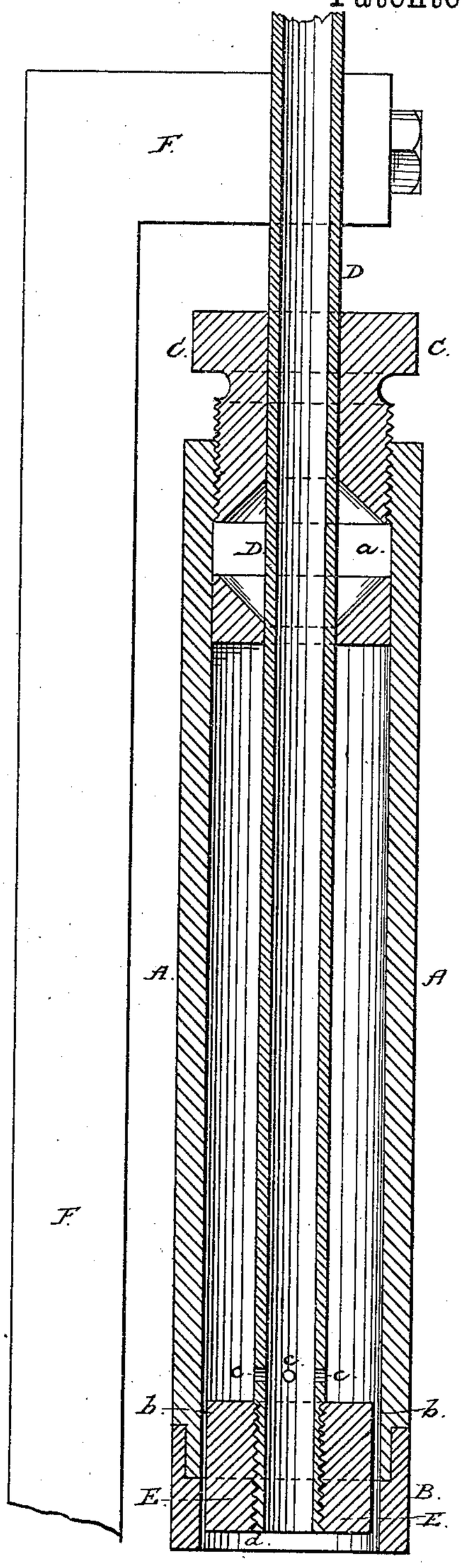
(No Model.)

A. BALL.

DEVICE FOR CLEARING CYLINDRICAL ROCK DRILLS.

No. 256,790. Patented Apr. 18, 1882.



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UNITED STATES PATENT OFFICE

ALBERT BALL, OF CLAREMONT, NEW HAMPSHIRE, ASSIGNOR TO THE SULLIVAN MACHINE COMPANY, OF SAME PLACE.

DEVICE FOR CLEARING CYLINDRICAL ROCK-DRILLS.

SPECIFICATION forming part of Letters Patent No. 256,790, dated April 18, 1882.

Application filed December 6, 1881. (No model.)

To all whom it may concern:

Be it known that I, ALBERT BALL, of Claremont, in the county of Sullivan and State of New Hampshire, have invented a new and Improved Device for Clearing Cylindrical Rock-Drills; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

My invention relates to a simple and novel device adapted to be used, in connection with a cylindrical drill for boring rock or other material, for the purpose of preventing the core from being withdrawn with the drill-rod from the hole; and, further, to serve as a convenient and suitable means for conveying water or other liquid or air or steam to the drill or cutting head into the hole being bored to prevent the said cutting head or bit from heating, and to wash or force out and carry away the detritus accumulating by the boring process in order to facilitate the proper action of the drill; and the invention consists principally in providing the drill-rod with a pipe or rod passing longitudinally through the center thereof, and in rigidly securing at the lower end of such pipe or rod a block or nut of suitable size and material, whereby the core of the material bored is prevented from being withdrawn with the drill-rod; and, further, in constructing said pipe or rod to effectively convey water or other suitable power to the hole being bored for the purpose above mentioned, all as more fully hereinafter set forth and claimed.

To enable those skilled in the art to which my invention relates to know how to construct and use the same, I will now proceed to describe it, having reference to the accompanying drawing, which is a vertical longitudinal section of a drill-rod with my invention shown in connection therewith.

A represents the cylindrical drill-rod, of ordinary construction, provided at its lower end with the drill or bit B, and at its upper end with a stuffing-box, C, provided with a lubricating-chamber, *a*, which may be filled with any desirable lubricant suitable for the purpose.

Passing longitudinally down through the center of the stuffing-box C and the drill-rod A is a pipe or hollow rod, D, for the conveyance of water or other power through the drill-rod to the hole being bored. The lower end of this pipe or hollow rod D is screw-threaded to receive a block or nut, E, to be secured thereon, while the upper end passes through the stuffing-box C and framing F, (in which it is rigidly secured by any suitable means,) to be attached to any desirable or convenient device capable of supplying the requisite power. This rod or pipe should so fit the stuffing-box C as to permit it (the stuffing-box) and the drill-rod to which it is secured to traverse freely over it.

The block or nut E, hereinbefore referred to, may be made of any desirable material possessing necessary strength and durability, but is required to be of a shape conforming with the drill-rod, and of a diameter and size sufficient, when secured to the end of the pipe or hollow rod D, to leave a small space or channel, *b*, between its outer sides and the inner walls of the drill-rod to permit the free passage of what water or other power that may come from the outlets or perforations *c*, made in the pipe or rod D a short distance above the said block or nut E, as shown; also, to leave a small space, *d*, between the under surface of the block or nut E and the points of the drill to prevent the said block or nut from interfering with the rock or other material during the process of boring.

Its operation is as follows: When the drill-rod (which may be operated by any of the well-known devices employed in this class of machinery) is advanced the pipe or rod D and its block or nut E remain stationary, (by the former's fixture in the framing F,) in consequence of which the drill's progress is limited to the space between the under surface of the stuffing-box C and the upper surface of the block or nut E, the latter therefore acting as an obstruction or stop to the further progress of the drill by the former's contact therewith. When the drill is withdrawn the tendency of the core of the material being bored is to come with it; but such is obviated by the block or nut E pressing on the top surface of the core and freeing it from the drill, thus preventing the core from clogging the same, as is frequent with other drills. The detritus or smaller particles accu-

mulating by the boring process are removed by the water or other power conveyed by the pipe or rod D to the hole.

By the foregoing description and the accompanying drawing the advantages and usefulness of my device will readily be perceived upon perusal and inspection by those well versed in the art to which it relates. Its construction and arrangement of parts are few and simple, and can therefore be cheaply manufactured and easily applied to the device for which it is adapted. It is free from all friction by its desirable arrangement with the lubricant in the stuffing-box of the drill-rod, thereby always assuring perfect and effective operation.

I am aware of the fact that hollow augers have heretofore been provided with a pipe or pipes for the conveyance of water, steam, or other power to the hole or orifice being drilled, and therefore do not wish to broadly claim the employment of such in my device; but

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

1. In a cylindrical drill for boring rock or other material, the combination therewith of a rigid pipe or hollow rod (for the conveyance of water or other power to the hole being bored) provided with a nut or block secured to the lower end thereof, substantially as described, shown, and for the purpose set forth.

2. In a cylindrical drill for boring rock or other material, the combination, with the pipe or hollow rod D, provided on its lower end with nut or block E, substantially as described and shown, of the perforations *c* and passage *b*, respectively, for the outlet and passage of water or other power to the hole being bored, substantially as described, shown, and for the purpose set forth.

This specification signed and witnessed this 18th day of October, 1881.

ALBERT BALL.

Witnesses:
F. A. BALL,
C. B. RICE.