Nov. 4, 1924. 1,514,585

C. R. EDWARDS

TESTING DEVICE FOR OIL WELLS

Filed Jan. 17, 1921

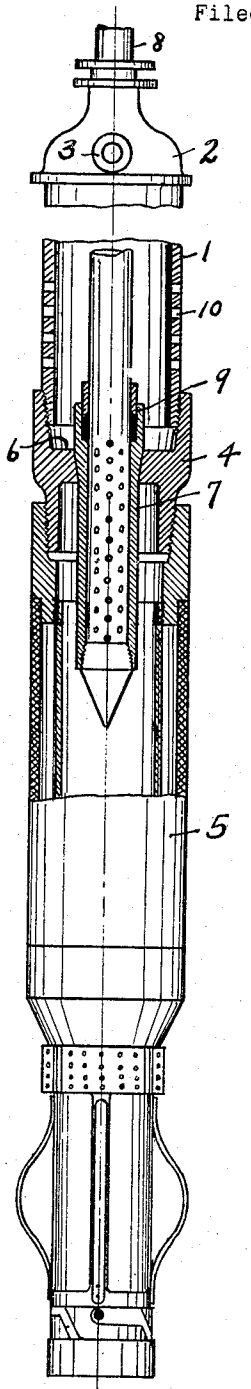


Fig. 1.

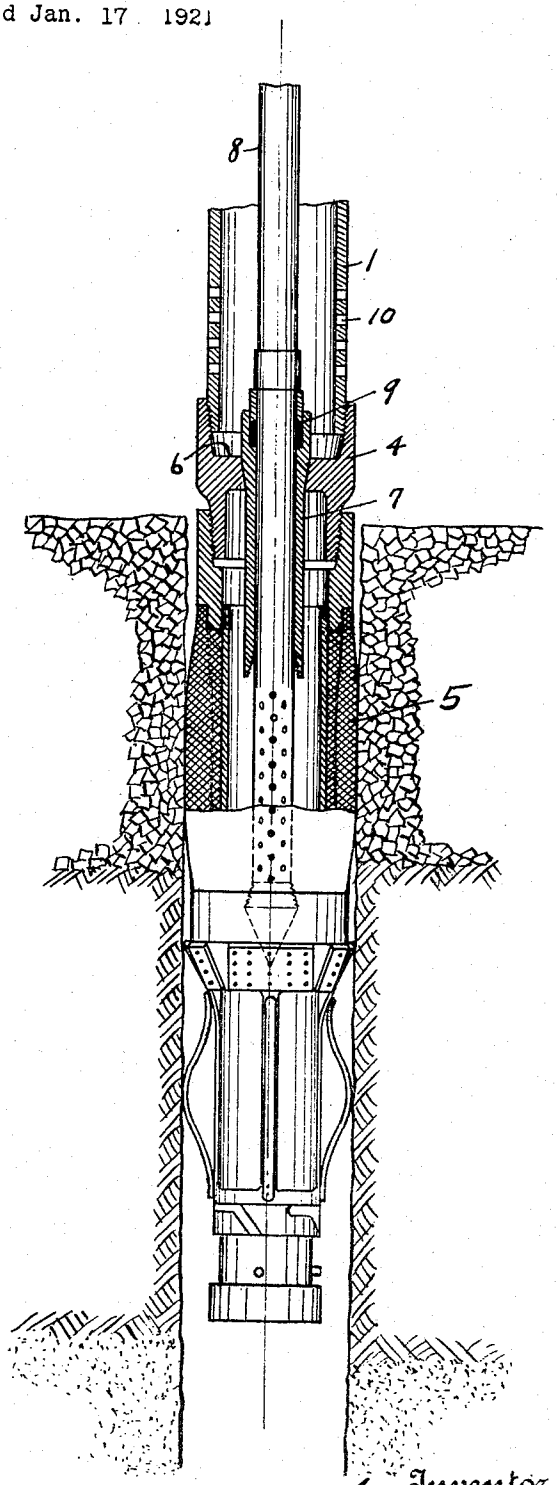


Fig. 2.

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UNITED STATES PATENT OFFICE.

CHARLES R. EDWARDS, OF HOUSTON, TEXAS.

TESTING DEVICE FOR OIL WELLS.

Application filed January 17, 1921. Serial No. 437,972.

To all whom it may concern:

Be it known that I, CHARLES R. EDWARDS, a 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 a Testing Device for Oil Wells, of which the following is a specification.

This invention relates to new and useful improvements in a testing device for oil wells.

One object of the invention is to provide a device of the character described which is specially adapted for testing the strata, being pierced, in drilling oil, gas or other wells, for the purpose of determining the presence or absence of oil, gas or other fluids.

With the above and other objects in view the invention has particular relation to certain novel features of construction, operation and arrangement of parts, an example of which is given in this specification and illustrated in the accompanying drawings, wherein:—

Figure 1 is a side elevation of the device, and

Figure 2 is a side elevation, partially in section, showing the well packer set.

Referring now more particularly to the drawings, the numeral 1 refers to a pipe, usually the ordinary drill stem which is let down into the bore as drilling progresses. The upper end of the pipe carries the casing head 2, having the hose connection 3, through which water or slush is forced into the interior of the pipe by means of the ordinary slush pump commonly used for the purpose.

Threaded onto the lower end of the pipe there is a nipple 4 to which the packer 5 is attached. This packer is provided to separate any stratum that may be encountered from any other stratum to be tested. This packer is of the usual construction, well known to those familiar with the art of drilling wells.

The nipple 4 has a seat 6 and depending therefrom there is a surrounding sleeve 7 whose lower end has internal threads.

A stem 8 is fitted through the casing head 2 and the sleeve 7 fits over the lower end of this stem and is threaded thereon. The lower end of the stem is closed and preferably pointed and the section thereof within the sleeve 7 is perforated. The upper end of the sleeve is formed with a stuffing box 9 through which the stem fits and which forms a water tight joint therewith.

In drilling, water, laden with mud, is forced under pressure of the pump, down into the bore to carry away the cuttings from the drill. This operation makes it difficult to test the strata for oil with the ordinary drilling equipment. With my apparatus, when it is desired to make a test, the drill pipe with the nipple 4 and the perforated lower end attached to the packer is lowered to near the bottom of the well; then the test stem 8, together with the sleeve 7, is lowered to a point above the seat 6 and water is then pumped down through the casing head 2 to wash out the bottom of the well by forcing water down the inside of the pipe 1 past the test stem 8 and the seat 6, to below the packer, thoroughly washing the stratum to be tested. The packer is then raised, tripped and set. The test stem is seated on the seat 6 and the slush pump started pumping in mud down the pipe 1, out through its perforated lower end and up so as to maintain the wall. After a time so as to let the water settle away and oil, gas or other fluid to accumulate, the test stem is screwed to the right, thus unscrewing it from the sleeve 7 and the test stem 8 is lowered. If there be any pressure of oil, gas or other fluid it will now rush through the perforated section of the stem 8, and up the stem and if there be sufficient pressure of the oil, gas or other fluid from the stratum below the packer, it will push a stream of the same from the top of said stem. By placing an ordinary working barrel at any suitable point in the test stem 8, if the pressure of the oil, or other fluid should not be great, the pump in the working barrel can be started and the fluid forced out through the stem 8, thus completely testing the stratum under investigation, both as to quality and quantity of flow of the fluid, and if oil or gas under enormous pressure is encountered, the superpressure may be relieved before attempting to set regular casing.

To withdraw the apparatus the packer is first released before stopping the slush pump and the test stem is then withdrawn before withdrawing the drill pipe and packer.

What I claim is:—

1. The combination with a packer adapt-

ed to be set in a well bore, of a stem provided to be inserted through said packer and adapted to communicate with the bore beneath said packer and permit fluid to be forced from the stratum, below said packer.

2. The combination with a packer adapted to be set in a well bore, of a tubular stem fitted through said packer, and normally blocking the same against the passage of fluid therethrough, the lower end of the stem being provided with an inlet through which the stem communicates with the bore beneath the packer when the stem is lowered through said packer.

3. The combination with a casing whose lower end is perforated, of a packer attached to the lower end thereof, and adapted to be set in a well bore, a stem fitted through the packer and at all times closing the packer against the flow of fluid from the casing downwardly therethrough, said stem, while in one position, excluding the flow of fluid therethrough from the bore beneath the packing and while in another position permitting fluid to flow from beneath the packer upwardly therethrough.

4. The combination with a casing whose lower end is perforated, of a packer attached to the lower end thereof, a sleeve within the packer, a stem within the casing whose lower end is fitted through the sleeve, the lower end of the stem being closed and the section thereof within the packer being perforated.

5. The combination with a packer adapted to be set in a well bore and having an internal fluid passageway, of a stem adapted to be inserted into said passageway to block the same, said stem being adapted to be lowered through the packer, and when in lowered position communicating with the bore beneath the packer and adapted to permit the forcing of fluid through said stem from the strata, below said packer.

6. The combination with a packer adapted to be set in a well bore, of a tubular stem fitted through said packer and normally blocking the same against the passage of fluid therethrough, the lower end of said stem being provided with an inlet which is closed when the stem is in said blocking position, said stem being capable of being lowered beneath the packer and when in lowered position to communicate through said inlet with the bore beneath the packer.

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

CHARLES R. EDWARDS.

Witnesses:
R. M. Smith,
Wm. A. Cathey.

DISCLAIMER

1,514,585.—*Charles R. Edwards*, Houston, Tex. Testing Device for Oil Wells. Patent dated November 4, 1924. Disclaimer filed July 3, 1930, by the patentee.

Hereby enters this disclaimer to so much of claim 1 of said patent as is in excess of the following:

In an apparatus for testing the productivity of a stratum exposed in a well while containing drilling fluid which might substantially prevent a flow from said stratum, the combination with a packer adapted to be set in a well bore, of a stem provided to be inserted through said packer and adapted to communicate with the bore beneath said packer to relieve pressure of said fluid against said exposed stratum and permit fluid to be forced from the stratum, below said packer.

Your petitioner also hereby enters this disclaimer to so much of claim 5 of said patent as is in excess of the following:

In an apparatus for testing the productivity of a stratum exposed in a well while containing drilling fluid which might substantially prevent a flow from said stratum, the combination with a packer adapted to be set in a well bore and having an internal fluid passageway, of a stem adapted to be inserted into said passageway to block the same, said stem being adapted to be lowered through the packer, and when in lowered position communicating with the bore beneath the packer and adapted to permit the forcing of fluid through said stem from the strata, below said packer.

Your petitioner also hereby enters this disclaimer to so much of claim 6 of said patent as is in excess of the following:

In an apparatus for testing the productivity of a stratum exposed in a well while containing drilling fluid which might substantially prevent a flow from said stratum, the combination with a packer adapted to be set in a well bore, of a tubular stem fitted through said packer and normally blocking the same against the passage of fluid therethrough, the lower end of said stem being provided with an inlet which is closed when the stem is in said blocking position, said stem being capable of being lowered beneath the packer and when in lowered position to communicate through said inlet with the bore beneath the packer.

[*Official Gazette July 22, 1930*]

DISCLAIMER

1,514,585.—*Charles R. Edwards*, Houston, Tex. TESTING DEVICE FOR OIL WELLS. Patent dated November 4, 1924. Disclaimer filed March 8, 1932, by the patentee.

Hereby enters this disclaimer as follows:

He, said patentee, disclaims any interpretation of any of the claims, 1 to 6, inclusive, in the patent which does not restrict said claims to a device that is capable of closing the test stem to the entrance of fluid from the bore beneath the packer by motion of the stem while the packer is set.

[*Official Gazette April 5, 1932.*]