No. 761,742. PATENTED JUNE 7, 1904.

M. J. WOODWARD.

WELL BORING TOOL.

APPLICATION FILED JUNE 16, 1902.

NO MODEL.

Fig. 1.

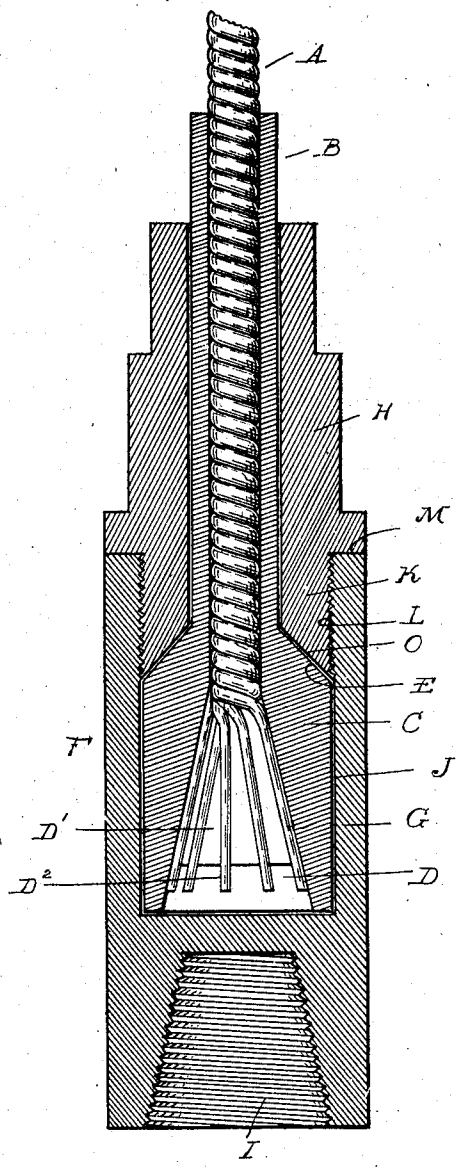
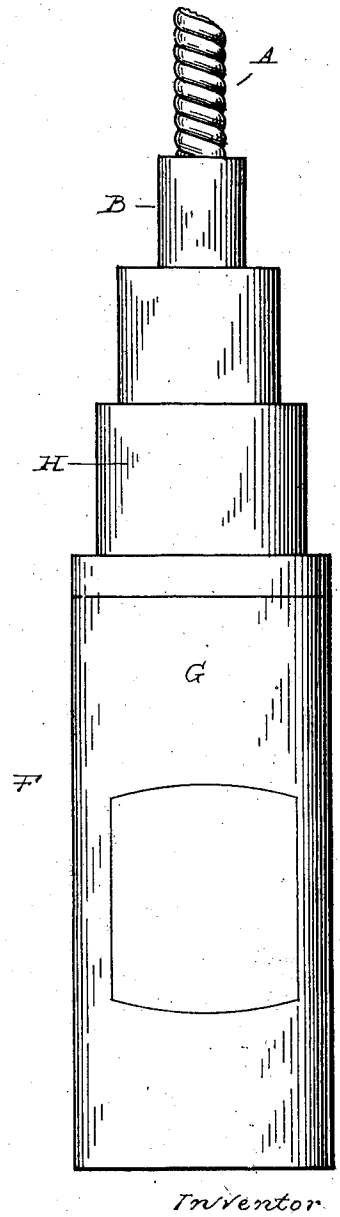


Fig. 2.



Witnesses
H. C. Smith.
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 761,742. Patented June 7, 1904.

UNITED STATES PATENT OFFICE.

MARTIN J. WOODWARD, OF PETROLEA, CANADA, ASSIGNOR TO AMERICAN STEEL & WIRE COMPANY, A CORPORATION OF NEW JERSEY.

WELL-BORING TOOL.

SPECIFICATION forming part of Letters Patent No. 761,742, dated June 7, 1904.

Application filed June 16, 1902. Serial No. 111,879. (No model.)

To all whom it may concern:

Be it known that I, MARTIN J. WOODWARD, a subject of the King of Great Britain, residing at Petrolea, in the county of Lambton, Province of Ontario, Canada, have invented certain new and useful Improvements in Well-Boring Tools, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates particularly to reciprocating well-boring tools of the type wherein the tool-holder, through the agency of a cable and suitable power appliances, is lifted and dropped successively; and the invention consists in novel means for automatically turning the drill during the reciprocation of the latter, so that a circular bore will be formed in the rock or other material that is being drilled.

The invention further consists in the peculiar arrangement and combination of the various parts of the mechanism, as will be hereinafter fully set forth, and pointed out in the claim.

In the drawings, Figure 1 is a vertical central section through an embodiment of my invention, and Fig. 2 is a side elevation thereof.

The reference-letter A designates the cable to which the tool or drill holder is secured and which is adapted to be reciprocated by suitable power appliances not herein shown or described. Fitting tightly about the lower end of the cable is an elongated metallic sleeve B, carrying at its lower end a head C, recessed, as at D, to form a socket for the cable end. A wedge D′ clamps the strands D^2 of the cable end to the head. Upon the upper portion of the head, immediately adjacent to the sleeve, is formed a conical bearing surface or shoulder E, the function of which will be hereinafter set forth.

F designates the drill-holder, which is formed, preferably, in two parts G and H. The section G has a socket or recess I formed therein, which is internally threaded to engage the drill-shank. The upper end of this section is bored out to form a cylindrical opening J, in which the head C is arranged and adapted to slide slightly longitudinally.

The upper or complementary member H of the drill-holder is tubular in form, embracing the sleeve B, and carries at its lower end a shank K, threaded upon its exterior and engaging an internal thread L, formed interiorly upon the upper end of the member G. A shoulder M upon the section H is adapted to bear, when the parts are in their operative position, against the upper edge of the member G. The shank K described is cut away at its lower portion, as illustrated in Fig. 1, forming an inclined bearing-surface O, which is adapted to engage the complementary surface upon the head C, the two surfaces limiting the independent longitudinal movement of the head. The cable being reciprocated by the power appliances referred to, on each lift of the drill from off the bottom of the drill-hole the weight upon the cable causes the tool to turn in a direction opposite to the twist of the cable. When this weight is removed, the cable returns automatically to its initial position. The friction-bearings E and O upon their engagement one with the other prevent independent rotary movement of the head within the drill-holder. When the cable is lowered, however, and the weight is removed from the bearing-surfaces, the head is free to revolve without friction, allowing the cable to return to its initial position in the manner above described.

From the description of the invention it will be obvious that the drill is rotated or turned automatically on each reciprocation of the cable.

What I claim as my invention is—

In a well-boring tool, the combination with the drill-holder formed in two complementary parts comprising a cylindrical section having a bore formed centrally within its upper end, and a tubular section carrying a shank fitting within the bore and having a threaded engagement with the cylindrical section, a conical

bearing-surface upon the shank, an elongated sleeve fitting loosely within the tubular section, a head integral with said sleeve arranged within the bore for slight sliding movement, and a frusto-conical shoulder upon the head adapted to engage the bearing-surface upon the shank.

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

MARTIN J. WOODWARD.

Witnesses:
OSWALD D. PEAT,
A. G. ROBERTSON.