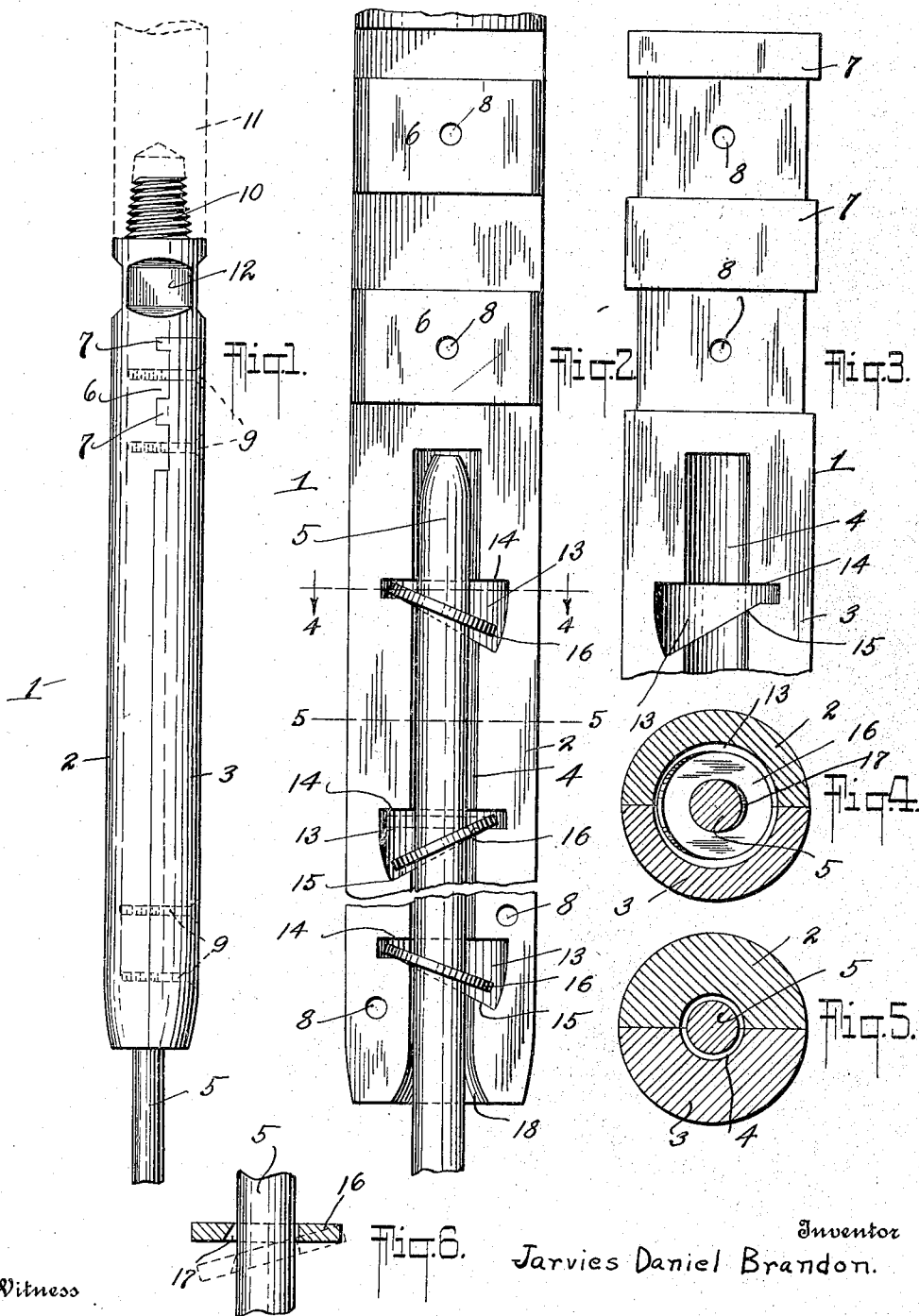


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 DRILL RETRIEVER.
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DRILL-RETRIEVER.

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To all whom it may concern:

Be it known that I, JARVIES DANIEL BRANDON, a citizen of the United States, residing at Lancaster, in the county of Fairfield and State of Ohio, have invented certain new and useful Improvements in Drill-Retrievers, of which the following is a specification.

This invention relates to an improved drill retrieving tool, and has for its primary object to provide a substantial, reliable and effective tool for the purpose of facilitating the removal of a drill from a boring or well shaft in a substantially automatic and positive manner.

In the art of well drilling, it frequently occurs that a drill will become accidentally released from engagement with its actuating and supporting cable, in which event the drill drops to the bottom of the well and if the latter is of a relatively considerable depth, it is a matter of considerable inconvenience and difficulty to successfully and easily retrieve the lost drill, inasmuch as the latter is frequently embedded in the bottom of the well or shaft and its elevation is accordingly rendered extremely difficult.

The present invention provides a tool which is of such construction as to be capable of being lowered into a well or shaft, and embodies features of construction which enables the tool to obtain a positive grip upon the shank of a drill situated in the bottom of the shaft, whereby upon the elevation of the tool, said drill will be automatically and firmly locked thereto and its elevation quickly and easily performed.

Another object of the invention resides in a tool or drill retriever of the aforesaid character which consists essentially of a body portion in which is provided an elongated bore capable of receiving the shank end of a drill, said bore being intersected by a plurality of transverse sockets which are provided with relatively angular walls, and ring members are loosely positioned within said sockets so that the openings in said ring members will be situated substantially in registration with said bore, this arrangement of parts being such that a drill may be readily positioned within said bore and the openings of said ring members upon downward movement on part of the tool, however, upon the elevation of the tool said ring members will be angu-

larly disposed by engaging with the inclined walls of said sockets, thereby causing the walls of said ring openings to frictionally engage with said drill in such manner that the latter will be securely, automatically and positively held within the tool during the elevation of the latter.

A further object of the invention resides in positioning said ring members so that the latter will assume angular positions with respect to each other, thereby causing said drill to be centered within the body of the retriever and to relieve the latter of extensive stress upon any one part thereof.

Other objects of the invention reside in constructing the body of said retriever in two parts so that the internal members of the tool may be rendered readily accessible and their operative positions securely maintained, in providing means for readily connecting the tool to raising and lowering mechanism, in securely connecting the two parts of the tool body together, and in forming said ring members so that the walls defining the openings thereof may be caused to exert a maximum gripping action upon an associated drill.

With these and other objects in view, as will appear as the description proceeds, the invention accordingly consists in the novel features of construction, combination of elements and arrangements of parts, hereinafter to be fully described and to have the scope thereof pointed out in the appended claims.

In the accompanying drawing, forming a part of this specification, and in which similar characters of reference denote like and corresponding parts:

Figure 1 is a side elevation of the improved drill retrieving tool comprising the present invention.

Fig. 2 is an enlarged elevation of half of the tool, the other half being removed for the purpose of more clearly disclosing the interior construction.

Fig. 3 is a similar view of the opposite or removed half.

Fig. 4 is a sectional view taken along the plane disclosed by the line 4—4 of Fig. 2, both halves of the tool body, however, being shown in assembled relationship.

Fig. 5 is a similar view taken along the plane disclosed by the line 5—5 of Fig. 2, and,

Fig. 6 is a fragmentary sectional view

taken through one of the ring or washer members.

Referring more particularly to the details of construction of the preferred form of the improved drill retrieving tool comprising the present invention, the numeral 1 designates the tool in its entirety. As shown, this tool consists of a body portion of elongated cylindrical formation which may be formed from any suitable material. Preferably, the body of said tool is formed to include a pair of separable sections, which are indicated by the numerals 2 and 3. Each of the sections is provided with an elongated semi-circular groove 4, whereby when the sections are assembled, said grooves will register to provide a longitudinally extending bore within the tube, which bore is adapted to receive the shank end 5 of a drill or other similar device which a tool 1 is adapted to retrieve.

To hold the sections together in a positive and rigid manner, the main section 2 is provided with a plurality of offset ribs 6, between which grooves are provided for the reception of tongues 7 provided upon the auxiliary section 3. By this construction it will be obvious that relative longitudinal movement between the sections will be effectively precluded. Further, the upper and lower ends of the sections 2 and 3 are provided with registering transversely extending openings 8 which are adapted to receive holding screws or the like 9, which act to retain said sections in their assembled condition and preserve the holding arrangement of the rib and tongue construction 6 and 7. The upper end of the tool is provided with a reduced threaded stud 10, which may be threaded into a socket formed in a cable carrying member 11, the latter being indicated by dotted lines in Fig. 1. By attaching the tool to the member 11, the operation of the former may be conveniently controlled, as it will be apparent that the tool may be raised or lowered within a well or shaft. Wrench receiving surfaces 12 are also provided upon the upper end of the tool for the purpose of facilitating the insertion of the stud 10 into the socket of the holding member.

Referring now to the more essential features of the invention, it will be observed upon reference to Figs. 2 and 3, that each of the sections 2 and 3 is provided with a plurality of ring receiving sockets 13, which are adapted to register when the sections are in their assembled form. These sockets are adapted to transversely intersect the drill receiving bore and the axis of said bore is common to the sockets 13. It will be observed that said sockets are formed with flat horizontal walls 14 which are disposed on the plane at right angles to the axis of the drill bore, and that the opposite walls of said sockets are relatively inclined as shown at

15. These sockets are adapted to receive a plurality of ring or washer members 16, which are provided with central drill receiving openings 17, said openings being disposed to align or register with the drill bore.

In operation, a drill which becomes broken or disengaged from its actuating cable and falls to the bottom of a well or shaft, may be retrieved by the lowering of the tool 1 into said shaft. It will be observed that the lower end of the bore is widened or flared as at 18 in order that the shank end 5 of the drill will be caused to pass into said bore upon the lowering of the tool 1. It has been found that by so flaring the open end of the bore, very little difficulty is encountered in the positioning of the drill within said bore, and this proper positioning of the drill may be determined by the arresting of the downward movement on the part of the tool 1. The openings 17 are also of such diameter as to permit the drill 5 to readily pass therethrough, and furthermore upon the lowering of the tool 1, said washers will be forced against the flat walls 14 of the sockets 13, thereby permitting the drill to pass therethrough without encountering undue friction. Now, upon the raising of the tool 1 so as to elevate the drill 5, it will be manifest that said drill will tend to escape or pass out of the tool bore. This action, however, is prevented by the washers or ring members 16, which assume the relatively angular positions shown on account of the inclined walls 15 of the sockets 13. This inclination of the washers causes the opening walls of the latter to frictionally engage with the sides of the drill 5 so that the release of the latter from engagement with the tool is positively prevented during the upward movement of said tool. The arrangement of the washers is such that their gripping pressure will increase in direct ratio to the weight or resistance offered by the drill during elevation of the tool 1. It will thus be manifest that the mere lowering of the tool 1 will cause the drill 5 to enter the reception bore formed in the tool, and that said drill will be firmly locked in position for upward movement by the peculiar arrangement and construction of the members 16. Furthermore, by causing the washer members to assume the relatively inclined positions with respect to one another, the same will exercise a uniform holding pressure upon the shank end of the drill, so that the latter will be automatically centered within the body of the tool and prevented from exercising undue pressure upon any single part of said tool. By forming the tool body in a plurality of sections, convenience is to be had in operatively positioning the washer members and by the rib and tongue construction, security is obtained in assembling of the sections. The

tool is substantially automatic in operation and therefore requires but a minimum amount of manual attention in effecting its functions.

5 What is claimed is:

1. A drill retriever comprising a body portion having a longitudinally extending open ended bore formed therein, said bore being longitudinally intersected by a plurality of ring sockets, and a plurality of angularly disposed clamping rings loosely positioned in said sockets and situated substantially in alinement with said bore, whereby said rings will be enabled to frictionally grip and retain the shank of a tool positioned within said bore.

2. A drill retriever comprising a body portion having a longitudinally extending open ended bore formed therein, said bore being longitudinally intersected by a plurality of ring sockets, each of said sockets comprising a substantially flat upper wall and an angularly disposed lower wall, and a plurality of relatively angularly disposed clamping rings loosely positioned within

said sockets and situated substantially in alinement with said bore, whereby when a drill is forced into said bore, said rings will be pressed toward the upper flat walls of said sockets, and upon upward movement on the part of said retriever, said rings will lie contiguous to the lower inclined walls, thereby obtaining a frictional grip upon said drill.

3. A drill retriever comprising a body portion formed to include a plurality of separable complementary sections, said sections being provided with registering grooves constituting a drill receiving bore, said bore being longitudinally intersected by a plurality of registering ring sockets formed in said sections, and a plurality of relatively angularly disposed clamping rings loosely positioned within said sockets and operative upon the raising of said retriever to frictionally grip a drill positioned within said bore.

In testimony whereof I affix my signature.

JARVIES DANIEL BRANDON.