Nov. 16, 1965 F. D. KNOBLOCK 3,217,673

FOLDING TYPEWRITER TABLES

Original Filed Feb. 6, 1962 2 Sheets-Sheet 1

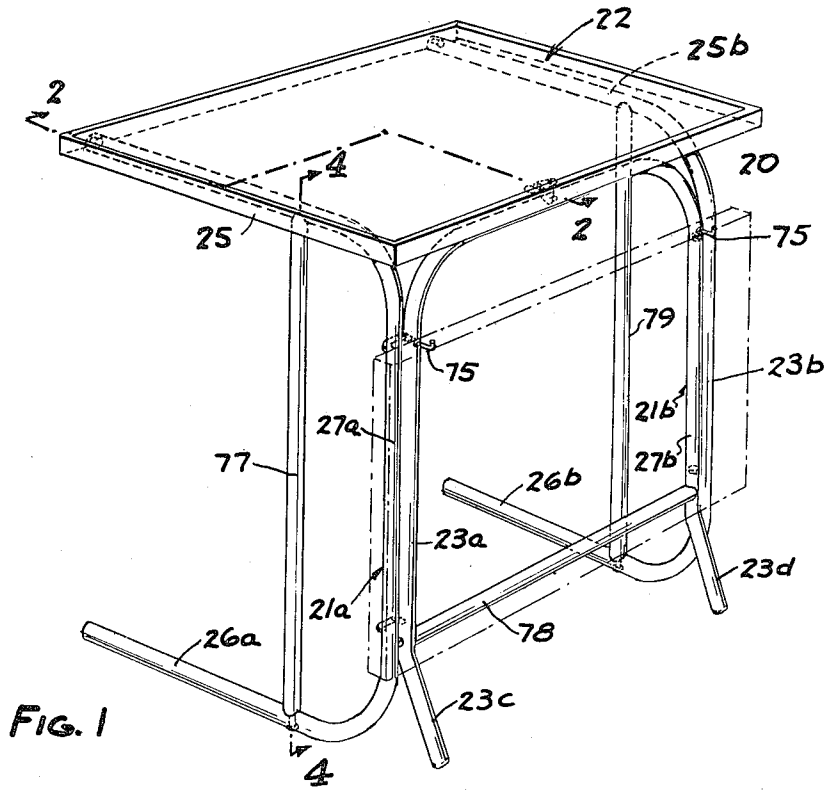



FIG. 1

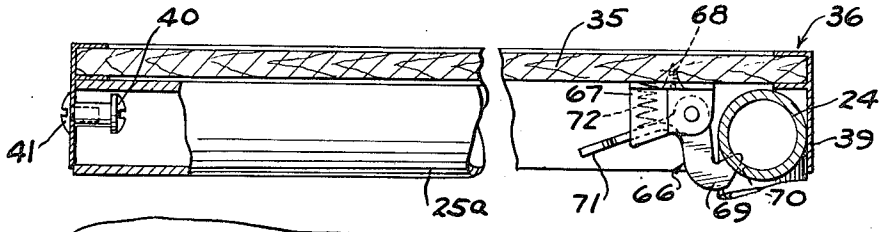



FIG. 2

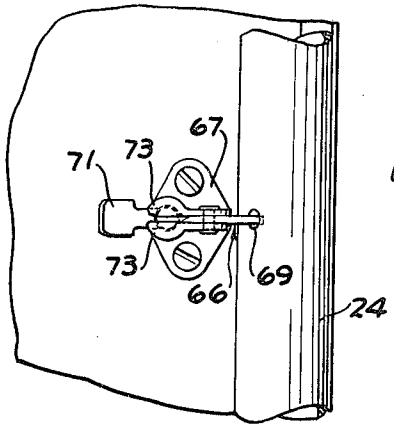



FIG. 3

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Original Filed Feb. 6, 1962 2 Sheets-Sheet 2

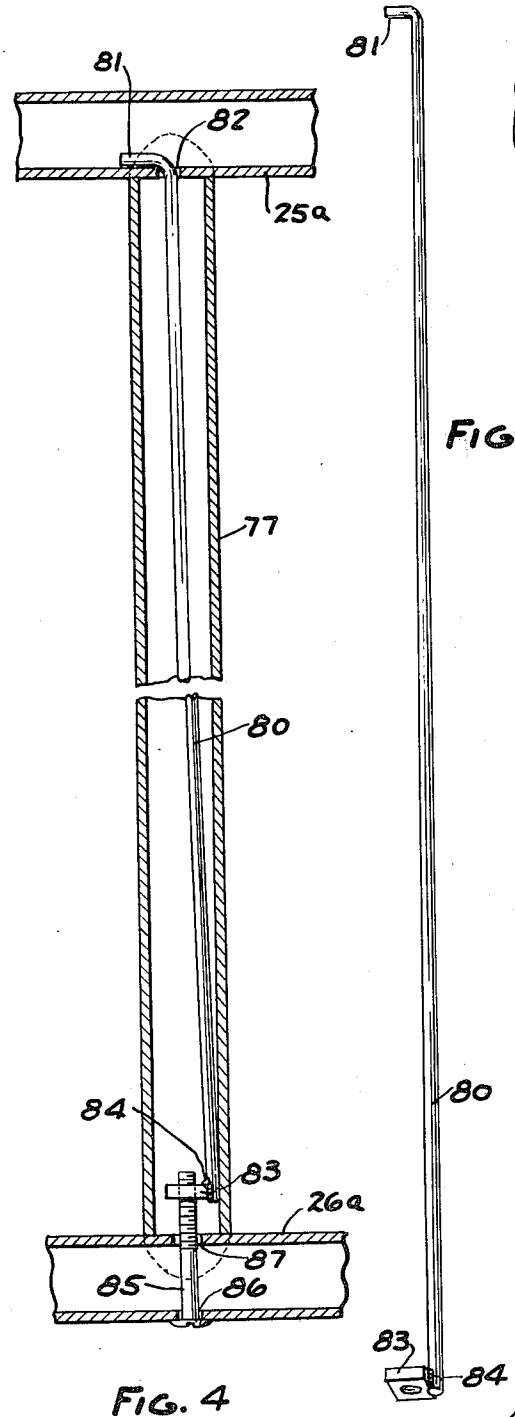



FIG. 4




FIG. 5

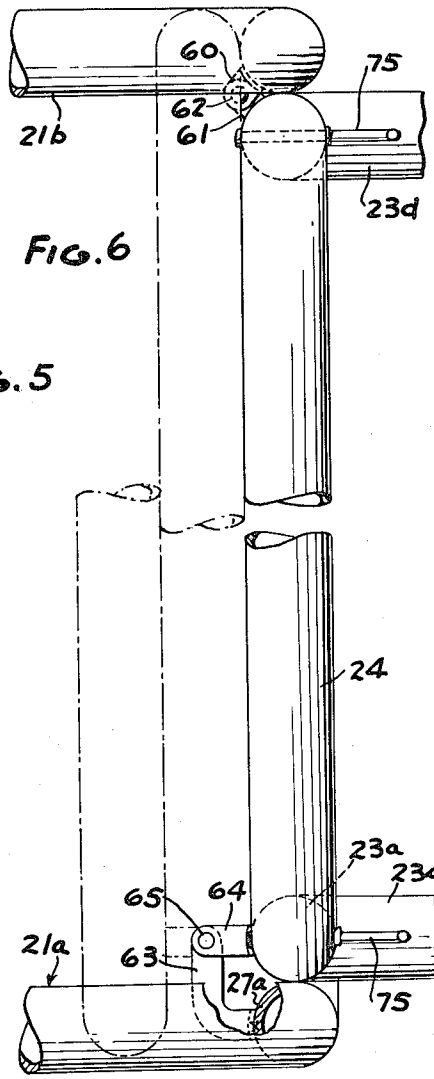



FIG. 6

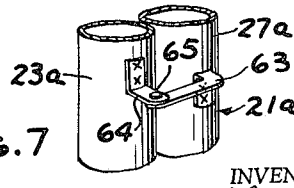



FIG. 7

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3,217,673

# FOLDING TYPEWRITER TABLES

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Original application Feb. 6, 1962, Ser. No. 171,457. Divided and this application Sept. 8, 1964, Ser. No. 394,765

5 Claims. (Cl. 108—157)

This application is a division of my copending application Ser. No. 171,457, filed Feb. 6, 1962, now abandoned.

This invention relates to folding tables and particularly to folding tables of the type which are adapted to support heavy loads such as typewriters.

In the patent to Frederick D. Knoblock and Albert C. Koett 2,902,325, titled "Folding Support Base for Table Top," issued Sep. 1, 1959 and in my Patent 3,108,550, issued Nov. 7, 1960, titled "Folding Table," there are disclosed folding tables of the type which are readily folded into flat compact form for storage and which can be unfolded and erected without the use of tools.

In Patent 2,902,325, there is disclosed a foldable base on which a tray or table top is adapted to rest which comprises side members each made of a single length of elongated tubing and having a U-shape. Each side member is positioned so that the lower arm is adapted to rest upon the floor and the upper arm is adapted to support the table top. The members are spaced apart with their bight portions extending vertically. A main frame member comprising a single length of elongated tubing of inverted U-shape is provided with the legs thereof parallel to the bight portions of the side members. The bight portions of the side members are adapted to be folded into compact relationship adjacent the main frame member. In the folding table shown in Patent 2,902,325, the table top is adapted to rest on the cross or bight portion of the main frame member and the upper arms of the side members. Although such a construction is suitable for most purposes, it has the disadvantage in that the table top may be inadvertently disengaged or moved upwardly. This is particularly undesirable in the case where the table is used to support a typewriter since the typewriter may be caused to fall to the floor resulting in damage to the typewriter.

In my Patent 3,108,550 novel hinge means are provided for hinging the main frame member to the side members. In addition, the table top is releasably hinged to the cross portion and the upper arms of the side members. Although such a construction is more suitable for preventing the table top from inadvertently being displaced relative to the frame members, the releasable means shown in my Patent 3,108,550 are subject to the disadvantage in that a substantial upward force will disengage the table top from the frame members. This is, of course, of a disadvantage in supporting heavy loads such as typewriters.

It is therefore an object of this invention to provide a folding table for heavy loads, such as typewriters, wherein the table top cannot be inadvertently disengaged particularly adjacent the user.

It is a further object of the invention to provide such a folding table wherein there is a positive lock between the table top and the frame members.

It is a further object of the invention to provide such a folding table which is relatively inexpensive.

It is a further object of the invention to provide such a folding table which has novel strut reinforcing means.

Basically, the invention comprises providing axially and horizontally engageable and disengageable means between the table top and the free ends of the upper arms of the side members and yieldable releasable means between the table top and the cross portion of the main frame member. By this arrangement, any tendency to provide an upward lifting force on the table top, as for example, by an upward movement of the knees of the user, will not disengage the table top from the arms in the side members. However, when it is desired to remove the table top for folding the table, the releasable means associated with the cross portion of the main frame member can be readily disengaged to permit removal of the table top.



In order to provide additional stability to the table, novel strut means are provided which include tubular members that require no welding. The members have substantially straight rods therein, one end of each rod being hooked into an opening in one tubular member with which the brace is associated and the other end of the rod having a nut fastened thereto into which a bolt is threaded after passing through the other tubular member with which the brace member is associated.

In the drawings:

FIG. 1 is a perspective view of a folding table embodying the invention.

FIG. 2 is a fragmentary sectional view taken along the line 2—2 in FIG. 1.

FIG. 3 is a fragmentary view looking upwardly on the right hand portion of FIG. 2.

FIG. 4 is a fragmentary sectional view taken along the line 4—4 in FIG. 1.

FIG. 5 is a perspective view of a portion of the structure shown in FIG. 4.

FIG. 6 is a fragmentarry plan view of the table shown in FIG. 1 with the table top removed.

FIG. 7 is a fragmentary perspective view of the hinge shown in FIGS. 1 and 6.

Referring to FIG. 1 the folding table comprises four elements, namely, a main frame member **20**, side frame members **21***a*, **21***b*, and a tray **22**. Main frame member **20** is made of a single length of tubing and has an inverted U-shape comprising generally vertical legs **23***a*, **23***b* connected by a horizontal cross or bight portion **24**. Each side member **21***a*, **21***b* is also made of a single length of tubing and comprises horizontal legs **25***a*, **25***b*, **26***a*, **26***b* connected by a vertical cross or bight portion **27***a*, **27***b*. Main frame member **20** and side members **21***a*, **21***b* are permanently hinged to one another by fixed hinges that comprise projecting arms **60**, **61** on leg **23***b* and bight portion **27***b*, respectively, that are hinged to one another by rivet **62** and projecting arms **63**, **64** on the vertical bight portion **27***a* and leg **23***a*, respectively, which are hinged to one another by a rivet **65** (FIG. 7). The projecting arms **60**, **61** are substantially identical to the arms **63**, **64** except that the arms **63**, **64** are longer so that when the side member **21***b* is folded into position adjacent the main frame member **20**, the side member **21***a* may thereafter be folded in position adjacent the side member **21***b*, shown in dotted lines in FIG. 6.

Latch means positively lock the forward end of the table top **22** to the cross portion **24** of the frame member. As shown in FIGS. 2 and 3, the latch means comprise latch **66** pivoted to bracket **67** fixed to the under side of the top panel **35** of the table top by screws **68**. Latch **66** is formed with a hook **69** that is adapted to releasably engage an opening **70** in the cross portion **24** of main frame member **20**. Latch **66** also includes a portion forming thumb lever **71** that is adapted to be depressed to release the hook **69** from the opening **70**. A coil spring **72** is interposed between the bracket **67** and the thumb lever **71** to yieldingly urge the hook **69** into engagement with the opening **70**. Portions **73** of the bracket are engaged by thumb lever **71** to limit the outward movement of the latch **66**.

Referring to FIG. 1, tray 22 is adapted to be supported on upper arms 25*a*, 25*b* and cross portion 24 when the table is unfolded. Tray 22 comprises a substantially flat panel 35 of glass, plastic, wood or similar material surrounded by a frame 36. Frame 36 includes inwardly extending lips 37, 38 integral with the frame and supporting the panel 35. In addition, frame 36 includes a downwardly extending flange 39 within the confines of which cross portion 24 and upper arms 25*a*, 25*b* are adapted to extend when the table is in unfolded position.

As shown in FIG. 1, the frame 36 is rectangular and includes a pair of inwardly extending pins 40 along one side thereof. The pins 40 are adapted to engage the open ends of the tubular arms 25*a*, 25*b* (FIGS. 1 and 2). Each pin 40 is tubular and is held in position on the flange portion 39 by a screw 41 extending through an opening in the flange portion and threaded into the tubular pin 40 (FIG. 2).

In order to mount the table top 22 on the frame member, the side members are first unfolded to the position shown in FIG. 1, and the tray 22 is brought into position engaging the pins 40 with the open ends of the arm 25*a*, 25*b*.

When the table is thus in unfolded condition, a typewriter or other heavy object may be placed in the table top 22 and the user can then proceed to work without danger or accidentally disengaging the table top from the frame members. The pin 40 prevents the rear of the table top 22 from becoming disengaged from the side arms 25*a*, 25*b* by any inadvertent lateral or upward movement such as might occur due to the movement of the knees of the user.

In order to remove the table top, it is only necessary to hold the frame members and lift on the front end of the table top 22, moving the thumb lever 71 and disengaging the forward end of the table top from the frame member. The rear end of the table top may be then disengaged by moving the table top rearwardly relative to the arms 25*a*, 25*b* to disengage the pins 40 from the ends of the arms 25*a*, 25*b*.

After the pins 40 are hooked in the open ends of the tubular arms 25*a*, 25*b*, the downward movement of the forward edge of the table top 22 causes the hook 69 to be urged outwardly and pass around the tubular portion 24 into engagement with the opening 70. Inadvertent displacement of the front edge of the table top 22 positively is prevented so that the table top will not be disengaged until the thumb lever 71 is depressed. A further advantage is that the latch 66 is mounted on a panel 35 removing strain from the frame 36.

Hooks 75 are provided adjacent the upper end of the legs 23*a*, 23*b* and are adapted to engage openings in the flange 39 to support the table top 22 when the table is folded, as shown in dotted lines.

In order to provide additional stability to the table for use, for example, to support a typewriter, brace members 77, 78 and 79 are provided between the upper and lower arms of the side members and the legs of the main frame member. Each of the braces 77, 78, 79 is of substantially identical construction.

Referring to FIGS. 4 and 5, each brace is of tubular construction and the ends thereof are cut to conform to the outer contour of the members 25*a*, 26*a* with which the tubular member is associated. A substantially straight rod 80 is provided within the tubular member and includes a turned over or hooked end 81 that passes through an opening 82 in the member 25*a*. A nut 83 is welded to the lower end of the rod 80 as at 84. A bolt 85 passes through aligned openings 86, 87 in the lower arm 26*a* and is threaded into the nut 83. By tightening the bolt 85, the rod 80 is pulled downwardly causing the hook 81 to engage the inner surface of the member 25*a* to pull the members 25*a*, 26*a* toward one another and positively lock the brace 77 in position. In this manner, a brace is provided which requires no welding and can be assembled with a minimum amount of labor and use of tools. As pointed out above, the braces 78, 79 are of identical construction to brace 77.



It can thus be seen that I have provided a folding table which is particularly adapted to support heavy loads and includes novel means for preventing inadvertent removal of the table top and novel brace means.

What I claim is:

1. The combination comprising a pair of tubular members and a brace extending between said tubular members, each said brace comprising a tube, a substantially straight rod extending through said brace and having one end thereof turned laterally, said tubular member which the one end of the brace is associated having an opening through which said hooked end of said rod extends, the other end of said rod being entirely within said brace and having a nut fixed thereto, the other tubular member with which said brace is associated having aligned openings therein, a bolt extending through said openings and threaded into said nut.

2. The combination comprising a pair of tubular members and a brace extending between said tubular members, said brace comprising a tube, the ends of said brace being formed to conform to the contour of the tubular members with which it is associated, a substantially straight rod extending through said brace and having one end thereof turned laterally, said tubular member which the one end of the brace is associated having an opening through which said hooked end of said rod extends, the other end of said rod being entirely within said brace and having a nut fixed thereto, the other tubular member with which said brace is associated having aligned openings therein, a bolt extending through said openings and threaded into said nut.

3. A folding table comprising a U-shaped single piece tubular main frame member having two substantially vertical leg portions and a connecting cross portion at the top thereof, two one piece tubular side members, each side member having a U-shape comprising a lower arm for resting horizontally on a floor, an upper arm substantially parallel to the lower arm, the arms of each side member being connected by vertically extending portions, said vertically extending portions being disposed respectively in close proximity to and parallel to the two legs of the main frame member, means for pivotally connecting said vertical portions of the side members respectively to the two legs of the main frame member, said one side member being pivoted to the main frame member so that it may be folded flat against the main frame member, the other side member being pivoted to said main frame member so that it may be folded flat against the one said folded side member, a brace extending between the legs of said main frame member and a brace extending between the upper and lower arms of each said side member, each said brace comprising a tube, a substantially straight rod extending through said brace and having one end thereof turned laterally, said tubular member which the one end of the brace is associated having an opening through which said hooked end of said rod extends, the other end of said rod being entirely within said brace and having a nut fixed thereto, the other tubular member with which said brace is associated having aligned openings therein, a bolt extending through said openings and threaded into said nut.

4. A folding table comprising a U-shaped single piece tubular main frame member having two substantially vertical leg portions and a connecting cross portion at the top thereof, two one piece tubular side members, each side member having a U-shape comprising a lower arm for resting horizontally on a floor, an upper arm substantially parallel to the lower arm, the arms of each side member being connected by vertically extending portions, said vertically extending portions being disposed respectively in close proximity to and parallel to the two

legs of the main frame member, means for pivotally connecting said vertical portions of the side members respectively to the two legs of the main frame member, said one side member being pivoted to the main frame member so that it may be folded flat against the main frame member, the other side member being pivoted to said main frame member so that it may be folded flat against the one said folded side member, and a rectangular table top adapted to rest on the cross portion and the upper arms, said table top comprising a rectangular top panel and a peripheral frame having a downwardly extending flange portion into which the cross portion and upper arms extend, axially and horizontally engageable means between the flange portion of the frame and the ends of the upper arms, and releasable locking means between the cross portion and the table top, a brace extending between the legs of said main frame member and a brace extending between the upper and lower arms of each of said side member, each said brace comprising a tube, a substantially straight rod extending through said brace and having one end thereof turned laterally to form a hooked end, said tubular member which the one end of the brace is associated having an opening through which said hooked end of said rod extends, the other end of said rod being entirely within said brace and having a nut fixed thereto, the other tubular member with which said brace is associated having aligned openings therein, a bolt extending through said openings and threaded into said nut.

5. A folding table comprising a U-shaped single piece tubular main frame member having two substantially vertical leg portions and a connecting cross portion at the top thereof, two one piece tubular side members, each side member having a U-shape comprising a lower arm for resting horizontally on a floor, an upper arm substantially parallel to the lower arm, the arms of each side member being connected by vertically extending portions, said vertically extending portions being disposed respectively in close proximity to and parallel to the two legs of the main frame member, means for pivotally connecting said vertical portions of the side members respectively to the two legs of the main frame member, said one side



member being pivoted to the main frame member so that it may be folded flat against the main frame member, the other side member being pivoted to said main frame member so that it may be folded flat against the one said folded side member, and a rectangular table top adapted to rest on the cross portion and the upper arms, said table top comprising a rectangular top panel and a peripheral frame having a downwardly extending flange portion into which the cross portion and upper arms extend, axially and horizontally engageable means between the flange portion of the frame and the ends of the upper arms, and releasable locking means between the cross portion and the table top, a brace extending between the legs of said main frame member and a brace extending between the upper and lower arms of each said side member, each said brace comprising a tube, the ends of said brace being formed to conform to the contour of the tubular members with which it is associated, a substantially straight rod extending through said brace and having one end thereof turned laterally, said tubular member which one end of the brace is associated having an opening through which said hooked end of said rod extends, the other end of said rod being entirely within said brace and having a nut fixed to a side thereof, the other tubular member with which said brace is associated having aligned openings therein, a bolt extending through said openings and threaded into said nut.

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