

[54] **COMBINATION SUPPORT MEMBER  
AND HINGE LOCK MEANS**

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[51] Int. Cl. .... **F16m 11/38**

[58] Field of Search ..... **248/188.6, 168, 439; 287/14;  
108/48, 117, 130, 131, 132, 133; 312/314**

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[57] **ABSTRACT**

A leg and hinge unit for supporting a table or the like and which permits the leg to be folded beneath the table for storage. The unit includes a U-shaped bracket having a baseplate portion adapted to be permanently secured to the underside of the table with the legs of the U extending therefrom. A support leg is slidably and pivotally secured to the U-shaped bracket by means of pins fixed to the support leg so as to ride in vertical slots located in the legs of the U-shaped bracket. With the table in its horizontal position and the support leg in its vertical position the pins are at the tops of the slots and the support leg is locked in position by means of shallow channel members on the underside of the bracket plate which receive end portions of the support leg. When the support leg is moved to a position substantially parallel to the table, the pins slide downwardly in the slots and the end portions are moved out of the channel members so as to be received in vertical members depending from one side of the bracket baseplate to thus lock the support leg in its horizontal position.

**8 Claims, 9 Drawing Figures**

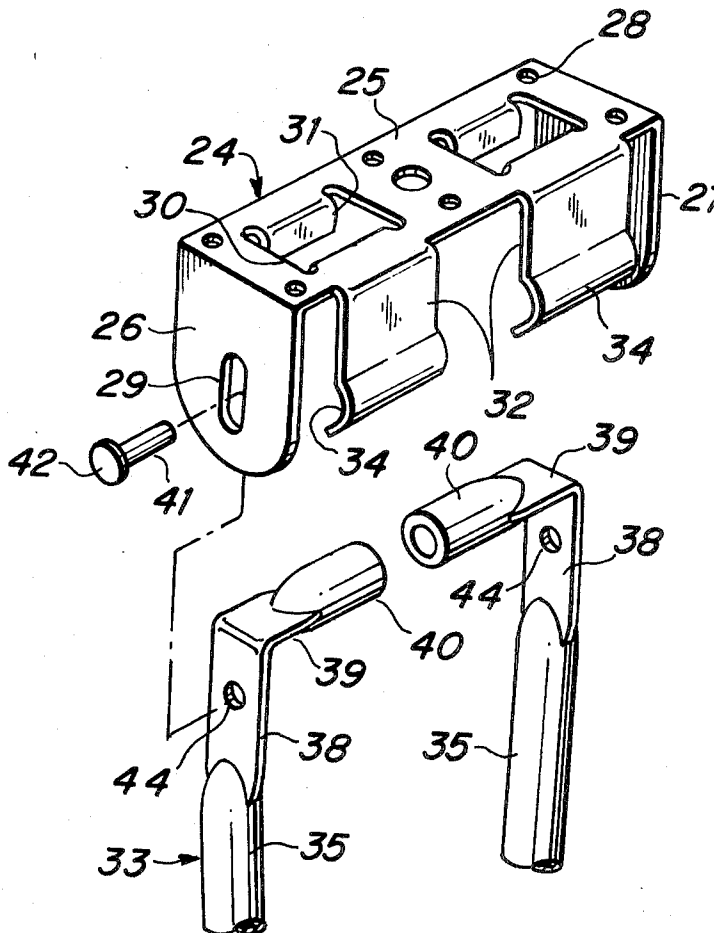




FIG-5

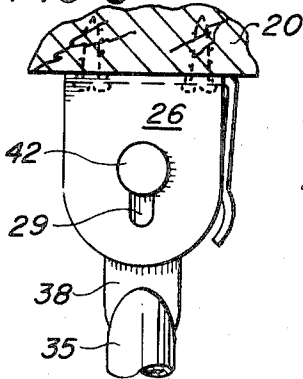


FIG-7

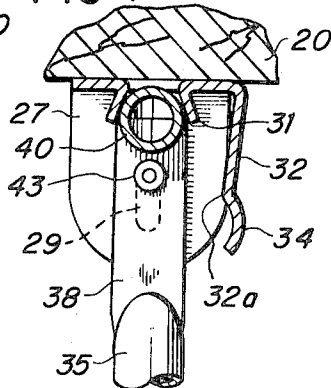


FIG-8

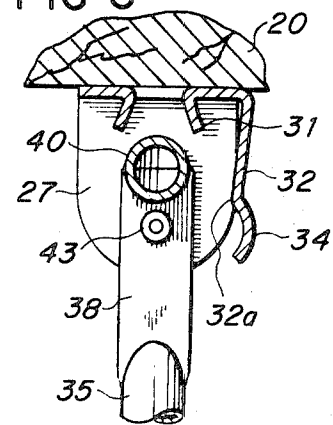


FIG-6

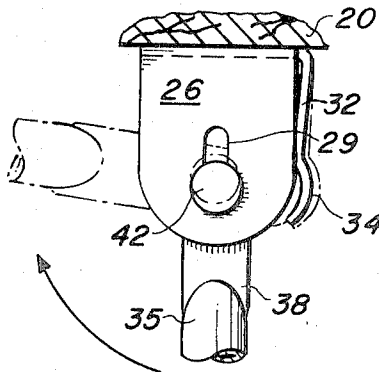


FIG-9

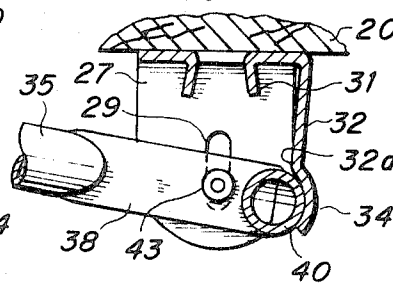
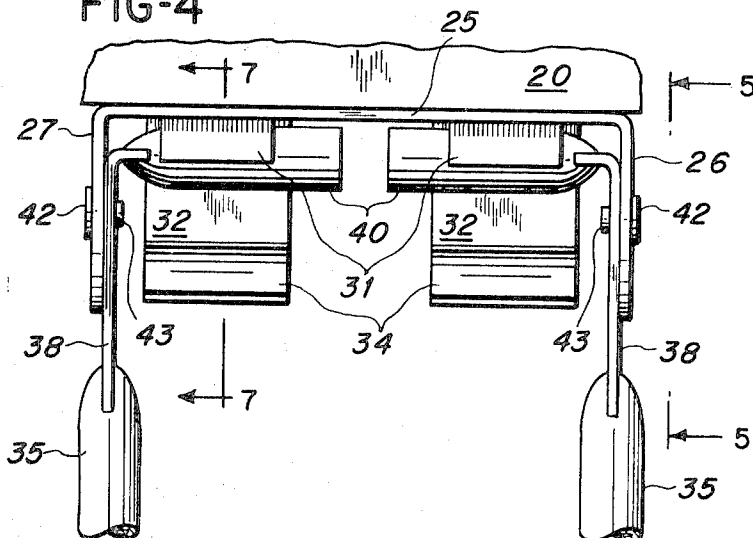


FIG-4



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## COMBINATION SUPPORT MEMBER AND HINGE LOCK MEANS

## BACKGROUND OF THE INVENTION

Various hinged legs serving as supports for tables and many like structures are known. However, there has been an absence of an economical and easily manipulated hinged leg assembly which would afford certain stability in its supporting function and a locked position thereof whether stored or acting in a supportive capacity.

This invention resides in a particular leg, hinge and locking arrangement not heretofore known, as will be fully described below, and which provides for the leg support structure two lock positions with a sturdy and simple arrangement utilizing a minimum number of parts.

## FIELD OF INVENTION

This invention has particular significance in camping trailers and the like wherein space is at a premium and wherein it is desirable to have tables and the like which can be folded out of the way for travel and extended for use. It will be apparent, of course, that the invention may be utilized in a great many conditions and circumstances other than that just indicated although this was the original concept.

## SUMMARY OF THE INVENTION

The invention embodiment provides a support structure including a leg and hinge arrangement whereby the leg may be locked in its vertical supporting position aided by the applied load which it supports. By raising the load and pulling the leg therefrom a small amount as here provided, the leg may be readily folded to a substantially horizontal position for storage, the hinge means which permits this having means to lock the leg in its stored position. The arrangement is achieved with a minimum number of parts disposed with utmost simplicity. It provides for the leg two locking positions with a very durable construction.

## THE DRAWINGS

FIG. 1 is a side elevational view, partly broken away and partly in section, showing the leg and hinge unit applied to a table which is hingedly connected to the sidewall of a camping trailer, a stored position of the leg being shown in dotted lines;

FIG. 2 is a perspective view of the arrangement of FIG. 1;

FIG. 3 is an exploded view of the hinge and a portion of the leg member which is joined thereto;

FIG. 4 is an elevational view, with parts broken away, of the hinge and leg as taken from the left sides of FIGS. 1 and 2;

FIG. 5 is a fragmentary side elevation taken along the line 5—5 of FIG. 4;

FIG. 6 is a view similar to FIG. 5 but showing a different position of the hinge and leg with yet another position thereof being shown in dotted lines;

FIG. 7 is a side elevation, partly in section and with parts broken away, taken along the lines 7—7 of FIG. 4;

FIG. 8 is a view similar to that of FIG. 7 but showing a different position of the hinge and leg; and

FIG. 9 is also a view similar to that of FIG. 7 but showing yet another position of the hinge and leg.

## DESCRIPTION OF THE INVENTION

Referring now to the drawings, while FIGS. 1 and 2 show an embodiment of the invention supporting a table 20, this is for purposes of illustration only. The invention leg and hinge unit may be applied to any member having a substantially horizontal position when in use and a substantially vertical position when not in use. Such a member, particularly with reference to camping trailers and the like, a sidewall of which is indicated at 21, could just as well be a cutting board, a wash basin, any kind of a table, an ironing board or even a bed.

The table, as the member 20 will be referred to henceforth throughout this description, is shown as connected to the wall 21 by a block 22 and a conventional hinge 23 respectively.

Referring to the invention assembly, its hinge comprises a U-shaped bracket generally indicated at 24 in FIG. 3 and including a narrow, elongate, flat, baseplate portion 25 having turned-down ends 26 and 27 which are shown to depend vertically, at right angles thereto. The baseplate portion 25 has a number of apertures 28 by means of which it may be fastened to the underside of the table 20 by screws, as indicated in FIG. 5. Each of the ends 26 and 27 has formed therein an identical and similarly positioned vertical slot 29.

Equidistantly spaced intermediate its ends, the base portion 25 includes two blanked out portions 30 each of which has a generally rectangular configuration. Each of the blanked out portions 30 is so formed and stamped to produce in the process a pair of divergent plate segments 31 turned down on parallel lines spaced between and parallel to the side edges of the baseplate 25. This provides at the underside of the plate portion 25 and between the ends 26 and 27 a pair of aligned shallow locking channels the sidewalls of which are formed by the segments 31.

As seen in FIG. 3, one side edge of the baseplate portion 25 has formed integral therewith and bent to depend vertically therefrom a pair of spring fingers 32. The fingers 32 are longitudinally spaced, aligned and their upper portions are bent slightly inward between the ends 26 and 27 while their lower dependent extremities are each bent outwardly and curved back to form an arcuate cup 34 which opens inwardly of the bracket 24. The fingers 32 provide means for locking a support leg 33 in a folded position in respect to the table 20. The dependent cup portions of the spring fingers are shaped to conform to the configuration of those portions of the leg with which they will coact. This will be further described.

The support leg 33 has been illustrated in this instance as comprising a continuous tubular member bent into a generally U-shaped configuration. Its closed end portion 36 forms a supporting base from which its leg segments 35 project upwardly in a slightly divergent relation. The uppermost ends of the leg segments 35 include flattened right-angled portions 38 bent inwardly towards each other and terminating in coaxial tubular portions 40, the adjacent ends of which are spaced. Note that the portions 38 and 40 are preferably defined by integral portions of the leg segments 35. However, they may be separately fabricated and welded together where circumstances so demand.

Each flattened portion 38 has in the part thereof forming an immediate direct extension of the tubular leg segment 35 a similar and identically positioned aperture 44. In assembling the leg unit 33 to the bracket 24, the flattened portions 38 of the upper ends of the divergent leg segments are disposed between the bracket ends 26 and 27 to align the apertures 44 with slots 29. The leg unit 33 is thus slip fit within the bracket to bridge the space between its ends and thereafter a headed pin 41 is inserted through each slot 29 to have the head 42 thereof abut the outer surface of the related end portion of the bracket. The body of the pin passes through the aligned aperture 44 in the flattened upper portion of the adjacent leg segment 35. A tubular rivet body 43 is fixedly applied to the inwardly projected end of each pin 41 whereby to contain the leg segment 35 in a pivoted slidably adjustable relation to the bracket 24. As will be obvious, the ends of the slots 29 determine the limits of movement therein of the pins 41 and thereby of the leg unit 33.

## OPERATION

When the support leg 33 is in its vertical support position of FIGS. 1, 2 and 4, the pins 41 are respectively positioned at the tops of the vertical slots 29 to which they relate. This is best seen in FIGS. 5 and 7. Under conditions of vertical load on the leg 33 here illustrated, the upper terminal tubular leg portions 40 are identically and respectively seated within the channels defined by the pairs of divergent plate segments 31. The weight of the table and its load, perhaps with an assist from the user, will insure this position being achieved. In this position the tubular portions 40 frictionally wedge between the up-

wardly convergent surfaces of the segments 31 which define the locking channels. The support leg unit 33 is thus secured against any pivotal movement.

In order to fold the support leg unit 33 under the table 20 and hold it there, the user will lift the table a small amount as permitted by the hinge 23 and pull the support leg unit 33 downwardly from its frictionally wedged position until the pins 41 are drawn to the bottom of their respective slots 29. When the pins 41 are so bottomed, the terminal portions 40 are just clear of their respective wedging channel forming bracket segments 31, as best seen in FIG. 8. The leg unit including its segments 35 may now be rotated, clockwise as viewed in FIG. 8, until the unit is substantially parallel with the underside of the table 20. As this leg moves to the position of FIG. 9 (and dotted line position of FIGS. 1 and 6), the terminal portions 40 will first engage the inwardly slanted upper portions of the vertical spring fingers 32, at about areas 32a thereof adjacent the cupped portions 34. This causes the spring fingers, which are slightly resilient, to move in a counterclockwise direction, noting FIG. 8. Continued clockwise movement of the support leg unit 33 and portions 40 thereof will permit the resilient spring fingers 32 to snap back to their original positions and the cup portion 34 to frictionally engage about the terminal portions 40 of the leg unit in a manner to lock the same in its stored or folded position as seen in FIG. 9. As this final action takes place to create a locking of the leg unit in its stored position, the pins 41, due to a form of lost motion movement, may ride slightly upward within the slots 29 as the members 40 engage and pass over the areas 32a of the locking member 32. This is also illustrated by the dotted line position of FIG. 6. The leg is now locked in a folded dotted line position shown in FIG. 1 and the table 20 may now swing to the dependent dotted line position of FIG. 2.

To return the support leg unit 33 to its vertical position, the table 20 is swung back to its horizontal position and the leg unit is moved in a counterclockwise direction as viewed in FIGS. 1 and 6. In so moving, the terminal leg portions 40 will ride over the areas 32a of the spring fingers, forcing the fingers in a counterclockwise direction (FIGS. 6 and 9) and as the pins 41 first bottom in the slots 29, whereafter, when the leg unit 33 is substantially vertical, the table 20 may be pushed downwardly so that the pins 41 abut the tops of slots 29, the leg section 36 engaging the floor 37 under the table. In the process the portions 40 of the leg unit will be wedged in locked position within the upper converging portions of the locking channels defined by segments 31.

It will be apparent to those skilled in the art that modifications may be made in this invention without departing from the scope and spirit thereof and although the invention has been described and depicted as comprised of certain particular structures and arrangements, these are not to be considered as a limitation on the invention except insofar as they are specifically set forth in the appended claims.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed comprise but one of several modes of putting the invention into effect.

Having thus described my invention, I claim:

1. A hinged mechanism for use in support of a table or like structure, including a hinge means and leg means, said hinge means comprising a bracket including a plate segment adapted to be secured to the table, said bracket including spaced projections, a pair of said spaced projections forming dependent members receiving in telescoped fit therewith said

leg means, a pair of lock devices extending from said plate segment and disposed between said dependent members, a resilient member in connection with said plate segment and depending from adjacent an edge thereof, said resilient member having a lock means on its projected extremity, said leg means and said dependent members having portions pivotally and slidably interengaging, including pins fixed on one of said dependent members and said leg means and slidable in a vertical slot provided in the other thereof, and said leg means including a terminal portion engageable with said lock devices and with said lock means, the arrangement of said slots, pins, lock devices and said terminal portion being such that when the pins are adjacent the tops of said slots said leg means will be vertically disposed and said terminal portion will be engaged within said lock devices whereby to lock said leg means in its vertical position and when said pins are adjacent the bottoms of said slots the terminal portion will be free of said lock devices so that said leg means may be pivoted to a substantially horizontal position whereby said terminal portion will engage the said lock means so as to lock said leg in this position.

2. Apparatus as set forth in claim 1 in which said leg means comprises a generally U-shaped tubular strap, the free ends of the strap being turned in towards each other to define a pair of said terminal portions, there being two pairs of said lock devices in the form of channel-defining members and said resilient member being in the form of a projected spring finger having curved portions providing said lock means, each of said terminal portions being arranged to cooperate with one of said pairs of channel members and with said lock means.

3. A hinge arrangement for a pivotal leg means and a structure to be supported by said leg means comprising bearing means adapted to be fixed to said structure to be supported, said bearing means having in connection therewith and projected therefrom a first lock means and a second lock means, the first said lock means being adapted to engage a portion of said leg means to fix it in a supporting position when so oriented and the second said lock means being adapted to resiliently contain a portion of said leg means to lock it in a pivoted folded position for storage, said bearing means including a plate segment having projected perpendicular thereto a pair of parallel bearing members each including therein an identical slot, pin means including a pin projected through each of said slots to interconnect with opposite sides of said leg means and form a pivotal and slidable connection of said leg means to said plate segment thereby, said plate segment further including between said bearing members at least one pair of divergent elements and to one side of said plate segment a projected spring finger to respectively provide said first and second lock means.

4. A hinge arrangement as set forth in claim 3, characterized by the said first lock means being a wedging means and the said second lock means being arranged to operate on the same portion of said leg means as is wedged by the said first lock means.

5. A hinge mechanism for a table and foldable leg, comprising a bracket adapted to be secured to the underside of a table, projections dependent from said bracket a pair of which define a relatively rigid locking device and another of which is a deflectable member having a lock means at an outer free end thereof, projection means dependent from said bracket, a leg having a slidable and pivotal connection with said projection means orienting a terminal portion of said leg for alternative engagement with said pair of projections and with said deflectable member, the arrangement in an unfolded position of the leg aligning the terminal portion thereof with said pair of projections to interengage said terminal portion in said locking device under a table load and said terminal portion in pivotally moving to a folded position stressing said deflectable member and in achieving a fully folded position seating to said lock means.

6. A hinge mechanism according to claim 5, wherein said leg has a U-shaped configuration presenting approximately

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parallel leg members which at their free ends each define a terminal leg portion, said terminal portions being bent to dispose in substantially aligned spaced apart opposed relation, said leg members having individual slidable and pivotal connection with said projecting means and said terminal leg portions disposing in approximately parallel underlying relation to said bracket, a corresponding locking device and a lock means being provided with respect to each of said terminal leg portions.

7. A hinge mechanism according to claim 5, wherein said bracket and dependent projections and projection means comprise a unitary bracket means including a substantially planar plate segment at least one end of which is bent downward to define said projection means, and at least one

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marginal portion of which is bent down to define said deflectable member, at least one portion of said plate segment intermediate its margins being outstruck in a downward direction to define said pair of projections, said pair of projections having a divergent, convergent relation for a wedging engagement therewith of the said terminal leg portion.

8. A hinge mechanism according to claim 5, wherein said projection means has a slot with respect to which said leg is in pinned connection, the lock means at the outer free end of said deflectable member being defined by an arcuate surface disposing approximately in the horizontal plane of the bottom of said slot.

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