

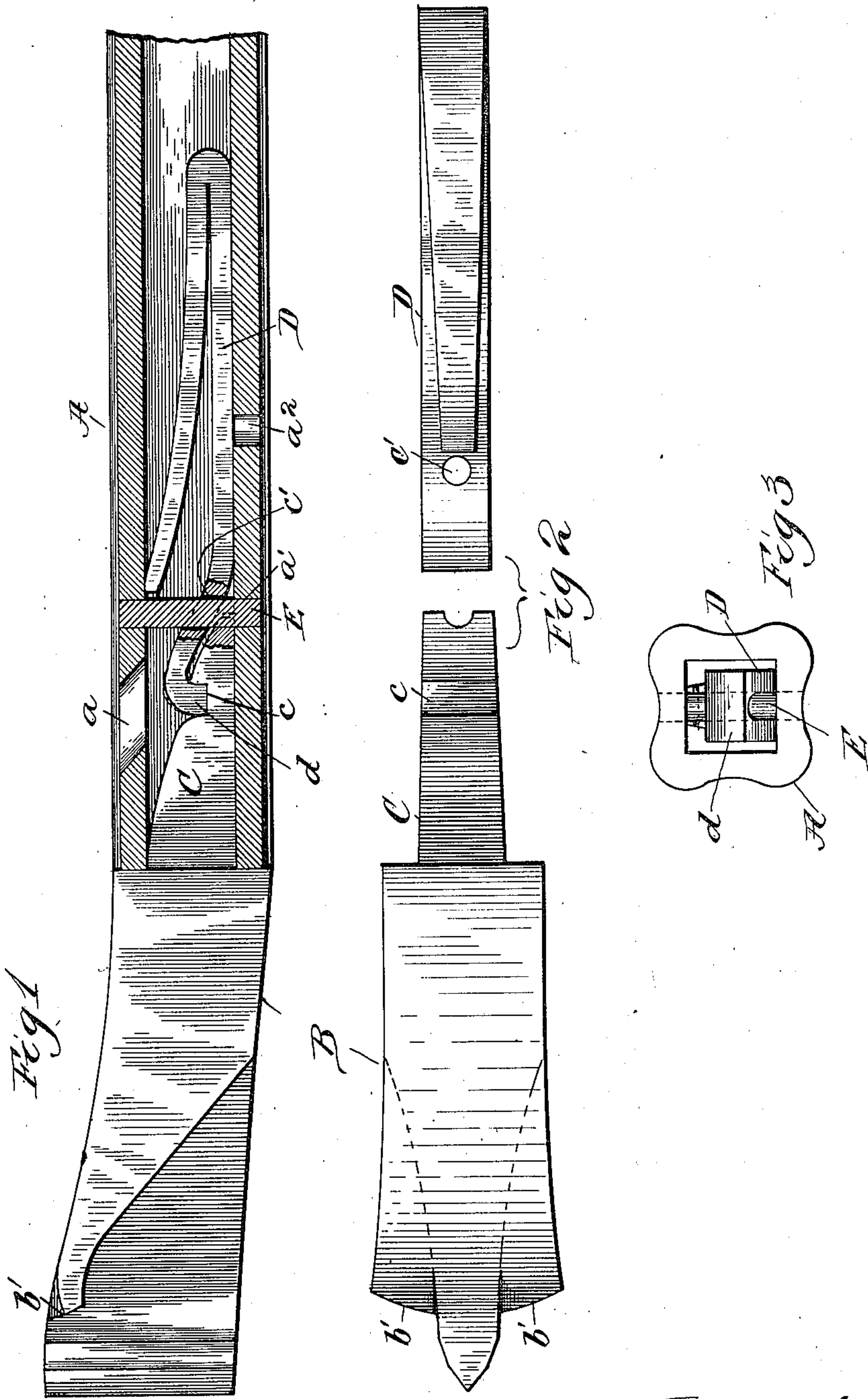
No. 617,795.

Patented Jan. 17, 1899.

O. G. WORSLEY.
ROCK DRILL.

(Application filed Aug. 27, 1898.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

OTTO G. WORSLEY, OF NEWARK, ILLINOIS.

ROCK-DRILL.

SPECIFICATION forming part of Letters Patent No. 617,795, dated January 17, 1899.

Application filed August 27, 1898. Serial No. 689,660. (No model.)

To all whom it may concern:

Be it known that I, OTTO G. WORSLEY, a citizen of the United States of America, and a resident of Newark, county of Kendall, and State of Illinois, have invented certain new and useful Improvements in Rock-Drills, of which the following is a specification and which are fully illustrated in the accompanying drawings, forming a part thereof.

The object of the invention is to provide a simple, strong, and efficient expansion-drill—that is to say, a drill in which the cutting-blade is thrown laterally as to the stock by spring action, so that it may be introduced into the shaft being sunk through the tubing that is to line the shaft and, emerging from the lower end of the pipe, will be forced laterally by the controlling-spring, so that it continues the shaft at the same bore as that portion to which the pipe has been fitted. These objects are attained by the construction hereinafter fully described, and illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of the drill-stock, the drill and controlling-spring being shown in elevation. Fig. 2 is a plan of the drill and spring detached on a plane perpendicular to that of Fig. 1; and Fig. 3 is an end view of the stock with the drill removed, the spring being shown.

The stock A is a tubular bar having a lateral aperture *a* for the discharge of water into the shaft and having its outer surface longitudinally channeled to permit the pulp to escape.

The bit or drill B has a chisel-blade, and at the edge, which projects to the wall of the shaft, has a pair of lateral wings *b' b'* for dressing the wall. The drill is provided with a shank of less diameter than the bore of the drill and adapted to enter the latter. Preferably the shank tapers from its base to its end, and at the juncture of the head of the drill with the shank the former is provided with an annular shoulder the plane of which is oblique to the axis of the drill, so that when it abuts against the squared end of the stock the winged edge of the blade will be extended laterally.

A spring D is located within the bore of the stock, so as to bear laterally against the shank C to throw it against the side of the

stock to bring the shoulder squarely against its end. The spring D is preferably V-shaped, and its longer arm, which bears against the shank C, is inclined inwardly and terminates in an outwardly-directed hook which takes into a recess *c* in the shank, so as to prevent the withdrawal of the drill from the stock. The side of the shank opposite to that upon which the spring bears should be perpendicular to the plane of the shoulder *b'*, as shown, or if not straight should be of such configuration that when brought to a bearing against the wall of the stock the shoulder will bear squarely against the end of the stock. The spring is held against longitudinal movement within the stock A by means of a pin E, set in a transverse aperture *a'* in the stock and passing through an aperture *c'* in the spring of larger diameter than the pin.

The drill is easily introduced into the stock by forcing the tapering end of its shank under the hook *d* until the latter engages the recess *c*. In order to remove the drill from the stock, a pin is forced into an aperture *a''* in the stock, so as to bear against the long leg of the spring and disengage its hook from the shank of the drill.

The drill will cut a shaft having a diameter of double the radius from the axis of the stock to the edge of the blade having the lateral wings *b'*. When it is found advisable to line the shaft with tubing as it is sunk, an expedient necessary when strata of loose material are passed through, the drill may be withdrawn and again inserted through the tubing, the spring yielding to bring the axis of the drill into alinement with the axis of the stock. The expansion of the drill when it emerges from the tubing continues the bore of the shaft as before, so that the tubing may be forced down as the drilling progresses.

The annular shoulder of the drill bearing against the end of the stock is of such area that the force of the blows is distributed sufficiently to prevent injury to the parts. This shoulder also wholly relieves the spring from any of the force of the blows.

I claim as my invention—

1. In a rock-drill, the combination with a socketed stock having its end faced to receive the impact of the drill-bit, and a drill-bit having a shoulder for bearing against the stock

end, one of such bearing-surfaces being oblique to the axis of the member of which it forms a part, of a shank for the bit adapted to enter the socket of the stock and to have
5 a lateral movement at its inner end, and a spring bearing laterally against the shank, whereby the bit is caused to extend beyond the line of the periphery of the stock.

2. In a rock-drill, the combination with a
10 socketed stock having its end faced to receive the impact of the drill-bit, and a drill-bit having a shoulder for bearing against the stock end, one of such bearing-surfaces being oblique to the axis of the member of which it

forms a part, of a shank for the bit adapted 15 to enter the socket of the stock and to have a lateral movement at its inner end, and a spring bearing laterally against the shank to throw one of its sides against the wall of the socket, such shank side being oblique to the 20 axis of the bit whereby the bit is caused to extend beyond the line of the periphery of the stock.

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Witnesses:

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