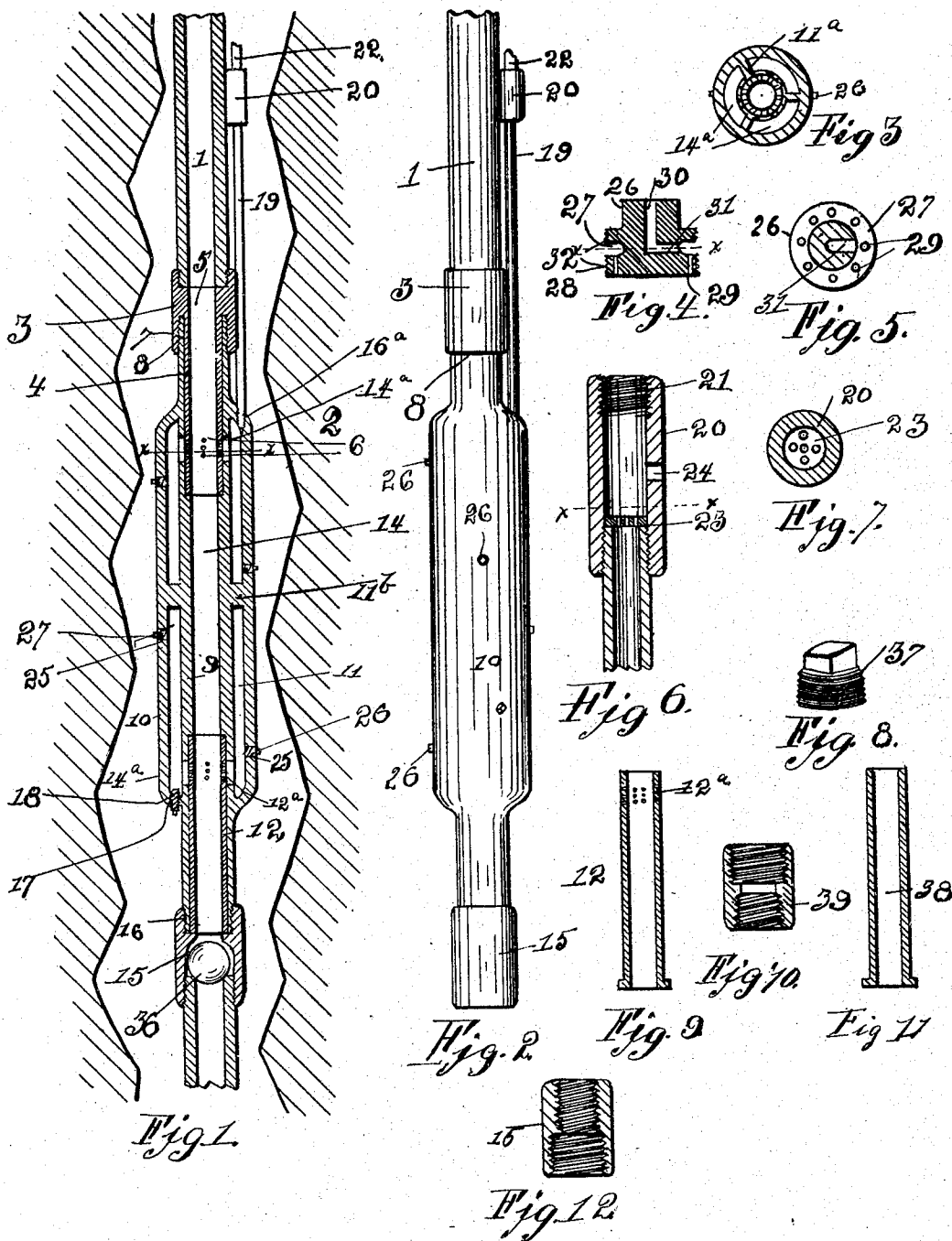


No. 806,559.

PATENTED DEC. 5, 1905.

F. H. McCOLLOUGH.
OIL WELL DEVICE.
APPLICATION FILED JULY 3, 1905.



Witnesses.
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UNITED STATES PATENT OFFICE.

FREDERICK HERBERT McCOLLOUGH, OF FAIRVIEW TOWNSHIP, BUTLER COUNTY, PENNSYLVANIA, ASSIGNOR OF ONE-THIRD TO WARREN W. BOWER AND ONE-SIXTH TO OSCAR CALLIHAN, BOTH OF CHICORA, PENNSYLVANIA.

OIL-WELL DEVICE.

No. 806,559.

Specification of Letters Patent.

Patented Dec. 5, 1905.

Application filed July 3, 1905. Serial No. 268,220.

To all whom it may concern:

Be it known that I, FREDERICK HERBERT McCOLLOUGH, a citizen of the United States of America, residing in Fairview township, in the county of Butler and State of Pennsylvania, have invented certain new and useful Improvements in Oil-Well Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in working barrels for oil-wells; and the invention has for its object the provision of novel means in connection with a working barrel for agitating the sand formation of an oil-well to increase the flow of the well and its general production.

In connection with the agitating means of my improved working barrel I employ novel means for regulating the agitation and for producing an agitation at any desired point within the sand formation of the well.

With the above and other objects in view the invention finally consists in the novel construction, combination, and arrangement of parts, which will be hereinafter more fully described and then specifically pointed out in the claims, and referring to the drawings accompanying this application like numerals of reference designate corresponding parts throughout the several views, in which—

Figure 1 is a vertical sectional view of a working barrel constructed in accordance with my invention, illustrating the same positioned within a sand formation of an oil-well. Fig. 2 is a side elevation of the working barrel. Fig. 3 is a cross-sectional view taken on the line *xx* of Fig. 1. Fig. 4 is a vertical sectional view of one of the plugs used in connection with the working barrel. Fig. 5 is a transverse sectional view taken on the line *xx* of Fig. 4. Fig. 6 is a vertical sectional view of a sleeve or sprayer used in connection with the working barrel. Fig. 7 is a transverse sectional view taken on the line *xx* of Fig. 6. Fig. 8 is a detail perspective view of a conventional form of plug used in connection with the working barrel. Fig. 9 is a vertical sectional view of a detachable sleeve. Fig. 10 is a sectional view of a collar. Fig. 11 is a similar view of a sleeve. Fig. 12 is a detail view of a collar.

In the accompanying drawings, I have illus-

trated the lower end of a pipe 1, which is adapted to extend into the sand formation 2 of an oil-well, and upon the end of this pipe it has been the practice to secure the ordinary type of working barrel, which is generally used in oil-well pumping. I dispense with the ordinary type of working-barrel and employ a specially-constructed barrel adapted to agitate the sand formation 2. In order to support my improved barrel, I provide the lower end of the pipe 1 with a sleeve 3, having a central depending pipe 4, the upper end of which terminates in an opening 5, formed in the sleeve 3. The lower end of the pipe 4 is provided with a plurality of circumferentially-arranged openings 6. The sleeve 3 is provided with a depending interiorly-screw-threaded flange 7, and in this flange is secured the screw-threaded end 8 of my improved working barrel. The working barrel consists of an inner annular shell 9 and an integral outer shell 10, these shells providing an annular compartment 11 within the working barrel. The shells are braced by vertically-disposed ribs 11^a, and the annular compartment 11 is centrally partitioned by a horizontal wall 11^b. The inner shell 9 has its ends bored out to form seats for a detachable pipe 12 and the pipe 4 of the sleeve 3. In this manner a smooth bore 14 is formed throughout the entire length of the barrel. The inner shell adjacent to the ends of the pipe 4 and the sleeve 12 is provided with three radially-disposed openings 14^a, these openings coinciding and registering with some of the openings 6, formed in the lower end of the pipe and some of the openings 12^a of the sleeve 12. To retain the sleeve 12 within the lower end of the barrel, I employ a collar 15, (see Fig. 12,) this collar being secured upon the screw-threaded end 16 of the barrel.

Both ends of the shell 10 are provided with openings 16^a and 17, and in the opening 17 is mounted a screw-threaded plug 18, while in the opening 16^a is secured an upwardly-extending tube 19, which carries a sleeve 20. This sleeve is clearly illustrated in Figs. 6 and 7 of the drawings. The one end of the sleeve is screw-threaded, as indicated at 21, to support another section of tubing 22 in case it is desired to use the same. In the sleeve 20 upon the top of the tubing 19 I mount a perforated plate or washer 23, and the sleeve is provided

with a radially-disposed aperture 24, which establishes communication between the tubing 19 and the exterior of the sleeve.

The outer shell 10 is provided with a plurality of staggeredly-arranged screw-threaded apertures 25, and in each one of these apertures I secure a plug 26, which is clearly illustrated in Figs. 4 and 5 of the drawings. Each plug is provided with an annular groove 27, forming a collar 28, which is provided with a plurality of vertically-disposed apertures 29. The plug is provided with an opening 30, communicating with the annular groove 27 by a port 31. These plugs are screw-threaded, as indicated at 32, whereby they may be secured in the screw-threaded openings 25 of the outer shell 10.

In operation the oil passing through the working barrel is adapted to pass through the openings 6 of the pipe 4, openings 14^a of the inner shell 9 into the annular compartment 11 of the working barrel, from where it passes through the plugs 26, mounted in the openings of the outer shell 10. This oil is adapted to spray and contact with the sand formation of the oil-well and agitate the same, whereby a larger flow of the well will be produced. At times it may be necessary to agitate portions of the same formation which cannot be conveniently reached by the working barrel, and for this reason I have devised the tubing 19 and the sleeve 20, which is adapted to carry the oil upwardly and distribute it against the sand formation above the working barrel.

The plugs 26 which I employ are specially constructed to prevent the plug from rusting or corroding, and in some instances I may find it advisable to dispense with the small openings 29 of the plugs and continue the openings 30 right through the plug-body. In some oil-well sand formation greater agitation is required in connection with some than with others, and should it be desired to decrease the agitation a number of plugs 26 can be removed and the ordinary type of plug 37 secured in the openings 25, consequently reducing the amount of oil ejected through the outer shell 10.

In connection with the working barrel I may employ a gravity-valve 36, which is preferably mounted in the sleeve 15, this valve being employed to prevent the oil passing downwardly into the well, but permitting of the same passing upwardly. It will be observed that I have provided the upper end of the working barrel with the depending pipe 4, which is substantially the same as the detachable sleeve 12, with the exception that the sleeve 12 can be readily removed and a sleeve 38 placed therein to close the openings 14^a of the working barrel in case it is not desired to use the same. In some instances it may be desirable to use a detachable sleeve in lieu of the pipe 4, in which case a collar 39 (see Fig. 10) is used in lieu of the collar 3.

It will be observed by the construction of my improved working barrel that either the pipe 4 and the sleeve 12 may be used at one time or either end of the working barrel used independently of the other end, and I do not care to confine myself to the manner in which it is used, as the working barrel can be readily reversed, the plug 18 being removed and replaced by the pipe 19, while the opening 16^a is closed by the plug 18, it always being essential that the valve 36 be used at the bottom of the working barrel.

I have provided the openings 6 at the lower end of the pipe 4 in order to cleanse the oil passing into the annular compartment 11 of all sediment or foreign ingredients detrimental to the sand formation 2, the perforated plate 23 of the sleeve 20 being employed for the same purpose.

It is thought from the foregoing that the construction, operation, and advantages of the herein-described working barrel will be apparent without further description, and various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

What I claim, and desire to secure by Letters Patent, is—

1. The combination with a sleeve, a depending pipe carried by said sleeve, the lower end of said pipe having openings formed therein, of a working barrel adapted to surround said pipe, said barrel consisting of an inner and outer shell, said inner shell having openings formed therein adapted to aline with the openings of said pipe, a plurality of plugs staggeredly arranged in said outer shell, said plugs having openings formed therein, a check-valve carried by the lower end of said working barrel, substantially as described.

2. The combination with a sleeve, a depending pipe carried by said sleeve, the lower end of said pipe having openings formed therein, of a working barrel, said barrel consisting of an inner and outer shell forming an annular compartment, an upwardly-extending tube carried by said barrel, a sleeve carried by said tube, said sleeve having an opening formed therein, a perforated washer mounted in said sleeve, said inner shell having openings formed therein, a plurality of plugs mounted in said outer shell, substantially as described.

3. The combination with a pipe having openings formed therein, of a working barrel adapted to surround said pipe, said barrel consisting of an inner and outer shell forming an annular compartment, an upwardly-extending tube carried by said barrel and communicating with said compartment, said inner shell having openings formed therein adapted to aline with the openings of said pipe, a plurality of plugs mounted in said outer shell,

said plugs having openings formed therein, substantially as described.

4. The combination with a pipe having openings formed therein, of a working barrel adapted to surround said pipe, said barrel consisting of an inner and outer shell and a central horizontal partition, said inner shell having openings formed therein, a plurality of plugs mounted in said outer shell on both sides of the central partition, substantially as and for the purpose described.

5. A working barrel of the character described consisting of an inner and outer shell forming an annular compartment, vertically-disposed ribs interposed between said shells, said inner shell having openings formed therein, a plurality of plugs mounted in said outer shell, said plugs having openings formed therein, substantially as described.

6. A working barrel of the character described, consisting of an inner and outer shell and a horizontal partition, said inner shell having openings formed therein, and a plu-

rality of plugs mounted in said outer shell above and below said partition, substantially as and for the purpose described.

7. A working barrel of the character described consisting of an inner and outer shell forming an annular compartment, a partition mounted centrally of said compartment, vertically-disposed ribs interposed between said shells, said inner shell having openings formed therein, a depending perforated pipe mounted within said inner shell, a detachable perforated pipe mounted within said shell, the perforations of said pipe and said sleeve aligning with the openings of said inner shell, said outer shell having openings formed therein, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

FREDERICK HERBERT MCCOLLOUGH.

Witnesses:

J. B. RUMBAUGH,
L. B. GARING.