No. 896,475. PATENTED AUG. 18, 1908.

C. J. SMITH.

ROCK DRILL.

APPLICATION FILED FEB. 24, 1908.

2 SHEETS—SHEET 1.

Fig. 1.

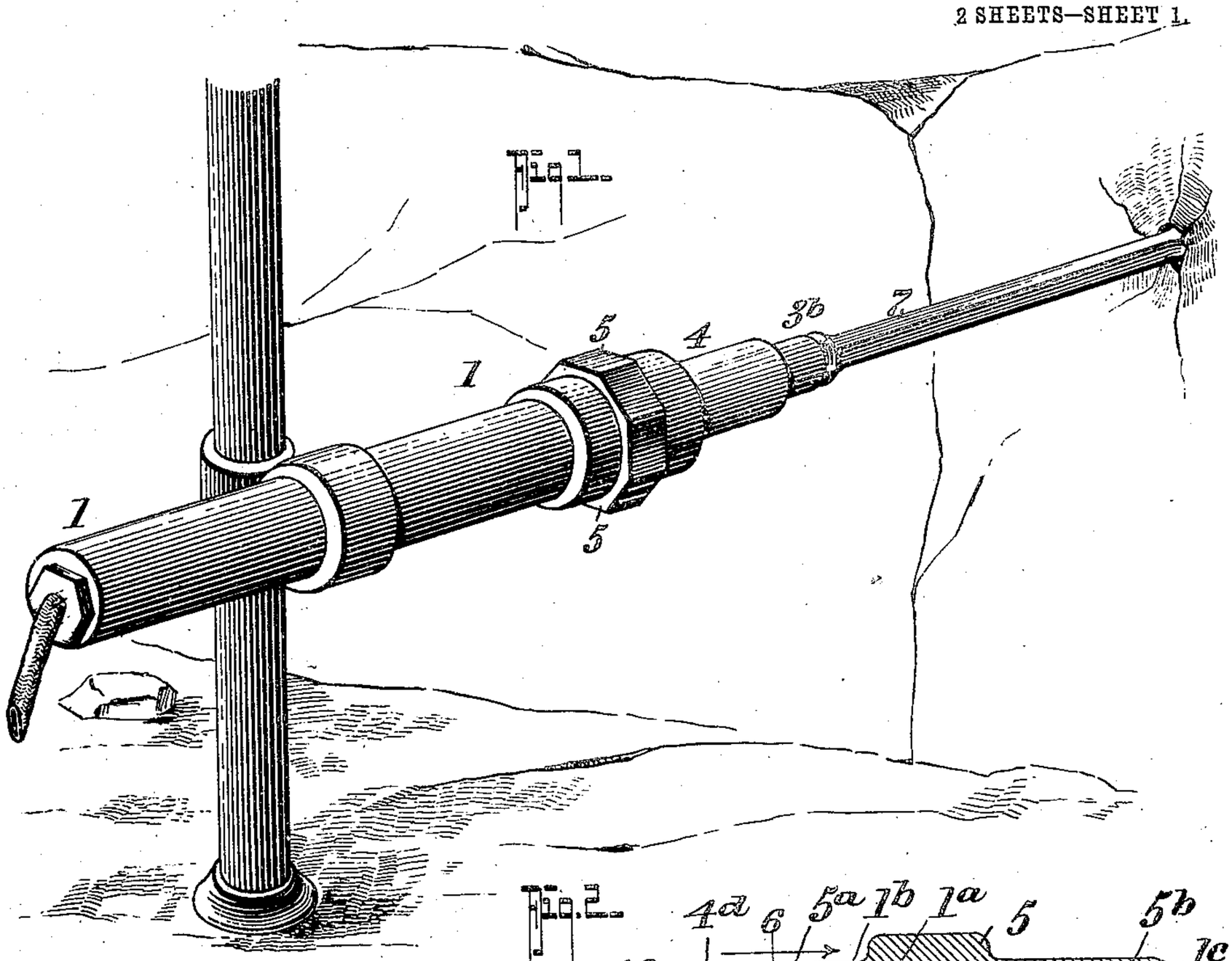


Fig. 2.

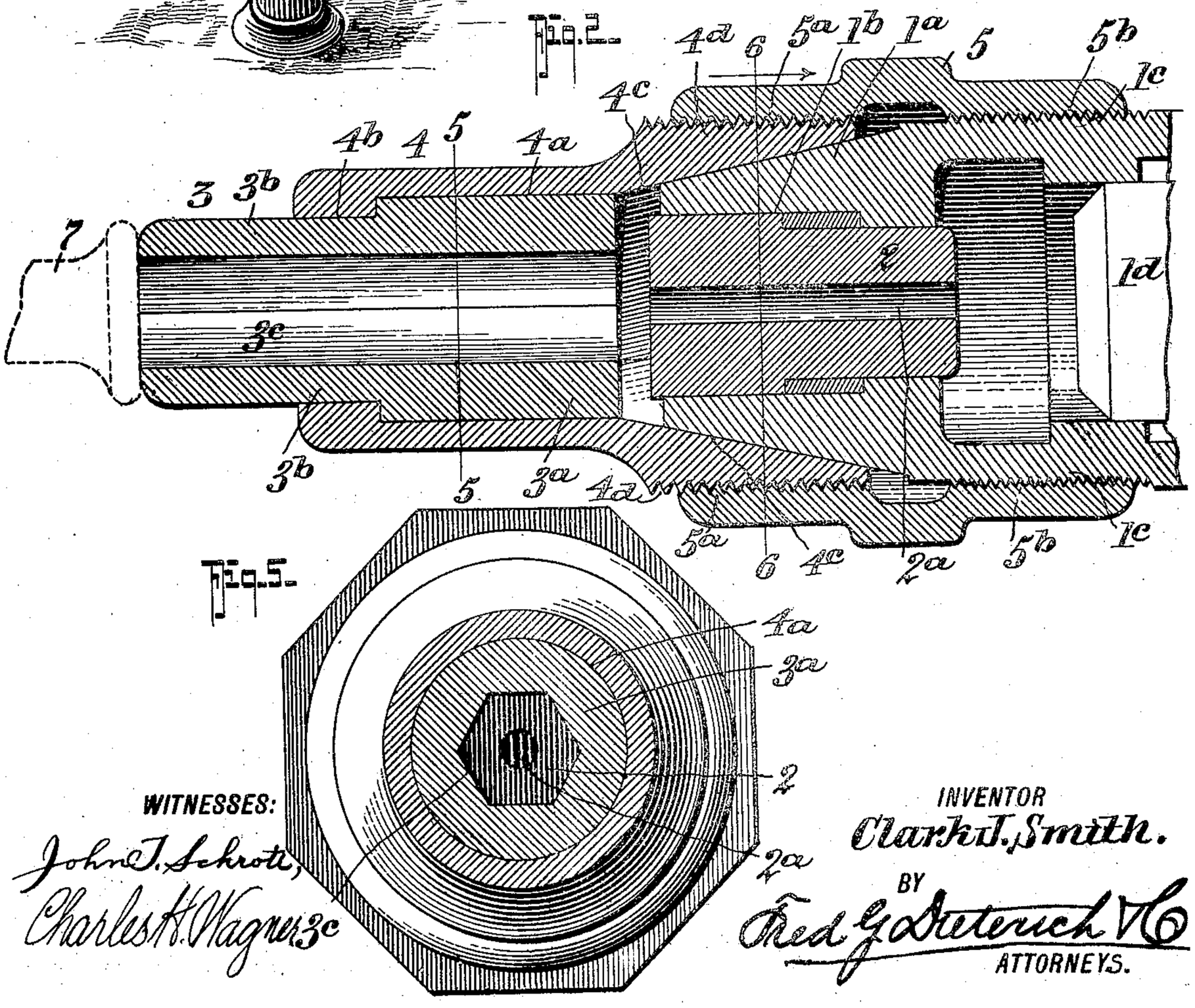


Fig. 5.

WITNESSES:

John T. Schrott,

Charles H. Wagner 3d

INVENTOR

Clark J. Smith.

BY

Fred G. Dieterich & Co

ATTORNEYS.

No. 896,475. PATENTED AUG. 18, 1908.

C. J. SMITH.

ROCK DRILL.

APPLICATION FILED FEB. 24, 1908.

2 SHEETS—SHEET 2.

Fig. 3.

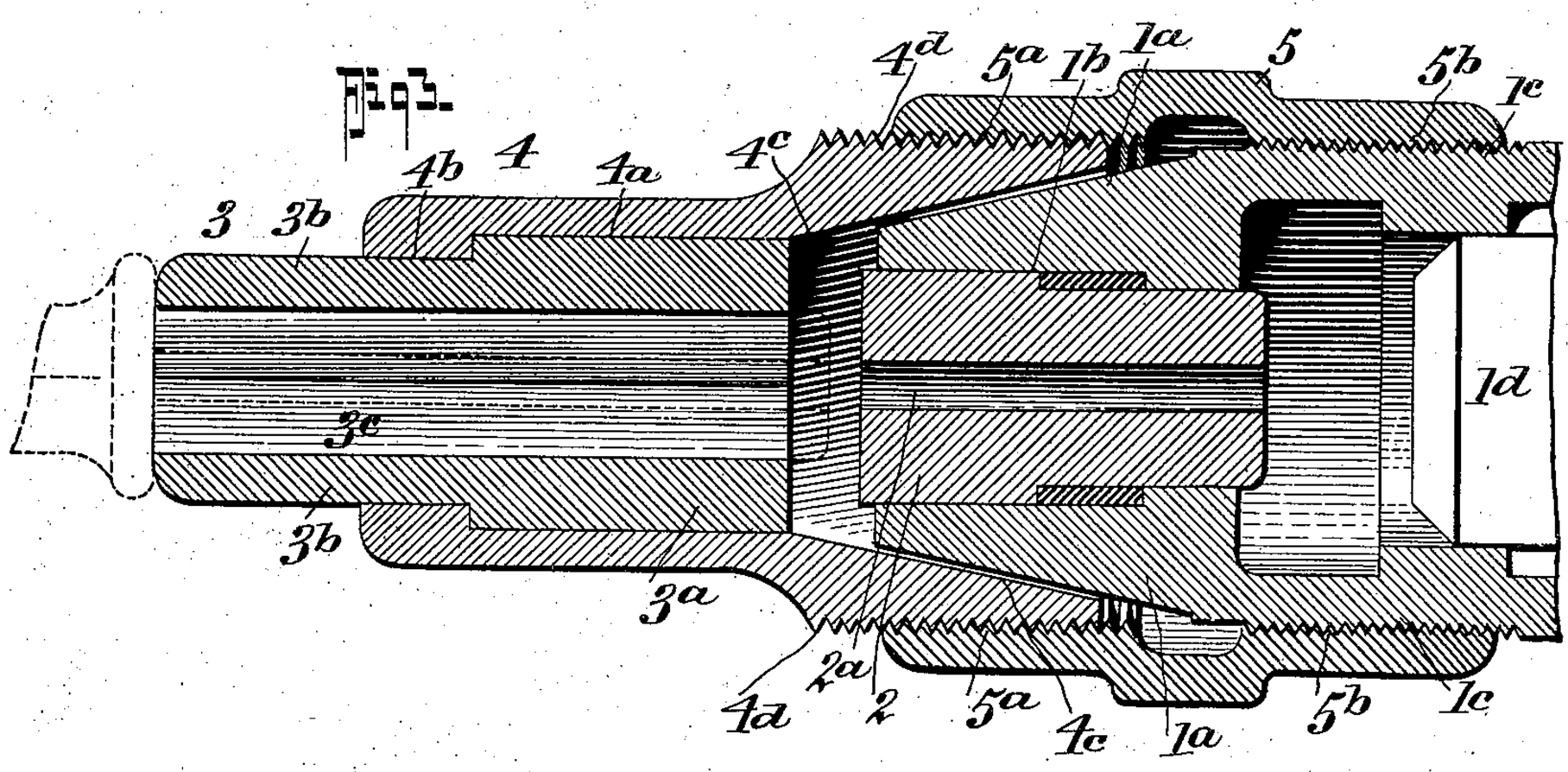


Fig. 4.

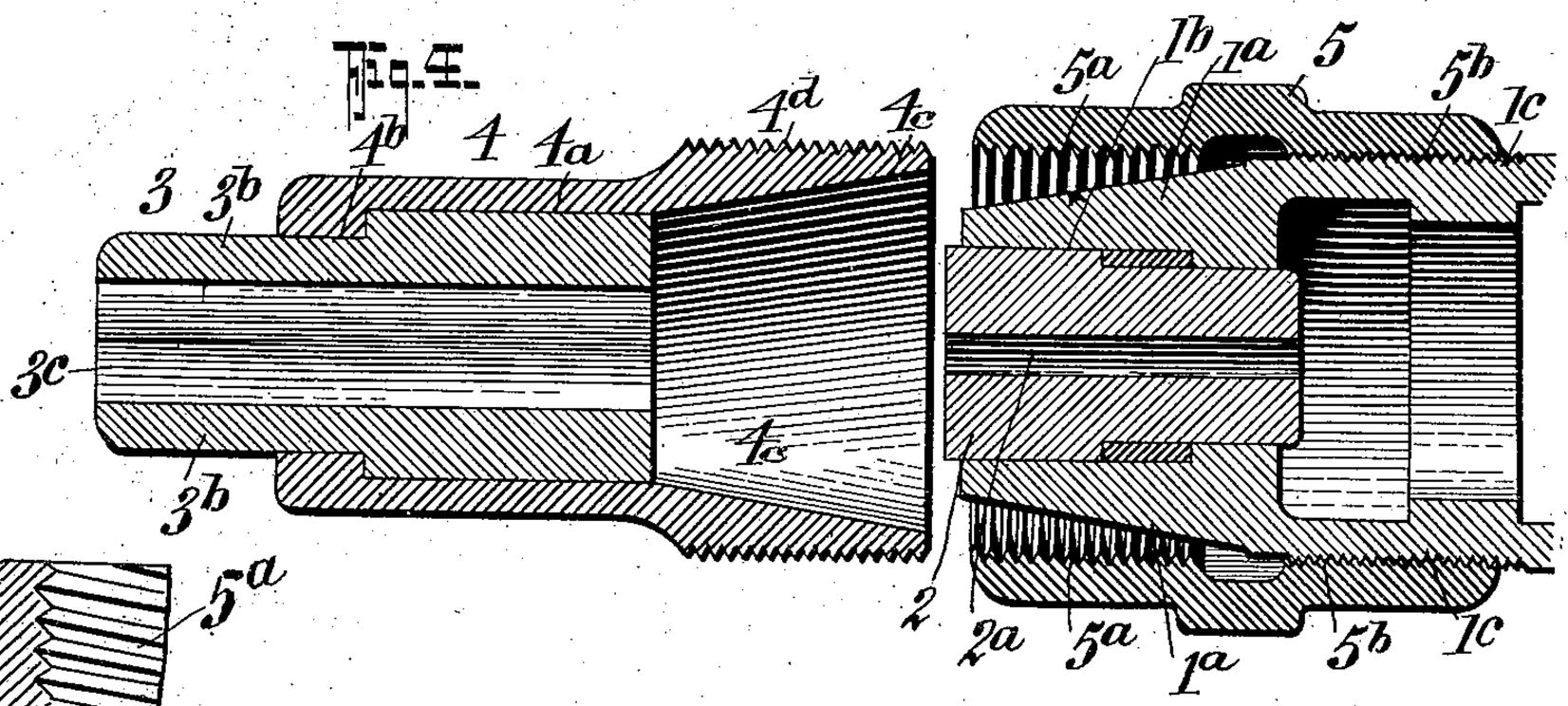


Fig. 7.

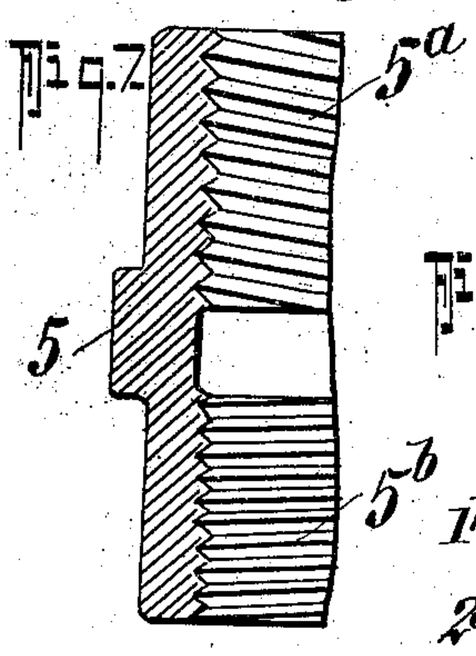
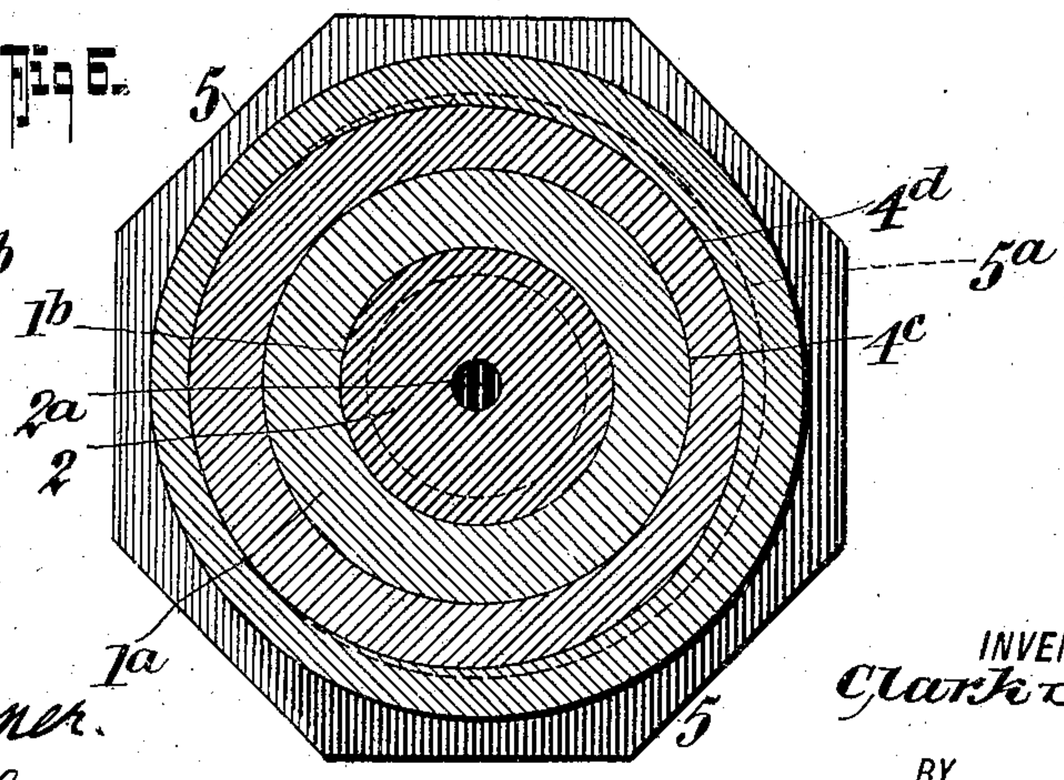


Fig. 6.



WITNESSES:

Charles F. Wagner.

John T. Schrott

INVENTOR

Clark J. Smith.

BY

Fred G. Dieterich & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

CLARK J. SMITH, OF OTTUMWA, IOWA, ASSIGNOR TO THE HARDSOCG WONDER DRILL CO., OF OTTUMWA, IOWA.

ROCK-DRILL.

No. 896,475. Specification of Letters Patent. Patented Aug. 18, 1908.

Application filed February 24, 1908. Serial No. 417,474.

To all whom it may concern:

Be it known that I, CLARK J. SMITH, residing at 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 specification.

My invention relates to certain new and useful improvements in rock drills and the like and in its generic nature the invention embodies a removable chuck for rock drills and an improved means for securing the chuck and holder to the drilling engine.

The invention primarily has for its object to provide a means for securing the chuck holder to the drilling engine end whereby a tight fit is made and the parts are so arranged and designed as to be readily separated or attached, as desired.

More specifically my invention resides in coupling the holder to the drilling engine by a collar nut having internal threads to engage external threads on the engine and the holder, the threads on the holder being of a different pitch than those on the engine, while the collar threads are formed to correspond to the threads on the holder and on the engine, so that as the collar is turned in one direction the holder and engine will be tightly drawn together (the engine and holder having a male and female connection) but when the nut is given a slight turn in the opposite direction, the combined threads will serve to quickly part the holder from the engine when the holder may be then readily unscrewed from the nut without removing the nut from the engine.

My invention also embodies the special construction and arrangement of parts hereinafter fully described, and specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which:

Figure 1, is a perspective view of a drilling engine embodying my invention. Fig. 2, is an enlarged vertical section of my invention showing the position of the parts when locked together. Fig. 3, is a similar view after the nut has been slightly turned to part the holder from the engine. Fig. 4, is a similar view the holder being unscrewed from the nut. Figs. 5 and 6, are sections on the lines 5—5 and 6—6 respectively of Fig. 2. Fig. 7 is an exaggerated detail view of a portion of the coupling nut showing the oppositely pitched threads.

Referring now to the accompanying drawings in which like letters and numerals of reference indicate like parts in all of the figures, 1 designates the drilling engine which may be of any improved type, the front or drill holding end of which is formed with a conical portion 1^a which has a pocket 1^b to receive the intermediate or special hammer 2 against which the hammer piston 1^d of the engine impacts.

The outer surface of the engine barrel is threaded adjacent the conical portion, as at 1^c, with a definite number of threads per inch, say ten threads per inch.

The drill chuck 3 has a head 3^a and a shank 3^b to fit in the bore parts 4^a and 4^b respectively of a chuck holder 4 whose inner portion is provided with a conical recess 4^c to receive the conical portion 1^a of the engine. The outer surface of the holder 4 is threaded at 4^d with threads of a different pitch than those 1^c of the engine, say eight threads per inch.

A nut 5 having internally threaded portions 5^a—5^b unites the holder to the engine, the nut threads 5^a—5^b corresponding to those 4^d and 1^c of the holder and engine respectively.

The chuck 3 has a drill receiving bore 3^c into which the end of the drill 7 is adapted to be fitted while the intermediate hammer 2 is provided with a passage 2^a to permit the exhaust passing therethrough and through the drill when a hollow drill is used.

By providing the nut with the two sets of threads one of one pitch and the other of another pitch, when the nut is turned backward the holder and the engine will be brought together quickly at a greater rate than would be the case were a simple threaded connection made between the parts, *i. e.*, with one set of threads at a pitch say eight to the inch, and the other at a pitch say ten to the inch, as the nut is turned backward the holder and drill will be brought together at a rate of forty threads per inch.

To remove the holder the nut is turned on

thus forcing the holder off the cone end of the engine, after which the holder may be unscrewed from the nut and removed.

One of the sets of threads is left handed and the other is right handed so that when the nut is turned in one direction the members 4 and 1 will be separated and when turned in an opposite direction will be drawn together.

A different chuck may then be placed in the holder and the parts reassembled or a different type of holder and chuck may be substituted, as may be found desirable.

One of the principal features of my present invention resides in combining the two different pitches of threads in the same nut for the purpose of converting a coarser thread into the power of a finer thread.

From the foregoing description taken in connection with the accompanying drawings, it is thought the complete construction, and numerous advantages of my invention will be readily understood by those skilled in the art to which the invention appertains.

What I claim is:

1. The combination with the drilling engine and the chuck holder, of means for coupling the two, said coupling means having a threaded engagement, with the holder and the drilling engine, of different pitches and directions.

2. The combination with the drilling engine and the chuck holder, of means for coupling the two, said coupling means having a threaded engagement, with the holder and the drilling engine, of different pitches and direction, and said holder and engine having coöperating conical portions.

3. In a drilling engine having a conical projection at one end, a drill chuck secured to the projecting end of said engine and having a conical portion to coöperate with the conical projection of the engine, said engine and said chuck having threaded portions of substantially the same diameter, the threaded portion of the drilling engine having a different pitched thread from that of the chuck and a coupling nut having a bore of substantially the same diameter throughout and threaded to coöperate with the chuck and the engine.

4. In a drilling engine having a conical projection at one end, a drill chuck secured to the projecting end of said engine, and having a conical portion to coöperate with the conical projection of the engine, said engine and said chuck having threaded portions of substantially the same diameter, the threaded portion of the drilling engine having a different pitched thread from that of the chuck and a coupling nut having a bore of substantially the same diameter throughout and threaded to coöperate with the chuck and the engine, the threads of the chuck being oppositely pitched to those of the drilling engine.

CLARK J. SMITH.

Witnesses:
A. C. JUDD,
RALPH MAHON.