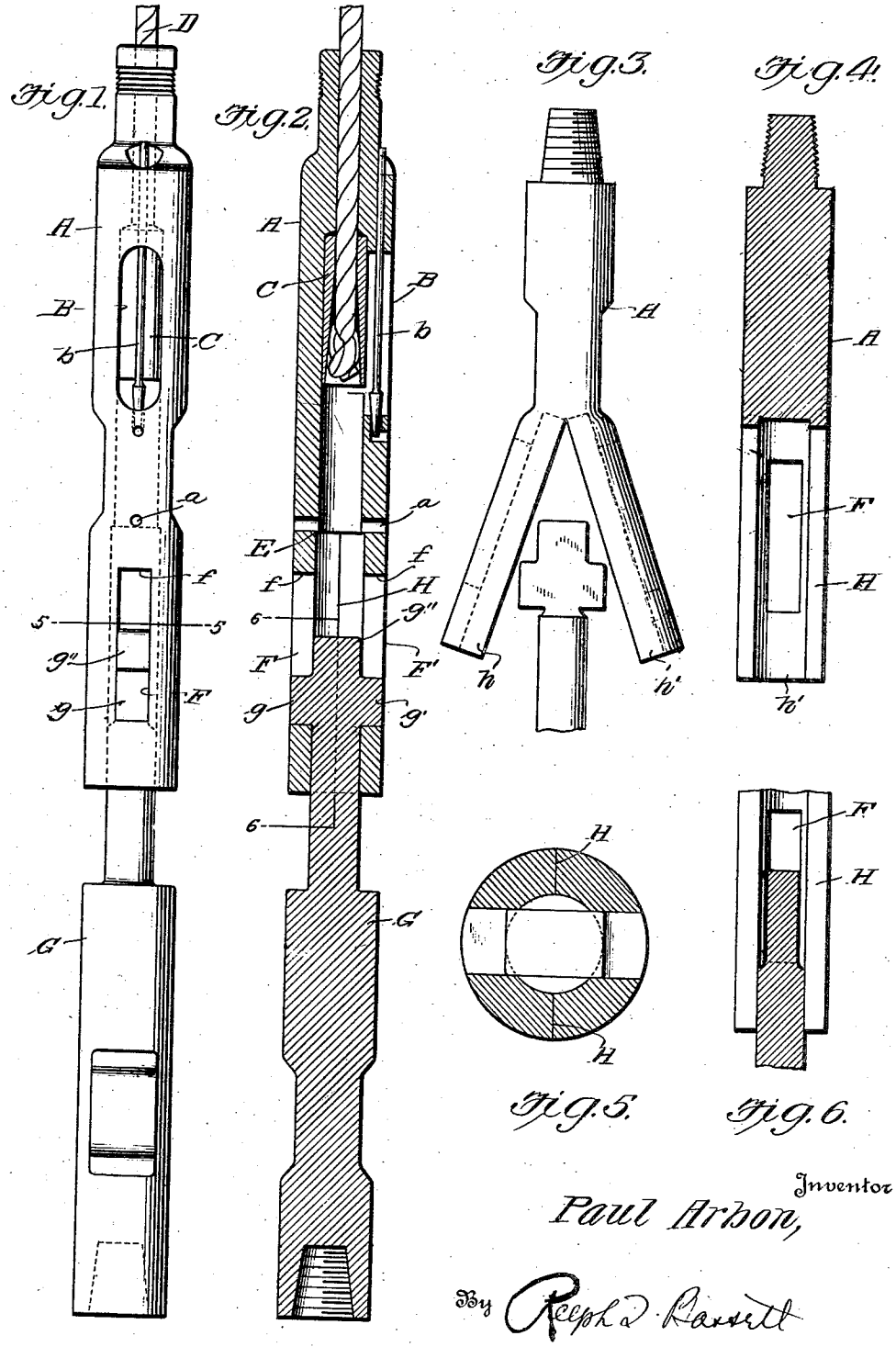
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P. ARBON

DRILLING JAR

Filed Jan. 2, 1923



Inventor

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Patented Apr. 28, 1925. 1,535,083

UNITED STATES PATENT OFFICE.

PAUL ARBON, OF TULSA, OKLAHOMA.

DRILLING JAR.

Application filed January 2, 1923. Serial No. 610,263.

To all whom it may concern:

Be it known that PAUL ARBON, a subject of the King of Great Britain, residing at Tulsa, in the county of Tulsa and State of Oklahoma, has invented certain new and useful Improvements in Drilling Jars, of which the following is a specification.

This invention contemplates the construction of a device of the class mentioned having the advantages of both a swivel socket and a jar.

In drilling oil wells through certain formations such as heavy gumbo and sticky clay the tools have a tendency to stick and dive causing an irregular and erratic motion of the walking beam. The jar of the conventional socket type is insufficient to give an upward flow which will free the tools in such formations and such efforts as have been made to procure the necessary jarring action have resulted in constructions unsatisfactory from the standpoint of strength and durability. For instance in one known construction there is no shoulder or if a sufficient shoulder is put in the lower member, it is necessary to weaken the main stem or the outside body. By going through the side of the body it is possible for me to keep my main stem of proper thickness and at the same time have plenty of strength through the outside body of the socket. Other well known jars are subject to the same complaints and while slight changes may be necessary to overcome same, nevertheless, such changes indicate the difference between success and failure in a drilling operation which is an expensive undertaking. On the other hand, in the construction of a jar the necessity of providing a construction which will permit a "rope action" is essential. In other words, at the present time no one jar has all the essential features to answer the requirements of certain drilling operations.

The present device contains a construction in compliance to the essential requirements of a drilling operation under all conditions as will more clearly appear by reference to the accompanying drawings forming a part of this specification and wherein like numerals of reference designate corresponding parts throughout the several views, in which:—

Figure 1 is a side elevation of one form of the assembled device,

Figure 2 is a vertical sectional view of Figure 1,

Figure 3 shows a modified form of the present invention showing the manner of inserting the lower section,

Figure 4 is a vertical sectional view of Figure 3 with the lower section removed,

Figure 5 is a sectional view on line 5—5 of Figure 1 and

Figure 6 is a sectional view on line 6—6 of Figure 2.

Referring more to the details of construction attention is directed to the fact that the upper portion of that type of the present invention shown in Figures 1, 2, 5 and 6 is similar to the Burns device and in so far as the immediate construction is concerned form no part of the present invention. For the sake of clearly disclosing the present invention, however, the construction will be seen to include the body A formed with the lateral opening B through which the swivel head C is inserted, the latter carrying the cable D. The guard pin *b* extends parallel to the axis of the body and prevents the escape of the swivel. Lower transverse perforations *a* are arranged for the reception of the conventional pin to prevent the escape of the swivel through the longitudinal passage.

The body A is elongated for the application of the present invention and the lower portion of this body has extending therethrough a continuation of the longitudinal passage formed in the upper portion for the reception of the swivel, this passage, however, is slightly enlarged from the lower walls of the transverse pin perforations, downwardly as indicated by reference character E. Two oppositely arranged lateral passages extend through the walls at F and F′ for a considerable portion of their length for the reception of the lateral extension on the lower section as will more clearly appear.

The lower member G includes the body and the upper annular shank. This upper shank includes the flattened head portion formed by the lateral extensions *g* and *g′* and the vertical extension *g″*, the entire head being in the form of a cross. The arms or extensions *g*, *g′* are constructed to fit and travel within the passages F and F′ extending outwardly and terminating flush with the outer face of the body portion A. The

upper extension corresponds in dimensions to the enlarged portion of the londitudinal passage to permit the movement of the same within the passage during the upper movement of the head, it being apparent that the lateral extensions g and g' at the end of their upward stroke engage the walls f and f'.

The upper annular shank is of sufficient diameter to permit proper clearance during movement within the longitudinal passage as shown more clearly in Figure 6, this figure also showing more clearly the arrangement of the head within the passage.

In Figures 3 and 4 the invention is shown without the swivel socket as there are cases where this simple form might be desired. Figure 3 also shows clearly the method of constructing and assembling the two sections of the jar. In this figure and the same method applies to that form shown in Figures 1 and 2, the lower end of the body is cut for a distance equal to the length of the enlarged longitudinal passage or for such a distance as may be necessary to procure the proper expansion to permit the introduction of the head of the lower section. This cut indicated by reference character H is made by any suitable means such as by a saw and the leg sections h and h' are expanded until the head can be inserted. The legs h and h' can then be brought together by a hammer or other suitable mechanism and electrically welded.

Particular attention is directed to the assembling of the elements and the relation of the parts whereby the strong, durable and compact construction is obtained.

What I claim as new and useful and desire to secure by Letters Patent, is:

1. A jar comprising an uncut solid body portion free from joints and having an extension provided at opposite sides with welded joints extending throughout the length of the extension, said extension including two sections integral with the body portion and connected together by said welded joints, each of said sections being provided with an internal longitudinally extending groove and a slot extending through its wall from its outer surface to the groove, the slots having their outer ends open at all times to permit dirt and the like to pass out of the slots, a stem of slightly less diameter than the body arranged in said grooves and having a flattened cross-shaped head, the arms of which are slidably mounted in said slots, the upper ends of said grooves being spaced from the upper ends of the slots a distance equal to the length of the head above the arms to permit the arms to strike the upper ends of the slots simultaneously with the impact of the head against the upper ends of the grooves.

2. A jar as claimed in claim 1 in which the stem is provided with an annular shoulder arranged below the extension of the body portion and adapted to engage the lower end of said extension during the operation of the jar.

3. A jar as claimed in claim 1 in which the body portion is provided with a bore extending from its upper end to said grooves, a cable extending through the upper end of the body portion into said bore and having its lower end swiveled and axially movable within the bore, and means in the body portion above the grooves to permit a cross-pin to be passed across the bore for preventing the swivel from falling downwardly into said grooves.

4. A jar comprising a tubular body portion free of joints and having an extension at its lower end provided at opposite sides with welded joints extending throughout the length of the extension, said extension including two sections integral with the body portion and connected together by welded joints, each of said sections being provided with an internal longitudinally extending groove and a slot extending through its wall from its outer surface to the groove, the grooves forming a passageway coaxial with the bore of the body portion, a cable rotatable and axially movable in the upper end of the bore of the body portion and provided at its lower end with a swivel, said body portion having ports extending through the same to receive a pin for limiting the downward movement of the swivel, said ports being arranged above the grooves, and a stem of slightly less diameter than the body portion arranged in said grooves and having a flattened cross-shaped head, the arms of which are slidably mounted in said slots, the stem having a body portion and an annular shoulder arranged between the stem and the body portion to receive impacts from the lower end of said extension.

In testimony whereof I affix my signature.

PAUL ARBON.