May 18, 1954 M. A. DAVIS 2,678,858

VERTICALLY ADJUSTABLE TABLE CONSTRUCTION

Filed July 23, 1951

Fig. 1

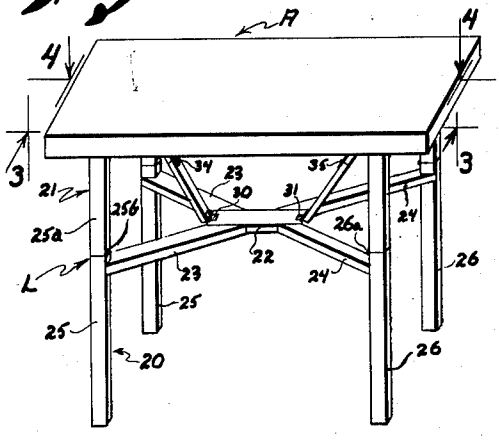


Fig. 2

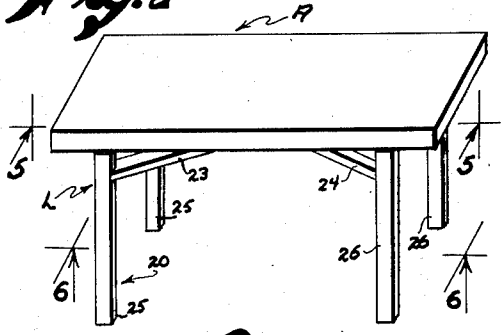


Fig. 5

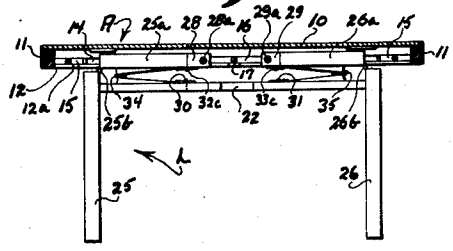


Fig. 3

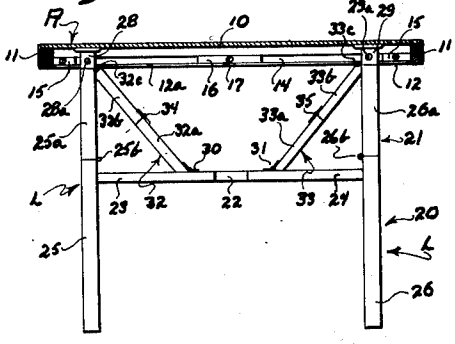


Fig. 6

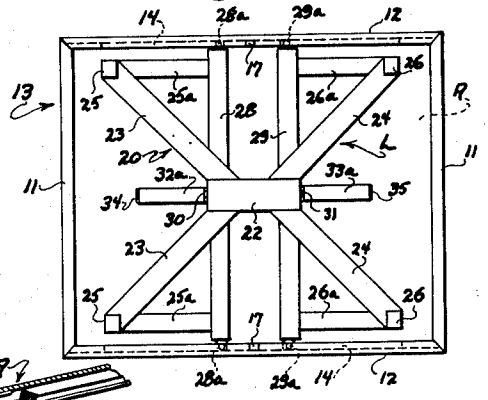


Fig. 4

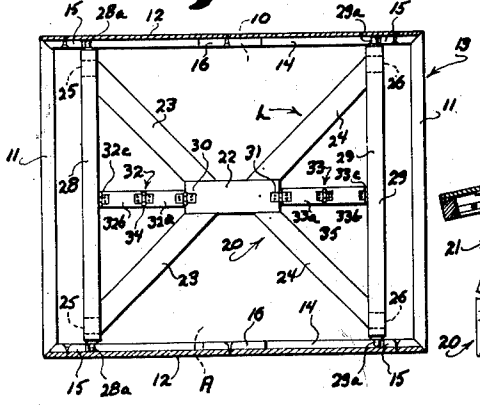
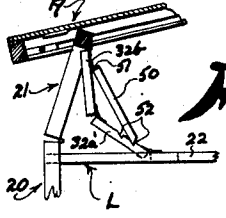


Fig. 7



INVENTOR.
MANSEL A. DAVIS
BY
Fulwider and Mattingly
ATTORNEYS.

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VERTICALLY ADJUSTABLE TABLE CONSTRUCTION

Mansell A. Davis, Long Beach, Calif.

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6 Claims. (Cl. 311—39)

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The present invention relates to the field of supporting devices, and more particularly to a table that may be so vertically adjusted as to permit its ready conversion from a low table to a high table or vice versa.

Although various forms of extendable and vertically adjustable tables have been devised and marketed in the past, such tables have met with but limited commercial success due to the complicated nature of the adjusting mechanisms embodied therein, and their generally cumbersome and awkward appearance.

The primary purpose in devising the present invention is to provide an adjustable table of simplified structure that is attractive in appearance when disposed in either the lowered or the elevated position.

A major object of the invention is to provide a table that may be assembled from a separate top and a leg supporting portion, and when so assembled is adapted to be vertically adjusted to a lowered or elevated position by a simple manual operation.

Another object of the invention is to supply a table that has an extremely simple mechanical structure, may be fabricated from standard commercially available material, and has a raising and lowering mechanism that is readily accessible and of a design that blends with the balance of the table structure to present an attractive overall appearance thereto.

A still further object of the invention is to provide a table that does not require elaborate plant facilities for its manufacture nor the use of highly skilled personnel, and can accordingly be retailed in the medium priced merchandising field.

Another object of the invention is to supply a table, which when an alternate adjustment mechanism is embodied therein, may be used at an angular position to provide a working surface for drafting, art work, needlework, and the like.

Yet another object of the invention is to furnish a table particularly adapted for use in the small home or apartment to serve as a coffee table when in the lowered position, or as a card table, dining table, or general utility use when in the elevated position.

These and other objects and advantages of the table will become apparent from the following description of a preferred form thereof and from the drawing illustrating that form in which:

Figure 1 is a perspective view of the table when in an elevated position;

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Figure 2 is a perspective view of the table when in the lowered position;

Figure 3 is a vertical cross-sectional view of the table when in the elevated position taken on the line 3—3 of Figure 1;

Figure 4 is a horizontal cross-sectional view of the table when in the elevated position taken on the line 4—4 of Figure 1;

Figure 5 is a vertical cross-sectional view of the table when in the lowered position taken on the line 5—5 of Figure 2;

Figure 6 is a combined horizontal cross-sectional and bottom plan view of the table when in the lowered position taken on the line 6—6 of Figure 2; and,

Figure 7 is an elevational view of an alternate adjustment device which may be incorporated in the table.

Referring now to the drawing for the general arrangement of the invention, it will be seen that the device includes a top A and adjustable leg structure L that permits the top to be disposed in the two positions shown in Figures 1 and 2, or in angular or intermediate positions.

Top A, as may best be seen in Figures 3, 4 and 5, includes a substantially rectangular sheet member 10 of a rigid material that forms the supporting surface. Sheet 10 may be fabricated from relatively thin stock and has two identical elongated end pieces 11 of rectangular cross section affixed to the under side thereof by conventional means. End pieces 11 are connected by two identical laterally spaced, longitudinally extending side pieces 12 likewise affixed to the under surface of member 10 by conventional means. It will be seen that the end pieces 11 and side pieces 12 define a substantially rectangular frame 13 of approximately the same exterior dimensions as member 10 to which it is reinforcingly affixed. The rigidity of frame 13 permits the use of a relatively thin sheet member 10, thus affording a light-weight durable table top A that not only has the advantage of portability, but economy of manufacture as well.

It will be noted that each of the side pieces 12 has a longitudinal slot 14 formed therein that is closed on the bottom by a rigid strip 12a that extends substantially the length of top A. Each of the slots 14 terminate at the ends thereof in resilient stops 15, the purpose of which will hereinafter be explained. Two elongated stops 16 formed of a rigid material such as wood are provided, with each being removably held in a centrally disposed position in one of the slots 14, as may be seen in Figure 3. Stops 16 serve to block

communication between the slots 14, and centrally disposed downwardly extending openings 17 formed in strips 15a.

The leg structure L includes a lower rigid supporting portion 20 and an upper adjustable portion 21, as may be seen in Figures 3 and 5. Leg portion 20 includes a centrally disposed rigid member 22 that has two diagonally disposed arms 23 extending outwardly from one end thereof, and two similar arms 24 from the other end thereof. Arms 23 are rigidly connected on the ends thereof to two vertically positioned legs 25, as are arms 24 to two legs 26. The legs 25 and 26 are of identical construction, and have rigid extensions 25a and 26a, respectively, mounted on the upper ends thereof. Extensions 25a are connected to legs 25 by hinges 25b, and extensions 26a are likewise movably affixed to legs 26 by hinges 26b. Hinges 25b and 26b are mounted on the inner faces of the legs and extensions 25a and 26a for reasons that will hereinafter become apparent.

Extensions 25a are connected on their upper ends by hinges 25b to a horizontally disposed rigid cross piece 28, and extensions 26a are similarly connected by hinges 26b to an identical cross piece 29, the cross pieces and extensions cooperating to form two inverted U-shaped supports. Projecting outwardly from the ends of cross pieces 28 and 29 are pins 28a and 29a, respectively. Pins 28a and 29a are slidably mounted in slots 14 by removing stops 16 and inserting the pins through openings 17 into the confines of the slots. Stops 16 are then mounted in their original positions to prevent displacement of pins 28a and 29a from slots 14. The stops also serve to regulate the degree of inward movement of cross pieces 28 and 29, as will later be explained in detail.

Member 22 has two longitudinally spaced hinges 30 and 31 mounted thereon, with the hinges being connected to two upwardly and outwardly extending rigid locking members 32 and 33 respectively that maintain the table in the elevated position shown in Figures 1 and 3.

Locking member 32 comprises a first rigid component 32a connected on its lower end to hinge 30, and provided on the other end with a spring-loaded hinge 34 that pivotally connects it to the lower end of a second rigid component 32b. Locking member 33 is of identical construction to member 32 and includes first and second rigid components 33a and 33b respectively, connected at their adjoining inner ends by a spring-loaded hinge 35. Springs 34 and 35 normally maintain locking members 32 and 33 in the extended position shown in Figures 1 and 3. The second locking member component 32b terminates in a hinge 32c affixed to cross piece 28, while component 33b has a hinge 33c mounted on the upper end thereof that is connected to cross piece 29.

Although the term "hinges" has been used throughout the description of the invention for the sake of convenience, it will be apparent that pins or other conventional elements may be substituted therefor should it be found expedient.

The use and operation of the table is extremely simple. When the table is to be used for dining, games, and other utilitarian purposes, the elevated position is found to be the most convenient. However, when not used for such purposes, the table may be readily converted to the form shown in Figures 2 and 5, or that of the conventional coffee table. The transformation of the table from one form to the other is accomplished with a minimum of physical effort. When it is desired to lower the table from the elevated position, the locking members 32 and 33 are grasped by the hands and caused to pivot relative to one another with a jack-knife-like action from the portion shown in Figure 3 to that disclosed in Figure 5.

As the locking members 32 and 33 jack knife they draw the cross pieces 28 and 29 inwardly toward one another, with the pins 28a and 29a being guided and traveling longitudinally in slots 14. During this movement of the locking members 32 and 33, top A is lowered until further downward movement thereof is prevented when its under surface rests on the top portions of legs 25, as shown in Figure 5.

When it is desired to convert the table from the position shown in Figures 2 and 5 to that shown in Figure 1, the top A is simply lifted upwardly. The weight of the lower rigid leg structure 20 is sufficient to prevent it from being raised at the same time. Simultaneous with the upward movement of top A, the leg extensions 25a and 26a pivot outwardly until the cross pieces 28 and 29 contact the resilient stops 15. Stops 15 are so situated that when such contact is made the leg portions 25a and 26a are vertically positioned to cooperate with legs 25 and 26 respectively and thus provide solid support for the top A.

It will be particularly noted that the locking members 32 and 33 extend downwardly and inwardly in such a manner as to allow for comfortable seating arrangement therearound without interference therewith. Because locking members 32 and 33 pivot outwardly when the table is to be collapsed, the possibility of their inadvertent displacement is avoided.

In the preferred form of the table above described, no provision has been made for an extendable top A, but it will be apparent that longitudinally extending leaves may be movably supported from the top for such use should it be so desired.

Should it be desired, the table may be fabricated with the adjustment device shown in Figure 7 which also permits the top A to be angularly positioned. An elongated rigid support 50 is pivotally connected to the upper interior face of member 32b or member 33b by a hinge 51. Supports 50 may be provided for both members if the maximum number of angular adjustments is desired.

In the event support 50 is mounted on member 32b, member 32a is replaced by a member 32a' that has a number of longitudinally spaced notches 52 formed in the upper surface thereof. Likewise, if a support 50 is mounted on member 33b, the member 33a is replaced with a member 33a', identical to member 32a'.

When it is desired to place the top A in an angular position, locking member 32 or 33 provided with the member 50 is moved to lower the table top in the normal manner. When top A assumes the required angle, the lower end of support 50 is placed in one of the notches 52 as shown in Figure 7. The rigidity of support 50 prevents further inward movement of the member 32b or 33b on which it is mounted, and top A is held in a stable angular position.

It will be apparent that if supports 50 are provided on both ends of the table and each is caused to engage identically disposed notches 52, that the table top A may be disposed intermediately between the elevated and lowered positions shown

in Figures 3 and 4. While the table has been shown as formed from a sheet member 10 and frame 13, the top A may be fabricated as an integral unit if desired, or suitable guides may be affixed thereto to slidably engage the ends of the cross pieces 28 and 29. Cross pieces 28 and 29 each cooperate with extensions 25a and 26a respectively to form transversely disposed inverted U-shaped supports that provide ample leg room, as well as a rigid table structure. The particular structure shown herein is embodied in a table, but should it be desired the top A may be provided with padding or a cushion and used as a hassock or foot support.

Although the table herein described is fully capable of providing the objects and achieving the advantages hereinbefore mentioned, it is to be understood that it merely illustrates the presently prefrered embodiment of the invention and that it is not to be limited to the details of construction herein shown and described other than as defined in the appended claims.

The invention claimed is:

1. A vertically adjustable table having unobstructed ends and sides, comprising: a table top that has laterally spaced parallel slots formed therein; two longitudinally spaced inverted U-shaped members; means rigidly mounted on said U-shaped members that movably engage said slots; a plurality of vertically disposed legs; pivotal means connecting the upper extremities of said legs to the lower extremities of said U-shaped members; a plurality of arms affixed to the end portions of said legs, said arms disposed in the same horizontal plane and extending inwardly to a common junction; two oppositely disposed upwardly and outwardly extending locking members, each of which includes first and second elongate components pivotally connected with the corresponding free ends of each of said first components hinged to said junction, with the corresponding free ends of each of said second components being pivotally joined to said U-shaped members; and resilient means operatively with said locking members to maintain said table top in a high stable position.

2. A vertically adjustable table having unobstructed ends and sides, comprising: a table top provided with two laterally spaced parallel slots; two longitudinally spaced inverted U-shaped members; means rigidly mounted on said U-shaped members that movably engage said slots; a plurality of vertically disposed legs; pivotal means connecting the upper extremities of said legs to the lower extremities of said U-shaped members; rigid inwardly extending supporting means connecting and maintaining said legs in a fixed relationship with one another; and adjustable locking means extending between said U-shaped members and said supporting means, said locking means when in a first position maintaining said table top at one elevation, and when in a second position permitting said table top to assume a second lower elevation.

3. A vertically adjustable table having unobstructed sides and ends, comprising: a substantially rectangular table top provided with laterally spaced parallel slots; four vertically extending legs disposed substantially under the corners of said table top; four leg extensions disposed above said legs; a plurality of hinges pivotally connecting said extensions to said legs; two cross pieces, each which are transversely disposed relative to said table top and extending between the upper portions of two of said leg extensions; means mounted on the ends of each of said cross pieces that movably engage said slots; supporting means that maintain said legs in a fixed relationship with one another, said supporting means so disposed as not to interfere with foot room under said table; and movable locking means disposed between said cross pieces and said supporting means, said locking means when in a first position maintaining said table top at an elevated position with said legs and leg extensions in vertical alignment, and said locking means when moved to a second position permitting said leg extensions to pivot inwardly toward one another to permit said table top to assume a lowered position.

4. A vertically adjustable table having unobstructed sides and ends, comprising: a substantially rectangular table top provided with laterally spaced parallel slots; four vertically extending legs disposed substantially under the corners of said table top; four leg extensions disposed above said legs a plurality of hinges pivotally supporting said extensions on the upper ends of said legs; two cross pieces, each of which are transversely disposed relative to said table top and extending between the upper portions of two of said leg extensions; means mounted on the ends of each of said cross pieces that movably engage said slots; supporting means affixed to said legs, said supporting means being so arranged as not to interfere with foot room under said table; two upwardly and outwardly extending locking members extending between and pivotally connected on their ends to said cross pieces and supporting means, each locking member comprising first elongated and second elongated components that are hinged together at the junction of their adjoining ends, with said first and second components capable of jack knifing from coaxial alignment with one another to positions substantially parallel to one another only when opposite, outwardly directed forces are applied thereto; and resilient means that maintain said first and second components in coaxial alignment whereby said legs and leg extensions are held the same vertical plane with said table top in a high position, but permits said first and second components to pivot relative to one another into positions substantially parallel to said leg extensions on which said table top rests in a low position.

5. A structure capable of removably supporting a table top that is formed with oppositely disposed longitudinally extending grooves that are in communication with centrally disposed openings, comprising: four substantially vertical legs; inwardly extending supporting means connected to only the end portions of said legs to maintain them in a fixed relationship with one another; two cross pieces; means mounted on the ends of said cross pieces that may be inserted through said openings and longitudinally movable in said grooves; four leg extensions, each two of which support one of said cross pieces in a transverse position on the upper portions thereof; two oppositely disposed upwardly and outwardly extending elongated locking members, each of which comprise a first and a second component that are pivotally connected at the junction of their adjoining ends; means pivotally connecting each one of said first components to one of said supporting means, each one of said second components to one of said cross pieces; and resilient means that maintain said first and second components in coaxial alignment to firmly

hold said leg extensions in vertical alignment with said legs and said table top in a high position when mounted thereon, but upon application of outward oppositely directed force to said locking members said resilient means permits said first and second components to pivot to positions substantially parallel to one another and said leg extensions on which said table top rests when in a low position.

6. A structure capable of removably supporting a table top formed with laterally spaced oppositely disposed parallel grooves in a plurality of elevations, comprising: four substantially vertical legs; a plurality of arms rigidly connected to one another and to the end portions of said legs to maintain them in a fixed relationship with one another; two cross pieces transversely disposed to said table top; means supported from said cross pieces that are engageable with and longitudinally movable in said grooves; four leg extensions, each two of which are rigidly connected to one of said cross pieces and disposed substantially normal thereto; two oppositely disposed, upwardly and outwardly extending elongated locking members, each of said members

comprising a first and a second component pivotally connected at the junction of their adjoining ends; and means operatively with said locking members that permit said first and second components to be disposed in coaxial alignment to hold said leg extensions in vertical alignment with said legs and said table top in a high position, but permitting said first and second components to be pivoted relative to one another upon application of opposite outwardly directed forces, to assume non-aligned positions where said table top may be supported at a lowered position.

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