(No Model.)

A. D. GOODELL.

BIT BRACE.

No. 488,691. Patented Dec. 27, 1892.

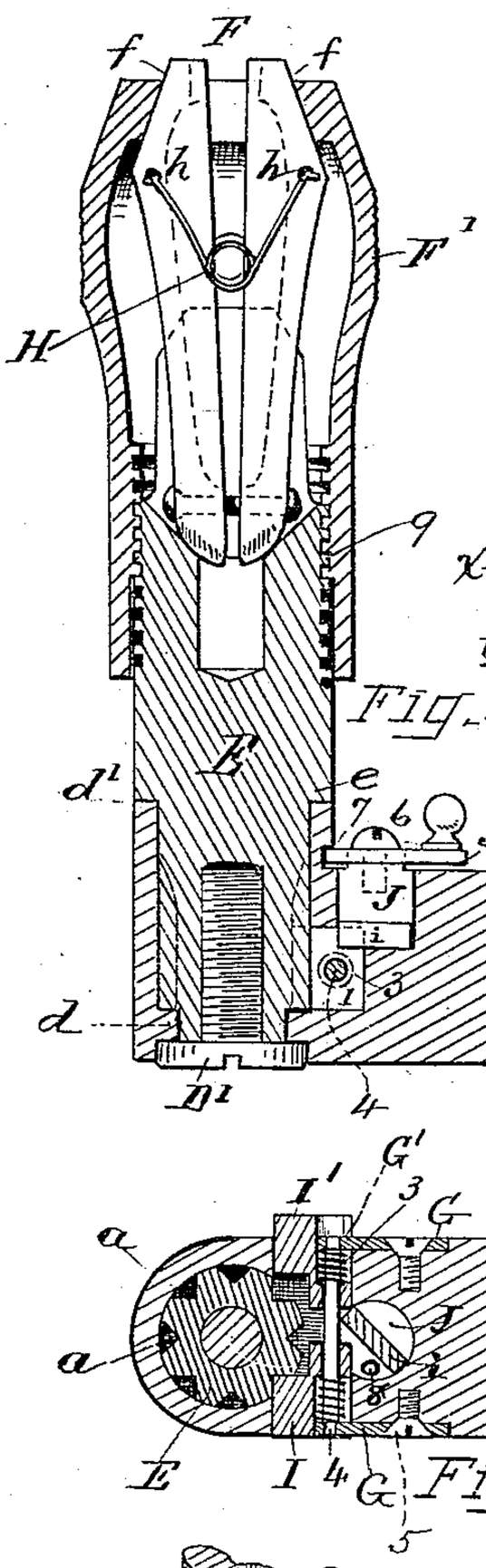


Fig. 2

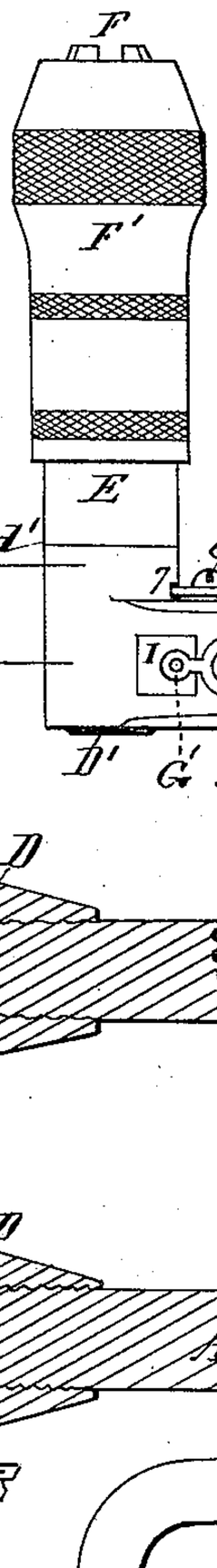


Fig. 1

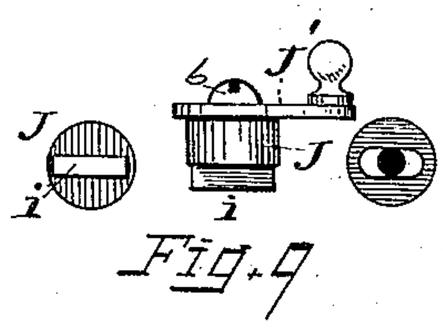


Fig. 9

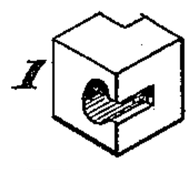


Fig. 7

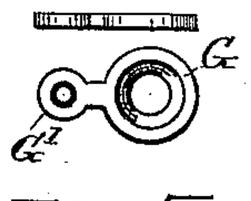


Fig. 8

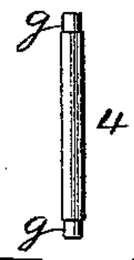


Fig. 10

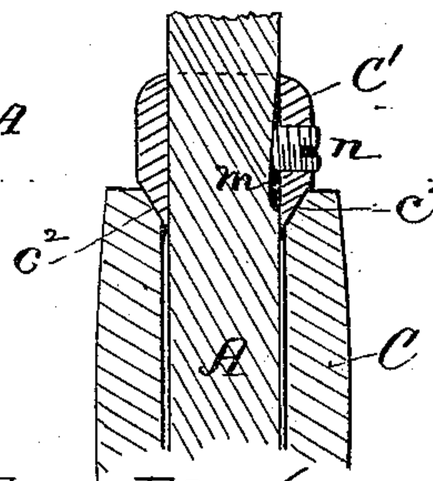
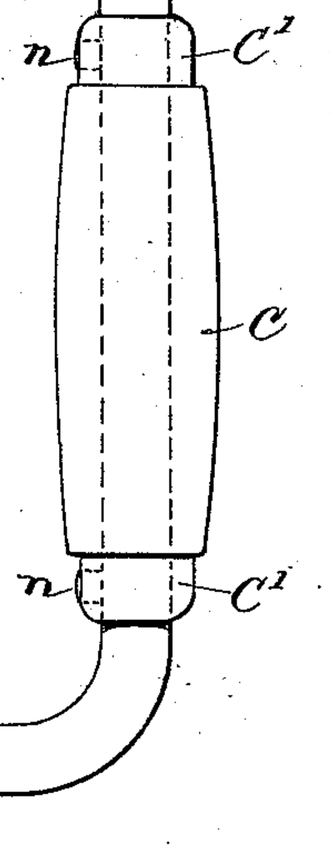


Fig. 6

Fig. 3



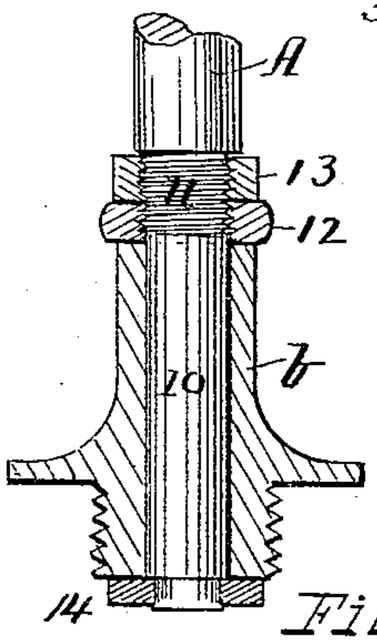
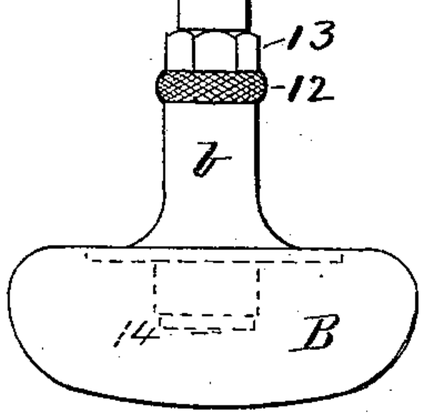


Fig. 5



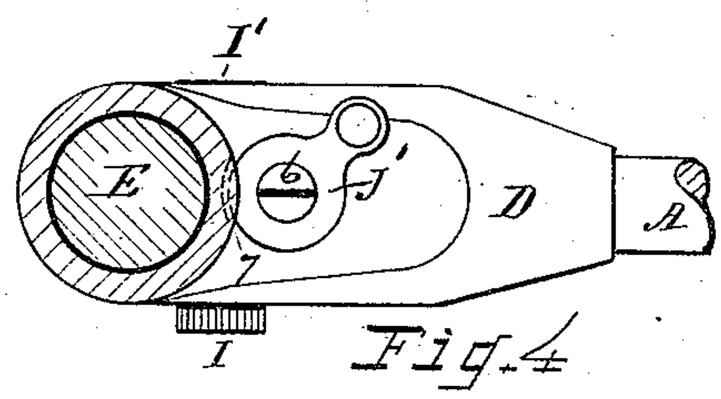


Fig. 4

Witnesses

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BIT-BRACE.

SPECIFICATION forming part of Letters Patent No. 488,691, dated December 27, 1892.

Application filed June 22, 1892. Serial No. 437,652. (No model.)

To all whom it may concern:

Be it known that I, ALBERT D. GOODELL, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improved Bit-Brace, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The object of my present invention is to provide a bit-stock or bit-brace in which the working joints between the parts that rotate one against another can be maintained in a condition for perfect operation, and to provide facilities whereby any looseness of said joints due to wear can be taken up by adjustment thereof.

Another object is to provide a bit-brace with an improved reversing ratchet mechanism, simple and efficient of operation, not liable to deterioration by use, and which can be economically manufactured.

Another object is to provide a bit-brace with simple and efficient means for automatically opening the bit-holding jaws as the cone of the threaded sleeve is released therefrom.

I attain these objects by the mechanism illustrated in the drawings, wherein

Figure 1 is a side view of my improved bit-brace. Fig. 2 is a longitudinal section of the ratchet frame and bit-holding chuck. Fig. 3 is a horizontal section through the ratchet mechanism at line *w w* Fig. 1. Fig. 4 is a horizontal section at line *x x*, Fig. 1. Fig. 5 is a section through the pressure-knob-shank and take-up collar. Fig. 6 is a section at one end of the handle. Fig. 7 is a perspective view of one of the rectangular pawls separate. Fig. 8 shows a plan and side of the cap-plate. Fig. 9 shows bottom, side and top views of the reversing dog, and Fig. 10 shows a side view of the guiding bar for the pawl springs.

The following description explains in detail the preferred construction and manner of embodying my invention for practical operation and use; the particular subject-matter claimed being hereinafter definitely specified.

Referring to parts, A denotes the sweep-bar or crank which is bent or offset in the usual well known form. B indicates the head or pressure-knob on the end of said bar, C the grip or handle; D the frame attached to the opposite end of the bar for supporting the bit-carrier E and its holding chuck which is composed of the jaws F and screw-threaded sleeve F′. The carrier E is rotatable within the frame and fitted in the manner shown in Figs. 2 and 3. The frame is provided with a shoulder or annular internal flange *d;* and the carrier is provided with a shoulder that fits against said flange, and also with a shoulder *e* that fits the end seat *d′* on the frame. Said carrier is retained in connection with the frame by a broad-headed screw D′ which screws into an opening coincident with the axis of the carrier, the head of the screw fitting against the flange *d* at its under side in the manner illustrated. The part of the carrier within the frame is fitted with a series of right-angled longitudinal grooves or ratchets *a*, and a pair of right-angled pawls or stops I I′ [see Figs. 2, 3, and 7] are movably arranged within a mortise formed transversely through the frame; said pawls being adapted as shown for engaging one or the other with said ratchet-grooves *a* for giving movement to the carrier either to the right or left accordingly as one or the other of said pawls is in engagement. The pawls are each provided with a cavity in which a small coiled spring 3 is fitted; and a bar 4 passes through the pawls and springs from side to side of the frame; said bar being retained at each of its ends by a cap-plate G having an ear G′ that enters the cavity of the pawl and supports the reduced end *g* of the bar while the body of the cap-plate is secured to the frame by a screw 5 in the manner illustrated. The respective springs 3 in the pawls are confined between the inner end of the pawl chamber and the ear of the cap-plate, so that the springs normally tend to force the pawls into engagement with the ratchets or notches of the bit-carrier. Centrally of the frame there is arranged a cylindrical dog J having on its lower end a projecting flange *i* which enters between the pawls I I′ for moving them to the right or left. Said cylindrical dog is arranged in a suitable opening extending into the frame, and is provided with a crank or thumb-plate J′ by which the dog can be swung to

the right or left for shifting the pawl movement. Said thumb-plate J′ is fitted over a projection formed on the top of the dog, and secured thereto by a screw 6. The frame D is recessed or under-cut, as at 7, to receive the edge of the plate J′ and thereby form a check or guard to prevent the dog from escaping from its place. [See Figs. 1, 2 and 4.] A small stud or pin 8 is fixed in the bottom of the cavity to prevent the dog being turned too far around in either direction. The bit-holding jaws F have their lower ends seated loosely in an angular cavity within the carrier, their upper ends being provided with the usual bevels *f* upon which the inner cone-shaped portion of the sleeve takes bearing for closing the jaws when said sleeve, which is screw-threaded to the exterior of the carrier, as at 9, is turned downward thereon. To effect the automatic opening of said jaws when the sleeve is released, I provide a spring or springs H consisting of a coil having two arms that extend outward therefrom and offset at their ends to engage within holes *h* formed transversely through the jaws near their upper ends, as indicated in Fig. 2. One of said springs is best arranged at each side of the jaws, the ends of the wires passed through the hole *h* being clinched loosely at the opposite side of the jaw for retaining the springs in connection therewith.

Combined with the handle C and sweep-bar I provide handle-supporting collars C′ which are adjustably confined on the bar A so that they can be adjusted or set up against the ends of the handle-piece C to avoid any excess of looseness in the working of the handle. Said collars can be arranged to set squarely against the handle; but are preferably constructed as indicated in Fig. 6, the end of the collar being beveled or conically tapered to fit a corresponding recess formed within the handle, as at c^2. The bar A is slabbed off on an outwardly tapered incline, as at *m*, to receive the point of the set-screw *n* fitted through the side of the collar. This construction prevents any tendency of the collar working away from the handle-end when once clamped in place.

The knob B is connected with the handle in the following manner;—The end of bar A is fitted with a journal portion 10, and provided with a screw-thread 11 at the inner end of said journal whereon is arranged an adjustable bearing collar 12. A nut 13 is fitted on the threaded portion against the collar, while the end of the bar has fixed thereon an annular disk 14 which is riveted firmly against the shoulder on the reduced end of the bar. The knob is provided with a tubular shank *b* having a flange against which the knob is fixed, and said tubular shank is mounted on the journal of the bar between the bearing-collar 12 and the annular disk 14, so that the tubular shank of the knob is confined to rotate smoothly between said disk 14 and the bearing collar 12. The knob proper is fitted on the threaded portion of the shank. Any looseness occurring between the knob shank and the bar A can be taken up by adjustment of the bearing collar 12 toward the end of the tubular shank.

With the foregoing description the operation of this bit-brace will be sufficiently obvious to any skilled person without further explanation.

What I claim as my invention herein to be secured by Letters Patent, is

1. In a bit brace, the sweep-bar having the journal and screw-thread formed thereon, and the annular disk fixed on the reduced end thereof, in combination with the pressure-knob, its tubular sleeve mounted on said journal adjacent to said disk, the threaded adjustable take-up collar arranged on said thread at the opposite end of the sleeve and the internally threaded nut adjacent to said collar, as and for the purpose set forth.

2. A bit brace, having the sweep-bar, the handle rotative thereon, and provided with adjustable collars fitting the respective ends of the handle, and means for firmly securing said collars in position on said bar, as set forth.

3. A bit-brace provided with a sweep-bar having an inclined flat surface on the side thereof, the handle loosely surrounding said bar and having an inwardly tapered cavity at its end, the adjustable collar having a conoidal end fitting said cavity, and a set-screw fitted in a threaded opening through the side of the collar and its point resting on the incline on the sweep-bar, as and for the purpose set forth.

4. The combination with the bit-carrier having the series of grooves, the frame fitted with a bearing for supporting said bit-carrier and having a transverse mortise extending through the same, as shown, of the right angled pawls oppositely disposed within said mortise for engaging the grooves of said bit-carrier, the cap-plates secured to the sides of the frame and having eye-portions that project into said mortise, a guide-bar extending through the pawls and supported at its ends by said cap-plates, the pawl springs arranged on said guide-bar within the pawls, and the shifting dog disposed in a cylindrical opening in the frame and having a flange that engages between said pawls, substantially as and for the purpose set forth.

5. The combination, with the sweep bar, ratcheted bit-carrier, and engaging pawls in a bit-brace of the frame having the under-cut recess, the pawl-shifting dog provided with an operating crank or thumb-plate having a circular edge or flange which extends into said recess, for the purpose set forth.

Witness my hand this 20th day of June, A. D. 1892.

ALBERT D. GOODELL.

Witnesses:
CHAS. H. BURLEIGH,
FRED A. GOODELL.