

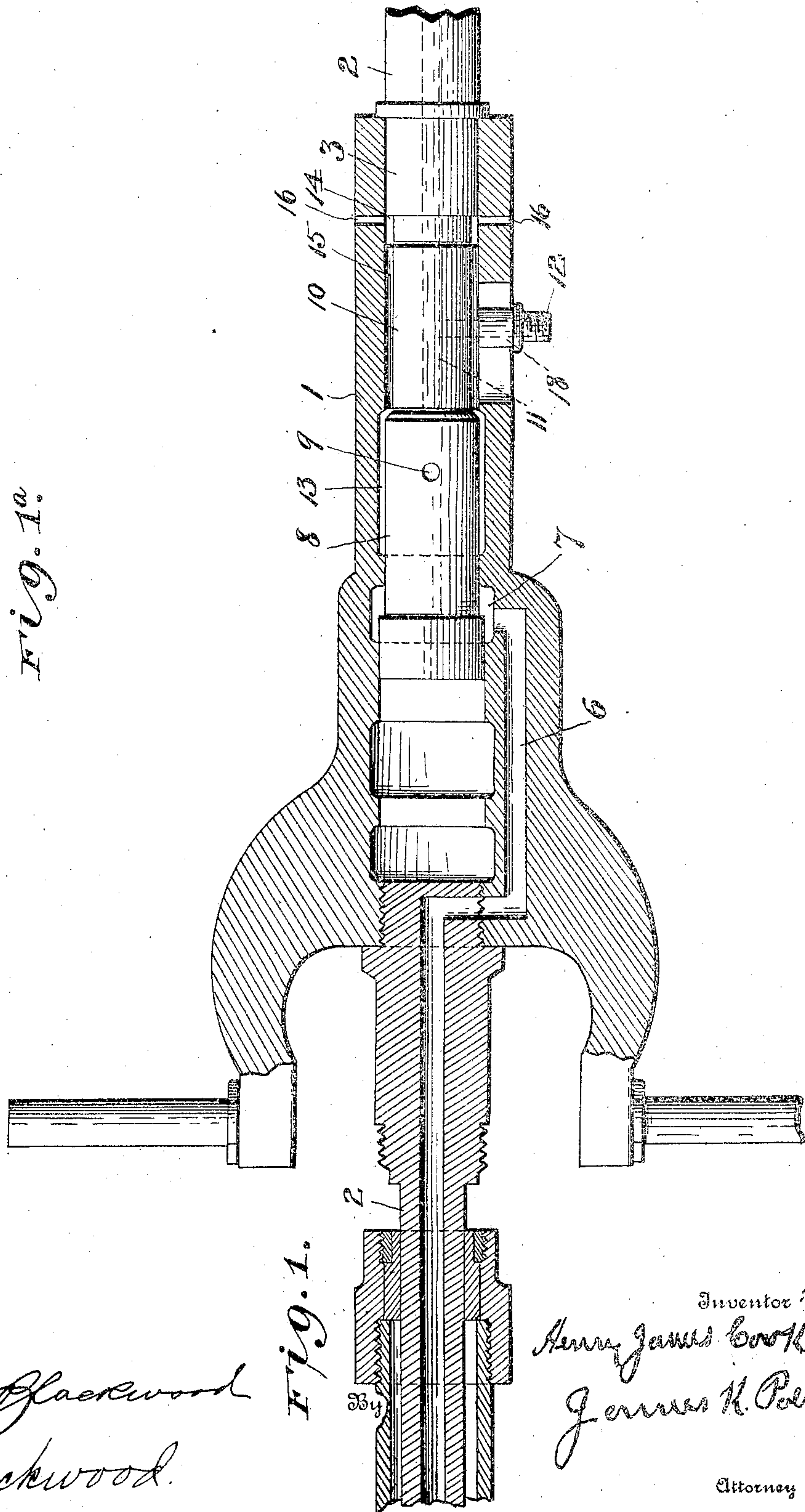
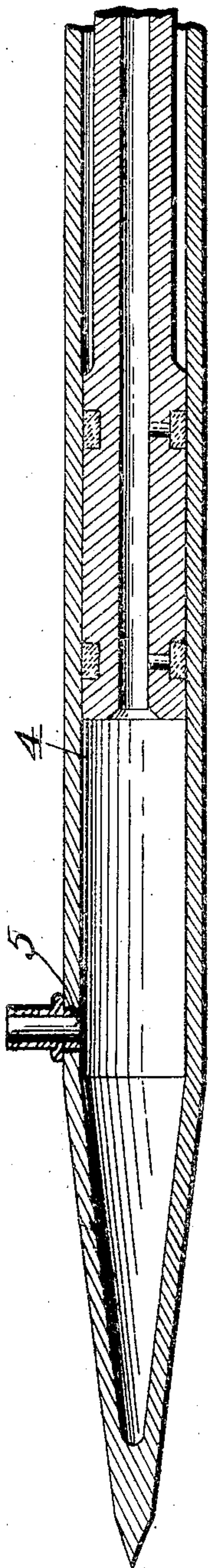
No. 881,059.

PATENTED MAR. 3, 1908.

H. J. COOK.
ROCK DRILL.

APPLICATION FILED JULY 2, 1907.

2 SHEETS—SHEET 1.



Witnesses

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Fig. 2.

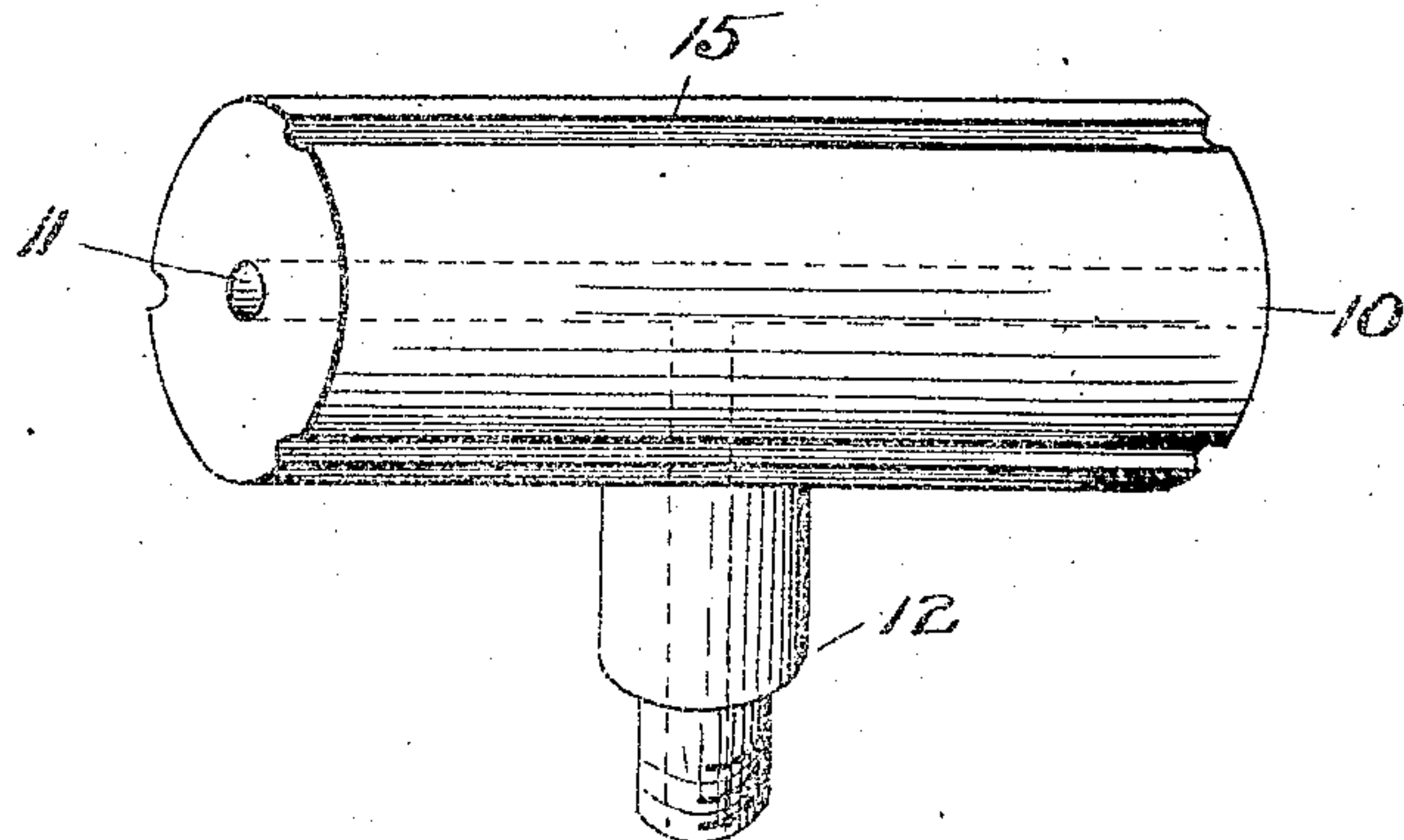


Fig. 3.

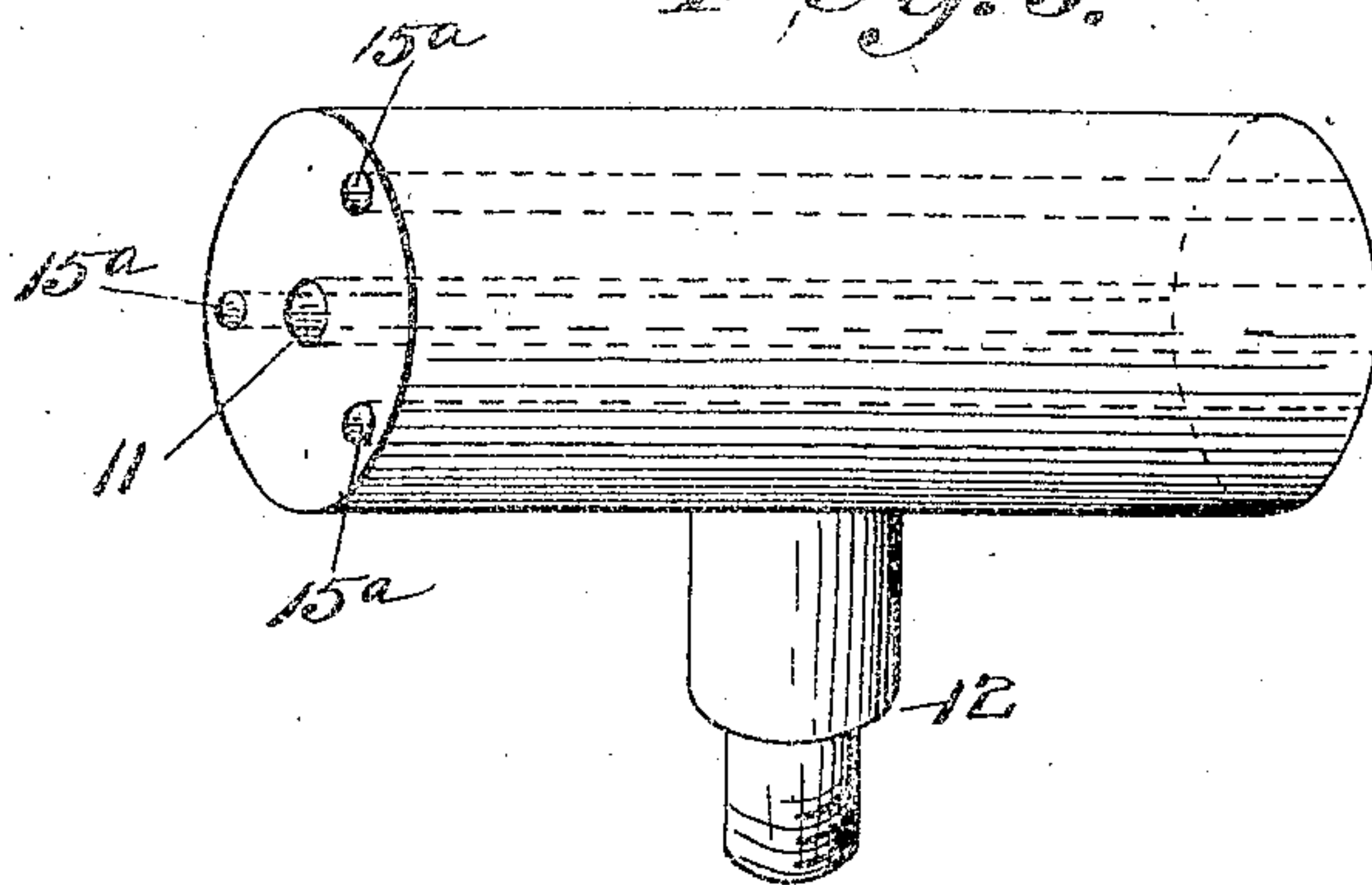
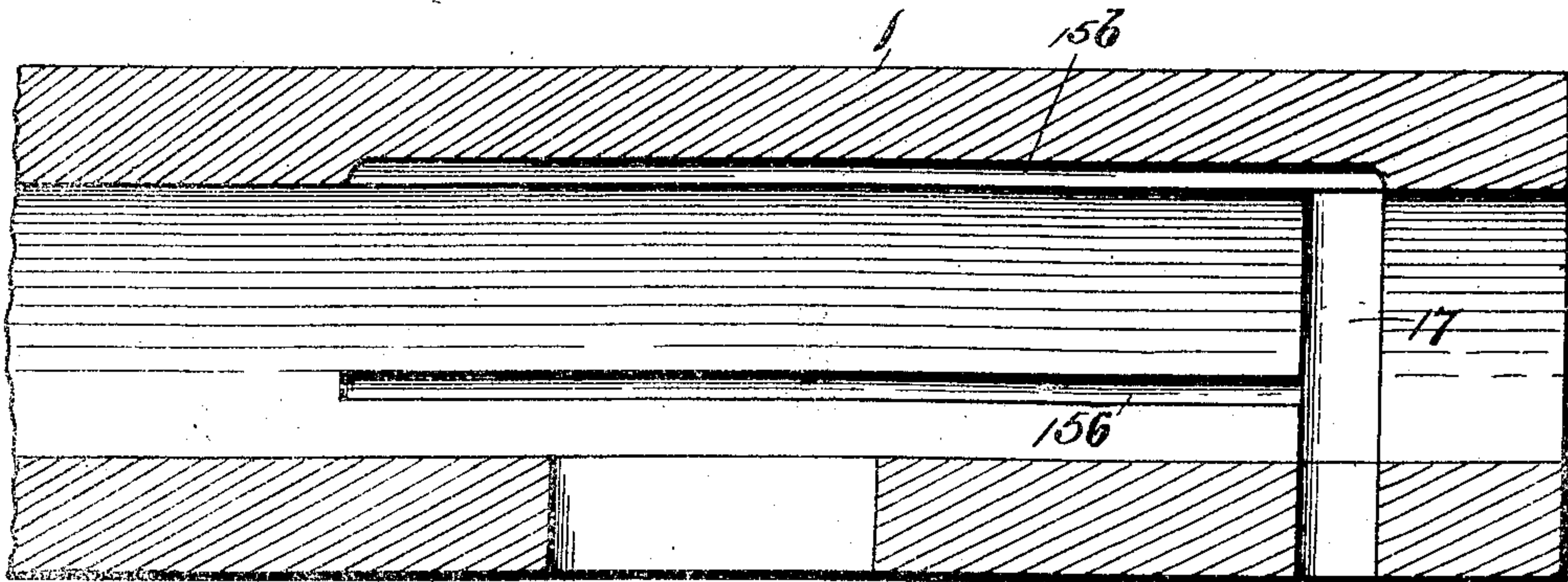


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

HENRY JAMES COOK, OF OTTUMWA, IOWA.

ROCK-DRILL.

No. 331,059.

Specification of Letters Patent.

Patented March 3, 1906.

Application filed July 2, 1907. Serial No. 331,895.

To all whom it may concern:

Be it known that I, HENRY JAMES COOK, a citizen of the United States, and a resident of Ottumwa, in the county of Wapello and State of Iowa, have invented certain new and useful Improvements in Rock-Drills, of which the following is a full, clear, and exact specification.

My invention relates to rock drills of the type employing compressed air for actuating the hammer, and has for its object the provision of improvements by which the air used for driving the hammer, after exhausting, is employed to form a seal to prevent leakage of the water used to flush the boring.

To this end my invention consists in providing a striking-block between the hammer and the drill-bit having the water-hose connected therewith and a central hole for conveying the flushing-water to the drill-bit head and provided with other holes or surface-grooves for conveying the exhaust air to a chamber surrounding the end of the drill-bit, or, if preferred, grooves may be formed on the inner side of the casing around the striking-head to convey the air to the chamber aforesaid.

The construction and operation of my improved rock-drill will be described in detail hereinafter and illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of the drill end of a rock-drill showing my improvements; Fig. 1^a, a view of the other end; Fig. 2, a detail view of the striking-block shown in Fig. 1; Fig. 3, a cross-section of a striking-block involving a modification of the structure shown in Fig. 2; and Fig. 4, a fragmental sectional view of the casing showing a modification with the air passages formed in the casing.

In the drawings similar reference characters indicate corresponding parts throughout the several views.

1 indicates the casing of my improved drill having the tubular drill-stem 2 having its shank 3 mounted in one end thereof. The drill-stem 2 is formed tubular for the passage of water or other flushing element to the drill-bore. Secured to the other end of the casing 1 is the compressed-air conduit 4 for conveying the air from air-pipe (not shown)

secured in hole 5 to the duct 6 in casing 1 that empties into the hammer-chamber 7.

8 indicates the hammer that is constructed hollow and provided with a flanged head against which the air presses to raise the hammer at the beginning of the stroke.

9 indicates a hole in the hammer through which the compressed air enters the inside of the hammer to drive it downward in completing the stroke.

This structure of drill, as above described, is now in common use, the hammer striking directly against the head of the drill-stem 2 and after completing the stroke the air exhausts from the casing through one or more holes made therein for that purpose.

My improvement consists in the provision of a striking-head 10 between the drill-stem 2 and the hammer 8, having a central hole 11 therein and a hose-connection 12 secured thereto and connected with the central hole 11 to convey water, air, or other flushing element to the drill-stem, the striking-head 10 engaging the head of stem 2 and the holes in the bit and the striking-head registering so as to permit the flushing element to flow into the bit.

My invention further contemplates the utilization of the exhaust air from the hammer in not only forcing the water through the stem by pressure exerted on the central hole but also in providing a water-seal to prevent the leakage of the water from the connection between the drill-stem and the striking-head. This I accomplish by providing air-ducts for the passage of the exhaust air from the chamber 13 above the striking-head 10 to a chamber 14 surrounding the head of the drill-stem 2.

In Figs. 1 and 2 the ducts for the passage of the exhaust air from the chamber 13 to the chamber 14, consist of longitudinal grooves 15, formed in the surface of the striking-head.

In Fig. 3 the ducts consist of holes 15^a between the center and the surface of the striking-head.

In Fig. 4 the ducts are formed by grooves 15^b in the part of the casing 1 surrounding the striking-head 10. 16 indicate exhausts for the air from the casing 14.

In Fig. 1 there is shown several exhaust-

ports so as to insure an even pressure of the air around the head of the bit, while in Fig. 4 but a single exhaust-port is shown, the pressure being equalized by providing an annular duct 17 connecting with the port.

18 indicates a rubber bushing on the hose-connection to prevent it from becoming crystallized because of the vibration of the hammer.

10 Having thus described my improvements, what I claim is—

1. In a rock-drill, a casing having a tubular drill stem mounted at one end, an air-propelled hammer, a striking-head mounted between the hammer and the drill-stem having a hole therein that registers with the hole in the drill-stem, and a hose connection secured to said striking-head and communicating with the hole therein, substantially as shown and described.

2. In a compressed-air rock-drill, in combination with the casing, a tubular drill-stem mounted in the casing and having its inner end spaced apart from the inner surface of the casing to form a chamber, an air-propelled hammer in the casing, a striking-head in the casing between the drill-stem and the hammer having a longitudinal hole there-through that registers with the hole in the drill-stem, a hose connection secured to said striking-head and communicating with the longitudinal hole therein to convey a flushing element thereto, and means to convey a part of the exhaust air from the hammer past the striking-head to the chamber around the drill-stem, substantially as shown and described.

3. In a compressed-air rock-drill, in combination with the casing, a tubular drill-stem mounted in the casing and having its inner end spaced apart from the inner surface of the casing to form a chamber, an air-propelled hammer in the casing, a striking-head in the casing between the drill-stem and the hammer having a central opening there-through that registers with the hole in the drill-stem, and means to convey the exhaust air from the hammer to the chamber around the drill-stem to form a seal for the connection between the striking-head and the drill-stem, substantially as shown and described.

4. In a compressed-air rock-drill, in combination with the casing, a tubular drill-stem mounted in the casing and having its inner end spaced apart from the inner surface of the casing to form a chamber, an air-propelled hammer in the casing, a striking-head in the casing between the drill-stem and the hammer having a central opening there-through that registers with the hole in the drill-stem, and air-ducts formed in the striking-head for the passage of the air exhausted

from the hammer to the chamber around the drill-stem, substantially as shown and described.

5. In a compressed-air rock-drill, in combination with the casing, a tubular drill-stem mounted in the casing and having its inner end spaced apart from the inner surface of the casing to form a chamber, an air-propelled hammer in the casing, a striking-head in the casing between the drill-stem and the hammer having a central opening there-through that registers with the hole in the drill-stem, and grooves in the surface of the striking-head forming ducts for the passage of air exhausted from the hammer to the chamber around the drill-stem, substantially as shown and described.

6. In a compressed-air rock-drill, in combination with the casing, a tubular drill-stem mounted in the casing and having its inner end spaced apart from the inner surface of the casing to form a chamber, an air-propelled hammer in the casing, a striking-head in the casing between the drill-stem and the hammer having a central opening there-through that registers with the hole in the drill-stem, a hose connection secured to the striking-head and communicating with the central hole therein to convey a flushing element thereto, and means to convey the exhaust air from the hammer to the chamber around the drill-stem to form a seal for the connection between the striking-head and the drill-stem, substantially as shown and described.

7. In a compressed-air rock-drill, in combination with the casing, a tubular drill-stem mounted in the casing and having its inner end spaced apart from the inner surface of the casing to form a chamber, an air-propelled hammer in the casing, a striking-head in the casing between the drill-stem and the hammer having a central opening there-through that registers with the hole in the drill-stem, a hose connection secured to the striking-head and communicating with the central hole therein to convey a flushing element thereto, and air-ducts formed in the striking-head for the passage of the air exhausted from the hammer to the chamber around the drill-stem, substantially as shown and described.

8. In a compressed-air rock-drill, in combination with the casing, a tubular drill-stem mounted in the casing and having its inner end spaced apart from the inner surface of the casing to form a chamber, an air-propelled hammer in the casing, a striking head in the casing between the drill-stem and the hammer having a central opening there-through that registers with the hole in the drill-stem, a hose connection secured to the

striking-head and communicating with the
central opening therein to convey a flushing
element thereto, and grooves in the surface
of the striking-head forming ducts for the
5 passage of air exhausted from the hammer
to the chamber around the drill-stem, sub-
stantially as shown and described.

In witness whereof I have hereunto set my
hand in presence of two subscribing wit-
nesses.

HENRY JAMES COOK.

Witnesses:

GUY L. COOPER,
S. J. WILCOX.