Oct. 6, 1959 H. F. SULLIVAN 2,907,616

LEAF HINGING MECHANISM FOR TABLES

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Fig. 1

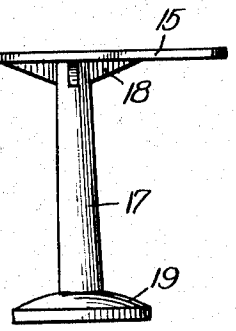


Fig. 2

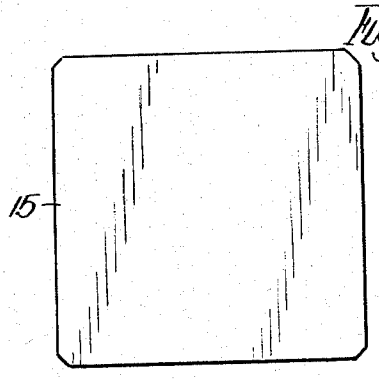


Fig. 3

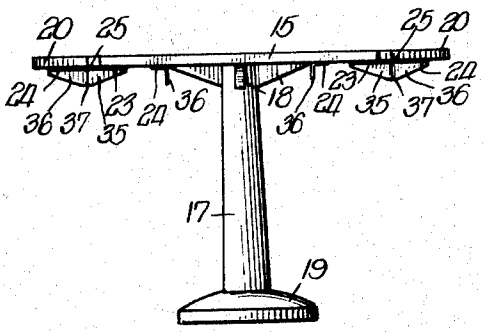


Fig. 4

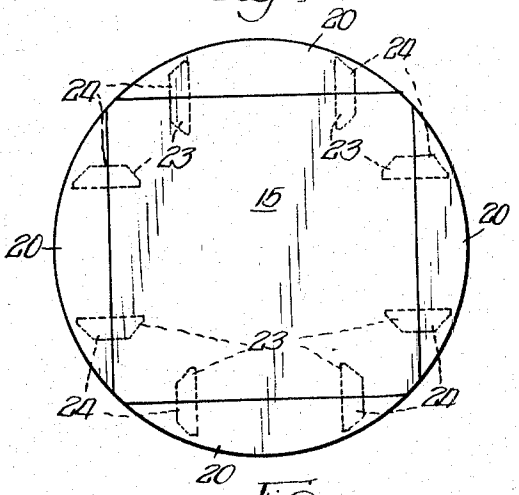


Fig. 5

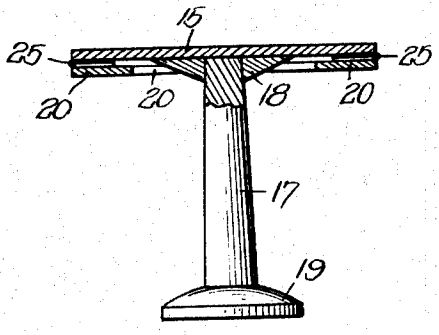
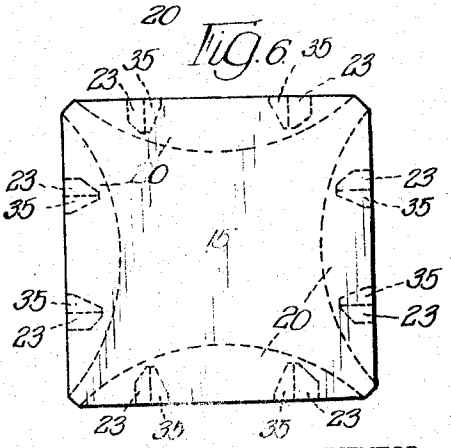


Fig. 6



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Fig. 7.

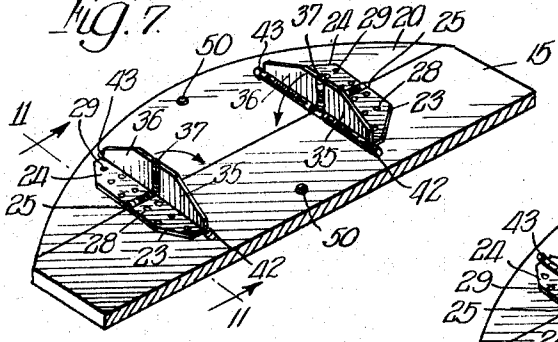


Fig. 8.

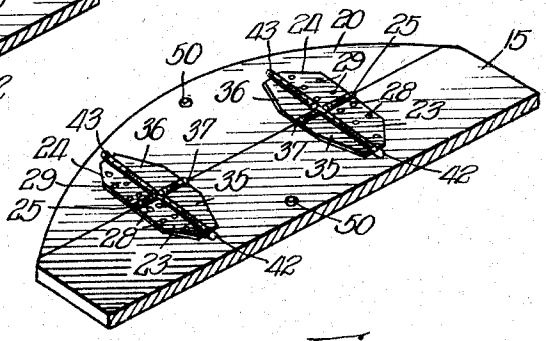


Fig. 9.

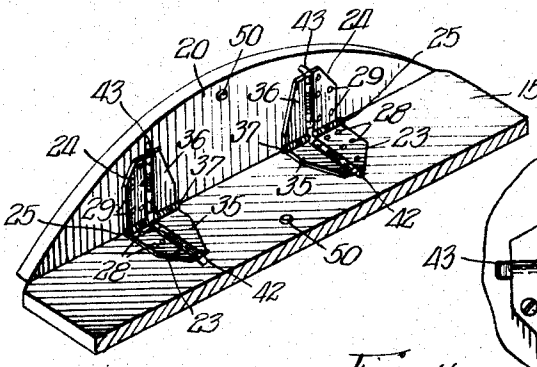


Fig. 10.

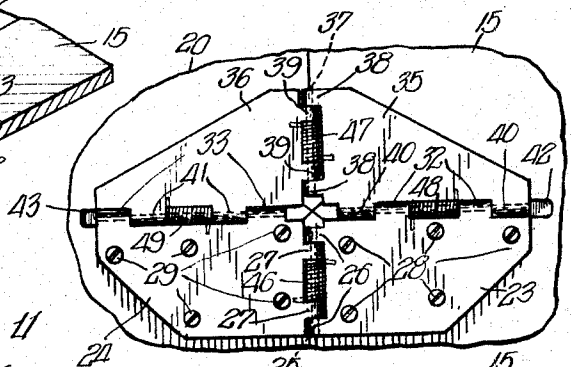


Fig. 11.

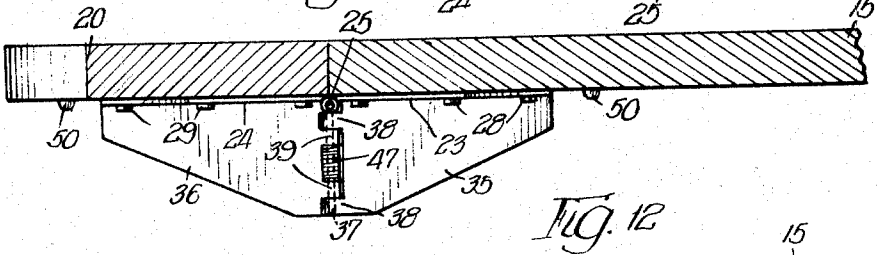
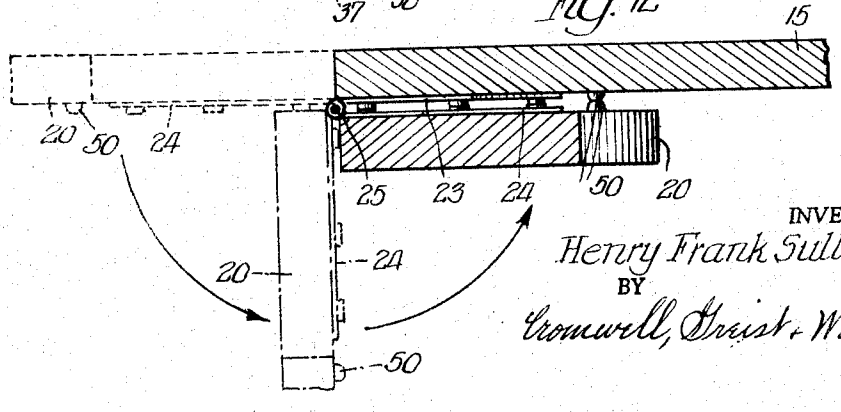


Fig. 12.



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LEAF HINGING MECHANISM FOR TABLES

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Application April 25, 1958, Serial No. 730,989

6 Claims. (Cl. 311—60)

This invention relates to a leaf hinging mechanism for tables and the like.

It is the general object of this invention to provide a new and improved mechanism for hingedly connecting a leaf to an edge of a table or other support.

Another object of the invention is to provide a new and improved leaf hinging mechanism for hingedly attaching a leaf to the edge of a support for movement between an extended position in the plane of the support and an out-of-the-way position against the underside of the support, which mechanism automatically retains the leaf in either its extended or its out-of-the-way position.

A further object of the invention is to provide a new and improved hinge-like device for use with a pair of hingedly connected members to automatically brace the two members in a fully extended position in the same plane when the two members are swung into such position.

Other objects of the invention are to provide a new and improved leaf hinging mechanism which is sturdy and is adapted to rigidly support a leaf in a fully extended position in the plane of a table-like support, which effectively holds a leaf in an out-of-the-way position against the underside of the support when not in use, which is economical to produce and easy to assemble, and which requires little or no maintenance.

A more detailed object of the invention is to provide, with a generally square table top supported on a central pedestal, a new and improved leaf hinging mechanism for hingedly connecting four arcuate leaves to the edges of the table so that the leaves are pivotable between fully extended positions in the plane of the table to convert the table into a circular one having an increased seating capacity and between out-of-the-way positions against the underside of the table, which mechanism automatically retains the leaves in either their fully extended or their out-of-the-way positions.

While the foregoing statements are indicative in a general way of the nature of the invention, other more specific objects and advantages will be apparent to those skilled in the art upon a full understanding of the construction, arrangement and purpose of the features of novelty incorporated in the new leaf hinging mechanism.

In the accompanying drawings a preferred embodiment of the invention is illustrated by way of exemplification but it will, of course, be appreciated that the invention is susceptible of incorporation in still other forms coming equally within the spirit of the invention and the scope of the appended claims.

In the drawings:

Fig. 1 is a side elevational view of a generally square non-extensible table of conventional type;

Fig. 2 is a top plan view of the table shown in Fig. 1;

Fig. 3 is a side elevational view of a table which has arcuately shaped leaves hingedly connected to the edges thereof in accordance with the invention, showing the leaves in their fully extended positions in the plane of the top of the table, in which positions the table is converted from a square shape to a circular shape having increased seating capacity;

Fig. 4 is a top plan view of the table shown in Fig. 3 with the leaves extended;

Fig. 5 is a partially sectioned side elevational view of the table shown in Figs. 3 and 4 with the leaves swung into their out-of-the-way positions against the underside of the top;

Fig. 6 is a top plan view of the table with the leaves folded in under the top;

Fig. 7 is a fragmentary perspective view of the underside of the table shown in Figs. 3 to 6 inclusive showing one of the leaves in its fully extended position with the leaf hinging devices of the invention in their leaf bracing position;

Fig. 8 is a perspective view similar to Fig. 7 with the leaf in its fully extended position and with the leaf hinging devices in their positions flat against the underside of the extended table whereby the leaf may be swung into its out-of-the-way position against the underside of the table;

Fig. 9 is a perspective view similar to Figs. 7 and 8 showing the leaf in a position intermediate its fully extended position and its position against the underside of the table;

Fig. 10 is an enlarged plan view of the invention when in its position shown in Fig. 8;

Fig. 11 is an enlarged and inverted vertical sectional view taken generally on the line 11—11 of Fig. 7; and

Fig. 12 is a vertical sectional view similar to Fig. 11 with the leaf shown in its out-of-the-way position against the underside of the top of the table and with the fully extended position and an intermediate position of the leaf being shown in broken lines.

In Figs. 1 and 2, there is illustrated a table of a conventional type which has a horizontally extending, generally square top 15, the corners of which are slightly beveled. The top of the table is supported on a centrally disposed pedestal 17 having a spider-type bracket 18 at its upper end which is secured to the underside of the top and a floor-engageable foot 19 at its lower end. To convert the table into a circular table having an increased seating capacity, four arcuate leaves 20 are hingedly connected one to each of the straight edges of the table.

The invention is directed to means disposed adjacent each end of the leaves 20 for connecting the leaves to the edges of the table for movement between fully extended positions in the plane of the top 15, Figs. 3 and 4, and out-of-the-way, reversely folded positions against the underside of the top, Figs. 5 and 6, which means automatically retain the leaves in either their fully extended or their out-of-the-way positions. If the corners of the top 15 were not beveled, there would be interference between adjacent leaves when they are folded into their positions against the underside of the table.

The details of the invention may best be described with reference to Figs. 7 to 12 inclusive. A first pair of hinged leaves or plates 23 and 24 formed of sheet metal are pivotably connected together by means of a pintle or hinge pin 25. The pin extends through a series of knuckles 26 and 27 which are formed respectively on adjacent edges of the plates 23 and 24 and which are interfitted in endwise alignment. The hinge plate 23 is secured flush or flatwise against the underside of the table by a plurality of screws 28 with the hinge connection or pintle 25 coincident with the edge of the table. The other hinge plate 24 is secured flush or flatwise against the underside of the leaf 20 by a plurality of screws 29.

As is evident in the drawings, the first pair of plates

have aligned edges extending at right angles to the meeting edges of the table and the leaf with the edge of the plate **23** having a pair of aligned knuckles **32** formed thereon and with the edge of plate **24** having a pair of aligned knuckles **33** formed thereon.

A second pair of hinge members or plates **35** and **36** formed of sheet metal have adjacent edges thereof hingedly connected together by means of a pintle or hinge pin **37** which extends through aligned knuckles **38** and **39** formed respectively on plates **35** and **36**.

The second pair of plates have corresponding edges extending at right angles to the hinged connection therebetween with the edge of the plate **35** having formed thereon a pair of aligned knuckles **40** interfitted with the knuckles **32** of the plate **23** and with the edge of the plate **36** having formed thereon a pair of aligned knuckles **41** interfitted with the knuckles **33** of the plate **24**. A pintle or hinge pin **42** extends through the aligned knuckles **32** and **40** of plates **23** and **35** respectively and a pintle or a hinge pin **43** extends through the aligned knuckles **33** and **41** of plates **24** and **36** respectively whereby to provide hinged connections between adjacent edges of the first and second pair of plates with the hinged connection **37** between the second pair of plates **35** and **36** being arranged in endwise association with the hinged connection **25** between the first pair of plates **23** and **24**.

With the leaf **20** in its fully extended position, the second pair of hinged plates **35** and **36** are pivotable about pintles **42** and **43** between a position extending at right angles to the first pair of plates **23** and **24** and to the underside of the extended table, as in Fig. 7, in which position the plates **35** and **36** act as a supporting brace for retaining the leaf in its fully extended position, and a position flush or flatwise against the underside of the extended table alongside the leaves **23** and **24**, as in Fig. 8, in which position the leaf **20** may be pivoted about the pintles **25** and **37** between its fully extended position and its out-of-the-way position, as best illustrated in Figs. 9 and 12.

A coil spring **46** which is disposed about the pintle **25** with its ends in engagement with the plates **23** and **24** is biased to move the plates **23** and **24** together. A coil spring **47** which is disposed about the pintle **37** with its ends engageable with the plates **35** and **36** is biased to move these plates together. When the second pair of plates **35** and **36** are in their flatwise position, as in Fig. 8, the springs **46** and **47** are operable to automatically move the leaf **20** from its fully extended position into its out-of-the-way position against the underside of the table and to resiliently hold the leaf in such out-of-the-way position.

Resilient button-like abutment members **50** are provided on the underside of the table top **15** and on the underside of the leaf **20** for engagement with each other when the leaf is in its position against the underside of the table.

In order to automatically swing the second pair of plates **35** and **36** into their leaf-bracing position, Fig. 7, as soon as the leaf has been swung into its fully extended position, a pair of coil springs **48** and **49** are disposed respectively about the pintles **42** and **43**. These springs are biased to pivot the second pair of hinged plates **35** and **36** into their position at right angles to the plates **23** and **24** as soon as both pairs of plates have been fully opened, as when the leaf is swung into its fully extended position.

With the leaf **20** braced in its fully extended position, it is a simple matter to manually urge the second pair of plates **35** and **36** against the action of the springs **48** and **49** in the direction of the arrows shown in Fig. 7 into their position flat against the underside of the extended table, as shown in Fig. 8, whereupon the springs **46** and **47** are permitted to automatically move the leaf **20** into its out-of-the-way position and to hold the leaf in such position against the underside of the table.

The invention disclosed herein is not intended to be limited to use with the particular table illustrated in the drawings. Obviously, the invention may be used for hingedly connecting a leaf to any table-like support or with any pair of hingedly connected members which are intended to be automatically braced in a fully extended position when pivoted or swung into such position.

I claim:

1. In combination, a table having a straight edge, a leaf in hinged association with the table along said edge for movement between an extended position in the plane of the table and a reversely folded position beneath the table, and means adjacent each end of the leaf for hinging the leaf to the table and for automatically retaining the leaf in either its extended position or its reversely folded position, each of said means comprising, a first pair of plates, a hinged connection between adjacent edges of said plates, one of said plates being adapted to be attached flatwise to the underside of the table with the hinged connection substantially coincident with the edge of the table and the other of said plates being adapted to be attached flatwise to the underside of the leaf, a second pair of plates, a hinged connection between adjacent edges of said second plates, which hinged connection is arranged in endwise association with the hinged connection between said first plates, hinged connections between adjacent edges of each of said first plates and each of said second plates, which last mentioned hinged connections are located at right angles to the hinged connection between the first plates and also at right angles to the hinged connection between the second plates, said second plates being pivotable between a position flat against the undersides of the table and extended leaf in which position the leaf is movable between its extended and reversely folded positions and a position at right angles to said first plates in which position the second plates act as a brace for retaining the leaf in its extended position, spring means associated with the hinged connection between the first plates biased to move those plates together, and other spring means associated with the hinged connections between the first and second plates tending to move the second plates into said bracing positions at right angles to the first plates.

2. For use with a substantially horizontal table-like support and a leaf which is movable between a substantially horizontal extended position and an out-of-the-way position, a first pair of hinged plates, one of said plates being adapted to be attached flatwise to the underside of the support and the other of said plates being adapted to be attached flatwise to the underside of the leaf, with the hinged connection therebetween substantially coincident with the edge of the support, a second pair of hinged plates with the hinged connection therebetween being arranged in endwise association with the hinged connection of said first plates, hinged connections between adjacent edges of each of said first plates and each of said second plates and located at right angles to the hinged connection of the first plates and also at right angles to the hinged connection of the second plates, first spring means associated with the hinged connection of the first plates biased to move those plates together, and second spring means associated with the hinged connections between the first and second plates tending to move the second plates into positions at right angles to the first plates when the leaf is moved into its extended position to provide a brace for retaining the leaf in said extended position.

3. A double-acting hinge device for pivotably connecting two members together for movement between a first position in which the two members are fully extended in the same plane and a second position in which the angle between the two members is less than 180° comprising, a first double-leaf hinge, the two leaves thereof

being adapted to be attached flatwise, respectively, to corresponding surfaces of the two members with the hinge connection therebetween substantially coincident with the meeting edges of the two members and in the same plane as said corresponding surfaces, a second double-leaf hinge, hinge connections between adjacent edges of the leaves of said first and second hinges with said hinge connections extending at right angles to the meeting edges of the two members, said second hinge being pivotable relative to said first hinge when the two members are in their fully extended position between a position flat against said corresponding surfaces of the two members in which position the two members may be pivoted between their first and second positions and a position at right angles to said corresponding surfaces in which position said second hinge acts as a brace to retain the two members in their fully extended position, first spring means associated with the hinge connection between the leaves of said first hinge biasing said leaves toward each other whereby the two members are resiliently urged toward and held in said second position, and second spring means associated with said hinge connections between said first and second hinges operable to pivot said second hinge into its bracing position at right angles to said corresponding surfaces as soon as the two members have been pivoted against the action of said first spring means into their fully extended position.

4. In combination, a table-like support having a straight edge, a leaf having a hinge connection with the support along said edge permitting pivotable movement of the leaf between an extended position in the plane of the support and an out-of-the-way position, and means for automatically retaining the leaf in both its extended and out-of-the-way positions, said means comprising, a first flat plate having an edge which is pivotably mounted on the underside of the leaf for movement about an axis which extends at right angles to the hinged edge of the leaf, a second flat plate having an edge which is pivotably mounted on the underside of the support for movement about an axis which is disposed in endwise alignment with said pivotable axis of said first plate when the leaf is in its extended position, each of said plates being pivotable between positions flat against and at right angles to the underside of the extended support and each plate having an edge coincident with the hinged edges of the leaf and support when in said flat position, a hinge connection between said coincident edges of said first and second plates so that with the leaf in its extended position and said plates pivoted to said right-angle positions said interconnected plates act as brace means for retaining the leaf in its extended position, first spring means associated with the pivotable connections of said plates to the undersides of the support and leaf operable to pivot said plates into said bracing position as soon as the leaf has been pivoted into its extended position, the leaf being pivotable between its extended and out-of-the-way positions when said plates are in their flat positions against the underside of the extended support, and second spring means associated with said hinge connection between said coincident edges of said first and second plates adapted to urge the leaf into its out-of-the-way position when said plates are pivoted against the action of said first spring means into their flat positions against the underside of the extended support.

5. In combination, a table-like support having a straight edge, a leaf having a hinge connection with the support along said edge permitting pivotable movement of the leaf between an extended position in the plane of the support and an out-of-the-way position, and a hinge-type device for automatically retaining said leaf in both its extended and out-of-the-way positions comprising, a pair of pivotably connected flat hinge members, means pivotably mounting corresponding edges of said pair of hinge members one on the underside of the leaf and one on the underside of the support for pivotable movement when the leaf is in its extended position about an axis at right angles to the hinged edges of the support and leaf between a first position flat against the underside of the extended support wherein the leaf may be pivoted between its extended and out-of-the-way positions and a second position at right angles to the underside of the extended support wherein said hinge members act as a brace for retaining the leaf in its extended position, first spring means operable to automatically pivot said hinge members into said second bracing position when the leaf is pivoted into its extended position, and second spring means operable when said hinge members are pivoted into said first position flat against the underside of the extended support to automatically pivot the leaf into its out-of-the-way position and to resiliently hold the leaf in said position.

6. In a table or the like having one or more leaves hingedly connected thereto for independent pivotable movement between extended and out-of-the-way positions, a double-acting hinge-type device for automatically bracing each leaf in both its extended and out-of-the-way positions comprising, a pair of hinge members, first and second hinge connections pivotably mounting one of said members on the underside of the table and the other member on the underside of the leaf, said first and second hinge connections both lying in a plane extending at right angles to the hingedly connected edges of the table and leaf, a third hinge connection between the two hinge members extending at right angles to said first and second hinge connections, whereby said two hinge members are pivotable between a position flat against the underside of the extended table in which position the leaf may be pivoted between its extended and out-of-the-way positions and a position at right angles to the underside of the extended table in which position said members act as a supporting brace for retaining the leaf in its extended position, spring means associated with said first and second hinge connections operable to automatically pivot said hinge members into said leaf-bracing position when the leaf is pivoted into its extended position, and other spring means associated with said third hinge connection operable to automatically pivot the leaf into its out-of-the-way position when said two hinge members are pivoted from said leaf-bracing position to said position flat against the underside of the extended table.

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