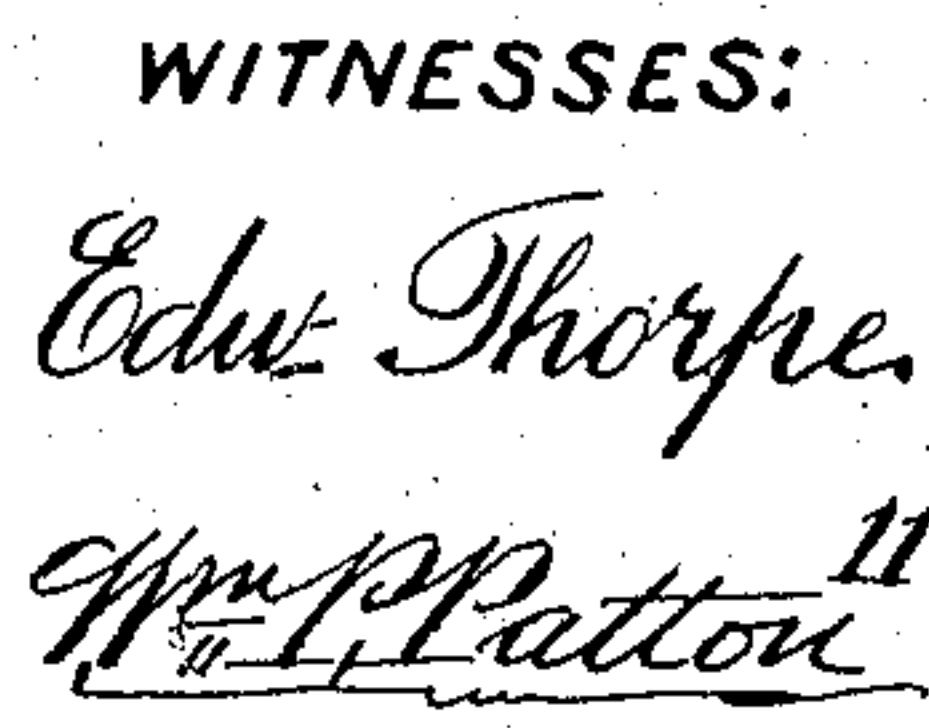


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FOLDING BIT-BRACE.

SPECIFICATION forming part of Letters Patent No. 790,086, dated May 16, 1905.

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To all whom it may concern:

Be it known that I, CHARLES W. STITES, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Folding Bit-Brace, of which the following is a full, clear, and exact description.

The object of my invention is to provide novel details of construction for a bit-holding brace, such as is used by woodworkers, which enable the body of the brace to be folded into a compact package and be quickly arranged for use when this is desired, a further object being to so construct the parts forming the brace that it will be very light, strong at the bends in the same, be adapted for a reliable connection of the members thereof where the parts are hinged together, and as an entirety provide a neat shapely device for the purpose specified.

The invention consists in the novel construction and combination of parts, as is hereinafter described, and defined in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a partly-sectional side view of the improved brace arranged for service. Fig. 2 is a side view of the same in a close-folded condition. Fig. 3 is a longitudinal sectional view substantially on the line 3 3 in Fig. 1. Fig. 4 is a partly-sectional plan view of details substantially on the line 4 4 in Fig. 1. Fig. 5 is a transverse sectional view substantially on the line 5 5 in Fig. 1. Fig. 6 is a fragmentary partly-sectional side view showing a modified locking means for the elbow-joints of the brace; and Fig. 7 is a reverse plan view, detached, of said locking device for the joints. Fig. 8 is a view in perspective of the wing-plate located at the upper end of the handle member of the structure.

The body of the brace is made up of three main members comprising a top horizontal member 10, a lower horizontal member 11, and an upright handle member 12. The latter, which at its ends is jointed upon the other members at and near like ends thereof in a

novel manner, is adapted to space apart the members 10 11 and hold them in nearly parallel planes one with the other. It may here be stated that the features of invention principally reside in the construction and arrangement of parts forming the joint connections of the three main members, which render said connections very strong and durable, afford a support against pressure on the free end of the top member, enable the members 10 and 11 to be closely folded upon the handle member at opposite sides of the same, and adapt the bit-brace for withstanding torsional strains in a reliable manner.

Upon the free end 10^a of the top member 10, which is turned upward, a head-piece 10^b of the usual or any approved form is loosely secured and may be provided at the point of attachment with a ball-bearing, as is common with this class of woodworking-tools. Upon a corresponding end of the lower member 11 a bit-holding chuck 11^a is secured in a plane axially coincident with the center of the head-piece 10^b, and as this detail is not a patentable feature it is not illustrated interiorly and needs no further description.

Upon the upper end of the handle member 12 a laterally-extending wing-plate 12^a is formed or secured, the point where the wing-plate is joined to the handle member having considerable width to assure necessary strength. The wing-plate 12^a has parallel sides and a suitable length, terminating at the end farthest from the member 12 in a tenon 12^b.

There is a longitudinal slot *a*, formed in the upper member 10 of the brace-body, which extends from the end that is to be connected with handle member 12, and the wing-plate 12^a is slidably fitted into said slot, as is indicated in Figs. 1 and 2. A short transverse slot *a'* is formed in the wing-plate 12^a at a point nearly central between its ends, and in the slotted portion of the upper brace member 10 opposite the slot *a'* a cross-pin *b* is inserted therethrough, said pin passing loosely through the slot *a'*.

There is a right-angular notch *c*, formed at the free end of each side wall of the slotted portion of the top member 10, these similar

opposite notches leaving tongues d extending from the side walls mentioned, which tongues may be slid into similar open recesses e , that are formed oppositely in the upright handle member 12 below but near the upper extremity of the latter. In the terminal wall of the slot a in the brace member 10 a socket is formed of a shape and dimensions that adapt it to neatly receive the tenon 12^b . It will be apparent that when the brace member 10 is moved toward the upper end of the handle member 12 the tongues d will slide into the open recesses e and have a bearing on the upper walls of said recesses, as appears in Fig. 1 for one of said tongues. When the longitudinal movement of the brace member 10 inserts the tongues d into the open recesses e , the tenon 12^b will be slid into the socket at the end of the slot occupied by the wing-plate 12^a , as also appears in Fig. 1, and it will be obvious that the interlocking engagement of the tongues and tenon, as shown and described, will render the connection between the members 10 and 12 very strong, the wing-plate 12^a becoming a strut-brace that greatly reinforces the connection between the members specified.

To render the connection between the brace members 10 12 reliable when they are arranged for service, means for locking the member 10 against sliding movement is provided, said means being shown in preferred form in Figs. 1 and 3 and in modified form in Figs. 6 and 7. The first-mentioned locking device consists of a slide-bolt 13, preferably dovetailed in cross-section, which is loosely fitted into a correspondingly-shaped groove g , formed longitudinally in the handle member 12 near the upper member or arm 10 of the brace, a notch g' , that is formed in the edge of said member or arm, receiving the adjacent end of the bolt 13 when the tongues d occupy the recesses e and the tenon 12^b is embedded in the socket it is to engage within, as before explained. Obviously when the bolt 13 is slid into the notch g' , as shown in Fig. 1, the handle member 12 and arm 10 will be held from disconnection, adapting the wing-plate 12^a to stiffen the elbow formation, rendering it capable of resisting pressure applied upon the head-piece 10^b when the brace is used and also to resist torsional strain incurred in use of the tool.

In Figs. 6 and 7 the locking device, which may, if preferred, be used in place of the bolt 13, consists of a disk 14, having an annular groove h formed in one side, leaving a nearly circular flange h' as a border-wall for the groove, said wall having an opening h^2 formed therein, as is clearly shown in Fig. 7. The disk 14 is perforated near the center, as at i , for the reception of a pivot-bolt i' , that is inserted in a threaded perforation formed in the arm 10 near the socket therein which receives the tenon 12^b . In the adjacent edge

of the wing-plate 12^a is formed a notch m , that will receive the flange h' . Preferably the flange h' is slightly eccentric to the pivot-bolt i' , so that a partial rotation of the disk will cause the flange to bind upon the wall of the notch m and hold the tenon 12^b in the socket within which it interlocks when the parts are arranged as shown in Figs. 1 and 6. The notch m is shaped to permit a free insertion of the notched edge of the wing-plate 12^a through it, which is obviously necessary to enable the flange h' to enter the notch m and for release of the wing-plate, so as to permit a folding movement of the arm 10 to be effected, as it is only necessary to turn the disk so that the notch or opening h^2 is alined with the edge of the wing-plate, which will permit a retraction of the latter, so as to release it from the socket in the arm 10, and a removal of the tongues d from the recesses e .

At the normally lower end of the handle member 12 a wing-plate or strut-brace 12^c is formed or secured in the same plane with the wing-plate 12^a , having a joint-ear 12^d formed on the end thereof which is below the end of the handle member, said ear projecting laterally from the handle member 12 in a plane coincident with that of the wing-plate practically as a portion thereof. An end portion of the lower brace member 11 is longitudinally slotted to receive the wing-plate or strut-brace 12^c , and at the termination of the slot a socket is formed which receives a tenon 12^e on the plate 12^c when the latter is fully inserted into the slot. The slot and wing-plate mentioned have a like lateral inclination given to them, considered longitudinally, as shown in Fig. 4. Upon the free ends of the leaves 11^b , that are spaced apart by the slot in the brace member 11, similar ears 11^c are formed, that are disposed oppositely, and these ears embrace the joint-ear 12^d when the parts are assembled. In the ear 12^d , near its center of width, a transverse slot n is formed longitudinally, as shown by dotted lines in Fig. 1. A pin o is passed through alined transverse perforations in the opposite ears 11^c at their centers and is therein secured and also passes through the slot n , thus holding the brace member 11, connected with the joint-ear 12^d , free to move endwise and be turned around the pivot-pin o as a center in direction of the arrow x in Fig. 1 when this is desired. The joint-ear 12^d inclines from a vertical plane, as shown in Fig. 3, this inclination of the ear and the lateral trend of the wing-plate 12^c adapting the brace member 11 to fold at one side of the handle member 12 and dispose the chuck 11^a at one side of the arm or top member 10 when the said members 10 and 11 are respectively turned in direction of the arrows x' x , thus compactly folding all members of the bit-brace.

As shown in Figs. 1 and 4, a slide-bolt 13^a is employed for detachably securing the lower member 11 in connection with the handle

member 12, said bolt being longitudinally movable in a groove *p*, that is similar to the groove *g* and is formed in the handle member 12, where it is connected with the wing-plate 12° the reciprocal bolt being opposite a notch *p'* in an appropriate leaf 11°.

It will be seen that when the lower brace member 11 is to be locked in position for service if it has been folded as shown in Fig. 2 said member is turned on the pin *o* in a reverse direction to that indicated by the arrow *x* until the wing-plate 12° is properly introduced between the leaves 11^b, the slot *n* facilitating this adjustment. The wing-plate is now moved endwise in the slot between the leaves 11^b until the tenon 12° enters the socket formed to receive it at the end of the slot in the brace member 11. When fully embedded in the socket, the tenon 12° arrests the longitudinal movement of the wing-plate 12° at a point which will dispose the end of the bolt 13^a opposite the notch *p'*, into which the bolt may be slid, and thus secure the handle-piece 12 firmly connected with the lower brace member 11.

The locking device shown in Figs. 6 and 7 may be employed instead of the locking-bolt 13^a, if this is preferred.

There is a sleeve 15 mounted upon the handle member 12, the latter being reduced in diameter between its ends to receive the sleeve, said part being preferably formed of wood in cylindrical shape made up of two half-sections which are joined together at their meeting edges, which are tongue-and-grooved to prevent lateral displacement, as shown at *r* in Fig. 5, the sleeve-sections being secured together with cement or glue in complete condition, affording a rotatable grip-piece for an easy manipulation of the brace.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A foldable bit-brace, comprising a handle member constructed at opposite sides of its upper end with recesses, and provided at this end with a wing-plate terminating with a tenon and having a slot therein, and a top member having tongues at its inner end received in said recesses, and also having a slot receiving the wing-plate, this slot having a notch in its base receiving said tenon, and the said top member being provided with a cross-pin passing through the slot in the wing-plate.

2. A foldable bit-brace, comprising a handle member constructed at opposite sides of its upper end with recesses, and provided at this end with a wing-plate terminating with a tenon and having a slot therein, a top member having tongues at its inner end received in said recesses, and also having a slot receiving the wing-plate, this slot having a notch in its base receiving said tenon, and the said top member being provided with a cross-pin pass-

ing through the slot in the wing-plate, and means for locking the top member against movement with respect to the handle member.

3. A bit-brace, comprising a handle member constructed at its lower end with a wing-plate extending beyond one side of said member, and provided with an ear extending beyond the opposite side of the member, this ear having a slot therein and the wing-plate terminating with a tenon, and a lower member having ears at its inner end embracing said first-named ear, and also having a slot receiving the wing-plate, this slot having a notch in its base receiving said tenon, and the said lower member being provided with a cross-pin passing through the slot in the first-named ear.

4. A bit-brace, comprising a handle member constructed at its lower end with a wing-plate extending beyond one side of said member, and provided with an ear extending beyond the opposite side of the member, this ear having a slot therein and the wing-plate terminating with a tenon, a lower member having ears at its inner end embracing said first-named ear, and also having a slot receiving the wing-plate, this slot having a notch in its base receiving said tenon, and the said lower member being provided with a cross-pin passing through the slot in the first-named ear, and means for locking said lower member against movement with respect to the handle member.

5. A bit-brace embodying a handle member having a slotted ear on one end and lateral recesses formed in the other end, a wing-plate for each end of the handle member projecting respectively from the recesses and the ear in substantially the same plane with each other, two longitudinally-slotted arms each receiving a wing-plate, a tenon on the end of each wing-plate occupying a socket in the end wall of the slot in a respective arm, a tongue on the free end of each spaced member on the slotted portion of said arm, the tongues entering the lateral recesses when the tenon is in the socket, a transverse pin in said arm loosely engaging the slot in the wing-plate, means for releasably securing the arm from movement, the wing-plate on the end of the handle member having the slotted ear thereon extending laterally therefrom, the slot in the remaining arm receiving the wing-plate and ear, a transverse pin in the arm passing through the slot in the ear, and means for holding this arm from rocking and sliding.

6. In a bit-brace of the character described, the handle member, the wing-plate on each end of the handle member extended laterally therefrom in substantially the same plane, the upper and lower slotted arms which respectively receive the wing-plates, the tenons on the wing-plates that occupy sockets in the arms, the transverse pins in the arms adapted

to rock and slide in slots in one wing-plate
and an ear on an end of the handle member,
and the slide-bolts respectively held in re-
cesses in end portions of the handle member
5 and adapted for engagement in respective
notches in the arms for holding said arms sta-
tionary.

In testimony whereof I have signed my name
to this specification in the presence of two sub-
scribing witnesses.

CHARLES W. STITES.

Witnesses:

WM. P. PATTON,
JNO. M. RITTER.