C. P. FINDLEY.

OIL AGITATOR.

APPLICATION FILED MAY 15, 1919.

1,363,962. Patented Dec. 28, 1920.

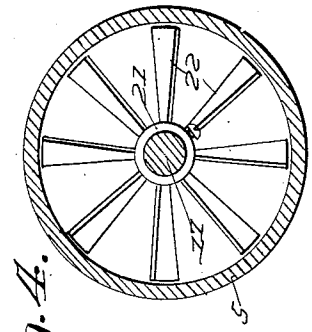


Fig. 4.

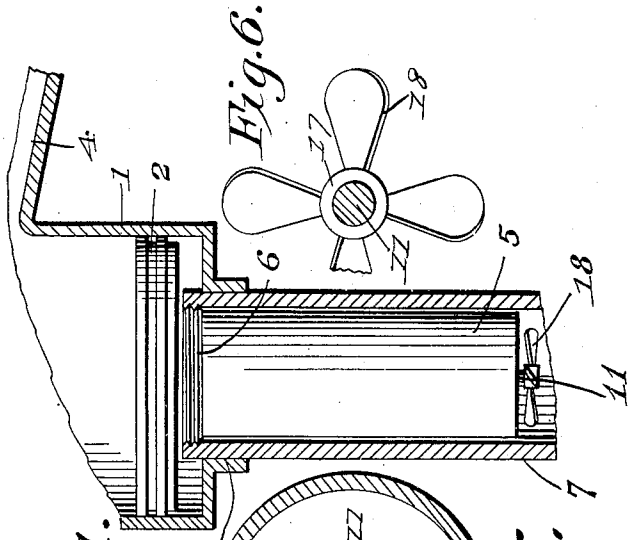


Fig. 1.

Fig. 6.

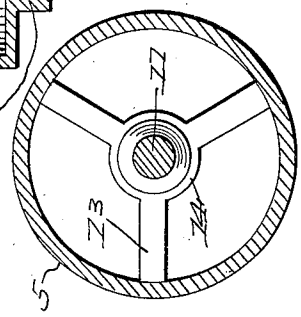


Fig. 5.

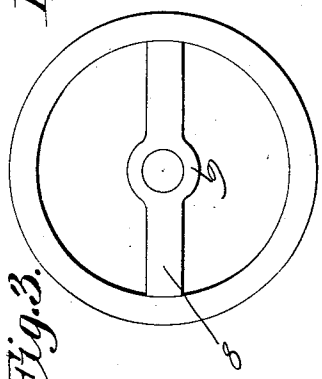


Fig. 3.

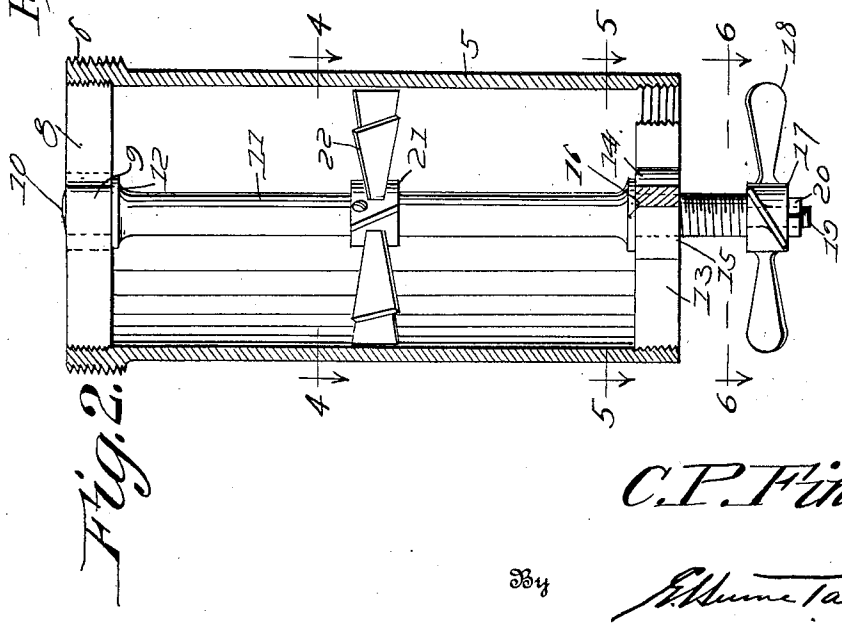


Fig. 2.

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UNITED STATES PATENT OFFICE.

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OIL-AGITATOR.

1,363,962. Specification of Letters Patent. Patented Dec. 28, 1920.

Application filed May 15, 1919. Serial No. 297,396.

To all whom it may concern:

Be it known that I, CHARLES P. FINDLEY, a citizen of the United States, residing at Glendale, in the county of Los Angeles and State of California, have invented new and useful Improvements in an Oil-Agitator, of which the following is a specification.

The object of the invention is to provide an apparatus for use in conjunction with the raising of oil from oil wells, so that the sand and water which is mixed in the oil may be distributed throughout the oil, thus making it possible for the pump to operate successfully because of the sand's being precluded from settling and thus damaging the pump parts. To this end the present invention contemplates a device in conjunction with the pump and this device is provided with a driving means and a stirrer operatively connected with the driving means, which is operated by the rising emulsion raised by the pump, the stirrer the while agitating the emulsion and thus keeping the oil, sand and water thoroughly mixed.

The invention is illustrated and described in a specific embodiment to which, however, it is not to be restricted. The right is reserved to make such changes or alterations as the actual reduction to practice may suggest, in so far as such changes or alterations are compatible in spirit with the annexed claims.

The same numerals of reference designate the same parts throughout the several figures of the drawings, wherein:

Figure 1 is a central vertical sectional view showing the agitating apparatus and a conventional form of pump which is employed for raising the oil.

Fig. 2 is an enlarged longitudinal sectional view through the stirring apparatus or agitator.

Fig. 3 is a top plan view of the structure of Fig. 2.

Fig. 4 is a section on the line 4—4 of Fig. 2.

Fig. 5 is a section on the line 5—5 of Fig. 2.

Fig. 6 is a section on the line 6—6 of Fig. 2.

As shown, the invention comprises a stirrer or agitator to be used in conjunction with a pump in raising the oil from the well, a conventional form of pump being herein illustrated, this pump having the cylinder 1 with a plunger 2 working therein, this plunger being reciprocated by any of the well known means unnecessary of illustration here. The intake to the pump cylinder is on the bottom thereof, as indicated at 3 while the discharge is disposed on the side of the cylinder and has connected with it a pipe 4 by means of which the oil is discharged into the separating apparatus described hereinafter.

The lower end of the pump cylinder is coupled to a supplemental cylinder 5 which houses the driving medium for the stirring apparatus, the means coupling this cylinder 5 to the pump cylinder being as illustrated at 6. The supplemental cylinder is designed for disposition within the well pipe 7 to which it is connected by means of the threads 6 which also connect with the pump cylinder 1, as clearly illustrated in Fig. 1.

The cylinder 5 at the upper end is internally threaded for the reception of the spider 8 which is threaded on its ends for engagement in threads in the cylinder. This spider is formed at its center with a bearing 9 designed to carry the journal 10 of a shaft 11, the latter being formed with a shoulder 12 abutting the bearing on the under end thereof.

In the bottom end of the cylinder 5 there is carried a three armed spider 13, the ends of whose arms are threaded to permit the spider's being engaged in the lower end of the cylinder which is internally threaded. The spider 13 is formed with a bearing 14 and in this bearing there turns a second journal 15 formed at the lower end of the shaft 11, the shaft being also formed with a shoulder 16 resting on top of the bearing 14 and taking care of the thrust of the shaft 11.

The shaft 11 is extended below the lower journal 15 and this extended end is reduced in diameter to permit the attachment to the shaft of a stirrer, which comprises a hub 17 with radially disposed wings or blades 18 projecting from the hub. This hub is carried on the reduced portion 19 of the shaft and is held in place thereon by a nut 20 which threadingly engages this reduced portion and abuts the hub forcing it against the shoulder formed where the reduced portion 19 adjoins the lower extension of the shaft.

Within the cylinder 5 and mounted on the shaft 11 there is a propeller consisting of a

hub 21 carrying radially disposed blades 22 which are given the proper pitch to enable them to effect a turning of the propeller as the emulsion of oil, sand and water passes through the cylinder on its way to the pump cylinder.

It is obvious that as the plunger of the pump is reciprocated oil will be drawn from the well through the stand pipe 7, through the cylinder 5 and into the pump cylinder. In so doing it will impact against the propeller blades 22 and thereby impart a turning motion to the propeller and thus effect the turning of the shaft 11 with the result that the stirring blades 18 will be rotated and will agitate the oil prior to its entering the cylinder 5, thus making an emulsion of the oil and water which enters the cylinder and distributing the sand raised from the well throughout this emulsion.

When the emulsion enters the pump it is discharged therefrom, as is apparent, through the discharge pipe 4.

The invention having been described, what is claimed as new and useful is:

1. In an apparatus of the kind described, a pump, a cylinder connected with the pump, an agitator operatively connected to the cylinder but exterior thereto, and propelling means for the agitator, the said propelling means being interior to the cylinder and being operable by the fluid passing through the cylinder as the result of the operation of the pump.

2. In an apparatus of the kind described, a pump, a cylinder connected with the pump, a shaft rotatably mounted in the cylinder, a stirrer carried by the shaft exterior to the cylinder, and a propeller carried by the shaft interior to the cylinder, whereby the passing of a fluid through the cylinder as a result of the operation of the pump may effect the turning of the stirrer for the useful purpose specified.

3. In an apparatus of the kind described, a pump, a cylinder connected with the pump, spiders detachably mounted in the opposite ends of the cylinder, a centrally disposed shaft rotatably mounted in the spiders, the shaft being interior to the cylinder but projecting from one end thereof, a stirrer carried by the projecting end of the shaft and a propeller carried by the shaft interior to the cylinder, whereby the passing of a fluid through the cylinder as a result of the operation of the pump may effect the turning of the stirrer for the useful purpose specified.

4. In an apparatus of the kind described, a pump, a cylinder connected with the pump, the opposite ends of the cylinder being internally threaded, spiders engageable with the said threads, the spiders being formed with bearings disposed in axial alinement with the cylinders, a shaft journaled in said bearings and projecting from one end of the cylinder, a stirrer carried by the projecting end of the shaft, and a propeller carried by the shaft interior to the cylinder, whereby the passing of a fluid through the cylinder as a result of the operation of the pump may effect the turning of the stirrer for the useful purpose specified.

5. In an apparatus of the kind described, the combination with the stand pipe of an oil well, of a pump operatively connected with the stand pipe at the upper end thereof, an agitator disposed within the stand pipe and below the pump, a propeller operatively connected with the agitator and being operable by the passing fluid raised through the result of the operation of the pump.

In testimony whereof I affix my signature.

CHARLES P. FINDLEY.