No. 827,673. PATENTED JULY 31, 1906.

P. F. SWART.

FOLDING TABLE BRACE.

APPLICATION FILED AUG. 24, 1905.

2 SHEETS—SHEET 1.

FIGURE 1.

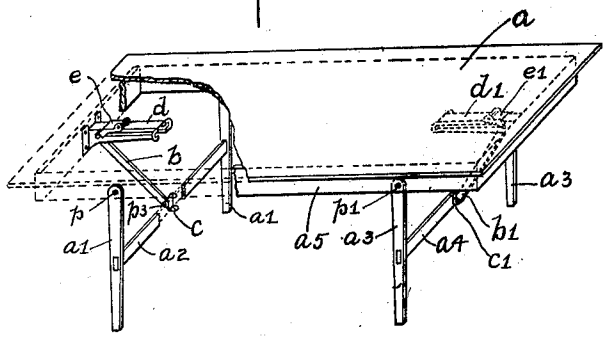


FIG. 2.

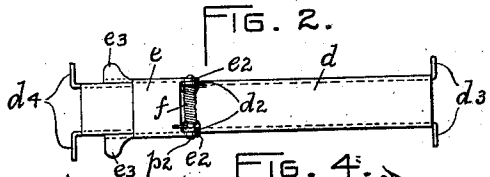


FIG. 6.

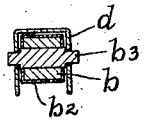


FIG. 3.

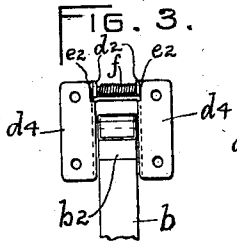


FIG. 4.

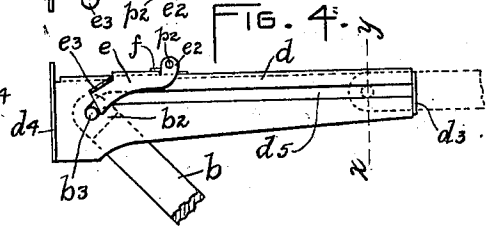


FIG. 5.

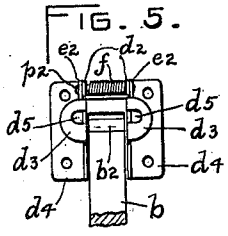


FIG. 7.

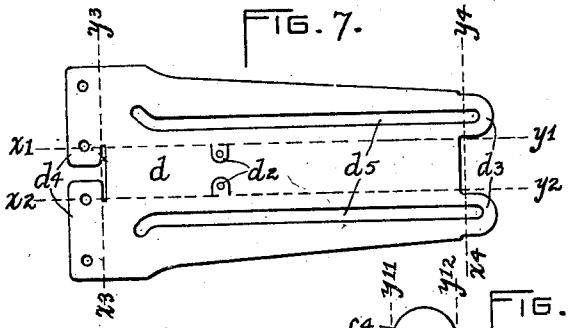


FIG. 9.

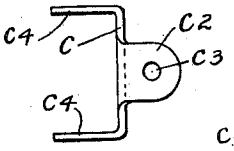


FIG. 10.

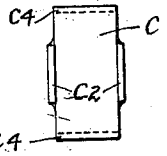


FIG. 11.

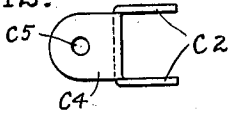


FIG. 8.

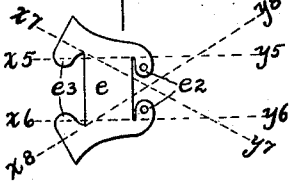
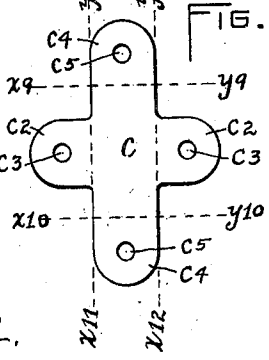


FIG. 12.



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No. 827,673. PATENTED JULY 31, 1906.

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FOLDING TABLE BRACE.

APPLICATION FILED AUG. 24, 1905.

2 SHEETS—SHEET 2.

FIG. 13.

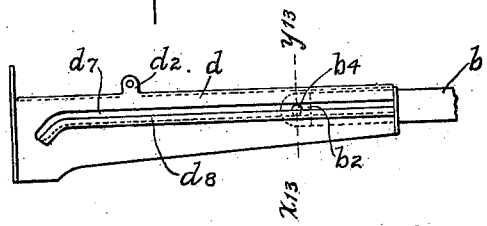


FIG. 14.

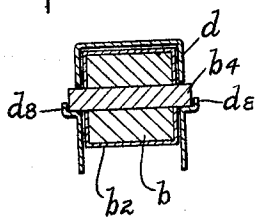
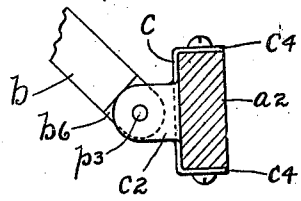


FIG. 15.



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PHILIP F. SWART, OF BROCKPORT, NEW YORK.

FOLDING-TABLE BRACE.

No. 827,673. Specification of Letters Patent. Patented July 31, 1906.

Application filed August 24, 1905. Serial No. 275,570.

To all whom it may concern:

Be it known that I, PHILIP F. SWART, a citizen of the United States, and a resident of Brockport, in the county of Monroe and State of New York, have invented a new and Improved Folding-Table Brace, of which the following is a specification.

This invention relates to attachments for swinging legs or standards for tables of that class which are arranged to be folded up under the body of the table or bench, so as to occupy the minimum space in packing and shipping or storing when out of use.

Among the purposes of my invention I will enumerate the following: With swinging legs or standards of the character described—that is, with each leg or pair of legs—there is usually provided a brace for rigidly holding the leg or legs in operative position, and it is desirable that such a brace should occupy as little space as possible, and it is also desirable that this brace should be insertible after the assembling of the table and attachment thereto of the main supporting and guiding mechanism for the braces. One of the purposes of my invention, then, is to provide a means for guiding and supporting the brace such that the brace may be removable therefrom and insertible therein after the assembling of the main and essential parts of the table or bench.

Another object of my present invention is to provide a locking mechanism for the brace which shall securely hold it in its operative position and one which can readily be released, so as to permit of the folding up of the legs under the table or bench, and one also in which the locking-latch shall be relieved from the strain exerted in holding the parts.

Still another object is such an arrangement and conformation of the parts just above described that the guiding, supporting, and locking mechanism for the brace may be formed by suitable dies from sheet metal.

Another feature of my present invention comprises an improved means for connecting the lower end of the brace to a cross-piece connecting the two legs of a pair.

In the accompanying drawings I have shown my invention as applied to the swinging legs of a table or bench, such legs attached to the table at points somewhat removed from the ends in order to place such legs more nearly under the center of a distributed load on such table.

The drawings are as follows: Figure 1 is a perspective view of a bench or table having swinging legs attached thereto and a brace for supporting them in accordance with my invention. Fig. 2 is a top view of the guiding, supporting, and locking mechanism for such a brace. Fig. 3 is an end view of the same as seen from the left in Fig. 2, showing a part of a brace in its operative position therein. Fig. 4 is a side view of such a mechanism, showing a brace therein in operative position and also showing in dotted lines the brace in the position which it assumes when the legs to which it is connected are folded up against the under side of the table. Fig. 5 is a view from the right as seen in Fig. 4. Fig. 6 is a view of a section, taken along the line $x\ y$ of Fig. 4, showing also the brace therein in the position indicated in dotted lines in Fig. 4. Fig. 7 is a view of the blank for this guide as it leaves the cutting-dies and before it is formed up to the shape indicated in the preceding figures. Fig. 8 shows in a view similar to Fig. 7 the blank for the latch used to hold the brace in its operative position. Fig. 9 is a side view of the clip used for connecting the lower end of the brace to the cross-piece connecting the legs of a pair on such table. Fig. 10 is a view of this clip as seen from the right in Fig. 9. Fig. 11 is a view as seen from the bottom in Fig. 9, while Fig. 12 shows the blank for forming this clip just as it leaves the cutting-dies. Fig. 13 shows in side view a modification of the parts seen in Figs. 2, 3, 4, and 5, while Fig. 14 shows a view of a section of the same, taken along the line $x^{13}\ y^{13}$ of Fig. 13. Fig. 15 shows the lower end of the brace b as connected to the cross-piece a^2, which is shown in this figure in section.

Similar letters refer to similar parts throughout the several views.

Referring to the drawings, a represents the top of a table, and a^5 the framework for the same.

a' represents the two legs of one pair connected by a cross-piece a^2, and a^3 represents the two legs of another pair connected by the cross-piece a^4. The legs a' are shown as swinging at their upper ends upon the pins or screws p, secured in the frame a^5, while the legs a^3 are similarly shown as swinging upon similar pins or screws p'.

A portion of the top of the table a is shown as removed in Fig. 1 to more clearly show the location and operation of the guide and support d.

As the conformation, arrangement, and operation of each brace for each pair of legs is the same, it will be necessary to describe only the brace b and its guiding and supporting mechanism d and its connection also with the legs a'. Referring now to Figs. 1 and 15, this brace b has a ferrule b^6 on its lower end and articulates upon a pin p^3, secured in the holes c^3 therefor in the ears c^2 on the clip c, which is secured upon the cross-piece a^2 by means of screws, as seen in Fig. 15, passing through suitable holes c^5 therefor in ears c^4, also formed on the clip c. This clip c is first cut to the form indicated in Fig. 12, after which it is bent up to the form indicated in Figs. 9, 10, and 11 by bending such blank along the dotted lines $x^{11}\,y^{11}$, $x^{12}\,y^{12}$, $x^9\,y^9$, $x^{10}\,y^{10}$ in Fig. 12. The upper end of the brace b carries a ferrule b^2 and carries also the pin b^3, the ends of which are arranged to work in the slots d^5 in the guide d. This guide d is formed from a blank which is cut to the conformation indicated in Fig. 7 by folding upward or toward the observer and from the plane of the figure that part to the left of the line $x^3\,y^3$ of Fig. 7 and also that part to the right of the line $x^4\,y^4$ of Fig. 7 and also the ears d^2, while at the same time the part above the line $x'\,y'$ and the part below the line $x^2\,y^2$ are bent downwardly and away from the observer and the plane of the figure, all of the bends of course being made at right angles to the plane of the figure. The parts to the left of the line $x^3\,y^3$ of Fig. 7 constitute ears or lugs d^4, through the holes in which are inserted screws for securing the guide d to the inside of the frame a^5, as seen in Fig. 1. The latch e is formed from a blank, which is first cut to the form seen in Fig. 8, after which the lugs e^3 are bent upwardly or toward the observer from the plane of the figure along the lines $x^7\,y^7$ and $x^8\,y^8$ of Fig. 8. Then the ears e^2 are bent similarly from the plane of the figure along the lines $x^5\,y^5$ and $x^6\,y^6$ of Fig. 8, while at the same time all of the parts above the line $x^5\,y^5$ and below the line $x^6\,y^6$ of Fig. 8 are bent downwardly or away from the observer and from the plane of the figure, resulting in the conformation as seen in Figs. 2 and 4. This latch e is secured upon the guide d by means of a suitable pin p^2, passing through the ears e^2 and d^2, and this pin is encircled by a suitable coiled spring f, operating in the manner indicated to hold the latch e downwardly against the upper face of the guide d. The slots d^5 shown in this guide d constitute a supporting, guiding, and retaining means for the upper end of the brace b, the pin b^3 working in such slots.

The conformation and arrangement of the parts is such that when the legs a' are folded upwardly and to the right, so as to lie flat against the under side of the table, the brace b occupies the position indicated in dotted lines at the right-hand end of the guide d in Fig. 4, lying also flat and nearly up against the under side of the table. At this time the pin b^3 is still in the slots d^5, but near the right-hand end thereof, while when the legs a' are opened downwardly to their operative position, as indicated in Fig. 1, the brace b occupies the position indicated in Fig. 1 and also in Figs. 3, 4, and 5, the pin b^3 at this time having engaged the latch e and, forcing it upwardly, has passed by the same and occupies the position indicated in Fig. 4, the latch e having sprung back into its operative position, preventing the return movement of the brace b and operating thus to hold the legs a' firmly in their operative and vertical position. On account of the curves seen in the slots d^5 at their left-hand ends it will at once be understood that the thrust of the pin b^3 in sustaining the legs a' in their operative position is exerted directly upon the sides of the slots d^5 and not upon the latch e, which for this reason may be made of light material and so adjusted that it may operate very freely, as it does not have to sustain any of the strain exerted upon the parts.

In folding up the table the table is preferably laid bottom side up and the latch e forced downwardly, when by grasping the brace b it may be forced to the right, and the legs a' will be folded up against the under side of the table.

Attention is especially called to the lugs or bends d^3 in the brace d and to the fact that the slots d^5 extend into such bends or lugs, as indicated in Figs. 5 and 7, in order that the upper end of the brace b, with the pin b^3 therein, may be inserted into the guide d or withdrawn therefrom whenever desired without the removal of the pin b^3, and that, too, while the guide d is in position secured to the frame a^5 of the table. This arrangement greatly facilitates the assembling of the parts, as well as the removal of the brace b for any needed repairs.

It is customary in assembling the tables to secure the guides d to the frame a^5, preferably before the top a has been put on, and then to secure the legs to the table-frame a^5, with the cross-piece a^2 between those of each pair. The braces b are assembled with the ferrules on each end thereof and with the pin b^3 in the upper end, and the legs a' are secured to the frame of the table with the cross-piece a^2 between them with the clip c thereon, after which the upper end of the brace b is inserted in the guide d, and the lower end is secured in the clip and between the ears c^2 thereon by means of the pin p^3, as indicated and already described. Thus it will be seen that by the insertion or removal of a single pin or bolt p^3 the brace may be secured in or removed from its operative position, or, if preferred, the lower end of the brace b may be secured to the clip c first by a pin p^3, inserted through the ears c^2 and riveted down, and then the

clip c may after the brace b has been inserted at its upper end in the guide d be secured to the cross-piece a^2 in the manner indicated.

It is preferable that the pin b^3 be freely insertible within the upper end of the brace b and that it be prevented from coming out or held in place by its engagement with the brace d. For this purpose the pin b^3 is shouldered or tenoned on its ends, as indicated in Fig. 6, the tenons only working in the slots d^5, while the shoulders on this pin b^3, engaging the vertical side members of the guide d, serve to hold the pin b^3 in place. The ends of the pin b^3 extend through the slots d^5 sufficiently to engage and operate the latch e. When it is desired to make use of a plain pin in place of the tenoned or shouldered pin b^3, as seen in Fig. 6, I make use of the construction shown in Figs. 13 and 14, in which the guide d is formed practically the same as already described, except that instead of removing the metal from the slots d^5 it is pressed outwardly to the form indicated in sectional view at d^8 in Fig. 14 and in side view in Fig. 13. In Fig. 13 the slots are lettered, as d^7, and in this arrangement I make use of a plain pin b^4 in the upper end of the brace b, and such pin is securely held in proper position by the side members d^8, formed on the guide d. In Fig. 13 the brace b is partially shown in its horizontal or inoperative position, while in Fig. 14 it is shown in sectional view taken along the line x^{13} y^{13} of Fig. 13.

The operation of my brace and guiding and locking mechanism therefor is believed to be so thoroughly obvious as to call for no further description herein.

What I claim is—

1. A support and guide for a sliding element comprising a plate of suitable material having a closed slot therein, such plate bent at a point near one end and within the length of such slot and such sliding element removable from such slot through that portion thereof contained in such bent portion of such plate.

2. A support and guide for a sliding element comprising two parallel plates of suitable material each having a closed slot therein and each bent at a point near one end and within the length of such slot corresponding to the bend in the other and such sliding element removable from such slots through those portions thereof contained in such bent portions of such plates, such plates formed integrally from a single sheet.

3. A support and guide for a sliding element comprising two parallel plates of suitable material each having a closed slot therein and each bent at a point near one end and within the length of such slot corresponding to the bend in the other and such sliding element removable from such slots through those portions thereof contained in such bent portions of such plates, such plates formed integrally from a single sheet and carrying flanges for preventing a movement of such sliding element laterally between such plates.

4. A support and guide for a sliding element comprising two parallel plates of suitable material each having a closed slot therein and each bent at a point near one end and within the length of such slot corresponding to the bend in the other and such sliding element removable from such slots through those portions thereof contained in such bent portions of such plates, such plates formed integrally from a single sheet and conformed relatively to such sliding element to prevent a lateral motion thereof between such plates.

5. In a folding table and as a means for guiding and supporting a brace therein, two parallel plates of suitable material each having a closed slot therein and each bent at a point near one end and within the length of such slots corresponding to the bend in the other, such brace having on the end thereof a head comprising a pin adapted to work in such slots and such pin insertible in and removable from such slots through those portions thereof contained in such bent portions of such plates, such pin freely removable from such brace and such plates adapted to hold such pin in operative position in the end of such brace by engagement therewith when in such slots.

6. In a folding table and as a means for guiding and supporting a brace therein, a plate of suitable material having a closed slot therein and bent at a point near one end and within the length of such slot, such brace having on the end thereof a head comprising a pin adapted to work in such slot and such pin insertible in and removable from such slot through that portion thereof contained in such bent portion of such plate, such pin freely removable from such brace and such plate tending to hold such pin in operative position in the end of such brace by engagement therewith when in such slot.

7. In a folding table and as a means for guiding and supporting a brace therein, two parallel plates of suitable material each having a closed slot therein and each bent at a point near one end and within the length of such slots corresponding to the bend in the other, such brace having on the end thereof a head adapted to work in such slots and such head insertible in and removable from such slots through those portions thereof contained in such bent portions of such plates, such head freely removable from such brace and such plates adapted to hold such head in operative position on the end of such brace by engagement therewith when in such slots.

8. In a folding table and as a means for guiding and supporting a brace therein, a plate of suitable material having a closed slot therein and bent at a point near one end and within the length of such slot, such brace hav-

ing on the end thereof a head adapted to work in such slot and such head insertible in and removable from such slot through that portion thereof contained in such bent portion of such plate, such head freely removable from such brace and such plate tending to hold such head in operative position on the end of such brace by engagement therewith when in such slot.

9. In a folding table and as a means for guiding and supporting a brace therein, two parallel plates of suitable material each having a closed slot therein and each bent at a point near one end and within the length of such slots corresponding to the bend in the other, such brace having on the end thereof a head comprising a pin adapted to work in such slots and such pin insertible in and removable from such slots through those portions thereof contained in such bent portions of such plates, such pin freely removable from such brace and such plates adapted to hold such pin in operative position in the end of such brace by engagement therewith when in such slots, each of such slots having in the end thereof opposite the bends in such plates a portion lying practically at right angles with such brace when in its operative position and a latch for engaging such pin and holding such brace in such operative position.

10. In a folding table and as a means for guiding and supporting a brace therein, a plate of suitable material having a closed slot therein and bent at a point near one end and within the length of such slot, such brace having on the end thereof a head comprising a pin adapted to work in such slot and such pin insertible in and removable from such slot through that portion thereof contained in such bent portion of such plate, such pin freely removable from such brace and such plate tending to hold such pin in operative position in the end of such brace by engagement therewith when in such slot, such slot having in the end thereof opposite the bend in such plate a portion lying practically at right angles with such brace when in its operative position and a latch for engaging such pin and holding such brace in such operative position.

11. In a folding table and as a means for guiding and supporting a brace therein, two parallel plates of suitable material each having a closed slot therein and each bent at a point near one end and within the length of such slots corresponding to the bend in the other, such brace having on the end thereof a head adapted to work in such slots and such head insertible in and removable from such slots through those portions thereof contained in such bent portions of such plates, such head freely removable from such brace and such plates adapted to hold such head in operative position on the end of such brace by engagement therewith when in such slots, each of such slots having in the end thereof opposite the bends in such plates a portion lying practically at right angles with such brace when in its operative position and a latch for engaging such head and holding such brace in such operative position.

12. In a folding table and as a means for guiding and supporting a brace therein, a plate of suitable material having a closed slot therein and bent at a point near one end and within the length of such slot, such brace having on the end thereof a head adapted to work in such slot and such head insertible in and removable from such slot through that portion thereof contained in such bent portion of such plate, such head freely removable from such brace and such plate tending to hold such head in operative position on the end of such brace by engagement therewith when in such slot, such slot having in the end thereof opposite the bend in such plate a portion lying practically at right angles with such brace when in its operative position and a latch for engaging such head and holding such brace in such operative position.

PHILIP F. SWART.

Witnesses:
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