April 26, 1932. B. L. PETERSON 1,855,363

DRILLING TOOL JOINT

Filed May 24, 1930

Fig. 1.

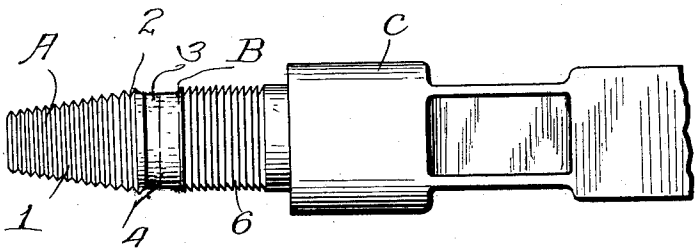


Fig. 2.

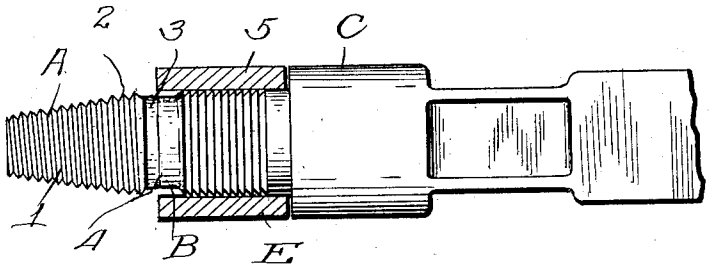
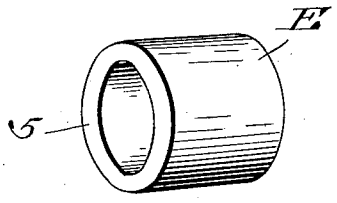


Fig. 3.



Inventor.

Bert L. Peterson.

By Hiram Swartz Atty.

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UNITED STATES PATENT OFFICE

BERT L. PETERSON, OF WOOSTER, OHIO

DRILLING TOOL JOINT

Application filed May 24, 1930. Serial No. 455,983.

My invention relates to improvements in tool joints for use in drilling oil, gas, and artesian wells, and particularly, to improved means for recovering a well drilling tool, the stem of which has been broken off in the well and separated from the rope socket and drill joint.

Practical experience in the well drilling field has shown that the heavy stem of a cable drill tool is liable to break off at the bottom of the tapered thread adjacent to the drill stem causing delays in drilling and serious fishing jobs due to such breakage and the inability of tools to grip the broken off end of the tapered threaded joint, such as are in common use, and thereby lift the broken off stem and drill bit out of the well casing. The principal object of my invention is to provide a remedy for such conditions by constructing a cable drill tool joint in such manner as to be readily accessible in case of breakage, and to prevent breakage at the thread of the tapered joint, as heretofore, and also to determine the extent of stress, if any, on the drill coupling before the tool is lowered into the well. I accomplish such objects by the construction hereinafter set forth and stated in the appended claims.

My invention is illustrated by the accompanying drawings in which similar letters and figures of reference indicate like parts. Referring thereto, Fig. 1 is a side view of the upper end of an ordinary drill stem, such as are in common use, disconnected from the ordinary rope socket joint; Fig. 2 is a like view, showing, in section, the drill collar in position on the joint; and Fig. 3 is a perspective view of the collar detached from the pin. In the drawings, A is the taper thread of the joint, having helical threads 1 on its surface, and 2 indicates a thread of largest diameter therein; B is a pin which projects from the stem C and is roughened by a series of beads 6, the object of which is to better engage a fishing tool and prevent such tool from losing its grip thereon when the drill collar E is withdrawn from the pin B. The pin is further provided with a circumferential groove 3, which is cut enough deeper than the terminal thread 2 to compel breakage at the said groove, in case of breakage of the joint, instead of at said thread 2, as has heretofore frequently occurred, and so as to have such breakage within and under the collar E, instead of beyond its end, so as to prevent the impact of fishing tools upon the broken off end from riveting the latter over the end 5 of the collar, and thus preventing its withdrawal from the pin B. An additional feature relating to said pin and the outer terminus of the collar is the impression of a line 4 partly or entirely encircling the pin at a point to mark the exact terminus of the collar in normal condition which is intermediate the edges of the groove 3 and indicate when the latter has been compressed or the pin stretched outwardly by the severe shocks of usage.

It is apparent that in case of breakage of the joint at the groove 2 within the collar B, the broken off member therein cannot be riveted so as to prevent removal of the collar, and the gage mark 4 suffices to warn against danger of breakage.

I am aware it is not new to construct a removable collar and a tapered thread in advance of it on a cable drill tool, and such I do not broadly claim; but having fully described my invention in relation thereto, what I claim as new and desire to secure by Letters Patent is:—

1. In a drilling tool joint, in combination with a drill stem, a pin projecting therefrom terminating with a tapered thread, and a collar removably mounted on the pin, and a circumferential groove cut in said pin terminating beyond the outer terminus of said collar deeper than the inner thread of the taper joint, susbtantially as set forth.

2. In a device of the character described,

the combination with a drill stem, of a pin projecting therefrom terminating with a tapered thread, said pin having a circumferential groove cut therein deeper than the adjacent thread of the taper joint, and a removable collar extending part way over said groove.

3. In a well drilling tool, a drill joint, comprising in combination, a drill stem, a pin projected from said stem terminating with a tapered thread, a circumferential groove cut in said pin deeper than the adjacent thread, and a gauge mark in said groove, and a removable collar terminating at said mark, substantially as set forth.

BERT L. PETERSON.