(No Model.)

D. M. FULTON.

RATCHET BRACE FOR BITS OR DRILLS.

No. 500,382. Patented June 27, 1893.

Fig 1.

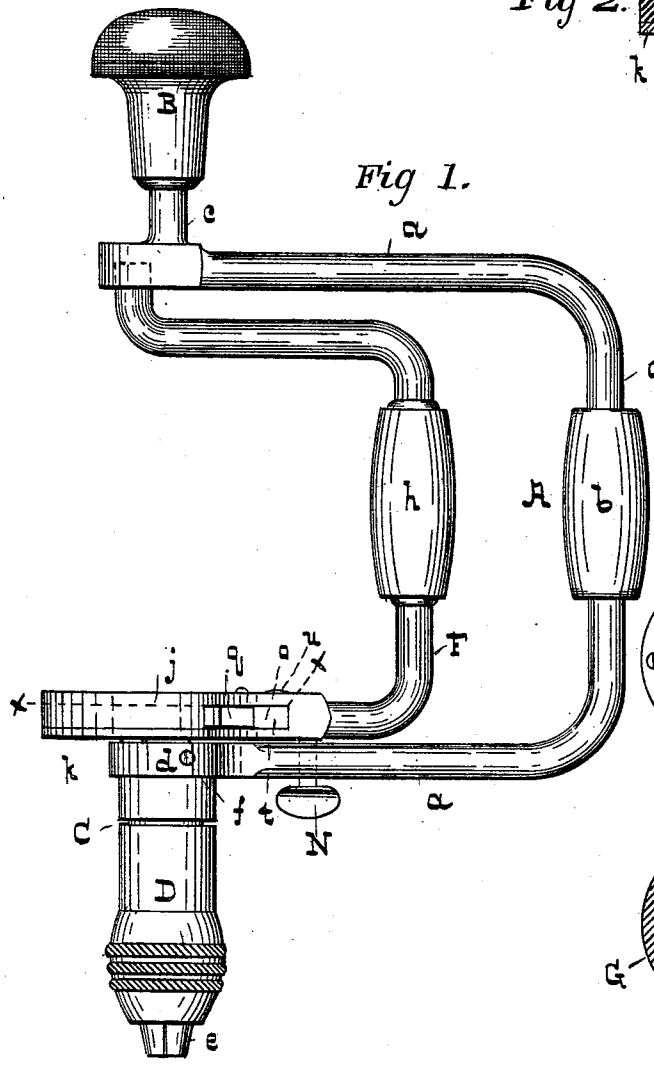


Fig 2.

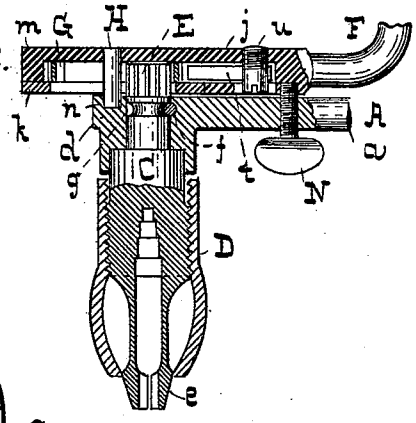


Fig 3.

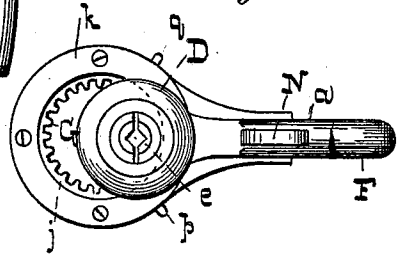
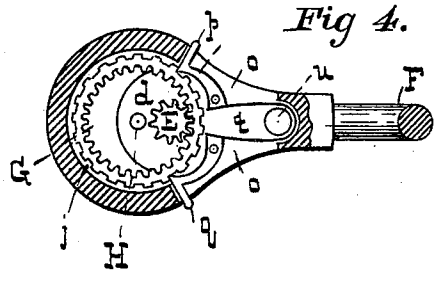


Fig 4.



-WITNESSES-

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UNITED STATES PATENT OFFICE.

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RATCHET-BRACE FOR BITS OR DRILLS.

SPECIFICATION forming part of Letters Patent No. 500,382, dated June 27, 1893.

Application filed October 4, 1892. Serial No. 447,778. (No model.)

To all whom it may concern:

Be it known that I, DAVID M. FULTON, of the city of Baltimore and State of Maryland, have invented certain Improvements in Ratchet-Braces for Bits and Drills, of which the following is a specification.

In the description of the said invention which follows reference is made to the accompanying drawings forming a part hereof and in which—

Figure 1 is an exterior side view of the improved brace, and Fig. 2 a central section of the lower part of the same. Fig. 3 is an under side view of the brace, and Fig. 4 a section taken on the dotted line *x*—*x*.

Referring to the drawings, A is the supporting frame of the tool, consisting of the U shaped bar *a* and the handle *b*. At one end of the bar *a* is a fixed stud *c* to which the breast block B is attached. At the other end of the bar *a* is an eye *d* in which is adapted to turn the spindle C. The outer end of the spindle is formed into spring jaws *e* of ordinary construction, and the portion of the spindle immediately in the rear of the spring jaws, is threaded and provided with a threaded ferrule D by means of which the jaws may be closed upon a bit or drill in the usual manner. The inner end of the spindle C has a pinion E, and the dislocation of the spindle is prevented by a pin *f* which passes through the wall of the eye *d* and is seated in a groove *g* in the spindle.

F is a driving crank having a handle *h* at the center. One end of this driving crank is seated and adapted to turn in a hole in the breast block end of the supporting frame, and the other end is formed into a circular box *j* having an annular covering plate *k*, for a purpose hereinafter described. Within the box *j* is secured an annular gear wheel G with its teeth on the inner surface and adapted to engage with those of the pinion E; and the said gear is held in place by the annular covering plate *k* before alluded to.

H is a pin secured in the plate *m* which serves as the bottom of the box *j* and it extends outward so as to rest and turn in a hole *n* in the wall of the eye *d* of the frame A. This pin is situated centrally of the gear G. The outer circumference of the gear wheel G has ratchet teeth, see Fig. 4, and the box *j* is provided with slots *o* in which are situated two pawls *p* and *q* adapted to engage with the said ratchet teeth. The hubs of these pawls bear against a bent plate spring *t* held in place by means of a pin or screw *u*. When both pawls are turned outward, the box *j* may be turned freely about the gear wheel G without revolving it, but by throwing either of the said pawls into engagement with the ratchet teeth, the turning of the crank handle communicates motion to the gear G but in one direction only. It will be understood that the direction of revolution of the drill or bit, when a vibrating motion only is imparted to the crank handle, depends entirely upon which pawl is used. When both pawls are placed in engagement with the ratchet teeth of the gear G, the movement of the crank handle in either direction will produce a rotary movement to the bit or drill. When both pawls are made operative, the U frame is held by the left hand, and the crank handle revolved by the right. The speed of the drill is then greater than that of the handle, the increase in speed being in the proportion which the number of teeth on the pinion E bears to the number of internal teeth in the gear G. With this arrangement of the parts, small holes can be rapidly drilled. But to drill a much larger hole, or one which requires more power than can be applied with the increased speed obtained through the medium of the gear and pinion, one pawl is connected with the ratchet, and the U frame and the crank handle united so that neither can have any independent motion, by means of a set screw N which at other times is unscrewed sufficiently to disconnect the said parts. The vibratory motion is then obtained through the medium of the handle of the frame A which is farther from the center of the drill than that of the driving crank, and the leverage is therefore greater.

I claim as my invention—

In a ratchet brace, the combination of a U frame one end of which carries the breast block and the other, the drill spindle, a pin-

ion attached to the inner end of the said spindle, a crank handle adapted for revolution within the said frame, the said handle carrying a box with an annular gear wheel with inside teeth in engagement with the said pinion and ratchet teeth on its circumference, and pawls whereby the movement of the handle may be communicated to the said gear wheel, substantially as specified.

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Witnesses:
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