(No Model.)

# J. P. GRISCOM

## DIAMOND DRILL CORE BREAKER.

No. 327,943. Patented Oct. 6, 1885.

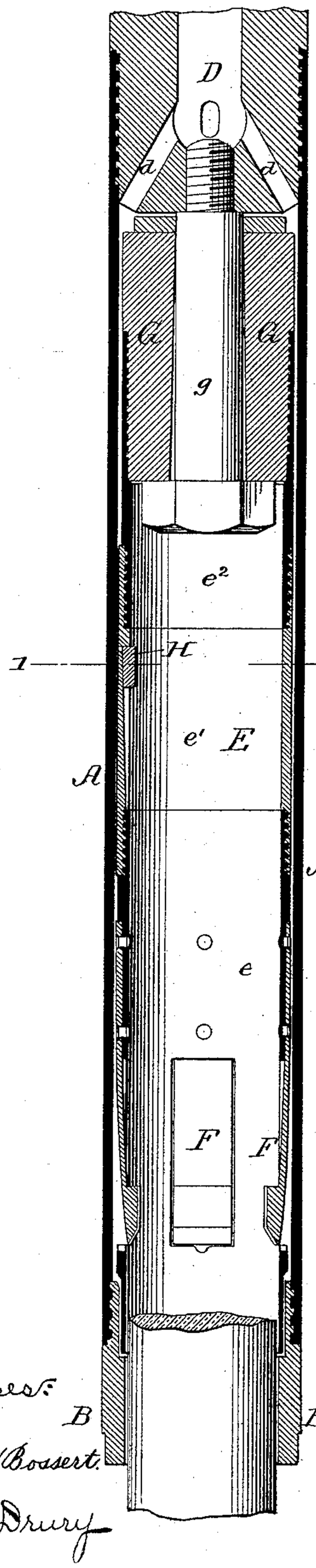
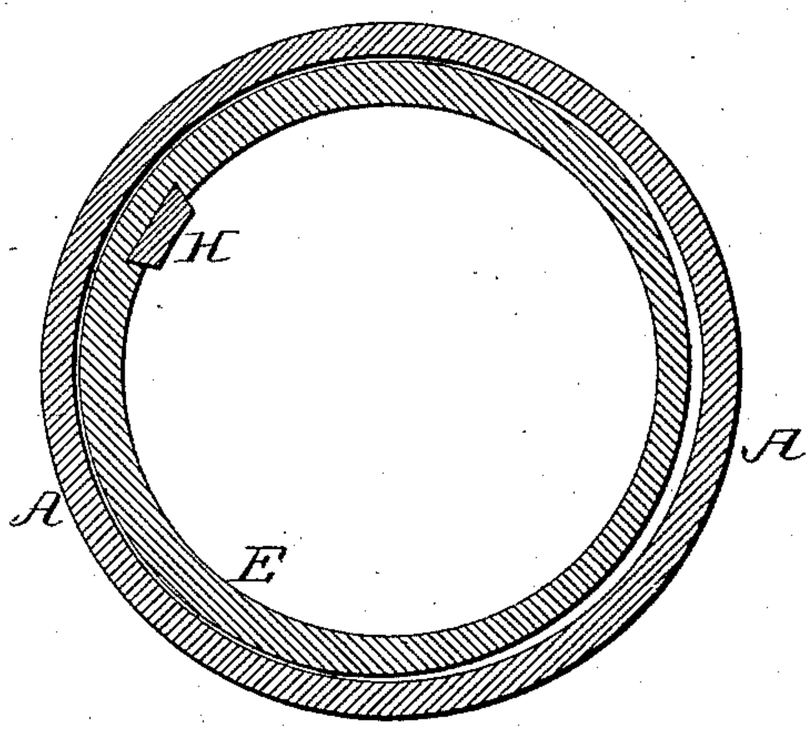



FIG. 1.

FIG. 2




Witnesses:
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# UNITED STATES PATENT OFFICE.

JOHN P. GRISCOM, OF POTTSVILLE, PENNSYLVANIA.

## DIAMOND-DRILL CORE-BREAKER.

SPECIFICATION forming part of Letters Patent No. 327,943, dated October 6, 1885.

Application filed May 20, 1885. Serial No. 166,122. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN P. GRISCOM, a citizen of the United States, and a resident of Pottsville, Pennsylvania, have invented certain Improvements in Diamond-Drill Core-Breakers, (Case B,) of which the following is a specification.

My invention consists of certain improvements in that class of diamond drills in which an inside barrel is combined with the outer barrel which turns the drill-bit; and the object of my invention is to so construct a drill of this character as to provide for the breaking of the core formed by the drilling without first removing the drill and using a separate tool, and this object I attain as fully described hereinafter.

In the accompanying drawings, Figure 1 is a longitudinal section of a drill embodying my invention, and Fig. 2 is a sectional view on the line 1 2, Fig. 1, but drawn to an enlarged scale.

A is the usual outer barrel, which carries at its lower end the drill-bit B, and at the upper end is secured to the drill-rod D.

E is the inner barrel, which may be made in three sections, the lower section, *e*, carrying the spring-fingers F, and the middle section, *e'*, carrying the wedging-piece, as hereinafter described, while the upper section, $e^2$, is screwed into the block G, by which the inner barrel is swiveled on the headed bolt *g*, secured to the lower end of the drill-rod. The latter is made tubular, and is provided at its lower end with lateral openings *d*, by which the water may be admitted to the annular space left between the inner and outer barrels for its passage to the drill-bit.

Drills of the construction described have heretofore had the inner barrel provided merely with springs F, which as the core was formed descended over the latter and grasped it with sufficient friction to pull it out on the withdrawal of the drill, if the core was loosened or broken from its base; but if the core remained fast to the bottom the springs would slide over the core when the drill was withdrawn, and leave the core standing in the hole, so that a second tool had to be inserted in the opening to break off the core and remove it.

To avoid the time and expense of this operation I provide the inner barrel, E, with a wedging piece or pieces, H, adapted to corresponding grooves in the section *e'* of the inner barrel, the bottom or seat of the groove being inclined, as shown in Fig. 1, so that when the tool has drilled so far into the opening that the piece H comes into contact with the core, and the drill is then pulled upward, the wedging-piece H, by frictional contact with the side of the core, will slide down the tapered seat in the groove and push the core over to one side, so as to finally break it off from its base.

The section *e'* of the inner barrel, which carries the wedging-piece H, is made thicker on that side, as shown in Fig. 2, so as to leave sufficient strength for the formation of the groove, and at the same time take up on that side of the barrel all the clearance left between the two barrels, in order that when the wedge presses against the core the two barrels will bear against each other and against the wall of the bore, and thus relieve the barrels from strain due to the wedging action on the core.

The springs F, carried at the lower end of the inner barrel, descend over and take hold of the core as it is formed, and prevent the inner barrel from revolving with the drill, and so avoid the wearing away of the wedging-piece by frictional contact with the core.

Although I have only shown one wedging-piece in the drawings, two or more may be used, if desired, provided they are placed on the thickened side of the barrel.

I wish it to be understood that I do not claim in this application a drill having an inner cylinder carrying a wedging-piece, and free to turn within the outer barrel, as this forms the subject of a separate application for a patent filed by me of even date herewith, Serial No. 161,121; but

I claim as my invention—

1. The combination of the outer barrel of a diamond drill with an inner barrel free to turn independently of the outer one, and leaving an annular space between the two, and a wedging-piece carried by and adapted to a seat in said inner free barrel, substantially as set forth.

2. The combination of the outer barrel of a diamond drill with an inner barrel, leaving a space between the two, the said inner barrel carrying four grasping-fingers, and being free to turn independently of the outer barrel, and

a wedging-piece carried by and adapted to slide in said inner barrel, substantially as set forth.

3. The combination of the outer barrel of a diamond drill with an inner barrel, leaving a space between the two, the said inner barrel having a groove with a tapering seat, and being free to turn independently of the outer barrel, and a wedging-piece adapted to slide in the said groove of the inner barrel, substantially as specified.

4. The combination of the outer barrel of a drill with an inner barrel carrying a wedge-piece, H, to act against the core, the said inner barrel being thickened on the side carrying the said wedge-piece, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN P. GRISCOM.

Witnesses:
J. H. FISTER,
MORGAN REED.