

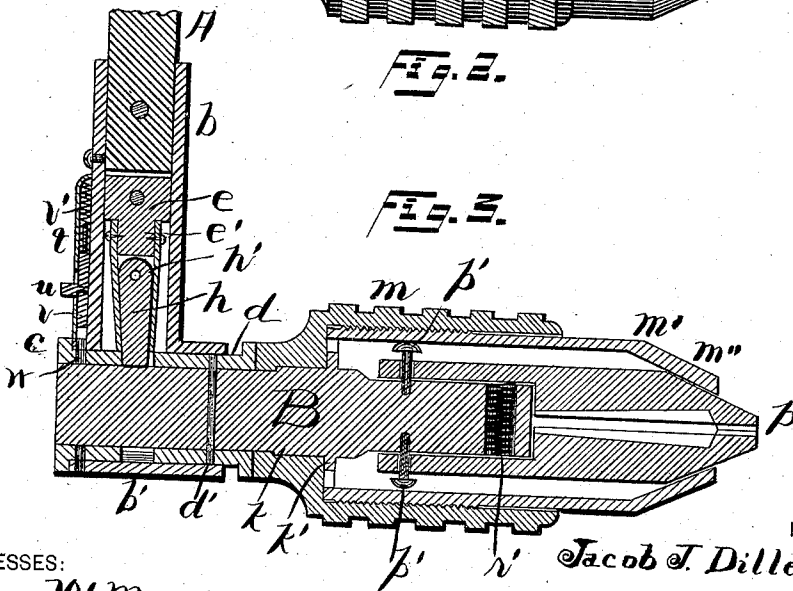
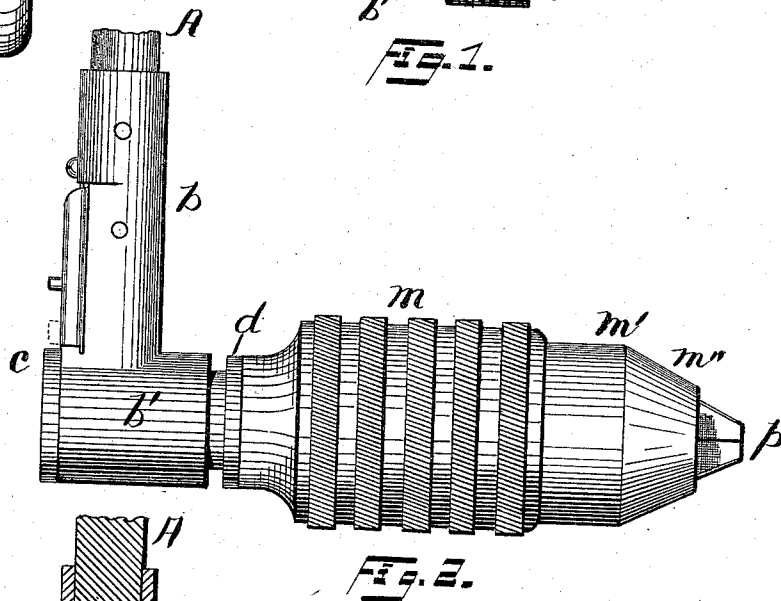
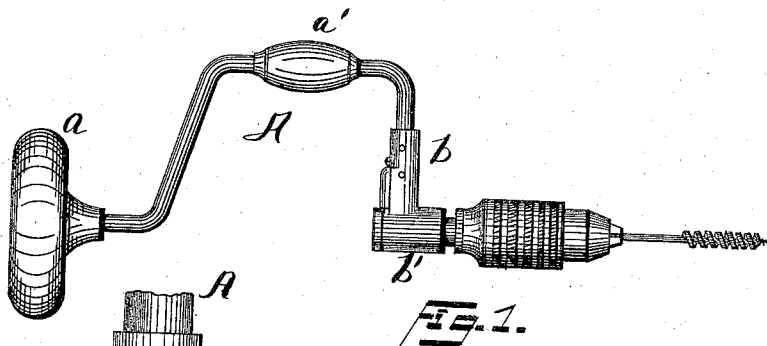
(No Model.)

3 Sheets—Sheet 1.

J. J. DILLENBECK.
RATCHET BRACE.

No. 535,682.

Patented Mar. 12, 1895.



WITNESSES:

Chas. W. Marvin.

M. M. Borch

INVENTOR

Jacob J. Dillenbeck.

BY

Smith & Benson

ATTORNEYS.

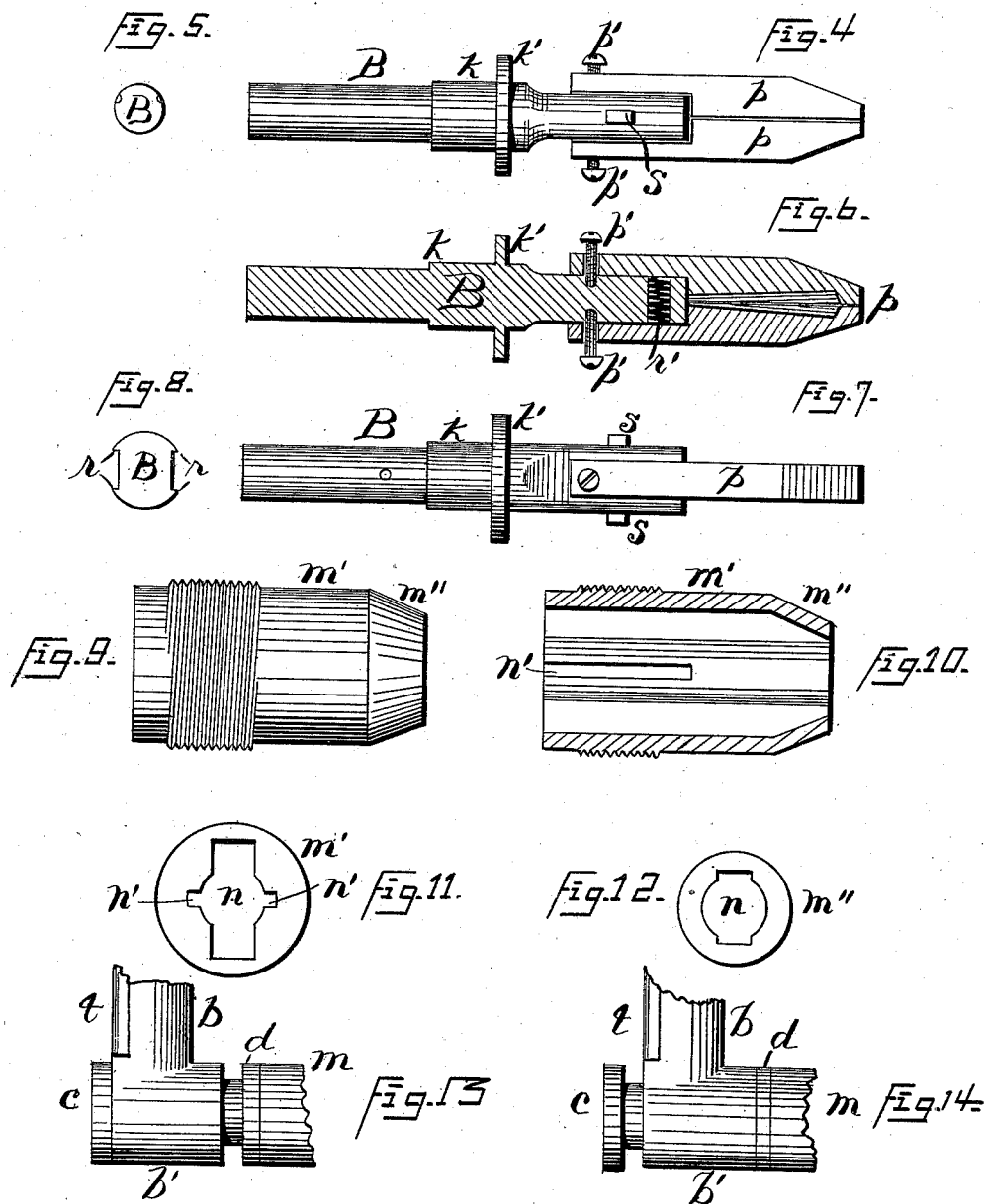
(No Model.)

J. J. DILLENBECK.
RATCHET BRACE.

3 Sheets—Sheet 2.

No. 535,682.

Patented Mar. 12, 1895.



WITNESSES:

Chas. W. Marvin

W. M. Borst

INVENTOR

Jacob J. Dillenbeck.

BY

Smith & Morrison

ATTORNEYS.

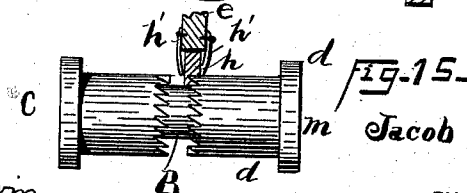
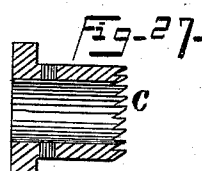
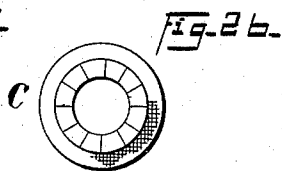
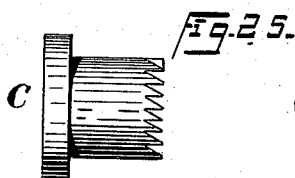
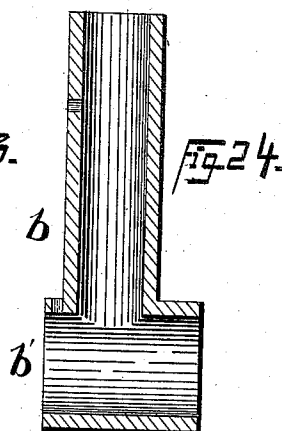
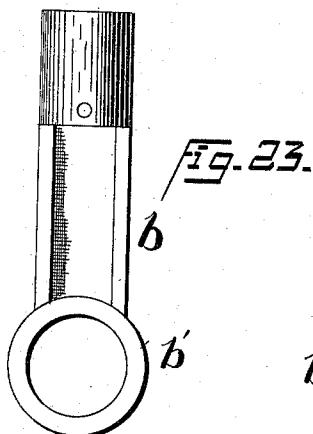
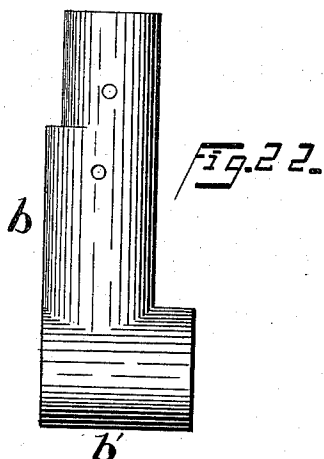
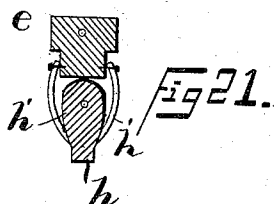
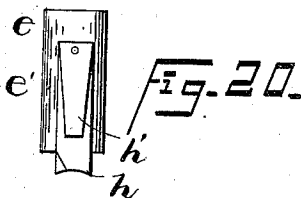
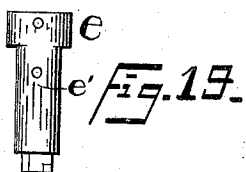
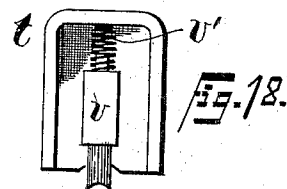
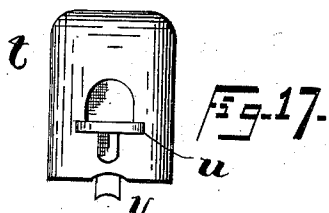
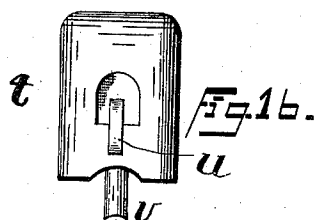
(No Model.)

3 Sheets—Sheet 3.

J. J. DILLENBECK.
RATCHET BRACE.

No. 535,682.

Patented Mar. 12, 1895.



WITNESSES:

Charles W. Marvin.
E. S. Borel.

INVENTOR

Jacob J. Dillenbeck.

BY

Smut & Son

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JACOB J. DILLENBECK, OF PULASKI, NEW YORK.

RATCHET-BRACE.

SPECIFICATION forming part of Letters Patent No. 535,682, dated March 12, 1895.

Application filed January 22, 1894. Serial No. 497,583. (No model.)

To all whom it may concern:

Be it known that I, JACOB J. DILLENBECK, of Pulaski, in the county of Oswego, in the State of New York, have invented new and useful Improvements in Ratchet-Braces, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to ratchet braces or bit-stocks for use in boring or drilling, and which are convertible into a solid brace, or vice versa, and which are also convertible into a right or left hand ratchet, so that the right hand ratchet can be used in advancing the tool, and the left hand one in withdrawing it.

My object is to produce a ratchet brace in which the tool holding jaws are mounted upon a shaft adapted to be ratchet driven to the right, by the oscillatory movement of the handle, to bore a hole; in which said shaft is adapted to be reciprocated so that the oscillation of the handle will, through another ratchet, drive the shaft and tool to the left as for the withdrawal of the tool from a hole; in which means are provided for locking the handle and tool-driving shaft together so that then the handle must be rotated, in either direction, in the same manner as a solid brace, the ratchet mechanisms being inoperative, and said shaft locked against reciprocation; in which the tool-gripping jaws are mounted upon the shaft in such manner that their rear ends are adapted to open outwardly when the front ends open; in which the tool shaft is provided with lateral lugs, on opposite sides, adapted to engage with slots or grooves in the inner surface of the exteriorly threaded sleeve and to traverse the same when the hand-nut is operated to open or close the tool-jaws.

My invention consists in the several novel features of construction and operation hereinafter described and which are specifically set forth in the claims hereunto annexed.

It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1, is a side elevation of the brace. Fig. 2, is an enlarged side elevation of the same, omitting part of the handle. Fig. 3, is a vertical longitudinal section of Fig. 2. Fig. 4, is a side elevation of the tool driving shaft and the jaws mounted thereon. Fig. 5, is an

elevation of the rear end of said shaft. Fig. 6, is a longitudinal section of said shaft and jaws. Fig. 7, is a top plan of said shaft and jaws. Fig. 8, is a front elevation of said shaft. Fig. 9, is an elevation of the reciprocating sleeve or grip block exteriorly threaded, and adapted to close the jaws or release them to open. Fig. 10, is a longitudinal section of the same. Fig. 11, is a rear elevation of the same. Fig. 12, is a front elevation thereof. Figs. 13 and 14 are elevations illustrative of the reciprocation of the tool-driving shaft. Fig. 15, is a sectional elevation of the drive shaft, the right and left hand ratchets and the spring pawl. Fig. 16, is a front elevation of the removable cap, carrying the bolt by which the handle and the driving shaft are locked, showing the bolt projected. Fig. 17, is a like view of the same showing the bolt drawn up. Fig. 18, is a rear elevation of the same. Fig. 19, is an elevation of the inner side of the pawl carrier and pawl. Fig. 20, is a front elevation of the same, showing the pawl and spring therein. Fig. 21, is a vertically sectional elevation of the same. Fig. 22, is a side elevation of the angular and tubular sleeve secured to the handle. Fig. 23, is a rear elevation of the same. Fig. 24, is a vertical section thereof. Figs. 25, 26 and 27 show respectively a side elevation, a front elevation, and a vertical longitudinal section of one of the tubular ratchets.

A—is the handle provided with the hand-rest —a— and the hand-grip —a'—, secured to the tubular arm —b— in any ordinary manner, said arm being integral with the body —b'— also tubular and both being interiorly connected.

B—is the jaw shaft upon which the tubular ratchets —c— —d— are secured, the ratchet —c— by the screw or screws —c'— (Fig. 23, dotted lines), and the ratchet —d— by a pin —d'— (Fig. 3), said ratchets and shaft being inserted through said body, the latter being rotatable thereon, except when locked, as hereinafter described.

In the arm —b— a block —e— is secured having a stem —e'— of reduced size, and having its lower end bifurcated so as to permit the pawl —h— to be mounted therein and to swing laterally, and springs —h'— secured to said stem engage with said pawl to permit

its point to snap from one ratchet tooth to another, with whichever ratchet it may be engaged.

The ratchets —*c*— —*d*— are provided with 5 oppositely arranged teeth, the ratchet —*c*— being hereinafter called the left-hand ratchet, and —*d*— the right hand ratchet. Said shaft is also provided with a shoulder —*k*— and a collar —*k'*—, and —*m*— is the hand-nut shouldered interiorly to engage with said shoulder 10 and collar and having its rotating bearing upon said shaft between the ratchet —*d*— and said collar. This nut is tubular, open in front, and interiorly threaded, to engage with the grip-block or sleeve —*m'*— through which is 15 an opening —*n*— at the rear of substantially the form shown in Fig. 11, and provided with the side grooves —*n'*—, said opening being changed at the front end to substantially the 20 form shown in Fig. 12, by the convergence of the walls of said sleeve, as at —*m''*—. The tool gripping jaws —*p*— are rearwardly mounted loosely upon the pins —*p'*— and normally lie between the flanges —*r*— upon 25 the shaft —*B*— (Fig. 8) and are also recessed interiorly to receive the squared shank of a bit or tool in the ordinary way. A spring, or springs —*r'*— is placed in an opening in the shaft —*B*— and bears outwardly against said 30 jaws, so that the rear ends of said jaws can swing or be forced outward, to permit said recesses to fit onto tool shanks of varying sizes and grip them for their whole length. The front ends of said jaws are beveled off to properly 35 engage with the interior of the front end of said sleeve, and to engage therewith both to prevent the rotation or twisting of said jaws out of alignment and also to close them as said grip is drawn back by said nut. Lugs 40 —*s*— upon the shaft —*B*— engage with the grooves —*n'*— to prevent the rotation of said grip, or the transmission of any dangerous torsional strain through it, to the jaws or said shaft.

45 When strain is applied to the handle, as in boring a hole the shaft and ratchets slide back through the body bringing the ratchet —*d*— into proper engagement with the pawl for the right-hand continuous or oscillatory movement of the handle; and when the strain is 50 reversed, as to pull out a tool, the ratchet —*c*— is brought into engagement for either of the left hand movements of the handle.

A cap —*t*— is connected to the rear of the arm —*b*—, provided with a substantially T- 55 shaped opening through which the rotatable button —*u*— projects, said button being connected to the bolt —*v*— within said cap, and when said button is horizontal, then said bolt is out of engagement, and its spring —*v'*— is 60 compressed, and when it is vertical, as in Fig. 16, then the lower end of said bolt is forced down so that its point enters a recess —*w*— (Fig. 3), in the ratchet —*c*— and thereby locks 65 the handle and tool shaft rigidly together and the brace then operates as a solid brace, with no ratchet action.

The jaws, the grip and the hand-nut together constitute the tool-head, and the arm —*b*— and the body —*b'*— are in reality a part 70 of the handle.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a ratchet brace, the combination with a handle, of a longitudinally movable tool 75 head carried by the handle and extending at right angles thereto, two ratchets secured on said head and having their inner toothed faces lying within the vertical planes of the handle, a single pawl pivoted within the handle and 80 having its free end projecting into the space between the toothed faces of the ratchets on the tool head and springs secured within the handle and bearing against opposite faces of said pawl, substantially as and for the pur- 85 pose specified.

2. In a ratchet brace, the combination with the angular piece *b, b'*, of a tool head extending through the portion *b'*, and movable longitudinally therein, ratchets secured on said 90 tool head to move therewith and having their inner toothed faces within the planes of the handle arm *b*, of the body, a single pawl pivoted in said arm *b*, and having one end extending into the other arm *b'*, between the 95 toothed faces of the ratchets on the tool head and springs secured at one end within the arm *b* and bearing at their free ends against the pawl therein, substantially as shown and described. 100

In witness whereof I have hereunto set my hand this 13th day of January, 1894.

J. J. DILLENBECK.

In presence of—

C. W. SMITH,

HOWARD P. DENISON.