March 10, 1931. E. G. COVELL 1,796,002

FOLDING TABLE

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Fig. 1

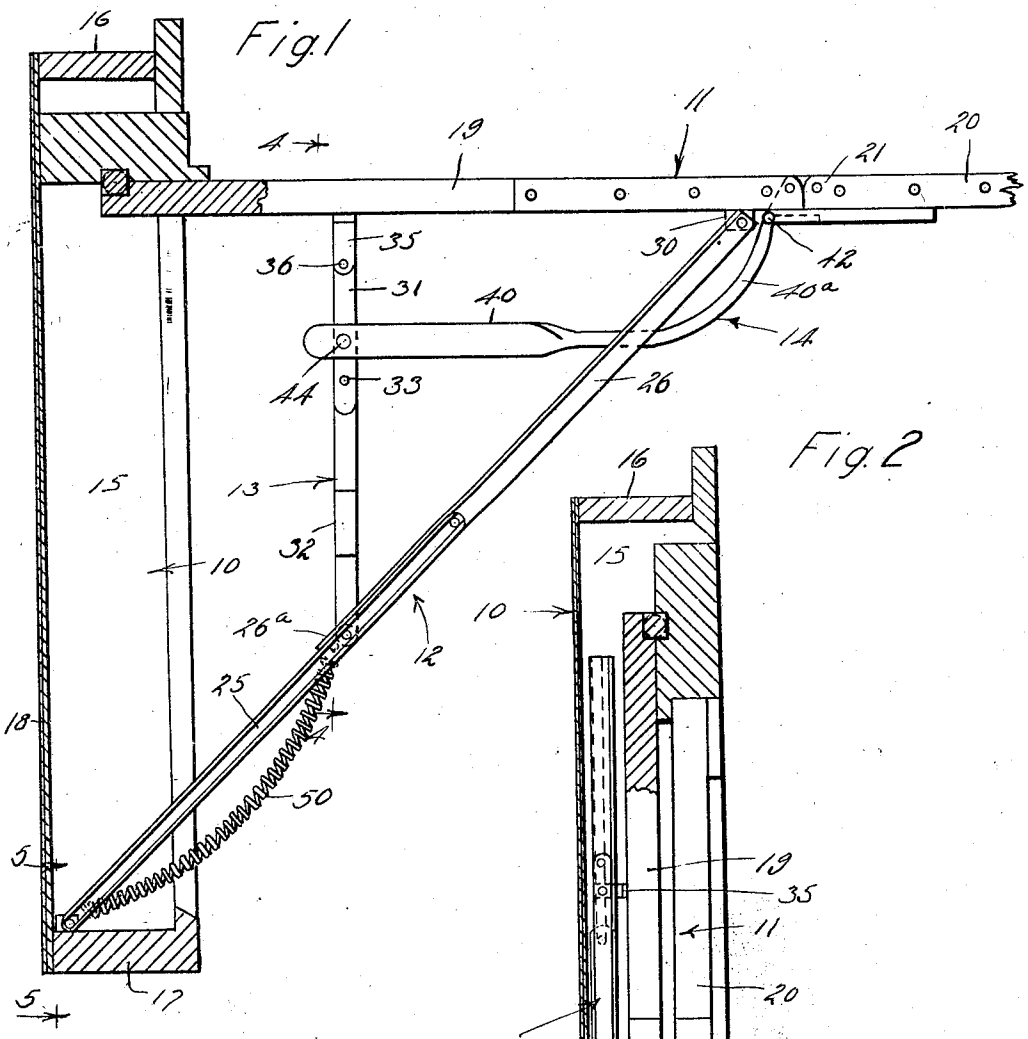
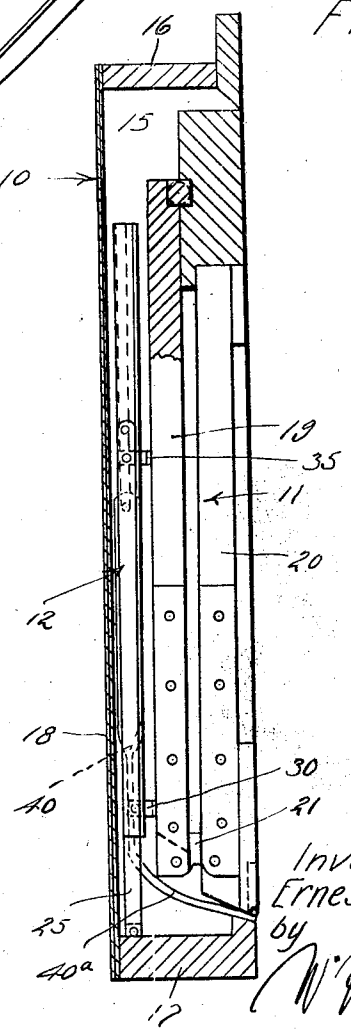


Fig. 2



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FOLDING TABLE

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Fig. 3

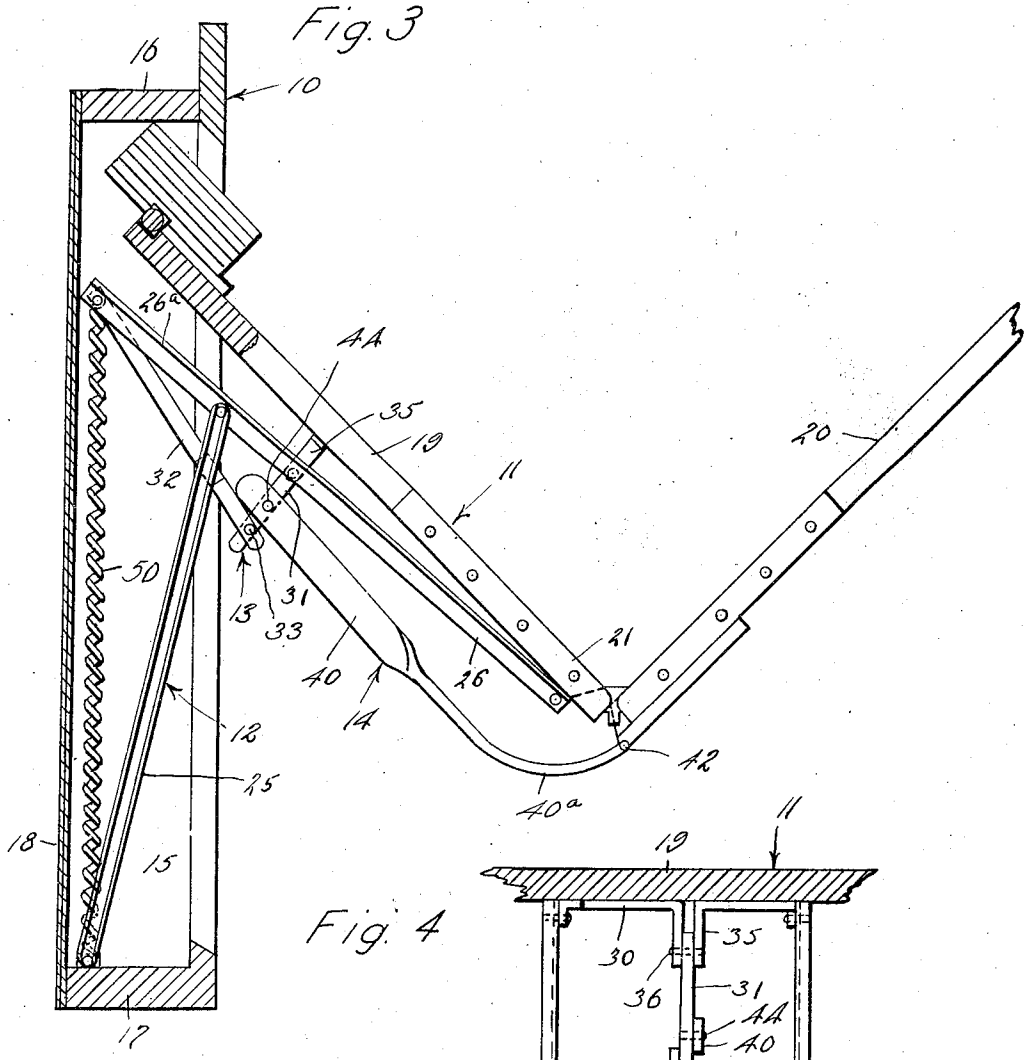


Fig. 4

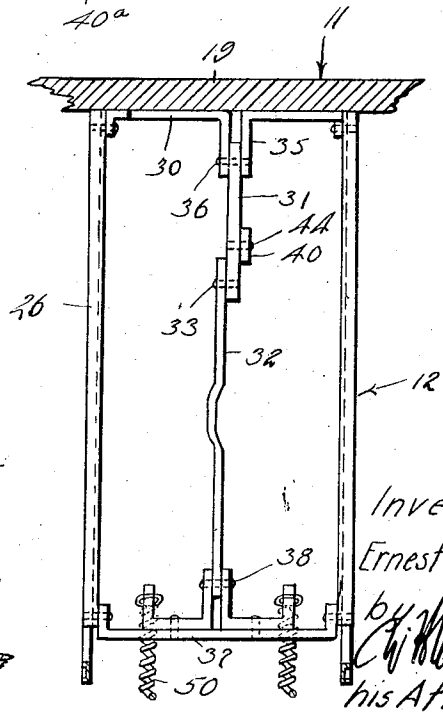
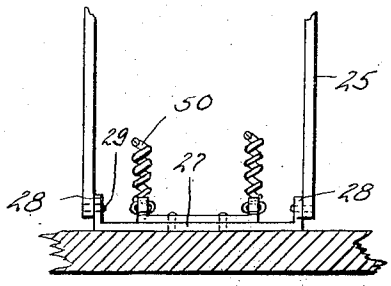


Fig. 5



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Patented Mar. 10, 1931 1,796,002

UNITED STATES PATENT OFFICE

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FOLDING TABLE

Application filed August 3, 1927. Serial No. 210,267.

This invention has to do with a folding support suitable for embodiment in or application to seats, platforms, tables, and like constructions and it is a primary object of this invention to provide an effective, simple and improved construction of the character mentioned.

The construction provided by this invention is suitable for application to or embodiment in constructions of various kinds. The construction can, however, be used to great advantage for a table or platform and therefore I will in this disclosure refer to the invention as applied to a table, it being understood that such reference is not to be construed as a limitation or restriction on the principles of the invention.

It is a primary object of this invention to provide a collapsible support for a table, or the like, which is effective and secure and entirely automatic in operation.

Another object of this invention is to provide a collapsible brace for a folding table, or the like, with means operable to automatically set it in operating position upon the table being moved to operating position and operable to automatically release it upon movement of the table to the folded position.

A further object of this invention is to provide a collapsible brace for a folding table embodying a toggle device for setting it in operating position and means whereby the toggle device is automatically set and broken as the table is moved into and out of operating position.

The various objects and features of the invention will be best and more fully understood from consideration of the following detailed description, throughout which description I refer to the accompanying drawings, in which:

Fig. 1 is a fragmentary side view of a construction embodying the invention showing the parts in operating position, Fig. 2 is a view similar to Fig. 1 showing the parts in folded or collapsed position, Fig. 3 is a view similar to Figs. 1 and 2 showing the parts in an intermediate or partially operated position, Fig. 4 is a detailed sectional view taken as indicated by line 4—4 on Fig. 1, and Fig. 5 is a detail sectional view taken as indicated by line 5—5 on Fig. 1.

The construction provided by my invention embodies, generally, a base or frame 10, a folding construction such as a table top 11, a collapsible brace 12 operable to hold the top 11 in operating position, means 13 operable to set the brace in operating position and operating means 14 for the means 13 whereby it is automatically set and released upon movement of the top 11 into and out of operating position.

The design and construction of the frame 10 will, in any particular case, depend upon the application and use of the construction. In the drawings I have disclosed a frame suitable for embodiment in or application to a wall or other vertical support. In this case the frame includes, generally, a box-like structure formed by vertical sides 15, a top 16, a bottom 17 and a back 18. In this case the front of the frame is open and is adapted to be closed by the top 11 when the top is in collapsed or folded position.

The table top 11 includes two sections, an inner section 19 and an outer section 20. The section 20 is pivotally connected to the outer edge of the inner section 19 so that the sections are movable betwen an open position where they are in a common horizontal plane with the outer section adjoining and extending outward from the outer edge of the inner section and a folded position where they are in adjoining relation and in parallel planes as disclosed in Fig. 2. The top sections 19 and 20 may be connected by hinges 21 of the character set forth and claimed in my copending application, Serial No. 210,265, entitled "Hinge", filed on even date herewith. This particular type of hinge embodies a link which allows for the operation above described and is particularly strong and secure. The hinges 21 can not be moved past or beyond the position shown in Fig. 1 and therefore operate to support the outer section 20 in the extended position. The inner end of the inner top section 19 is pivotally connected to the frame 10 to allow for movement of the top section 19 between the positions illustrated in Figs. 1 and 2 of the drawings.

In the arrangement shown in the drawings a mounting member 22 is carried by the inner end of the section 19 and operates to pivotally connect the section 19 between the sides 15 of the frame. The axis of pivotal connection between the top section 19 and frame is such as to allow the outer section 20 of the top to be substantially flush with the front of the frame when the parts are folded as shown in Fig. 2.

The collapsible brace 12 provided by this invention is adapted to extend diagonally between the outer end portion of the inner top section 19 and the lower portion of the frame 10 when in operating position, and to fold between the top section 19 and the back 18 of the frame when the parts are folded as shown in Fig. 2. The brace 12 includes two parts or legs, a lower leg 25 pivotally connected to the frame 10 and an upper leg 26 pivotally connected to the top section 19. The legs are pivotally connected together and in the preferred construction the outer leg 26 has a projecting end part 26*a* which overlaps the lower leg 25 to stop the legs in the position shown in Fig. 1. In the preferred construction each of the legs of the brace comprises, or is in the form of, two spaced parts as shown in Fig. 4, thus making the construction strong and rigid. In the arrangement illustrated in the drawings, the leg 25 of the brace is connected with the bottom 17 of the frame through a suitable bracket 27. The bracket 27 is shown in Fig. 5 and includes a metal strap to be secured to the bottom 17 and having its ends 28 upturned to be connected with the leg parts by pivot pins 29. A bracket 30 similar to the bracket 27 may be employed at the pivotal connection between the leg 26 and top section 19.

The means 13 provided for setting the brace in the operating position illustrated in Fig. 1 includes a toggle connection between the top section 19 and one of the legs of the brace. The toggle connection is preferably of simple construction including an upper link 31 pivotally connected to the top section 19 and a lower link 32 pivotally connected to the extension 26*a* of the brace leg 26. The links 31 and 32 are pivotally connected by a pivot pin 33 and are proportioned so that they are in line or parallel when the parts are in operating position as shown in Fig. 1. The upper end of the link 31 is pivotally connected to the underside of the top section 10 through a bracket 35 and pivot pin 36. The lower end of the link 32 may be pivotally connected by a pivot pin 38 to a brace 37 connecting the lower ends of the two parts of the leg 26 as shown in Fig. 4.

The means 14 provided for automatically operating the toggle connection includes an arm 40 having one end pivotally connected to the outer top section 20 and the other end pivotally connected to one of the links 31 of the toggle connection. The arm 40 may be connected by a pivot pin 42 to the top section 20 to be connected with the top section on an axis spaced from the axis of pivotal connection between the top sections 19 and 20. The axis of the pivot pin 42 is spaced or offset inwardly from the axis of pivotal connection between the top sections 19 and 20 so that it is swung or moved outward or forward during movement of the outer top section 20 from the extended position to the folded position. A pivot pin 44 pivotally connects the arm 40 with the link 31 at a point between the pivot pins 33 and 36 so that the toggle connection is broken in a forward direction as the top section 20 is moved from the extended position to the folded position. The end portion 40*a* of the arm 40 that connects to the top section 20 is curved to extend around and clear the pivotally connected ends of the top sections when the parts are folded as shown in Fig. 2. The curved portion 40*a* is such that the main or body portion of the arm is substantially parallel with the top section when the parts are folded.

In accordance with the preferred construction, I provide counterbalancing means in connection with the parts above described, for the purpose of making the device easy to operate. The counterbalancing means may include one or more springs 50 connected between the bracket 27 and the frame 10. In the drawings I have shown two ordinary helical springs connected between the parts just mentioned and proportioned so that they are loose, or hand free, when the parts are in operating position as shown in Fig. 1, but come into play as the parts are moved from the operating position to the closed or folded position and are under considerable tension when the parts are in the completely folded position shown in Fig. 2. The action of the springs is to counterbalance the weight of the parts and in practice I have found that springs of the proper strength will counterbalance the parts so that the construction works smoothly and substantially uniformly between the two extreme positions shown in Figs. 1 and 2.

When the table is not in use it is folded into the frame as shown in Fig. 2 where it is compact and occupies very little space. When the table is desired for use, the outer or upper end of the outer top section 20 is pulled forward causing the lower or outer end of the inner top section to be swung forward and up. As the outer end of the outer top section is pulled away from the frame 10, the sections swing apart until they finally reach the extended position where they are in a common horizontal plane. During this operation the legs of the brace are moved from the folded position to the operating position where they are in line with each other and the arm 40 is operated to move the links of

the toggle connection so that they are in line when the outer top section reaches the operating position. With the parts in operating position as shown in Fig. 1, the operating arm 40 holds the toggle connection with the links in line with each other and the toggle connection having its links in line, positively holds the brace in operating position. The parts thus set, operate to effectively brace and support the top sections in a firm and secure manner. To fold the construction, the operation is reversed, that is, the outer end of the outer top section 20 is lifted and moved inwardly, which operation causes the arm 40 to move forward, breaking the toggle connection and causing the brace 12 to fold.

Having described only a typical preferred form of my invention I do not wish to limit myself to the specific details set forth, but wish to reserve to myself any changes or variations that may appear to those skilled in the art or that may fall within the scope of the following claims.

Having described my invention, I claim:

1. In combination, a frame, an inner top section pivotally connected to the frame, an outer top section pivotally connected to the inner section, a folding brace between the inner section and frame having upper and lower sections, the sections being pivoted together at a point spaced from the lower end of the upper section, a positive toggle connection between the brace and inner section for holding the brace in operating position, an operating connection between the outer section and the frame, and a frame attached spring-connected to the lower end of the upper brace section at a point below its pivotal connection with the lower brace section.

2. In combination, a frame, an inner top section pivotally connected to the frame, an outer top section pivotally connected to the inner section, a folding brace between the inner section and frame having upper and lower sections, the sections being pivoted together at a point spaced from the lower end of the upper section, a positive toggle connection between the brace and inner section for holding the brace in operating position, an operating connection between the outer section and the frame, and a frame attached spring-connected to the lower end of the upper brace section at a point below its pivotal connection with the lower brace section.

In witness that I claim the foregoing I have hereunto subscribed my name this 1st day of July, 1927.

ERNEST G. COVELL.