

R. S. CARTER.
 DRILL BIT AND SECTIONAL ROD THEREFOR.
 APPLICATION FILED JUNE 9, 1914.

1,211,080.

Patented Jan. 2, 1917.

2 SHEETS—SHEET 1.

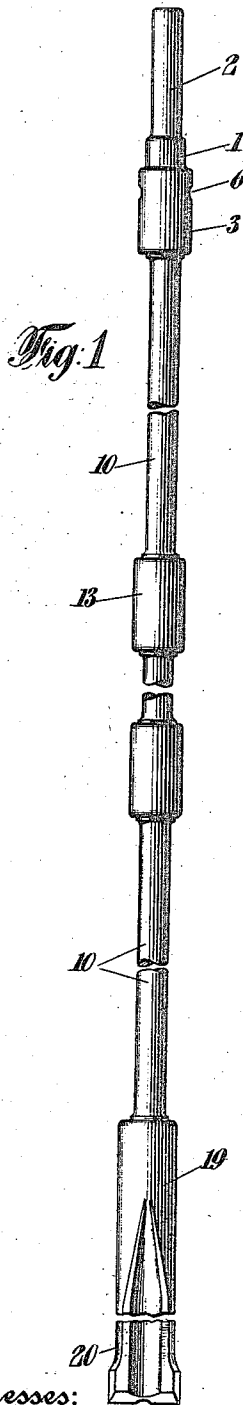


Fig. 1

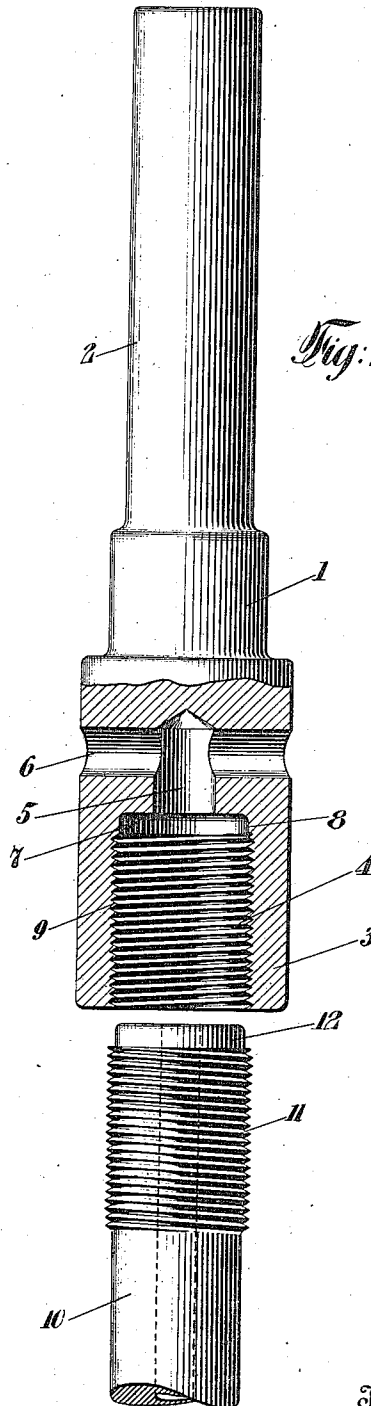


Fig. 2 A

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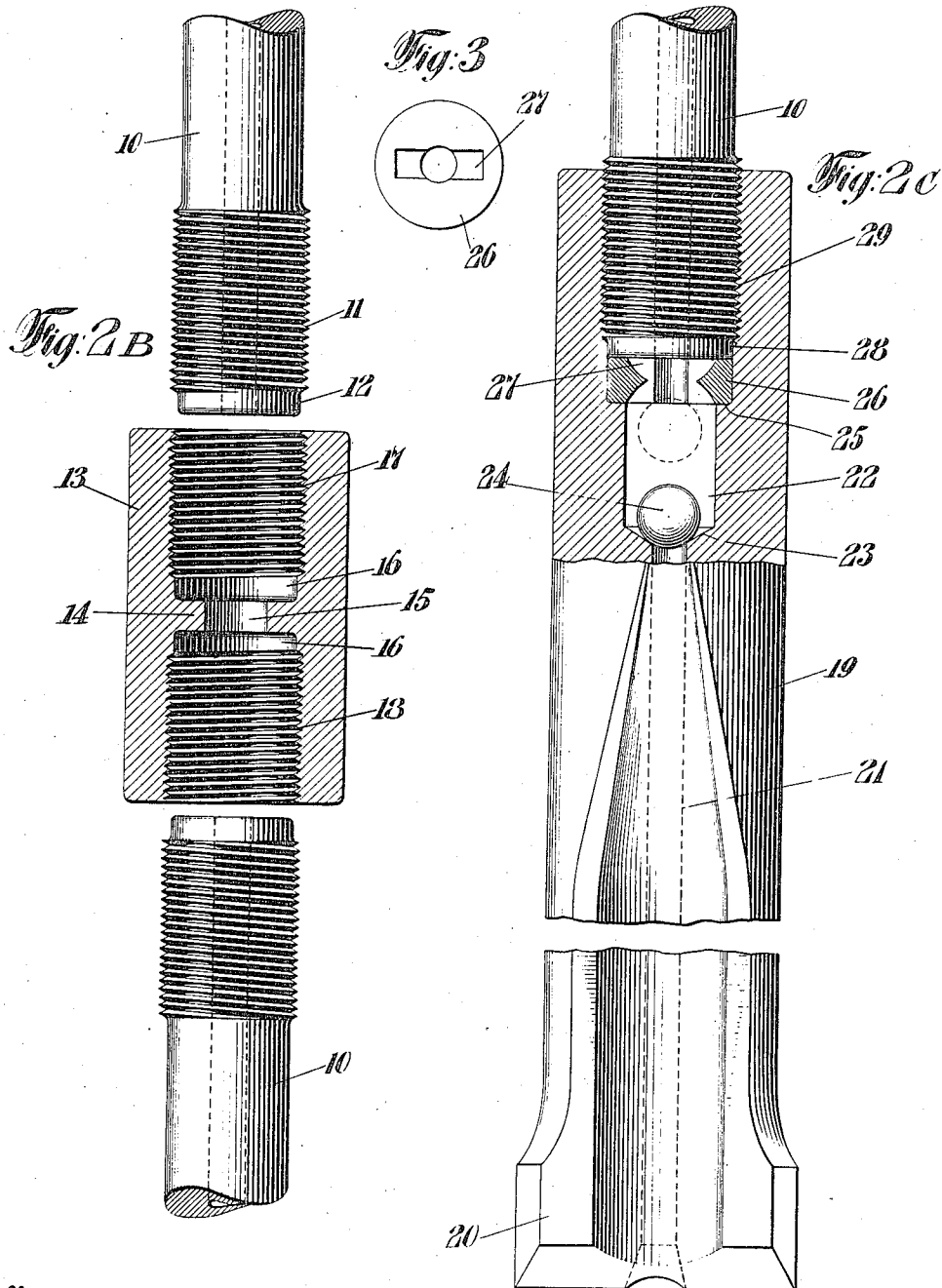
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 Attorney

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UNITED STATES PATENT OFFICE.

RUSSELL S. CARTER, OF HEWLETT, NEW YORK, ASSIGNOR TO INGERSOLL-RAND COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

DRILL-BIT AND SECTIONAL ROD THEREFOR.

1,211,080.

Specification of Letters Patent.

Patented Jan. 2, 1917.

Application filed June 9, 1914. Serial No. 843,917.

To all whom it may concern:

Be it known that I, RUSSELL S. CARTER, a citizen of the United States, residing at Hewlett, Long Island, in the county of Nassau and State of New York, have invented a certain new and useful Improvement in Drill-Bits and Sectional Rods Therefor, of which the following is a specification.

This invention relates to drill bits having sectional drill rods and more particularly to drill rods and bits of the so-called "pump" type which by their reciprocating movement not only drill the hole but remove water from the hole in the manner of a pump.

The principal object of this invention is to provide a strong and easily manipulated connection between the several sections of the drilling tool.

A further object is to provide a simple retaining mechanism for the valve of a pump bit through the agency of the drill rod section directly connected with the bit proper, the connection of the drill bit and drill rod also securing the valve in position.

With these objects in view a drill rod and bit have been devised, a practical embodiment of which is represented in the accompanying drawings, in which,

Figure 1 shows a side elevation of the bit with several sections of a drill rod attached thereto. Fig. 2^A shows an enlarged partially sectional view of the drill rod shank with the upper end of a rod section in position to be secured thereto, Fig. 2^B shows a sectional view of an intermediate coupling sleeve together with sections of drill rod, Fig. 2^C shows the bit proper partially in section with a section of drill rod secured in operative position, and Fig. 3 shows a plan of the valve retaining washer.

In the drawings, the assembled drilling tool is shown as comprising a shank portion 1, the upper end 2 of which is adapted to fit in the chuck of an ordinary rock drill engine of the reciprocating plunger type. The lower end 3 of the shank portion 1 is in the form of a sleeve being provided with an interior bore 4 from the upper end of which a short longitudinal passage 5 opens into a transverse bore 6 opening to the atmosphere. The upper end of the bore 4 around the passage 5 forms a shoulder 7 immediately adjacent to which the bore is for a short distance smooth and not provided with threads. Just below this smooth portion 8 is a thread-

ed portion 9 which is of larger diameter than the smooth portion 8 the inner edges of the threads being shown in the drawings as of the same diameter as the smooth bore 8. This sleeve 3 receives the upper end of the first of a series of drill rods 10, these rods being provided with threaded portions 11 extending nearly to their ends and adapted to screw into the threaded portion of the sleeve 3, the extremities 12 of these rods, however, being without threads and of suitable size to fit the smooth portion 8 of the sleeve 3. To connect adjacent drill rods 10 coupling sleeves 13 are provided. These sleeves have each a central web 14 with a central perforation 15. On each side of the web 14 immediately adjacent thereto are smooth non-threaded portions 16 exactly similar to the smooth portion 8 in the socket 3, while on the outer sides of the smooth portions 16 are oppositely threaded portions 17 and 18, the same size as the portion 9 of the sleeve 3.

Secured to the lower end of the last drill rod 10 is the pump bit proper 19, which has a cutting portion 20 from the face of which a longitudinal bore 21 extends upwardly to a valve chamber 22 of larger diameter, a valve seat 23 being provided where the bore 21 enters the valve chamber 22 upon which rests a ball valve 24. Above the valve chamber 22 the bore of the pump bit is enlarged forming a shoulder 25. Seated on the shoulder 25 is a reversible ball retaining washer 26 which is provided with a transverse slot 27 so arranged that it cannot be closed by the ball valve 24. Above the washer 27 the bore of the bit is smooth for a short distance and is of the same diameter as the smooth portions 12 of the drill rods, and above this smooth portion 28 is a threaded portion 29 adapted to receive the threaded portion of one of the drill rods.

It will be apparent from the above description that the threaded connection of the drill rods to the various portions of the bit are practically the same in each case, there being a sleeve having an internal shoulder adjacent to which is a smooth portion of smaller diameter than the threaded portion, the ends of the drill rods being correspondingly shaped.

The advantage of this construction is that the threads never become either cut or jammed by the hammering of the bit on the

drilled surface and although the connection is strong and secure it is always possible to detach the parts from each other without difficulty.

Although the sectional drill rod coupling is here shown in connection with a hollow rod adapted for pump drills of the reciprocating plunger type, the coupling may be used for solid drill rods or with rods for use with drills of the hammer type, and it is to be understood that while the present showing and description discloses only one specified modification of the invention, other forms and modifications are included in the spirit and scope of the invention as expressed in the claims.

What I claim is:

1. In a pump drill, the combination of a bit having a longitudinal bore opening into a valve chamber of larger diameter, a valve, to close said bore, a shoulder at the upper end of said chamber, a retaining washer on said shoulder, a cylindrical drill rod receiving sleeve extending upwardly from said washer having a non-threaded portion immediately adjacent to said washer and a threaded portion of larger diameter above said non-threaded portion, together with a hollow drill rod having a threaded portion

fitting said sleeve threaded portion, and a non-threaded extremity fitting said sleeve non-threaded portion.

2. In a pump drill, the combination of a bit having a longitudinal bore opening into a valve chamber, a valve controlling said bore, a shoulder at the upper end of said chamber, retaining means on said shoulder, a cylindrical drill rod receiving sleeve extending upwardly from said retaining means having a threaded portion, together with a hollow drill rod having a threaded portion fitting said sleeve threaded portion.

3. In a pump drill, the combination of a bit having a bore opening into a valve chest, a valve in said chest, to close said bore, a drill rod receiving sleeve extending upwardly from said valve chest, a valve retaining washer in the lower end of said sleeve, and a drill rod threaded into said sleeve, said drill rod retaining said washer and valve in position.

In testimony whereof, I have hereunto set my hand.

R. S. CARTER.

Witnesses:

FRED S. OVERTON,
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