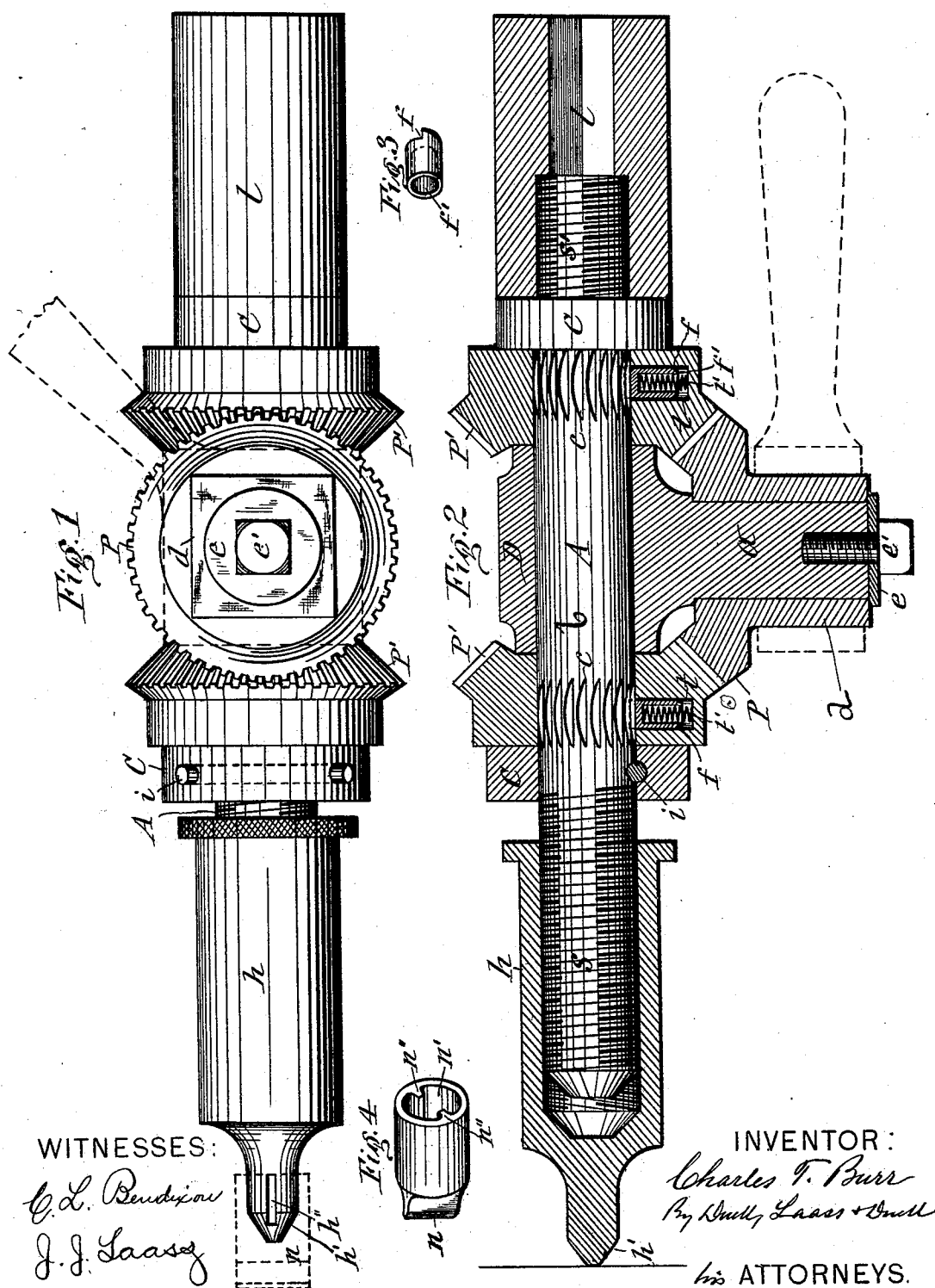


C. T. BURR.
BATCHET DRILL.

Patented Oct. 31, 1893.



UNITED STATES PATENT OFFICE.

CHARLES T. BURR, OF ITHACA, ASSIGNOR TO GREENE, TWEED & CO., OF
NEW YORK, N. Y.

RATCHET-DRILL.

SPECIFICATION forming part of Letters Patent No. 507,968, dated October 31, 1893.

Application filed February 23, 1893. Serial No. 463,288. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. BURR, of Ithaca, in the county of Tompkins, in the State of New York, have invented new and useful
5 Improvements in Ratchet-Drills, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention consists in a novel construction of duplex ratchet drill-stock by means of which a nearly continuous motion in one direction can be imparted to the drill in a most convenient manner, and thus its efficiency is twice that of an ordinary ratchet drill.

15 The invention is fully illustrated in the annexed drawings in which—

Figure 1 is a side view of a drill-stock embodying my invention. Fig. 2 is a longitudinal section of the same, and Figs. 3 and 4 are
20 detached perspective views respectively of one of the pawls and one of the end-bearings of the mandrel.

Similar letters of reference indicate corresponding parts.

25 A—represents the mandrel of the drill-stock. This mandrel is formed with a journal —b— and ratchets —c—c— at opposite ends of said journal and pitched in one and the same direction. At the outer ends of said
30 ratchets are collars —C—C— one of which may be integral with the mandrel, but the other is formed separately to allow the two ratchet-wheels and intermediate sleeve hereinafter described, to be slipped onto the mandrel from one end thereof. Said latter collar
35 may be fastened to the mandrel either by means of a pin —i— passing transversely through the collar and through a groove in the side of the mandrel as shown in Fig. 2 of
40 the drawings, or by means of a set screw passing through one side of the collar and engaging the side of the mandrel. The end portions of the mandrel are screw-threaded as shown at —s— and —s'—. One of these portions constitutes the feed-screw of the drill,
45 and the other of said end portions of the mandrel receives the drill-holder —l— which is provided with a screw-threaded socket by which it is screwed onto said end portion of
50 the mandrel. To the feed-screw —s— is connected the feed-nut —h— which terminates

with the tapering bearing —h'— by which the drill-stock, when in use, is made to bear on an abutment resisting the end-pressure of the mandrel. Said end-bearing is conical and, in
55 the operation of the drill, the operator takes hold of the nut —h— and prevents it from turning by one hand, while he imparts rotary motion to the mandrel by the other hand. The turning of the feed screw in the nut forces
60 the mandrel forward.

To permit the feed to be rendered automatic I adapt the bearing —h'— to receive and hold a chisel-pointed bearing —n— which obtains on the abutment such a hold as to prevent the nut —h— from turning. For the attachment of said chisel pointed bearing —n— I prefer to form the same with a socket —n'— and longitudinal tongues —n''—n''— on the interior of said socket, and provide the sides
70 of the end-bearing —h'— with corresponding grooves —h''—. The bearing —h'— is inserted into the socket —n'— and at the same time the tongues —n''— are made to enter the grooves —h''— and thus the said chisel-pointed
75 bearing —n— is firmly secured to and prevented from turning on the bearing —h'. It is obvious that the tongues —n''— may be on the bearing —h''— and the corresponding grooves may be in the socket —n'— of the
80 chisel-pointed bearing —n—. Hence I do not limit myself to the specific arrangement of said parts.

Upon the journal —b— of the mandrel is mounted the revoluble sleeve —D— which is
85 provided with a trunnion —a— extending therefrom axially at right angles to the mandrel. Upon this trunnion is mounted the primary miter pinion —P— which is formed with the outwardly projecting angular hub —d—
90 or other suitable seat for attaching thereto a wrench by which to turn said pinion, as indicated by dotted lines in the annexed drawings. A set-screw —e'— tapped into the outer end of the trunnion fastens to the latter a cap
95 or washer —e— which laps onto the end of the hub of the pinion —P— and thus retains the same on the trunnion. At opposite sides of the primary miter pinion —P— are miter pinions —P'—P'— journaled on the mandrel
100 and meshing with the pinion —P. Said pinions —P'—P'— are confined from moving

longitudinally on the mandrel by the ends of the sleeve —D— and collars —C—C— abutting against opposite sides of the pinions. The hubs of the pinions —P'—P'— extend
 5 over the ratchets —c—c— and are provided with sockets —t— extending from the interior of the hubs partway radially outward and in each of said sockets is seated a pawl —f— which I preferably form with a socket —f'—
 10 in its outer end for the reception of the spiral spring —t'— which forces the pawl toward the ratchet.

The described drill-stock with a drill secured to the holder —l— is operated by placing the end-bearing —h'— or —n— against a
 15 suitable resisting abutment, and then oscillating the wrench applied to the hub —d— of the primary pinion —P—. The two ratchets —c—c— being pitched in one and the same
 20 direction, and the pawls —f—f— arranged correspondingly, causes the two pawls to engage their respective ratchets alternately during the reverse movements of the wrench and thus the movement of the mandrel is rendered
 25 nearly continuous in one and the same direction.

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

The combination of the mandrel —A— 30
 formed with the journal —b—, ratchets —c—
 c— at opposite ends of said journal and pitched in one and the same direction, collars
 —C—C— fixed to the mandrel at the outer
 35 ends of ratchets, and a feed-screw —s—
 —D— mounted on the journal —b— and provided with the trunnion —a— extending from
 said sleeve axially at right angles to the mandrel, the pinion —P— mounted on the trun- 40
 nion —a— and formed with the angular hub —d—, the pinions —P'—P'— mounted on the
 mandrel between the sleeve —D— and collars
 —C—C— and engaging the pinion —P—, 45
 pawls —f—f— connected to the pinions —P'—
 P'— and engaging the aforesaid ratchets, the
 feed-nut —h— on the aforesaid feed-screw of
 the mandrel, and the drill-holder mounted
 upon the opposite end of the mandrel, substantially as described and shown. 50

In testimony whereof I have hereunto signed my name this 30th day of January, 1893.

CHARLES T. BURR. [L. s.]

Witnesses:

H. M. SEAMANS,

MARK W. DEWEY.