

L. H. Bowman,
Rock Drill.

N^o 49,704.

Patented Sep. 5, 1865.

Fig. 1

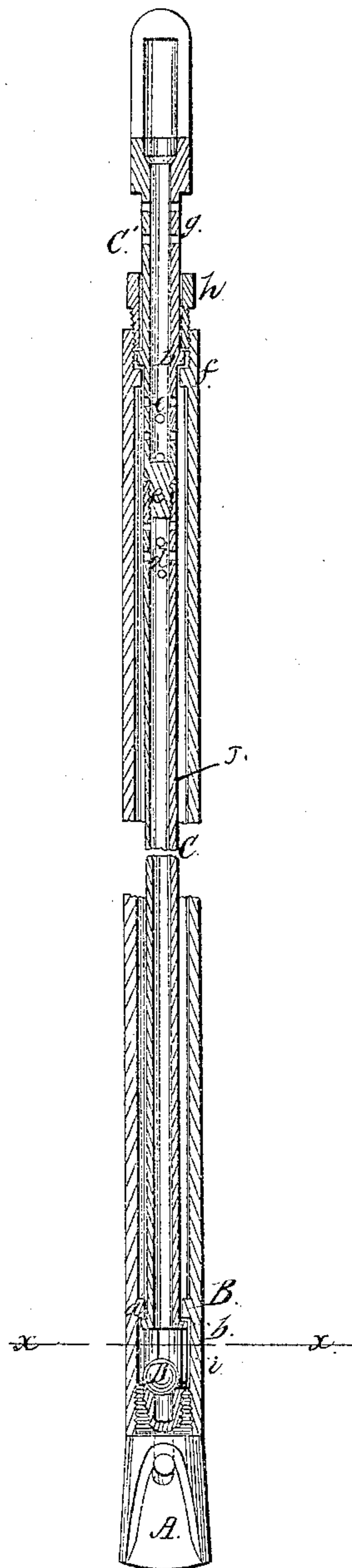


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

LEWIS H. BOWMAN, OF NORRISTOWN, PENNSYLVANIA.

IMPROVED OIL-DRILL.

Specification forming part of Letters Patent No. 49,704, dated September 5, 1865.

To all whom it may concern:

Be it known that I, LEWIS H. BOWMAN, of Norristown, in the county of Montgomery and State of Pennsylvania, have invented a new and useful Improvement in Drills for Boring Oil and other Wells; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an axial section of a drill and drill-stock made according to my invention, the letter *y*, Fig. 2, designating the line of section. Fig. 2 is a cross-section taken on the line *x* of Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to produce a drilling apparatus which will remove the broken and pulverized rock from the bore and collect it in the rod of the drill, at the same time discharging the water from the rod, so as to allow the heavier matters to be retained in the rod until the receptacle provided for them is filled. This is accomplished by means of a tubular drill-rod containing a central tube which is directly above the valve-box, and an annular chamber surrounding said tube and communicating therewith by means of perforations in the sides of the tube, through which the detritus is received into the annular chamber.

A designates a drill, which may be of the form here shown, or of any other character and design.

B designates a tubular rod, into the bottom of which the stock of the drill is screwed. This stock is also tubular, and has lateral openings on each face of the cutter. The top of the drill-stock forms a seat for a ball or other suitable valve, which plays in a valve-box, *i*, formed in the adjacent part of the drill-rod.

The letter *a* designates an internal flange formed on the inner circumference of the drill-rod at the top of the valve-box *i*, and the letter *f* designates a like flange on its inner circumference, near its top.

C is a tube small enough in diameter to pass up within the drill-rod through its flange *a*; but the lower end of the tube is prevented from passing beyond and above the flange by a col-

lar, *b*, which abuts against it. This arrangement leaves the collar or end of the tube in the highest part of the valve-box *i*. The central tube, C, is not so long as the drill-rod, and its sides near its end are freely perforated with holes *d*, which make a communication between the tube C and the annular space J, formed between it and the sides of the drill-rod, while an internal screw-thread is cut on its end to enable it to receive the solid end *c* of a supplementary tube, C', which is continued upward until it extends out of and beyond the top of the drill-rod. This tube C' has also a flange or collar, *b*, which, when the solid end *c* is screwed down into the top of the tube C, rests snugly upon the flange *f* of the drill-rod. By this arrangement the tube C is held firmly supported within the drill-rod, and its lower flange or collar, *b*, is drawn snugly up against the top of the valve-box, so as to leave the valve unmolested. The lower part of the tube C—that part which is below its collar *b*—is perforated with numerous holes *e*, which open in like manner into the annular space J of the drill-rod. The tube C' is secured to the top of the drill-rod, and a tight and strong joint is made between them by means of a coupling, *h*, with an external screw-thread, which engages a screw-thread cut on the inside of the top of the drill. The tube C' may be continued above this joint for any convenient length. In this example of my invention I have carried it up only a short distance, and have made a swivel at its top, whereby it may be connected to any rope or rod for operating the drill. I have also perforated its sides above the joint at the top of the drill-rod with numerous holes *g*, which, however, may be dispensed with if the top of the tube C' is open.

The operation of this improvement is as follows: The pulverized and broken rock and other substances (solid and fluid) which are collected and produced at the bottom of the bore will be forced at each descent of the drill past the valve D into the tube C. When this tube is filled up to the perforations *d* these substances will be discharged through them into the annular space J, into the bottom of which the heavy matters—such as earth and rock—will be collected, while the liquid matter will be forced by the continual accumulations made in the tube C and in the space J upward be-

yond the tube C to the perforations *e*, through which they will be discharged into the tube C', and at the top of which, or through its perforations *g*, they will eventually be discharged into the bore of the well. When the annular chamber J is filled with solid matter the drill is raised from the bore and the chamber is emptied.

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

1. Forming a supplementary chamber, J, within the walls of a tubular drill-rod for receiving the detritus of the rock and other heavy matter from the chamber next above the valve, substantially as described.

2. The combination of the central tube, C, communicating at top with the annular surrounding chamber J, with the water-discharging tube C', substantially as described.

3. The combination of the annular detritus-chamber J with the water-discharging chamber C', substantially as described.

The above specification of my invention signed by me this 7th day of July, 1865.

LEWIS H. BOWMAN.

Witnesses:

SAML. BROWN, Jr.,

EMANUEL BURKERT.