No. 661,419. Patented Nov. 6, 1900.

S. McCLELLAN.

UNIVERSAL BRACE.

(Application filed Feb. 24, 1900.)

(No Model.) 2 Sheets—Sheet 1.

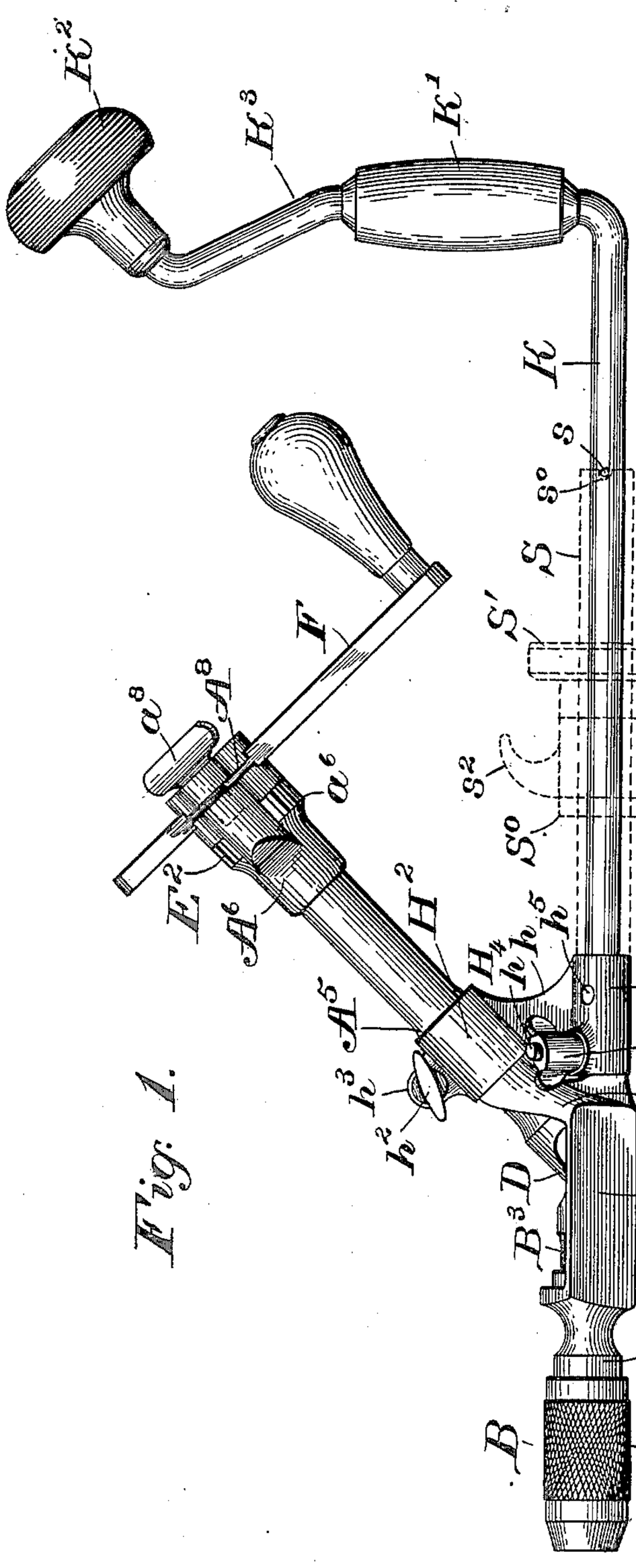

Fig. 1.

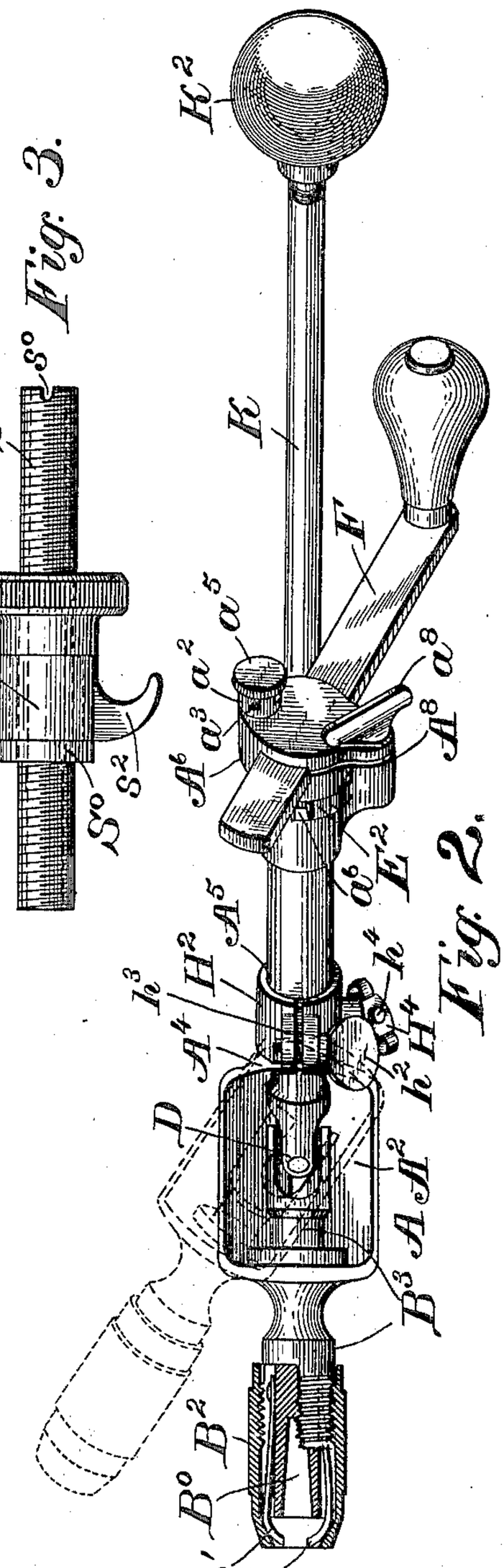

Fig. 3.

Fig. 2.

Witnesses
Percy C. Bowen
John Richard Wilcox

Inventor
Stephen McClellan
by Wilkinson & Helm
Attorneys

No. 661,419. Patented Nov. 6, 1900.

S. McCLELLAN.

UNIVERSAL BRACE.

(Application filed Feb. 24, 1900.)

(No Model.) 2 Sheets—Sheet 2.

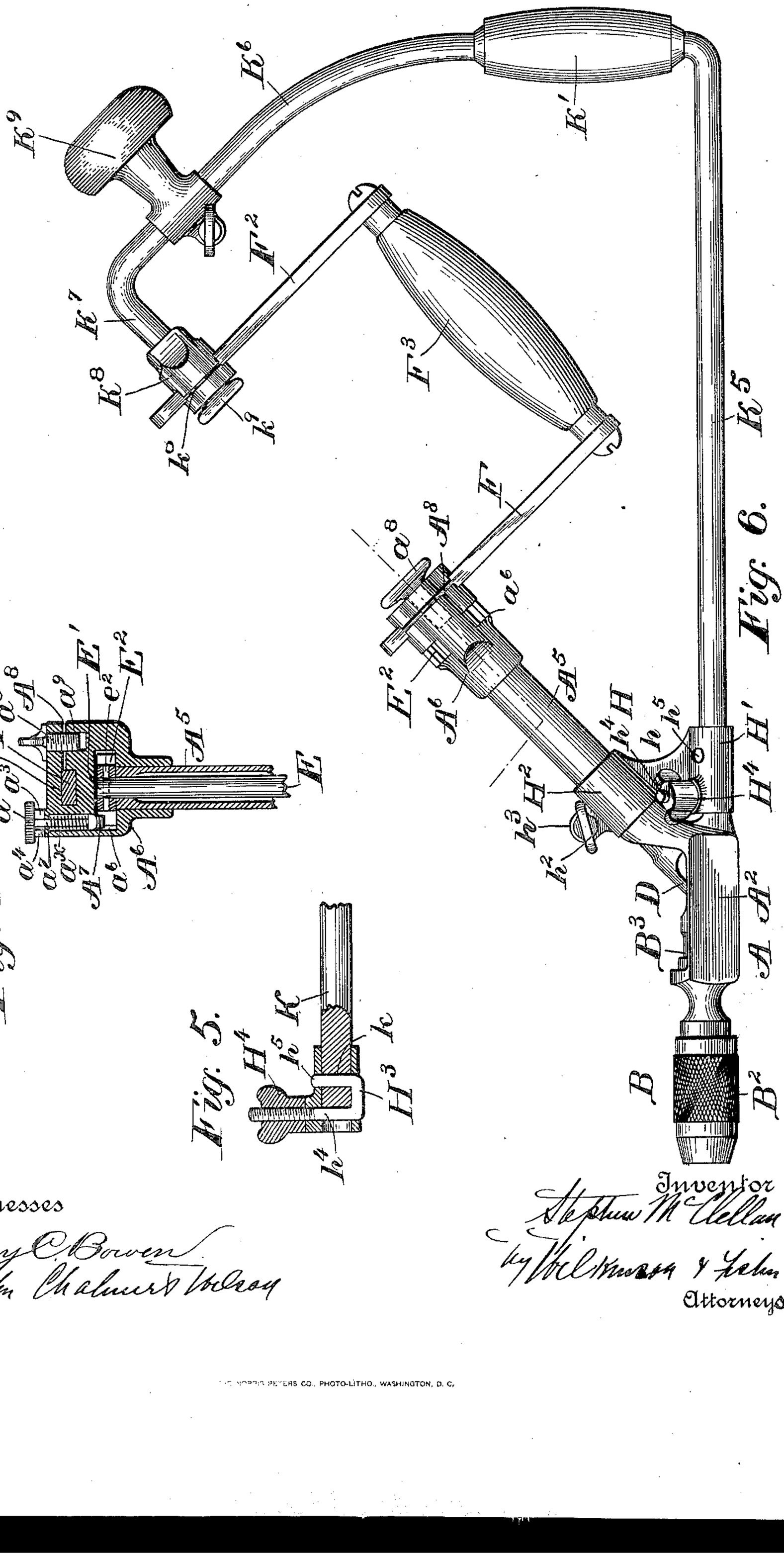

Fig. 6.

Fig. 4.

Fig. 5.

Witnesses

Percy C. Bowen

John Chalmers Wilson

Inventor

Stephen McClellan

by Wilkinson & Helm

Attorneys

UNITED STATES PATENT OFFICE.

STEPHEN McCLELLAN, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO DENNIS NUNAN, OF SAME PLACE.

UNIVERSAL BRACE.

SPECIFICATION forming part of Letters Patent No. 661,419, dated November 6, 1900.

Application filed February 24, 1900. Serial No. 6,386. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN McCLELLAN, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Universal Braces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in bit-braces; and it consists in an improved form of brace having a V-guide which is substantially right-angled and mechanism mounted therein for driving a bit so arranged that the crank-arm of the handle may turn in a corner without striking the wall or without striking a plane support should the guide rest thereon when boring a hole.

This invention has particularly for its object to provide certain improvements upon the devices shown and described in my Patent No. 585,531, dated June 29, 1897, the particular improvements consisting in means for allowing the bit-chuck to be turned for boring around a corner or obstruction and also certain other improvements looking toward the universal adaptability of the device hereinafter described and claimed.

My invention will be understood by reference to the accompanying drawings, wherein the same parts are indicated by the same letters throughout the several views.

Figure 1 represents a side elevation of one form of my machine in a horizontal position. Fig. 2 represents a top plan view of the same, the dotted lines in said figure indicating the angular adjustability of the bit-chuck. Fig. 3 represents a detail view of an attachment intended for use when desired upon the machine shown in Figs. 1 and 2 for "feeding." Fig. 4 is a detail sectional view of the ratchet mechanism for rotating the driving-spindle and also shows the crank connections therewith. Fig. 5 is a detail sectional view showing the connection between the handle-rod and the bracket by means of which it is held, and Fig. 6 represents a side elevation of a modified form of my machine.

A represents a casting or guide carrying at its forward portion the chuck B. This chuck, as shown in Fig. 2, consists of a socket B^0 for the insertion of the bit and a pair of spring-arms B′, arranged to be brought together upon the bit-shank or released therefrom by an inclosing sleeve B^2, provided with internal screw-threads engaging screw-threads upon the exterior of the chuck-spindle B^3.

The casting A is provided with inclined side walls A^2, preferably at or nearly at right angles to each other. The two sides A^2 form a V-shaped guide adapted to fit snugly in corners of walls, cabinets, or the like, whereby the tool may be steadied in use. The rear end of the guide-casting is preferably made solid, as at A^4, and extending upwardly and rearwardly to form the journal-bearing A^5, having central axial opening through which passes the driving-spindle E, which driving-spindle E is connected to the chuck-spindle B^3 by means of a universal joint D, as shown most clearly in Fig. 2, or by means of a beveled gear or any other convenient connection by which a rotation of the spindle E may be imparted to the chuck-spindle B^3.

The driving-spindle E has mounted upon its end E′ a ratchet-wheel E^2, which is held thereon by means of a pin at e^2 passing through both the hub of the said ratchet-wheels and the said driving-spindle E, as seen most clearly in Fig. 4.

A casing or head A^6 is mounted loosely upon the end of the bearing-sleeve A^5 and is provided with an opening a^6, in which the ratchet-wheel E^2 is inclosed, and the said head and ratchet-wheel may rotate with respect to each other, the said head A^6 being retained in position upon the bearing-sleeve E by the said ratchet-wheel, which is secured upon the end of the spindle E.

A beveled pawl A^7, having a stem a^7, is fitted into the said head and arranged to engage the sides of the teeth of the wheel E^2, as shown in Fig. 4. The ratchet A^7 is held in engagement with the wheel E^2 by means of a coil-spring $a^\times$, which surrounds the stem a^7. The stem a^7 is provided with a milled head a^5, by means of which it may be turned, and beneath this milled head are provided one or more teeth or projections a^4, arranged to engage any one of a series of notches a^3 in the

cylindrical extension a^2 or top of the head A^6, as seen in Figs. 2 and 4. The pawl A^7 may be set to rotate the driving-spindle E in either direction by adjusting the same through half a rotation of its stem, and it may be adjusted to lock the head A^6 against rotation with respect to the wheel E^2 and the driving-spindle E by a quarter-turn. This is true by reason of the ratchet having but a single bevel and two opposite flat sides, which latter when turned to engage the teeth lock the same. The head A^6 is split at A^8 and provided with an enlarged opening A^9 for the reception of the sliding arm F of the hand-crank, the said sliding arm being clamped in the opening A^9 in the said head by means of a thumb-screw a^8, which engages in a screw-threaded opening a^9 in the said head and is arranged to draw the split portions of the head together upon the crank-arm F.

H represents a frame comprising a closed sleeve H′ and a split sleeve H^2, connected at an angle of approximately forty-five degrees by an integral or rigid webbed portion h. The split sleeve H^2 fits loosely over the bearing-sleeve A^5, whereon it may be clamped by means of the thumb-screw h^2 engaging lugs h^3, provided with screw-threaded openings for the reception of the said thumb-screw. Into the closed sleeve H′ fits the end of the rest-rod K. This rod K is secured into the said sleeve H′ by means of a hooked pin H^3, the shank h^4 of which works through one opening through the sleeve H′ and the point h^5 of which moves through another opening in the said sleeve. The shank portion of the said hooked pin is elongated and provided with screw-threads, upon which engage a thumb-nut H^4 for tightening and loosening the said hooked pin to secure or disengage the rest-rod K. The rest-rod K is provided with an opening k, which is located at such a distance from the end of the said rod that when the end of the said rod has been inserted into the sleeve sufficiently to come into contact with the shank h^4 of the hooked retaining-pin and its through movement is arrested the said opening k will be positioned for the engagement of the point h^5 of the said retaining-pin. By means of this arrangement the connection between the rest-rod K and the sleeve or socket H′ may be immediately effected. When thus connected to the sleeve or socket H′, the rest-rod K and the frame H are rigid with respect to each other.

As hereinbefore stated, the split sleeve H^2 is adjustably held upon the rigid bearing-sleeve A^5 by means of its clamping-screw h^2, hereinbefore described. The said bearing-sleeve A^5 may thus be clamped in the said sleeve at any position within the limit of its adjustment, so that when for any reason it would be desirable to turn the frame A and the bit-chuck off to one side or the other at an angle to the direct line of operation of the machine (represented by the rest-rod K) this may be effected by simply loosening up on the clamping-screw h^2 and then turning the bearing-sleeve A^5 sufficiently in either direction to throw the bit-chuck B as far to the one side or the other of the central straight line as is desired. In this adjustment the bearing-sleeve A^5 merely rotates within the clamping-sleeve H^2 without altering its position of angularity with respect to the rest-rod K, while the frame A and the bit-chuck are given a tilted effect proportionate to the extent of the rotation of the said bearing-sleeve A^5, which is integral with the said frame.

As shown in Figs. 1 and 2, the rest-rod K may carry at its rear ends a hand-rest K′ and a breast-rest K^2, the latter at the extreme end thereof, and both being located upon an angular extension K^3 of the rest-rod K. In this form of the machine the hand-crank has but a single arm F, as hereinbefore described.

In Fig. 6 I have shown a modification in the form of the rest-rod. In this view the rest-rod K^5 is provided at its rear end with a curved extension K^6, which terminates in a retroverted end K^7 in line with the driving-spindle E when in operative position, and upon this extension K^7 is mounted a head K^8, split, as at k^8, for the reception of the crank-arm F^2, which is secured therein by means of a clamping-screw k^9. The handle F^3 connects the ends of the two crank-arms F and F^2. Upon the curved portion of the rest-rod K^6 is mounted the hand-rest K′, and an adjustable breast-rest K^9 is also preferably mounted thereon.

In Fig. 3 I have shown a device for use in providing a force-feed to the bit where necessary or where the necessary "feed" cannot be given by means of the ordinary rests. This device consists of a cylindrical sleeve S, arranged to fit over the rest-rod K adjacent to the sleeve or socket H′ and to be held thereon against rotation by means of a pin or pins s, fixed on the rest-rod K and arranged to engage in a notch or notches s^0 at one end of the said sleeve S. The said sleeve S is exteriorly screw-threaded for its entire length, and fitted thereon is an interiorly-screw-threaded sleeve S^0, having a milled boss or enlargement S′, by means of which the sleeve S^0 may be turned.

A hub having integral pins or lugs s^2 is mounted in an annular recess upon said sleeve S^0, so as to admit of rotation of said sleeve and the said hub with respect to each other. In use the exteriorly-screw-threaded sleeve S being in position upon the rest-rod K a rope or chain is connected to some fixed object in advance of the frame A and preferably in line with the axis of the bit, and the ends of this chain or rope are attached to the lugs or pins s^2 upon the hub S^2. As the boring progresses the frame of the machine may be advanced and given a forward pressure on the bit by the turning of the sleeve S^0 by means of this milled boss S′. This feeding device is principally intended for use in drilling or boring metal or hard wood.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a detachable rest for bit-braces, the combination with a frame comprising two sockets or sleeves set at an angle to each other, the one to adjustably inclose a rigid portion of the frame of the brace, and the other to receive the forward end of the rest-rod or handle, and means for clamping one of said sockets or sleeves upon said rigid portion of the brace-frame, allowing of adjustment in a circular direction about the same, substantially as described.

2. In a detachable feeding device for bit-braces, the combination with the rest-rod or handle; of a hollow sleeve adapted to fit over the rest-rod or handle, and having exterior screw-threads; an interiorly-screw-threaded sleeve mounted thereon and provided with means for turning the same; and a hub or turnbuckle mounted loosely on the said outer sleeve and having hooks or ears for the attachment of a rope or chain, substantially as described.

3. In a detachable feeding device for bit-braces, the combination with the rest-rod or handle; of a hollow sleeve adapted to fit over the rest-rod or handle, and having exterior screw-threads; an interiorly-screw-threaded sleeve mounted thereon and provided with means for turning the same; and a hub or turnbuckle mounted loosely on the said outer sleeve and having hooks or ears for the attachment of a rope or chain, and means for holding the inner sleeve against rotation on said rest-rod or handle, substantially as described.

4. A bit-brace comprising a guide-frame, an inclined arm rigidly connected thereto, a shaft journaled in said frame and carrying a chuck, a second shaft in said inclined arm, gearing between said shafts, means for rotating said second shaft, and a breast-rest or handle connected to the said inclined arm and adjustable thereabout, substantially as described.

5. A bit-brace comprising a guide-frame, and an inclined arm rigidly connected thereto, a shaft journaled in said frame and carrying a chuck, a second shaft journaled in said inclined arm, ratchet mechanism for rotating the latter shaft, gearing between the said shafts, and a breast-rest or handle connected to the said inclined arm and adjustable thereabout, substantially as described.

6. A bit-brace comprising a guide-frame, an inclined arm rigidly connected thereto, a chuck, and means for driving the same carried by the said guide-frame, a breast-rest or handle, and a sleeve connected to the forward end thereof inclosing the said inclined arm, and means for clamping the said sleeve adjustably about the said inclined arm, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

STEPHEN McCLELLAN.

Witnesses:
DWIGHT HILLIARD,
A. HILLIARD.