Sept. 9, 1924. 1,507,991

C. R. EDWARDS

TOOL JOINT

Filed Oct. 14, 1919

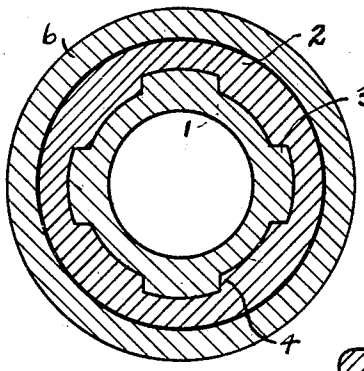


Fig. 2.

Fig. 1.

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TOOL JOINT.

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To all whom it may concern:

Be it known that I, CHARLES R. EDWARDS, citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Tool Joints, of which the following is a specification.

This invention relates to new and useful improvements in a tool joint.

One object of the invention is to provide a device of the character described, which has been especially designed for use in connecting together the adjacent ends of the sections of a drill stem. In drilling wells by the well known rotary process, a drill stem is employed formed of sections and to the lower end of which the drill bit is attached. In drilling the bit becomes worn and the stem must be withdrawn from the bore, for the purpose of substituting a new bit and in withdrawing the stem, the stem must be broken up, usually at every third joint, so that it can be easily handled and when the new bit is substituted for the old one, the stem must be again made up and let down into the bore. The tool joint herein described has been designed so that the stem may be easily broken up as it is being withdrawn from the bore and easily made up when it is being let down into the bore. The joint may also be used to connect the grief stem or the drill bit to the drill stem.

Another object of the invention is to provide a tool joint of the character described so constructed that the stem may be readily held suspended in the bore by elevators while it is being made up, or broken up.

With the above and other objects in view, the invention has particular relation to certain novel features of construction, arrangement of parts, and use an example of which is given in this specification and illustrated in the accompanying drawing wherein: Figure 1 shows a vertical sectional view of the device and Figure 2 shows a sectional view taken on the line 2—2 of Figure 1.

Referring now, more particularly to the drawing, the numerals 1 and 2, respectively, refer to the adjacent sections of the drill stem, the lower end of the section 1 being shown reduced and somewhat thickened and the upper end of section 2 being shown upset, or formed with thickened walls and externally threaded. As shown in Figure 1, the adjacent ends of said sections are formed with projecting interlocking shoulders 3 and 4, said respective shoulders being spaced apart, and the shoulders 3 arranged in staggered relation to the shoulders 4 and fitting between them so as to form, in effect, a clutch. These intermeshing shoulders may be of various forms, the preferred form being shown. Screwed upon the reduced lower end of the section 1 is a ring like nut 5, which is provided to hold the connecting coupling 6 against detachment from said section. This coupling is sleeve like in form and its upper end has the inwardly extending annular flange 7 which fits closely, wherein the reduced lower end of the section 1. This coupling is first fitted over said reduced end and the nut 5, then screwed in place. The lower end of the coupling 6 is internally threaded and when it is desired to couple together the two sections of the string, said coupling 6 is first secured upon the section 1 as explained and is then threaded on to the upper end of the section 2 and screwed up tight so as to form a tight fitting joint. The coupling 6 sustains the weight of the stem, but as the stem is rotated in the well known manner, in the process of drilling, the interlocking shoulders 3 and 4 will sustain the torsional strain.

Underneath the coupling 6 there is an annular shoulder 8, carried by the section 2, and while the stem is being made up, or broken up as above explained, this shoulder rests upon the upper end of the elevators 9 of well known construction, which in turn are sustained by the rotary table of the well known rotary, one of the chief features of this form of tool joint residing in the provision of said shoulder to engage with and rest upon the elevators and to sustain the weight of the stem down the bore.

What I claim is:

A tool joint, including two pipe sections whose ends abut, one of said abutting ends being reduced and thickened and the other abutting end being upset and formed with thickened walls which are externally threaded, interlocking shoulders carried by said abutting ends, said shoulders being spaced apart and arranged in staggered relation, the shoulders of one end fitting between the shoulders of the other end, a ring-like nut threaded onto said reduced end, a coupling fitted around said reduced end, said coupling being sleeve-like in form and having one end formed into an inwardly extending annular flange which engages

against said nut and having its other end internally threaded and thus adapted to be screwed onto the outwardly threaded upset end of the other section and a set screw by means of which said ringlike nut is locked against unscrewing.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES R. EDWARDS.

Witnesses:
E. V. HARDWAY,
ALBERTA ALLEN.