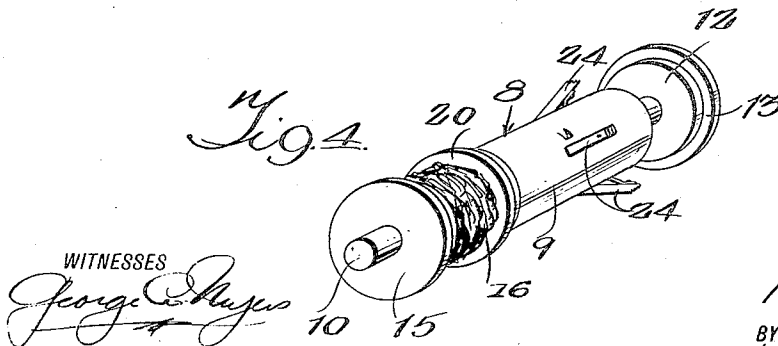
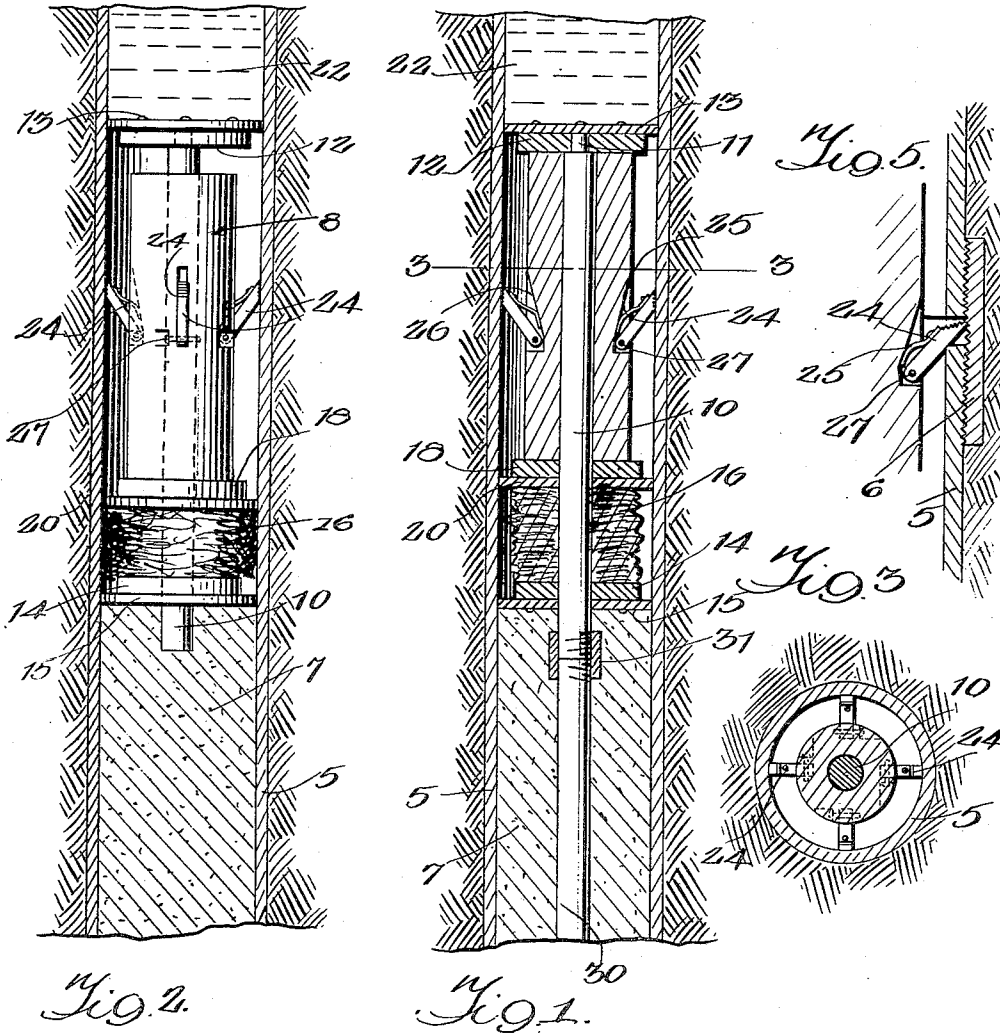


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M. E. INSKEEP.
PACKER PLUG.
FILED MAY 31, 1921.



WITNESSES

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MONT ELSWORTH INSKEEP, OF WILSON, OKLAHOMA.

PACKER PLUG.

Application filed May 31, 1921. Serial No. 473,613.

To all whom it may concern:

Be it known that I, MONT E. INSKEEP, a citizen of the United States, and a resident of Wilson, in the county of Carter and State of Oklahoma, have invented certain new and useful Improvements in Packer Plugs, of which the following is a specification.

This invention relates to packer plugs especially adapted for use in oil and other wells.

An important object of this invention is to provide a packing plug having novel means whereby the same may be anchored in an oil well casing after a quantity of cement has been forced into the casing to close the cavities adjacent the lower end of the same, whereby oil is prevented from flowing upwardly between the wall of the well and the wall of the casing.

The invention forming the subject matter of this application also aims to provide novel means whereby the improved packer plug may be accurately anchored a predetermined distance above the lower end of the well.

Another object is to provide a packing plug having novel means whereby pressure of the oil or gas is utilized as a means for forcing the packing plug into liquid tight engagement with the wall of the casing.

A further object is to provide a packing plug for oil wells which is efficient, simple in use and cheap to manufacture.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawing forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a detail sectional view through the well, the view illustrating the improved packer plug prior to releasing the downward pressure on the same.

Figure 2 is a side elevation of the improved packing plug in the casing, the packing plug is shown anchored to the wall of the casing.

Figure 3 is a horizontal sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a perspective of the improved packing plug detached.

Figure 5 is a detail sectional view through the casing, the view illustrating a slightly

modified means for anchoring the plug within the casing.

In the drawing, wherein for the purpose of illustration is shown a preferred embodiment of the invention, the numeral 5 generally designates a well casing which may be composed of a plurality of aligned sections connected by means of couplings 6.

The improved packer plug which is adapted to prevent the escape of a quantity of cement 7 from the lower end of the casing is generally designated by the numeral 8 and includes a cylindrical body 9 having a longitudinal bore which slidably receives a stem 10 passing out through opposite ends of the body. The lower end of the shaft 10 is reduced to form an attaching pin 11 extended through a disk-shaped piston 12 having a disk-shaped washer 13 secured to the lower side and extending beyond its periphery to contact with the inner wall of the casing to form a liquid tight joint therewith.

The lower portion of the stem is provided at the point spaced from its lower end with a disk shaped piston 14 having a washer 15 which extends beyond the periphery of the piston 14 and has contact with the wall of the casing so as to prevent the return of the cement upon being poured into the well.

An expansible and contractible packing 16 of rubber, oakum or the like is arranged about the stem 10 between the disk-shaped piston 14 and a disk-shaped piston 18 rigidly secured to the lower end of the body and having a washer 20 which has contact with the wall of the casing.

In the use of the improved packing plug a quantity of cement in a fluid state is introduced into the well casing and the packing plug is then inserted into the casing. Subsequent to the insertion of the packing plug in the casing a quantity of water, mud or other suitable matter 22 is introduced under high pressure into the well casing so as to force the packing plug and consequently the cement downwardly. The downward movement of the cement and the packing plug continues until the cement passes out the lower end of the casing and fills the cavities adjacent the lower end of the casing and between the wall of the casing and the wall of the hole. When the packing plug is being forced downwardly the same occupies the position illustrated

in Figure 1 and when the plug reaches the lower end of the well the resistance to the matter 22 is greatly increased. When the resistance offered to the matter 22 is noticeably increased the operator cuts off the pressure on the matter 22 so as to permit the pressure of the gas or oil to act on the cement and thereby force the disk-shaped piston 14 which is rigidly connected to the stem 10 upwardly. The upward movement of the stem and the disk-shaped washer 14 spreads the packing 16 into liquid tight engagement with the casing in the manner illustrated in Figure 2 whereby the cement is prevented from returning. When the pressure of the oil or gas or the earth adjacent the lower end of the casing forces the disk-shaped piston 14 upwardly, an upward pressure is exerted on the body 9 so that a plurality of pivoted dogs 24 carried by the body are moved outwardly by leaf springs 25 into locking engagement with the wall of the casing. As illustrated in Figure 1, the dogs 24 which are of elongated formation are pivoted at their lower ends within recesses 26 by means of pivot pins 27. The leaf springs 25 which are secured to the terminal portions of the dogs 24 have contact with the inner walls of the recesses 26 and constantly urge the dogs 24 outwardly into engagement with the well casing. Since the ends of the dogs 24 are beveled and are provided with upwardly directed teeth the dogs will not be locked or anchored to the casing until an upward pressure is exerted on the body. The stem which extends slightly below the piston 14 spaces the disk-shaped piston 14 slightly above the lower end of the well.

Should it be desired to anchor the packing plug a distance of ten feet from the bottom of the casing, the lower section of the casing may be ten feet in length and the dogs reversed in the manner illustrated in Figure 5. With the dogs 24 thus reversed the body will not be anchored to the casing until the same moves upwardly for engaging the dogs with the joints between the lowest section and the adjacent section. As illustrated in Figure 5, the joint formed between the lower section forms an annular groove within which the terminal portions of the dogs are received whereby the body is securely anchored.

Also, the body may be limited in its downward movement by means of a pilot rod 30 of a desired length and which is connected to the lower portion of the stem 10 by means of a coupling 31 or other suitable means. When the pilot rod is used, the body may be anchored a predetermined distance above the lower end of the body. In case it is desired to anchor the body 10 feet above the lower end of the well the pilot rod may be 10 feet in length.

Should the casing terminate three feet from the bottom of the well and should it be desired to anchor the body 9 feet above the lower end of the well, the pilot rod may be 9 feet in length.

Having thus described the invention, what is claimed is:—

1. A packing plug for oil wells comprising a piston, a stem slidable through said piston, a second piston rigidly connected to said stem, and an expansible packing confined between said pair of pistons and forced into engagement with the wall of the well by the upward movement of the second named piston with relation to the first named piston.

2. A packing plug for wells comprising a body, a stem slidably carried thereby, a packing element surrounding said stem, and a piston rigidly secured to the lower portion of said stem.

3. A packing plug comprising a body, a stem slidably carried thereby, a piston rigidly connected to the lower portion of said body, a second piston secured to said stem adjacent its lower end, and a packing confined between the first and second named pistons.

4. A packing plug comprising a body, a stem slidably carried thereby, a piston rigidly connected to the lower portion of said body, a second piston secured to said stem adjacent its lower end, a packing confined between the first and second named pistons, and means carried by the body to anchor the same in position.

5. A packing plug for well casings comprising a body, a stem slidable through the body and having its upper end provided with a piston, a second piston secured to the stem adjacent its lower end, a packing confined between said second named piston and the lower end of said body, and a plurality of pivoted dogs carried by the intermediate portion of said body.

6. A packing plug for well casings comprising a body, a stem slidable through the body and having its upper end provided with a piston, a second piston secured to the stem adjacent its lower end, a packing confined between said second named piston and the lower end of said body, a plurality of pivoted dogs carried by the intermediate portion of said body, and a pilot rod connected to the lower portion of said stem.

7. A packing plug for oil well casings comprising a body, a stem slidable through the body and having its upper end provided with a piston, a second piston secured to the stem at a point spaced from its lower end, and an expansible packing confined between the lower end of said body and said second named piston, the extended portion of said stem constituting a stop element to limit the downward movement of the body.

8. A packing plug for oil well casings comprising a body, a stem slidable through the body and having its upper end provided with a piston, a second piston secured to the stem at a point spaced from its lower end, and an expansible packing confined between the lower end of said body and said second named piston, and a pilot rod connected to the extended lower end portion of said stem.
9. A packing plug for wells comprising a piston, a stem slidable through said piston, a second piston on the lower portion of said stem, an expansible packing surrounding said stem between said first and second named pistons, and an anchoring device associated with said first named piston.
10. A packing plug for oil wells comprising a piston, a stem slidable through the piston, a second piston rigidly secured to said rod at a point spaced from one end of the same, an expansible packing confined between the first and second named pistons, and a third piston rigidly connected to the upper end of said rod.
11. A packing plug for oil wells comprising a piston, a stem slidable through the piston, a second piston rigidly secured to said rod at a point spaced from one end of the same, an expansible packing confined between the first and second named pistons, a third piston rigidly connected to the upper end of said rod, and anchoring devices securing the plug in position.
12. A packing plug comprising a body, a stem slidable through the same and having upper and lower pistons, a packing confined between one of the pistons and the adjacent end wall of the body, and an anchoring device for securing the body in position.

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