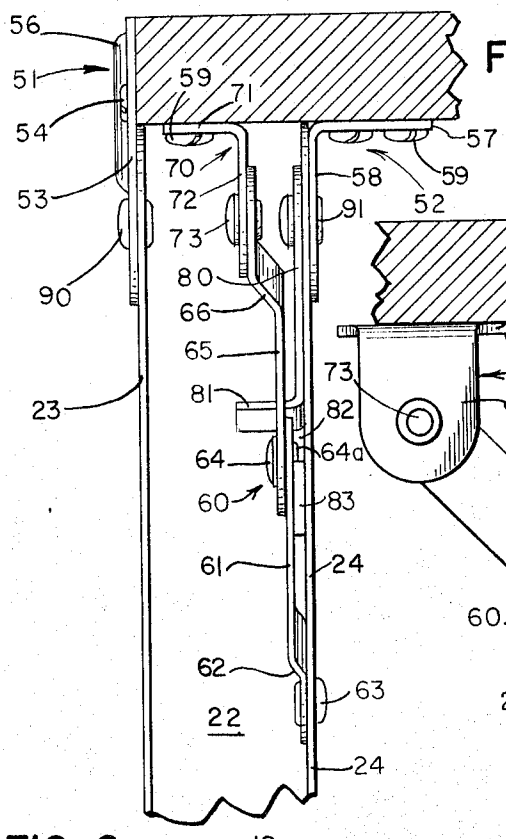


FIG. 4

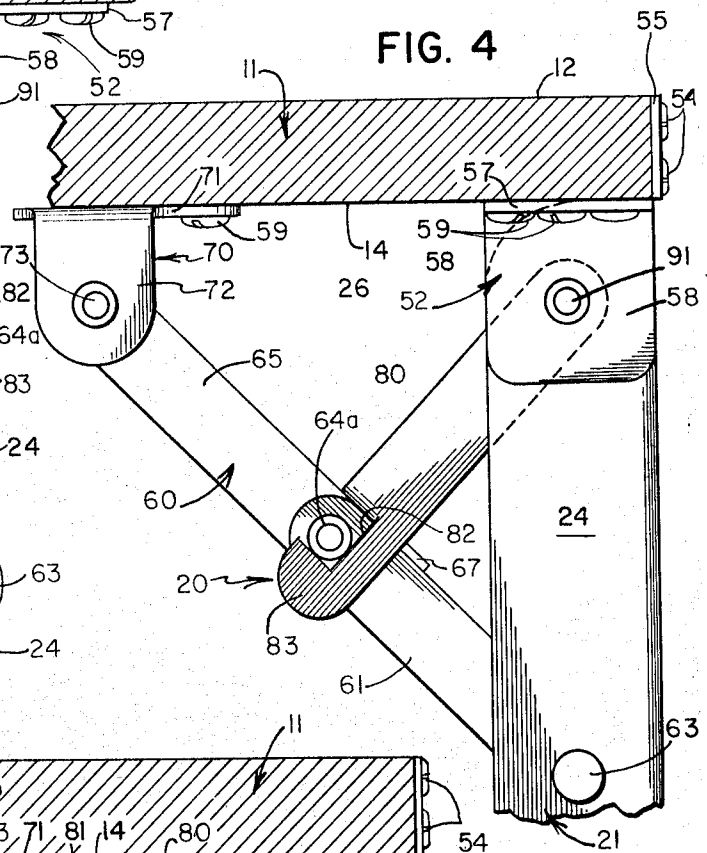
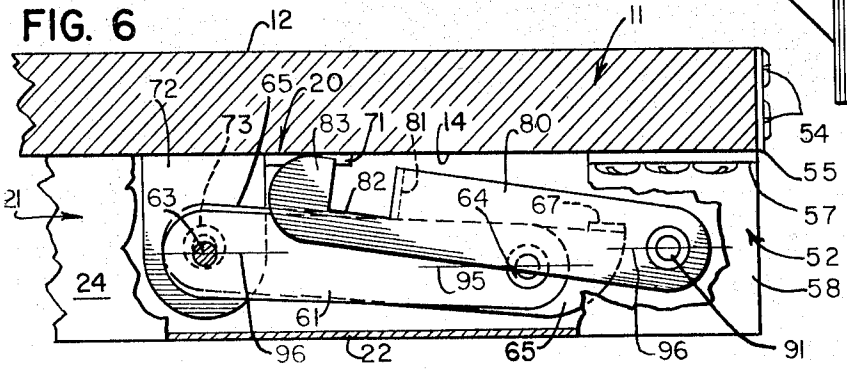


FIG. 6



United States Patent Office 3,266,445 Patented August 16, 1966

3,266,445

FOLDING LEG ASSEMBLY

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6 Claims. (Cl. 108—125)

This invention relates to a folding leg assembly, and particularly to a folding leg assembly for supporting a table top or the like along the edges thereof at a corner thereof.

It is an important object of the present invention to provide an improved table leg assembly of the type having a brace connected between the leg and the underside of an associated table top, the leg of the present invention in the folded position fully enclosing and covering the brace and all of the parts connected with the brace, the leg being connected to the table top by a leg bracket that mounts upon an edge of the table top to dispose the leg adjacent to the edge of the table top on the underside thereof.

Another object of the invention is to provide in a folding leg assembly of the type set forth an improved leg bracket having a main wall and an attachment flange disposed substantially normal to each other and mountable upon the side edges of a table top at a corner thereof.

Yet another object of the invention is to provide an improved safety latch in a folding leg assembly of the type set forth wherein a safety latch in cooperation with the brace provides an over-center toggle construction which serves to lock the leg in the folded position thereof.

Still another object of the invention is to provide in a folding leg assembly of the type set forth an improved foot construction which fully closes the lower end of the leg and prevents marring of floors or the like that come in contact therewith, the foot construction also serving to assist in enclosing the brace and the safety latch when the leg is in the folded position thereof.

Further features of the invention pertain to the particular arrangement of the parts of the folding leg assembly whereby the above-outlined and additional operating features thereof are attained.

The invention, both as to its organization and method of operation, together with further objects and advantages thereof, will best be understood by reference to the following specification taken in connection with the accompanying drawings, in which:

FIGURE 1 is a perspective view of the underside of a table having mounted on each of the four corners thereof a folding leg assembly made in accordance with and embodying the principles of the present invention, three of the legs being shown in the extended operative position thereof and one of the legs being shown in the folded position thereof;

FIG. 2 is a side elevation view on an enlarged scale of one corner of the table of FIG. 1 illustrating the details of construction of one of the leg assemblies thereof, certain portions of the leg being broken away;

FIG. 3 is a view of the leg assembly illustrated in FIG. 2 as seen from the right;

FIG. 4 is a side elevational view of the leg assembly of FIGS. 2 and 3 as seen from the right in FIG. 3;

FIG. 5 is a view of the leg assembly of FIG. 2 with the leg thereof in the folded position, certain portions of the leg being broken away;

FIG. 6 is a view similar to FIG. 5 and showing the other side of the folding leg assembly with the leg in the folded position thereof, additional portions of the leg being broken away to illustrate the position of the brace and safety latch construction;

FIG. 7 is a view in horizontal section along the line 7—7 in FIG. 2; and

FIG. 8 is a side elevational view of the foot on the lower end of the leg of FIG. 2 as seen in the direction of the arrows along the line 8—8 thereof.

Referring to FIG. 1 of the drawings, there is illustrated a table **10**, such as a card table, including a table top **11** on which are mounted four of the table leg assemblies **20** made in accordance and embodying the principles of the present invention, the table leg assemblies **20** being arranged so that each of the legs may be folded against the underside of the table top **11** along one of the side edges thereof as illustrated by the table leg assembly **20** to the right in FIG. 1. The table top **11** as illustrated is generally square and includes a top surface **12**, an underside **14** and opposed pairs of side edges **15** and **16**.

Each of the table leg assemblies **20** is identical in construction to the others, and accordingly, only one of the table leg assemblies **20** will be described in detail in FIGS. 2 to 8, like reference numerals being utilized to identify like parts throughout the drawings. The table leg assembly **20** includes a leg **21** which is generally U-shaped in cross section, as may be best seen from FIG. 7, and includes an elongated main wall **22** which extends the entire length thereof. Formed integral with the main wall **22** and extending substantially perpendicular thereto from the opposite edges thereof are two parallel, opposed and spaced-apart side flanges **23** and **24** which cooperate with the main wall **22** to provide a hollow leg of essentially U-shaped cross section. The side flanges **23** and **24** extend the entire length of the leg **21**, the upper outer corners of the side flanges **23** and **24** being rounded as at **25** and **26**, respectively, to permit folding of the leg **21** as will be described more fully hereinafter, the other end of the side flanges **23** and **24** terminating in lower free edges **27** and **28**, respectively.

The lower end of the leg **21** carries a foot **30** that comprises a plate **31** which is generally rectangular in shape and is formed integral with a main wall **22**, the plate **31** being disposed substantially normal to the main wall **22** and extending therefrom in the same direction as the side flanges **23** and **24**, the plate **31** joining the main wall **22** at a juncture **32**, the juncture **32** being cut out or necked as at **33** and **34** to facilitate the forming thereof. The plate **31** has formed integral with the outer end thereof an upturned front flange **35** which has the outer surface thereof aligned substantially in the same plane as the three edges of the leg side flanges **23** and **24**. The lateral edges of the plate **31** have thereon integral side flanges **36** and **37** which extend substantially normal thereto and upwardly toward the other end of the leg **21** on the outside of the adjacent leg side flanges **23** and **24**, respectively, whereby the plate **31** and the side flanges **36** and **37** thereon cover and conceal the lower edges **27** and **28** of the leg side flanges **23** and **24**, respectively, (see FIG. 8 also).

Formed integral with the foot **30** is a glide **40** which is arranged substantially centrally of the plate **31** and extends downwardly therefrom terminating in a bearing surface **41** that is substantially flat and is adapted to rest upon an underlying support surface, such as a floor. Extending upwardly from the bearing surface **41** as illustrated in FIG. 2 is a generally conical wall **42** integral with the plate **31** and joining the bearing surface **41** at a generally rounded corner so that the glide **40** will not mar or scar an associated underlying floor.

The leg **21** is hingedly attached to the table top **11** at one of the corners thereof by means of a pair of leg brackets **51** and **52**. The leg bracket **51** includes a main plate **53** that is generally rectangular in shape and is oriented vertically as illustrated in FIG. 1, openings (not

shown) being provided in the upper portion thereof to receive two fasteners such as the screws 54 for attaching the main plate 53 to the table top side edge 16. The main plate 53 extends downwardly and below the underside 14 of the table top 11 and is disposed adjacent to the end of the side edge 16. Formed integral with the main plate 53 and disposed substantially normal thereto is an attachment flange 55 having openings (not shown) therein and receiving therethrough two fasteners such as the screws 54 (see FIG. 6). Arranged generally centrally of the main plate 53 and disposed vertically as viewed in FIG. 2 is a downwardly extending reinforcing corrugation 56. The leg bracket 52 includes a mounting flange 57 and a support flange 58 disposed substantially normal to each other, the mounting flange 57 being fixedly secured to the underside 14 of the table top 11 as by a plurality of screws 59, the screws 59 passing through openings (not shown) in the mounting flange 57 and engaging the table top 11, three of the screws 59 have been illustrated as being utilized in mounting the flange 57.

The leg brackets 51 and 52 are mounted so that the inner surface of the main wall 53 and the support flange 58 are disposed substantially normal to the underside 14 of the table top 11 and substantially parallel to each other and spaced-apart a distance such as to receive therebetween the upper end of the leg 21 as viewed in FIG. 3. A first rivet 90 passes through aligned openings (not shown) in the leg side flange 23 and the main plate 53, and a second rivet 91 passes through aligned openings (not shown) in the leg side flange 24 and the support flange 58. In the construction, the upper end of the leg 21 including the upper edges of the main wall 22 and the leg side flanges 23 and 24 are disposed immediately adjacent to the underside 14 of the table top 11 when the leg 21 is in the operative position, i.e., when the longitudinal axis of the leg 21 is substantially normal to the underside 14 of the table top 11. Because of the rounded corners 25 and 26 on the leg side flanges 23 and 24, respectively, the leg 21 can be pivoted in one direction, i.e., in the counterclockwise direction as viewed in FIG. 2, and only in that direction, from the operative position illustrated in FIG. 2 to a pivoted position illustrated in FIG. 5. In the pivoted position of the leg 21, the free edges of the leg side flanges 23 and 24 are disposed against the underside 14 of the table top 11 throughout substantially the entire length thereof.

In order to maintain the leg 21 in the operative position thereof illustrated in FIGS. 2, 3 and 4, there has been provided a brace 60 which includes a pair of arms 61 and 65. The arm 61 is provided with an offset therein (see FIG. 3) and has one end pivotally connected to the leg 21 by means of a rivet 63, the rivet 63 passing through aligned openings (not shown) in the side leg flange 24 and the arm 61. The other end of the arm 61 and one end of the arm 65 are pivotally connected by a rivet 64 passing through aligned openings (not shown) therein, the adjacent end of the arm 65 extending downwardly beyond the rivet 64 as illustrated in FIG. 2 and carrying on the outermost portion thereof an abutment finger 67 that extends inwardly and over the other arm 61 and in contact therewith to prevent further movement of the rivet 64 downwardly and to the right as illustrated in FIG. 2.

The other end of the brace arm 65 is pivotally connected to the underside 14 of the table top 11 by means of a brace bracket 70, the brace bracket 70 including a mounting flange 71 and a support flange 72, the mounting flange 71 and the support flange 72 being disposed substantially normal to each other. The mounting flange 71 is provided with a pair of openings (not shown) therethrough that receive screws 59 that extend into the table top 11 to mount the brace bracket 70 on the underside 14 thereof. The adjacent end of the arm 65 has an offset 66 therein and the outermost portion thereof is connected to the support flanges 70 by means of a rivet 73, the rivet 73 passing through aligned openings (not shown) in the arm 65 and the support flange 72. As illustrated in FIGS. 2, 3 and 4, the abutment finger 67 on the arm 65 abutting the arm 61 prevents further movement of the rivet 64 downwardly and to the right, whereby the parts are illustrated in the bracing position thereof, the brace 60 in this position holding the leg 21 as illustrated in the operative position. When it is desired to pivot the leg 21 to the pivoted or folded position thereof, it is necessary first to move the rivet 64 upwardly and to the left as illustrated in FIG. 2 so as to fold the brace arms 61 and 65 with respect to each other.

In order to prevent inadvertent movement of the brace arms 61 and 65 toward the folded position for the leg 21, a safety latch 80 has been provided, the safety latch 80 at one end thereof being pivotally connected to the leg bracket 52 by means of the rivet 91. The other end of the safety latch 80 (see FIG. 4) has a notch 82 therein, the material from the notch 82 being bent to form an integral abutment finger 81 (see FIGS. 2 and 3 also), the provision of the notch 82 in the safety latch 80 also forming a hook 83 on the outer end thereof. In the latching position of the safety latch 80, the lowermost edge thereof, as illustrated in FIGS. 2 to 4, bears against the upper edge of the brace abutment finger 67 and the notch 82 receives therein the peened over head 64*a* on the rivet 64 with the hook 83 releasably in engagement therewith. With the parts so arranged, it is not possible to move the rivet 64 upwardly and to the left as illustrated in FIG. 2, i.e., toward the leg folded position thereof, whereby the safety latch 80 serves firmly to hold the leg 21 and the associated parts in the operative position thereof. When it is desired to pivot the leg 21 to the folded position thereof, the safety latch 80 is releasably disengaged from the head 64*a* on the rivet 64 by being slidably moved thereover, whereby the safety latch 80 may be pivoted to the position illustrated by the dashed lines in FIG. 2. The rivet 64 can now be moved upwardly and to the left as seen in FIG. 2 to permit the leg 21 to be pivoted from the operative position illustrated in FIG. 2 to the folded position illustrated in FIG. 5.

As is best seen in FIG. 3 of the drawings, all of the brace 60, the brace bracket 70 and the safety latch 80 are disposed between the lateral confines of the leg 21, and more specifically are disposed between the leg side flanges 23 and 24, i.e., the lateral extent of the brace 60 and the brace bracket 70 and the safety latch 80 is less than the distance between the leg flanges 23 and 24 and all of these parts are disposed therebetween. Furthermore, all of the brace 60, the brace bracket 70 and the safety latch 80 are disposed with respect to the leg assembly 20 in the direction of folding thereof so that when the leg 21 is moved to the folded position illustrated in FIG. 5, the brace 60, the brace bracket 70 and the safety latch 80 are all received within the leg 21. Furthermore, all of the parts including the brace 60, the brace bracket 70 and the safety latch 80 have a depth in the folded position thereof, i.e., extend downwardly from the underside 14 of the table top 11 as viewed in FIG. 2, a distance less than the distance from the edges of the leg side flanges 23 and 24 to the inner surface of the main wall 22. As a result, the leg 21 can be folded flush against the underside 14 of the table top 11 as illustrated in FIGS. 5 and 6. It will be seen therefore that when the leg 21 is in the folded position thereof, the brace 60 and the brace bracket 70 and the safety latch 80 are all completely received within the leg 21 and are enclosed thereby so that the leg assembly 20 in the folded position has an unusually neat and attractive appearance and has no protruding parts that will catch on furniture on the clothing of a user, and has no sharp parts that will cut or mar surfaces against which the leg assembly 20 comes in contact.

Another important feature of the invention resides in the fact that the safety latch 80 in cooperation with the

brace **60** not only serves to hold the leg **21** in the extended operative position illustrated in FIGS. 2–4 of the drawings, but these parts also serve releasably to lock the leg **21** in the folded position thereof, these parts cooperating to form an over-center toggle construction. Referring to FIG. 6 of the drawings, it will be seen that in the fully folded position of the safety latch **80**, the hook **83** thereof contacts the underside **14** of the table top **11**, whereby to space the lower edge of the abutment finger **81** a specific distance away from the underside **14**. In the pivoting of the brace **60** toward the folded position of the parts, the brace arm **65**, and specifically the upper edge thereof, contacts and abuts against the finger **81**, whereby to stop further pivoting of the brace arm **65** about the rivet **63** and thus to stop the center of the rivet **64** at a fixed point with respect to the underside **14** of the table top **11**, that point being in a plane designated by the numeral **95** disposed substantially parallel to the underside **14**. The center point of the rivet **64** reaches the plane **95** before the leg **21** is in the fully folded position thereof. The linkage, however, permits the leg **21** to continue being pivoted until it reaches the fully folded position at which time the center point of the rivet **63** is disposed in a plane diagrammatically illustrated as at **96**, which plane **96** is fixed a second predetermined distance away from the underside **14**, which second predetermined distance is less than the first predetermined distance; in other words, the center of the rivet **63** has moved past or over the center of the rivet **64**, thus to give the usual over-center toggle action which serves releasably to hold the leg **21** in the folded position thereof.

Each of the leg assemblies **20** is preferably formed of metal, such as steel, aluminum, and the like, and further are painted or otherwise treated for ornamentation purposes. The legs **21** may each be formed of a single piece of metal cut and shaped by folding and pressing as illustrated. The leg assemblies **20** can also be used to form with tops a wide variety of pieces of furniture other than the card table illustrated in the drawings, examples of other such pieces of furniture being banquet tables, serving tables, work benches, banquet benches, coffee tables, and the like, and to this end the legs **21** may be formed with different lengths as required, such as 28 inches for higher tables and 16 inches for lower tables.

From the above it will be seen that there has been provided a folding leg assembly which fulfills all of the objects and advantages set forth above. More specifically, the improved folding leg assembly is readily mountable upon the side edges of the table top at a corner thereof while permitting the free edges of the U-shaped table leg to be folded flush against the underside of the table top. In addition, the improved folding leg assembly completely covers the brace and the brace bracket and the safety latch with the hollow U-shaped leg in the fully closed position thereof whereby to provide a particularly neat and attractive arrangement of the parts in the folded position, which arrangement also protects all objects with which the leg assembly may come into contact since there are no projections or sharp points or hooks thereon. There also has been provided an improved safety latch for locking the brace in the bracing position thereof, the safety latch including means releasably locking it in the latching position. The safety latch and the brace also cooperate to provide an over-center toggle construction which serves to lock the leg in the folded position thereof. There further has been provided an improved foot construction which fully closes the lower end of the leg so as to assist in enclosing the brace and safety latch of the legs in the folded position thereof. The foot further includes an integral glide which prevents marring of floors and the like that come in contact with the foot.

While there has been described what is at present considered to be the preferred embodiment of the invention, it will be understood that various modifications may be made therein, and it is intended to cover in the appended claims all such modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. A folding leg assembly for supporting a table top or the like having an underside and side edges disposed normal to the underside and substantially normal to each other, said folding leg assembly comprising an elongated leg of generally U-shaped cross section including an elongated main wall extending substantially the length thereof and opposed spaced-apart side flanges on the longitudinal edges of said main wall extending substantially the length thereof, a leg bracket including a main plate having structure thereon for mounting said main plate on an associated side edge with said main plate extending downwardly below the underside of the associated table top, the inner surface of said main plate being disposed against the associated side edge and disposed substantially in the same plane therewith, means hingedly interconnecting said main plate and the upper end of said leg with the outer surface of the outer one of said leg side flanges disposed against the inner surface of said main plate and lying substantially in the same plane therewith and with the associated table top side edge, said leg being pivotal between an operative position with the longitudinal axis thereof disposed substantially perpendicular to the underside of the associated table top with the outer side of said outermost side flange disposed in the same plane as the associated table top side edge and a folded position with the longitudinal free edges of said side flanges disposed substantially against the underside of the associated table top and with the outer surface of said outermost side flange lying in the same plane as the associated table top side edge, a brace including a first arm hingedly connected adjacent to one end thereof to said leg between said side flanges adjacent to the upper end thereof and a second arm hingedly connected adjacent to one end thereof to the other end of said first arm, and a brace bracket hingedly connecting the other end of said second arm to the underside of the associated table top in a position such that said brace arms are in the extended bracing position thereof when said leg is in the operative position thereof, said brace and said brace bracket being disposed in the direction of folding of said leg and having a lateral extent with respect to said direction of folding less than the distance between said side flanges and a depth when pivoted less than the distance from the edges of said side flanges to the inner surface of said main wall so that said leg completely receives and encloses therein said brace and said brace bracket when said leg is in the folded position thereof.

2. The folding leg assembly set forth in claim **1**, and further comprising an attachment flange integral with said main plate and disposed substantially normal thereto and including structure for mounting thereof on a side edge adjacent to that on which is mounted said main plate.

3. The folding leg assembly set forth in claim **1**, and further comprising a reinforcing corrugation extending outwardly from said main plate.

4. The folding leg assembly set forth in claim **1**, and further comprising a safety latch having one end thereof pivotally connected to said leg bracket and engageable with said brace to hold said brace in the bracing position thereof until said safety latch is released.

5. The folding leg assembly set forth in claim **1**, and further comprising a brace abutment finger on one of said arms and engageable with the other of said arms in the extended bracing position thereof to prevent folding of said arms with respect to each other in one direction, and a safety latch having one end thereof pivotally connected to said leg bracket and having a finger adjacent to the other end thereof and engageable with said brace to prevent folding of said brace in the other direction thereof so as in cooperation with said brace abutment finger

positively to lock said brace in the bracing position thereof and said leg in the operative position thereof, the other end of said safety latch abutting against the underside of the associated table top when said leg assembly is in the pivoted position thereof and said second arm contacting said safety latch finger to prevent the pivot point between said arms from moving upwardly beyond a plane parallel to the underside of the associated table top and passing through the pivot point between said second arm and said brace bracket while permitting the pivot point between said first arm and said leg to continue past a plane parallel to the underside of the associated table top and passing through said pivot point between said arms thus to form an over-center toggle construction positively to lock said leg in the folded position thereof.

6. The folding leg assembly set forth in claim 1, and further comprising a foot on the lower end of said leg including a plate integral with said main wall and substantially closing the lower end of said leg and having a

pair of side flanges integral therewith and extending upwardly toward the upper end of said leg and being disposed outwardly with respect to said leg flanges to cover the lower free ends thereof.

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