(No Model.)

R. McKEE.

DRILL BIT.

No. 451,292. Patented Apr. 28, 1891.

Fig. 1.

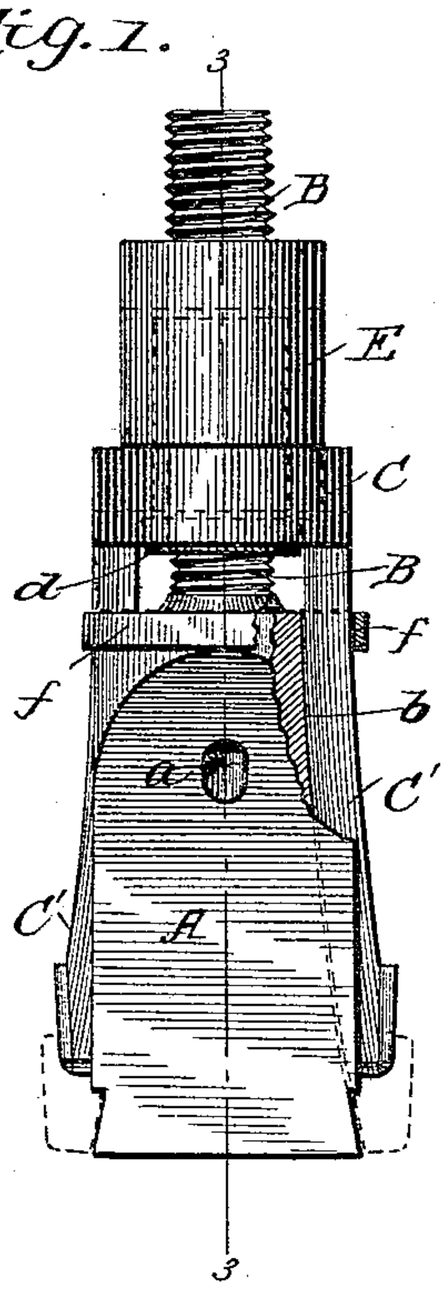


Fig. 2.

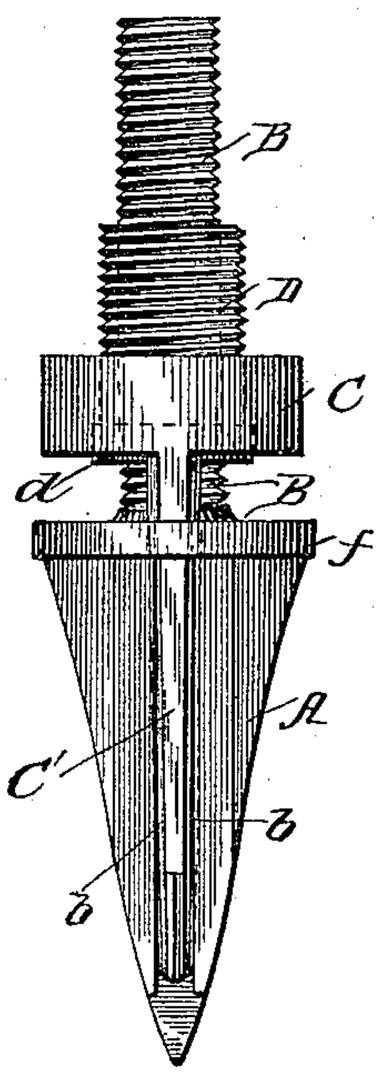


Fig. 3.

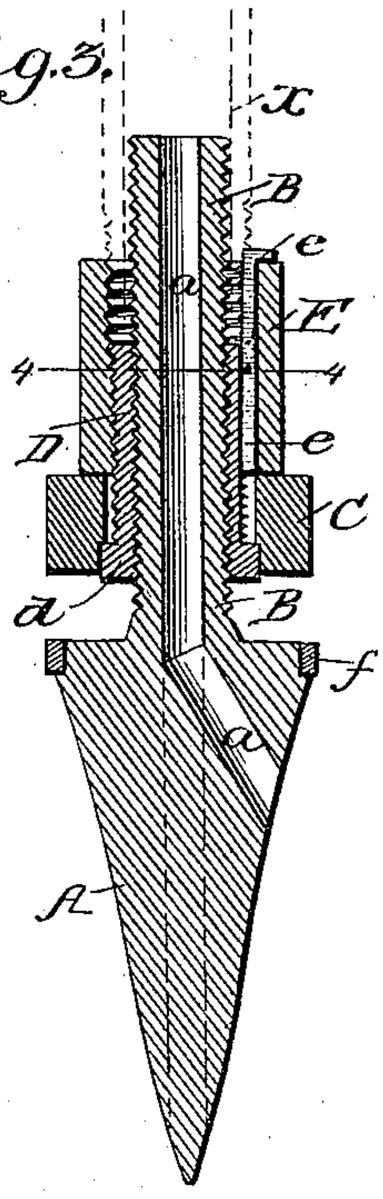


Fig. 4.

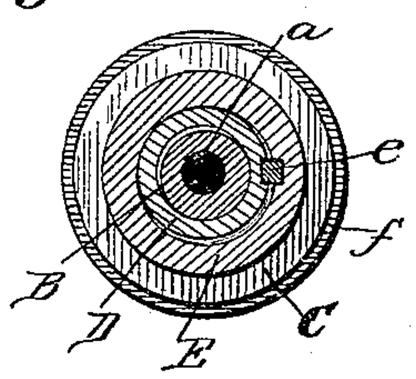
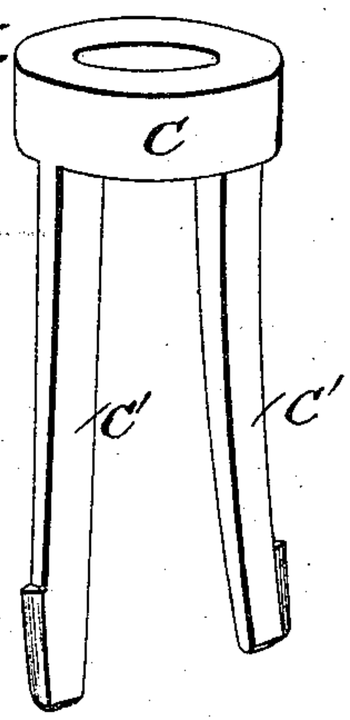


Fig. 5.



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ROBERT McKEE, OF MEEKER, COLORADO.

DRILL-BIT.

SPECIFICATION forming part of Letters Patent No. 451,292, dated April 28, 1891.

Application filed December 12, 1889. Serial No. 333,555. (No model.)

To all whom it may concern:

Be it known that I, ROBERT McKEE, residing at Meeker, Rio Blanco county, and State of Colorado, have invented a new and useful Improvement in Drills, of which the following is a specification.

My invention is an improvement in drills employed for boring Artesian wells and others of analogous kinds. It is more particularly an improvement in that class of drills having an attachment in the form of arms or teeth adapted to be projected laterally for enlarging the cutting-face of the drill when required in order to increase the diameter of the well.

The construction and operation are as hereinafter described with reference to accompanying drawings, in which—

Figure 1 is a side view of my improved drill. Fig. 2 is another side view, the drill-tube coupling being removed. Fig. 3 is a central longitudinal section of the drill on line 3 3, Fig. 1. Fig. 4 is a cross-section on line 4 4, Fig. 3. Fig. 5 is a perspective view of the adjustable drill attachment.

The body A of the drill proper is wedge-shaped or tapered in the usual way and provided with a cylindrical shank B, which is reduced in diameter and screw-threaded from end to end. A passage *a*, Fig. 3, extends through the shank B lengthwise and centrally thereof, and is deflected laterally to its termination on one of the flattened sides of the drill proper A. This passage serves for withdrawing (by means of a pump) the water, sand, mud, chipped rock, &c., accumulated in the bore while drilling.

The drill A has a lengthwise groove *b* on opposite sides, and it will be noted, Fig. 1, that such grooves gradually decrease in depth from the upper end to the point of the drill.

The drill attachment, by whose vertical adjustment the point may be increased in width, consists, Fig. 5, of an annular collar C, having two opposite pendent extensions or arms C′ C′, which are formed in one rigid piece with said collar and adapted to fit loosely, and thus to slide freely in the aforesaid grooves *b b*. The points of these arms are broadened and also tapered or wedge-shaped, corresponding to the drill proper. A sleeve D screws on the drill-shank B, and is threaded exteriorly, save at the lower end, which is provided with a circumferential lateral flange *d*, Fig. 3. The opening in the collar C of the aforesaid attachment is sufficiently large to receive the threaded portion of the sleeve D, and has a rabbet in its under side, in which the aforesaid flange *d* fits. An internally-threaded sleeve-coupling E screws on sleeve D, so that the collar C of the drill attachment is confined between it and the flange *d*, as shown. The coupling E connects the drill to the drill-tube, of which a portion is shown by dotted lines at *x*, Fig. 3, and it is keyed to the sleeve D at *e*, so that both may be rotated together. All the screw-joints of the drill-tube are similarly keyed together.

A band *f* encircles the head of the drill A and aids in confining the arms C′ C′ in the grooves *b b*.

Wells drilled in any medium save solid rock require a casing to prevent the sides caving in; but to adapt it to receive casing-sections of uniform size the bore requires to be enlarged at certain points, and for this work my drill attachment is intended and adapted. To adjust the said attachment, and thus practically widen the working face or edge of the drill, the drill-tube is rotated, (to the right,) and thereby the sleeve D is screwed farther down on the drill-shank B, which movement forces the drill attachment C C′ C′ farther down, so that the arms C′ C′ are spread farther apart, thus widening the face or point of the drill. By rotating the drill-tube in the opposite direction (to the left) the attachment will be drawn upward, and the arms C′ C′ thereby retracted into the deeper portions of the grooves *b b*, which practically narrows the face of the drill to that extent. The drill and its attachment can then be drawn up through the casing, leaving the well complete, with a casing of uniform diameter throughout.

What I claim is—

1. The combination, with the drill proper A, having the reduced and exteriorly-threaded shank B made integral therewith, of the attachment consisting of an annular portion and pendent arms constructed integrally, the said collar fitting loosely on the drill-shank

and the arms extending down on the sides of the drill, and the tubular coupling E, which screws on the drill-shank and serves to connect with the drill-tube, as shown and described.

2. The combination, with a drill proper having a threaded shank and grooved sides, of a drill attachment having opposite arms or teeth extending down the sides of the drill, a sleeve D, adapted to screw up and down on the shank and connected with the said attachment, whereby they may rotate independently, but are raised together, and a coupling immovably secured to the sleeve D for connecting it with the drill-tube, substantially as shown and described, whereby the rotation of the latter serves to adjust the attachment higher or lower, as specified.

3. The combination, with the drill proper having a threaded shank and grooves in its sides which diminish in depth from top to bottom, of the drill attachment consisting of an annular collar and pendent arms or teeth adapted to work in such grooves, the threaded sleeve D, applied to said shank and having a flange at its lower end which engages the collar of the attachment, and a drill-tube coupling which is keyed to the sleeve and serves to confine the attachment and to connect the drill with a drill-tube, as shown and described.

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