

Oct. 31, 1939.

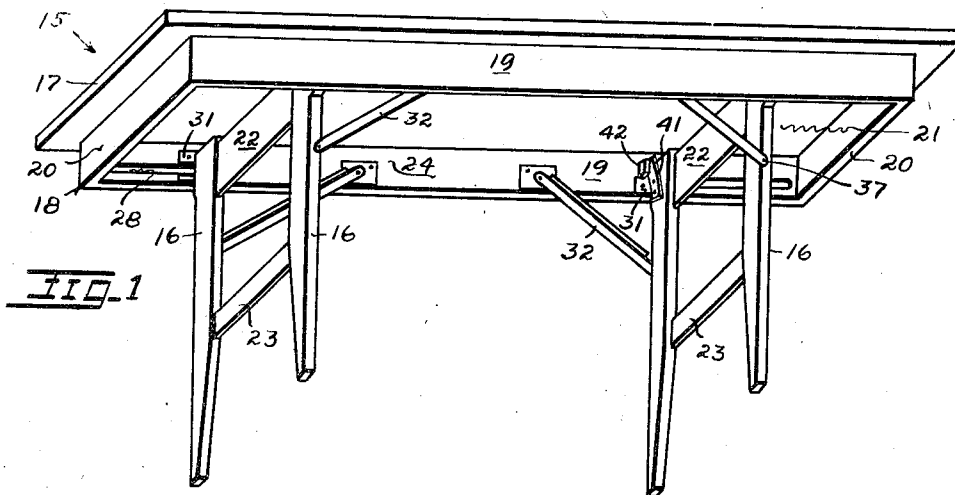
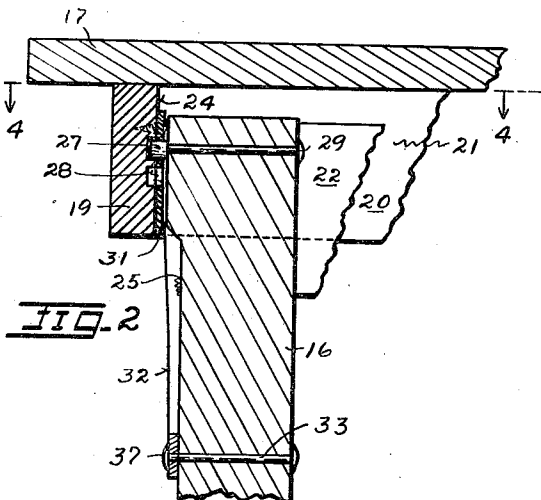
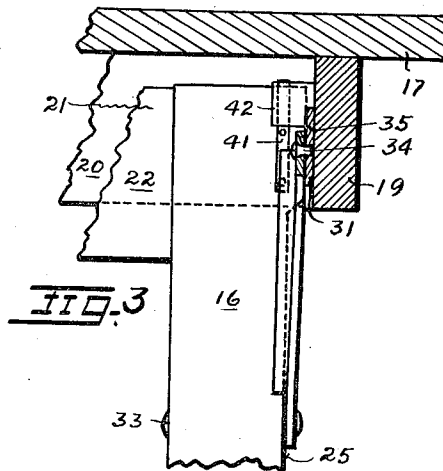
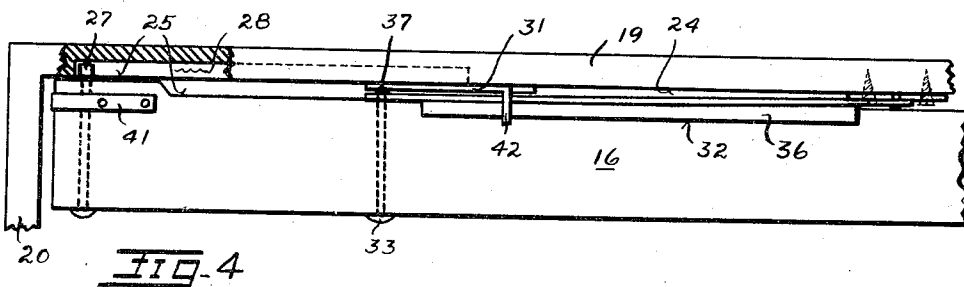
O. C. BRISTOW

2,178,248

FOLDING TABLE

Filed Aug. 9, 1937

3 Sheets-Sheet 1



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FOLDING TABLE

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3 Sheets-Sheet 2

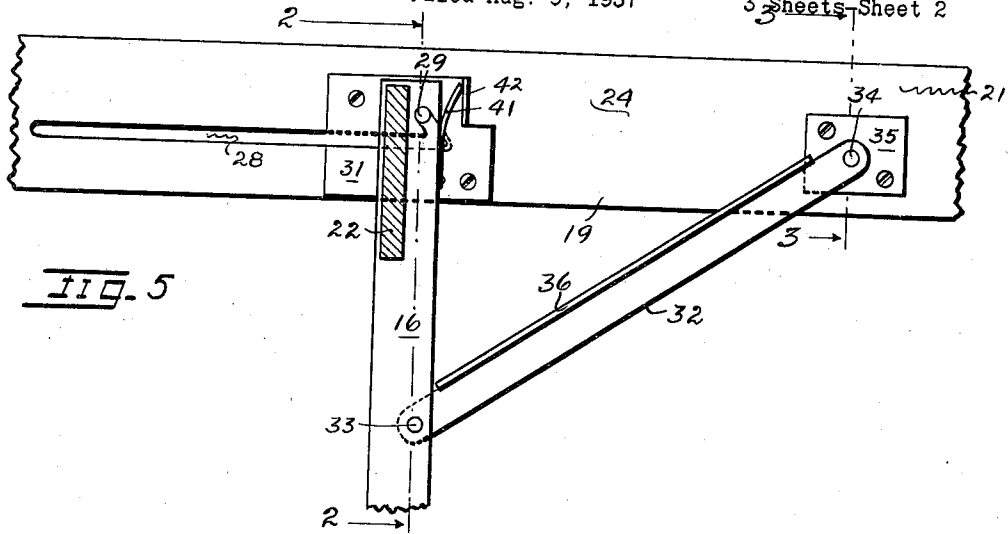


FIG. 5

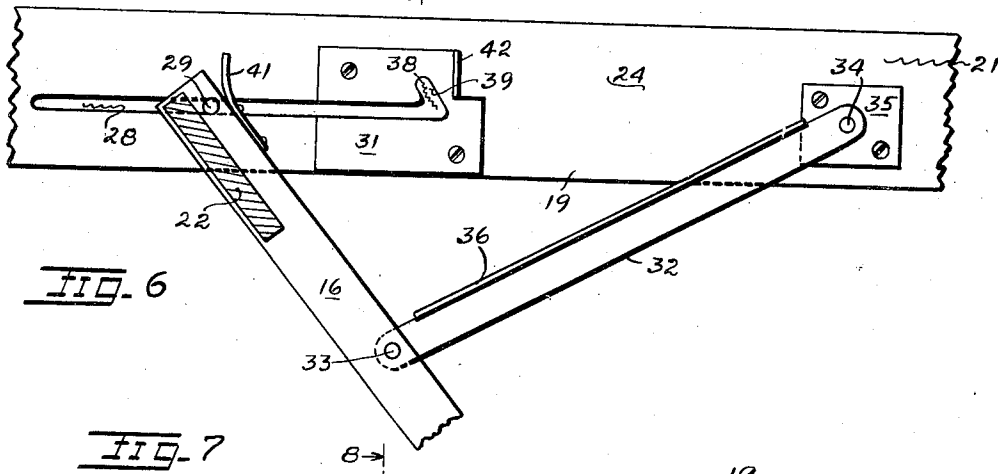


FIG. 6

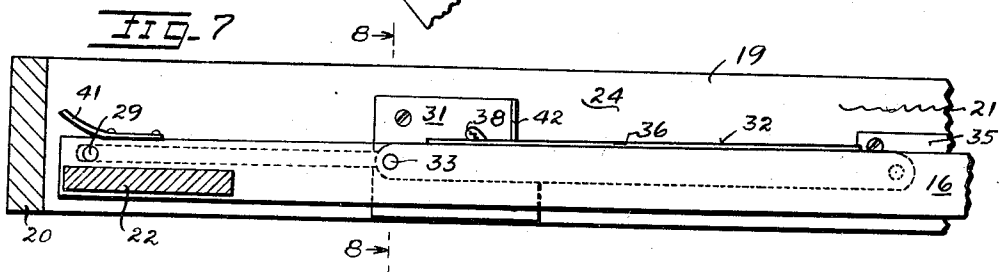


FIG. 7

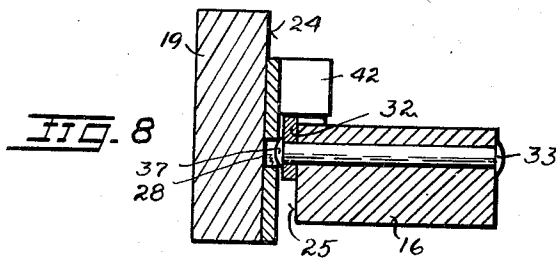


FIG. 8

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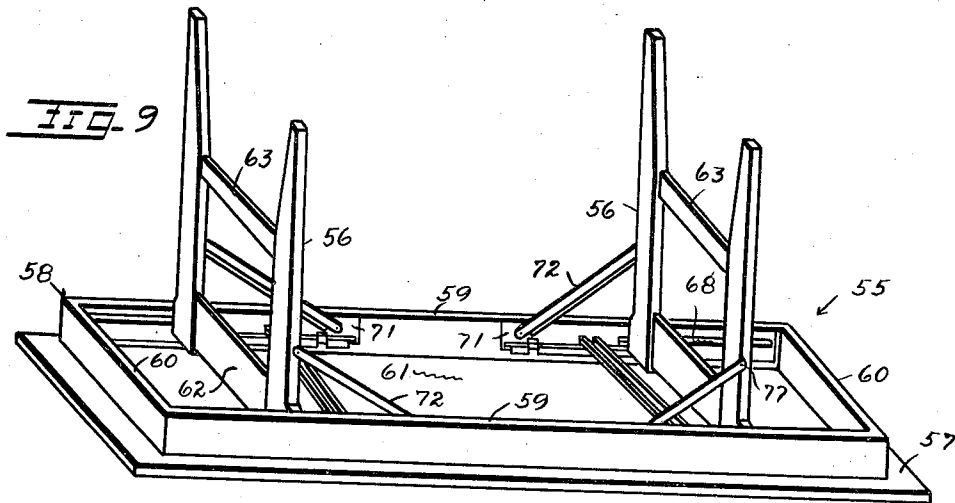
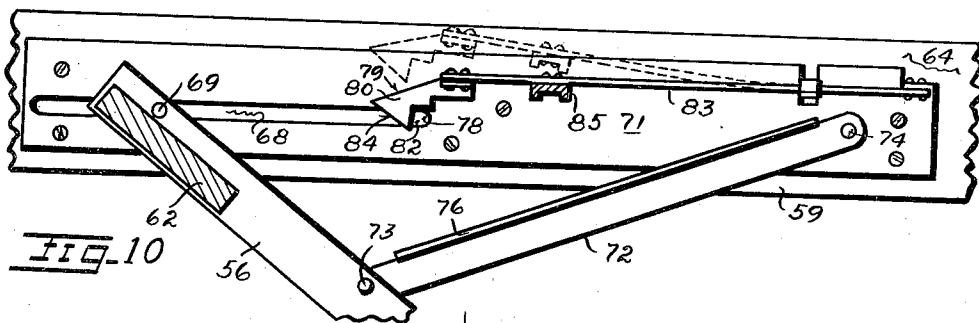
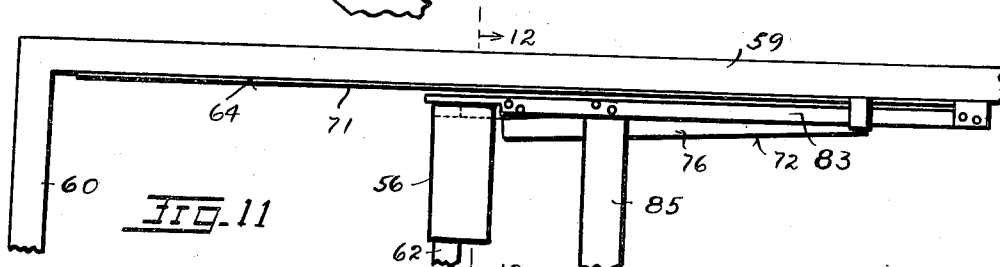
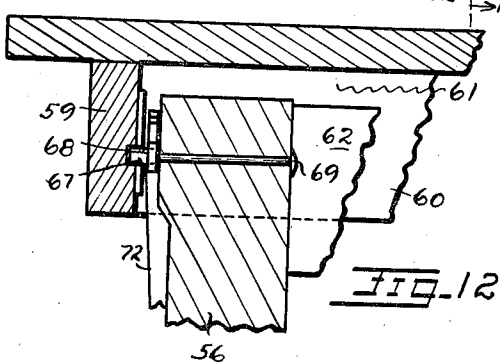
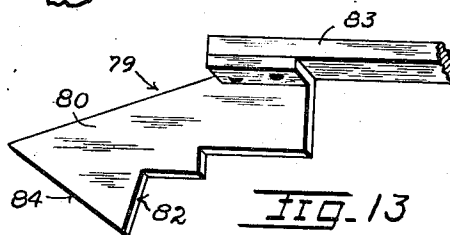
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FOLDING TABLE

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3 Sheets-Sheet 3



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2,178,248

FOLDING TABLE

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Application August 9, 1937, Serial No. 158,097

3 Claims. (Cl. 311-87)

The invention relates to a table having attached legs foldable against the table top or extendible to an operative position.

5 A general object of the invention is to provide a generally improved mounting for the legs of folding tables.

A more specific object is to provide improved and automatically operative devices for releasably securing the table legs in their limiting positions.

10 Another object is to provide a folding table of the class described wherein an unintended release of the extended legs for their folding is substantially impossible while the table is set up in position for use.

15 A further object is to provide a folding table which is particularly compact when folded.

The invention possesses other objects and features of advantages, some of which, with the foregoing, will be set forth or be apparent in the following description of typical embodiments of the invention, and in the accompanying drawings in which,

25 Figure 1 is an underneath perspective view of a folding table embodying the present invention, the table legs being fully extended.

Figures 2 and 3 are enlarged fragmentary sections of the table taken in planes which are perpendicular to the table top and to the longitudinal axis of the table, said planes being respectively indicated at 2-2 and 3-3 in Figure 5.

30 Figure 4 is a fragmentary plan view taken at the plane of the line 4-4 in Figure 2, but with a leg of the table in fully folded position.

35 Figure 5 is an enlarged view of a portion of the showing of Figure 1, a leg of the table being fully extended.

40 Figures 6 and 7 are similar to Figure 5 except that the table leg is disposed intermediately of its limiting positions in Figure 6 and is shown as fully retracted in Figure 7.

Figure 8 is a section at 8-8 in Figure 7.

45 Figure 9 is a perspective view of a table in inverted position and having its legs held extended by a device which comprises another embodiment of the invention.

50 Figure 10 is an enlarged fragmentary elevation of a portion of the structure shown in Figure 9, and corresponding to the showing of Figure 6.

Figure 11 is a plan view of the structure of Figure 10, but with a table leg thereof operatively extended.

55 Figure 12 is a fragmentary section at 12-12 in Figure 11.

Figure 13 is a perspective view of a catch element of Figures 9 to 11 inclusive.

Figures 1 to 8 inclusive disclose the features of the present invention as embodied in the structure of a folding table 15 having a top structure arranged for its support on four legs 16 which are attached to the top for their extension as a support means or may be folded flat beneath the top. The table-top structure includes a slab-like element 17 which provides the working surface for the table and is mounted on a support frame 18 to members 19 of which the legs 16 are directly and solely attached; the form and composition and securing of the element 17 are generally aside from the present invention which particularly concerns the connections between the legs 16 and the top members 19.

In the present instance, the frame members 19 comprise opposite sides of the frame 18 and are connected at their ends by cross members 20 to provide a laterally closed rectangular frame which defines a space 21 within it. As shown, the frame members 19 and 20 comprise flat boards of rectangular cross-section and like width, and are each set transverse to the plane of the frame whereby the space 21 is of uniform depth. The members 19 and 20 are known in the art as aprons. The space 21 is shown as deep enough to completely receive the legs 16 when the latter are folded into parallel relation with the plane of the top structure, this being preferred since it protects the retracted legs and provides for a firm stacking of a plurality of the folded tables.

As illustrated, the legs 16 at the table ends are unitarily connected so that each leg pair is movable as a unit between extended and withdrawn positions. Accordingly, the legs of each pair are connected by means of mutually spaced cross members 22 and 23 to provide leg units which are rigid against any distortion and constantly hold the legs of a pair in fixedly spaced relation. The width of each said leg unit is slightly less than the spacing between the mutually opposed inner faces 24 of the top members 19 whereby they may be disposed between said members with their outer edge faces 25 in opposition to the apron faces 24. Although the legs 16 are thus movable in connected pairs between their operative and inoperative positions, the present means connecting the legs to the apron members 19 are individual to each leg and the adjacent apron member; accordingly, each said connecting means is actually operative with respect to a single leg, and will hereinafter be so considered and described.

Each leg 16 fixedly mounts a pin 27 which extends laterally from it near its inner end and is constantly and slidably engaged in a slot 28 provided in the opposite apron 19; in the present instance, the pin 27 comprises an extending portion of an element 29 which is engaged through the leg as a bolt or rivet and has the pin 27 as a head thereof. The slot 28 extends longitudinally along the apron 19, and when the apron is formed of wood or another relatively soft material, the slot edges at the slot portion which receives the pin 27 when the leg is fully extended may be reinforced by a metallic plate 31 fixed to the apron against its inner face 24 and perforated in complementary relation to the slot portion opposite it. The spacing of the outer faces 25 of the legs 16 of an associated pair is but slightly less than the distance between opposed plates 31, and the pins 27 are of such length that they simultaneously engage the corresponding slots 28 for all positions of the pins along the slots. In the present instance, the slot portions in the aprons 19 comprise grooves extending from the inner apron faces 24 whereby the presence of the slots is not evident from the outer faces of the aprons, and the aprons are not unnecessarily weakened.

A brace link 32 connects an intermediate point of each leg with the corresponding apron 19 at a fixed point thereof. One end of the link is pivotally secured to the leg by means of a headed pivot pin 33 fixed in the leg and extending transversely from the outer leg face 25, and the other link end is secured to the apron by means of a headed pivot pin 34 extending from the inner apron face 24. In the present instance, each pivot pin 34 is mounted on a metallic plate 35 which is appropriately fixed to the apron at its face 24. Intermediately thereof, the link 32 is provided with a flange 36 which extends from the link edge which is nearest the top of the table, is perpendicular to the plane of the link, and is arranged to be utilized in a manner to be hereinafter brought out.

By particular reference to Figure 5, it will be noted that when a leg 16 is fully extended for supporting a table top, the slot 28 engaged by its pin 27 extends from the pin toward the nearest end apron 20 while the brace link 32 for the leg extends oppositely with respect to the leg. The arrangement is such that the inner leg end is arranged to be disposed close to the apron 20 when the leg is in the fully folded position shown for it in Figure 7; in this manner, an operatively extending leg is adapted to provide its support at a point which is appreciably spaced from the apron 20, and the folded leg requires a minimum length of storage room as measured from said apron.

When the leg 16 is in its fully retracted position, it is preferably parallel to the plane of the table top, as is shown in Figure 7; when so disposed, the leg 16 is preferably arranged to lie flat against and along the flange 36 of its brace link whereby said flange is operative as a stop to limit the folding movement of the leg to prevent its engagement with the top slab of the table. Furthermore, when the leg is in the fully folded position shown for it, the suitably rounded head 37 of the link pivot pin 33 is arranged to engage in the slot 28 at the plate 31 as a detent means for releasably securing the leg in folded position, this relation being brought out in Figures 7 and 8. Since a movement of the head 37 of the pivot pin 33 to and from its position of engagement in the

slot 28 is over the opposed face of the plate 31, the leg 16 is preferably narrowed below the leg portion which is arranged to lie opposite the plate 31 when the leg is extended by an amount approximating the transverse thickness of the link 32 whereby the apron need be only slightly sprung away from the leg by the detent 37 as the latter moves over the face of the plate 31 to or from the slot 28. The present means for releasably securing the leg in folded position is understood to solely utilize elements provided for other purposes in the structure.

Means are provided for releasably securing a fully extended leg in set position, said means being directly coactive with the pin 27 of the leg. By particular reference to Figure 2 and Figures 5 to 7 inclusive, it will be seen that the slot 28 is provided at its inner end with an upwardly directed extension 38 which is oblique to the slot axis to provide what may be termed a return bend portion of the slot. The pin 27 of the fully extended leg is arranged to engage the upper end of the slot portion 38 as a support for the table top thereat, and any effort to swing the free leg end inwardly beneath the table top is positively resisted by the closed end of said slot portion.

For releasing the pin 27 from the slot portion 38, the leg must be swung slightly outwardly with respect to the table top and at the same time must be shifted longitudinally to dispose the pin in alignment with the major slot portion for outward movement therealong to dispose the leg in its folded position, it being noted that the pressure engagement of the pin 27 against the inner edge 39 of the slot portion 38 is operative in the manner of a cam to urge said longitudinal shifting of the leg. A leaf spring 41 is mounted on the upper leg end to extend transversely from the rear face thereof for the slidable engagement of its free end with a reaction member 42 while the pin 27 is in and adjacent the slot portion 38; as shown, the member 42 comprises a transversely upturned portion of the plate 31. The bearing face provided by the member 42 for the spring 41 is preferably long enough in a line transverse to the top plane that the spring extremity may not engage behind the member as the pin moves along the slot 28 and into the slot extension 38 as the leg is extended to operative position, it being understood that the spring 41 normally secures the pin 27 against release from the slot portion 38.

Since an operative leg which is secured by the described means may be released for its folding only by shifting it longitudinally away from the table top, it will be understood that a leg may be readily released only when the table is inverted, or at least turned on its side. Furthermore, the legs must be manipulated in pairs, which fact further adds to the difficulty of releasing a pair of legs while the table is erect and in use. It will thus be understood that accidental or deliberate folding of the operative table legs is practically impossible when the table is erect; this is not a disadvantage, as tables with folding legs are primarily designed for occasional use and are folded and stored between periods of their use.

The folding table of Figures 9 to 13 inclusive primarily differs from the table previously described in the means provided for securing the table legs in extended position. In this embodiment, a table 55 includes legs 56 arranged to support a table top structure comprising a top slab 57 and a supporting frame 58, said frame 75

having apron members 59 and 60 cooperative to define a space 61 for receiving the folded legs 56. The legs 56 are connected in unitary pairs by cross members 62 and 63 and have their outer edge faces 65 in opposition to inner faces 64 of the side aprons 59. Pins 67 provided by members 69 mounted in the upper ends of the legs extend from the leg faces 65 for constant engagement in slots 68 provided in plates 71 which are mounted against the inner apron faces 64, and said slots are continued as grooves in the underlying apron portion.

A brace link 72 connects as intermediate point of each leg with a fixed point on the corresponding plate 71, the connections at the leg being provided by a pivot pin 73 having a rounded head 77 for engagement as a detent in the slot 68 as described for the previous embodiment and shown in Figure 8. The link 72 is pivotally secured to the apron 59 by a pivot pin 74 extending from the plate 71; it will be noted that the plate 71 provides the full length of the slot 68 as well as a mounting for the pin 74. The brace link 72 preferably has a stop flange 76 corresponding to the flange 36 of the link 32.

In the present table structure, the slots 68 are entirely straight with their inner ends 78 operative as stops against the pins 67 when the legs are fully extended. Means are provided to directly engage and releasably secure the pins 67 against the slot ends 78, said means essentially comprising a catch member 79 for wedgedly engaging a pin 67 at the opposite side thereof from the stop provided by the slot end 78. The member 79 comprises a flat portion 80 for constant disposal between the leg and the plate 71 and for movement between a position in which a wedging edge 82 thereof is disposed across the slot 68 and behind the pin 67, and a position in which it does not extend across the slot, the latter position being indicated in Figure 10.

As particularly shown, the member 79 is mounted on the free end of an elongated spring bar 83 which is fixed to the plate 71 at the upper edge thereof nearest the top slab of the table, said spring bar being set and arranged to constantly urge an operative disposal of the member 79 across the slot 68. The wedging edge 82 of the member 79 makes a slight angle with a tangent to the curve of movement of a point thereof as it is moved to its inoperative position, said edge extending in such a direction with respect to said tangent that the wedging effect increases as the member moves against the pin. An oblique approach edge 84 of the member 79 permits a wedging displacement of the member by the pin the disposal of the leg in its extended position.

Release of a pin 67 to permit a folding of the leg as the latter moves along the slot 68 during leg may be effected by displacing the member 79 to free the pin. Since the legs 56 are connected in pairs for their movement between extended and folded positions thereof, means are provided for simultaneously releasing both legs of an extended leg unit. Accordingly, a laterally stiff bar 85 is connected to and between the springs 83 for a connected pair of legs at corresponding intermediate points of the springs whereby a pressing of the bar toward the top slab of the table may inoperatively dispose the catch members 79 of the springs simultaneously. It will be understood that release of secured operative leg units of the present embodiment is also difficult unless the table is inverted as in Figure 9; when the table is inverted, an operator need only

step on the bar 85 for releasing a leg unit for its folding.

Referring generally to both disclosed devices for securing folding legs in extended position, it will be noted that in each case a separately operative securing means is directly operative with respect to a pin of each leg, is operatively rendered operative as the legs are extended from a folded position thereof, and is arranged to be rendered inoperative against the resistance of a spring means. And it will be noted further that the motions of the leg units between their limiting positions are similar for both embodiments.

From the foregoing description taken in connection with the accompanying drawings, the advantages of the present device will be readily understood by those skilled in the art to which the invention appertains. While I have described the features and the principles of operation of the device in what I now consider to be preferred embodiments of my invention, I desire to have it understood that the showing is primarily illustrative, and that such changes may be made, when desired, as fall within the scope of the following claims.

I claim:

1. In a folding table, a top, a supporting leg for swinging movement in a plane transverse to that of the table top and between limiting operative and retracted positions thereof in which the leg is respectively transverse and parallel to the table top, a brace link, pivot means respectively connecting the extremities of said brace link with a fixed point of the top and with an intermediate point of the leg, a pin extending laterally from the leg at an inner point thereof and in transverse relation to said plane of movement of the leg, and means on the top providing a guide slot constantly receiving the pin and operative to determine the limited extended position of the leg, said link pivot means at the leg comprising a pin having a protruding head for engagement as a detent in the slot when the leg is fully retracted to releasably secure the leg in the latter position thereof.

2. In a folding table, a top, a supporting leg for swinging movement in a plane transverse to that of the table top and between limiting operative and retracted positions thereof in which the leg is respectively transverse and parallel to the table top, a brace link, pivot means respectively connecting the extremities of said brace link with a fixed point of the top and with an intermediate point of the leg, a pin extending laterally from the leg at an inner point thereof and in transverse relation to said plane of movement of the leg, and means on the top providing a guide slot constantly receiving the pin, said brace link having a portion which extends in the path of movement of the leg and is operative as a stop to positively limit the retractive movement of the leg to its said parallel relation to the table top.

3. In a folding table, a top, a leg for movement between extended and retracted positions thereof, a brace link pivotally connected to and between an intermediate point of the leg and a fixed point of the table top, means providing a guide slot at the under side of the table top and having a portion thereof generally parallel to the table top and a second portion upwardly directed from the first, a pin extending laterally from the leg at a point thereof inwardly of the point of attachment of said link thereto and slidably engaged in said slot and arranged to seat against the upper end of the second slot portion

for supporting the top when the leg is fully extended, said second slot portion being angularly related to the table top in such manner that the downward release movement of the pin therefrom requires an angular swinging of the leg about the link pivot point thereof in an opposite direction to its swinging movement to its re-

tracted position, and a spring means coactive between the table top and the upper leg end when the leg is in operative extended position to urge a swinging of the leg to its retracted position and yieldingly resist a movement of the leg to release the pin from the second slot portion.

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