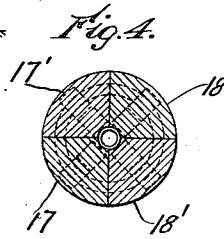
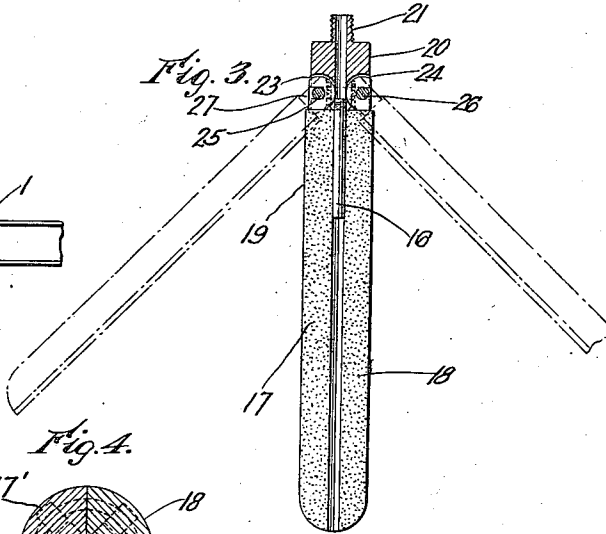
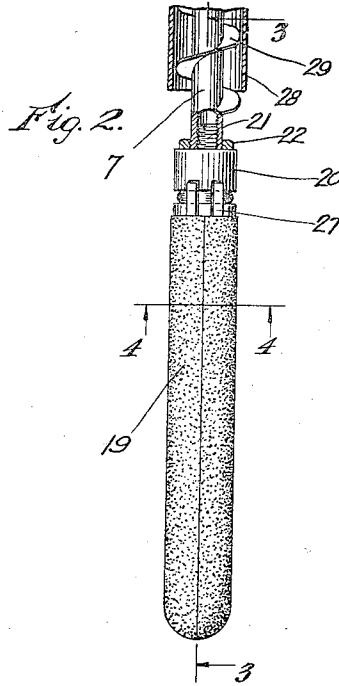
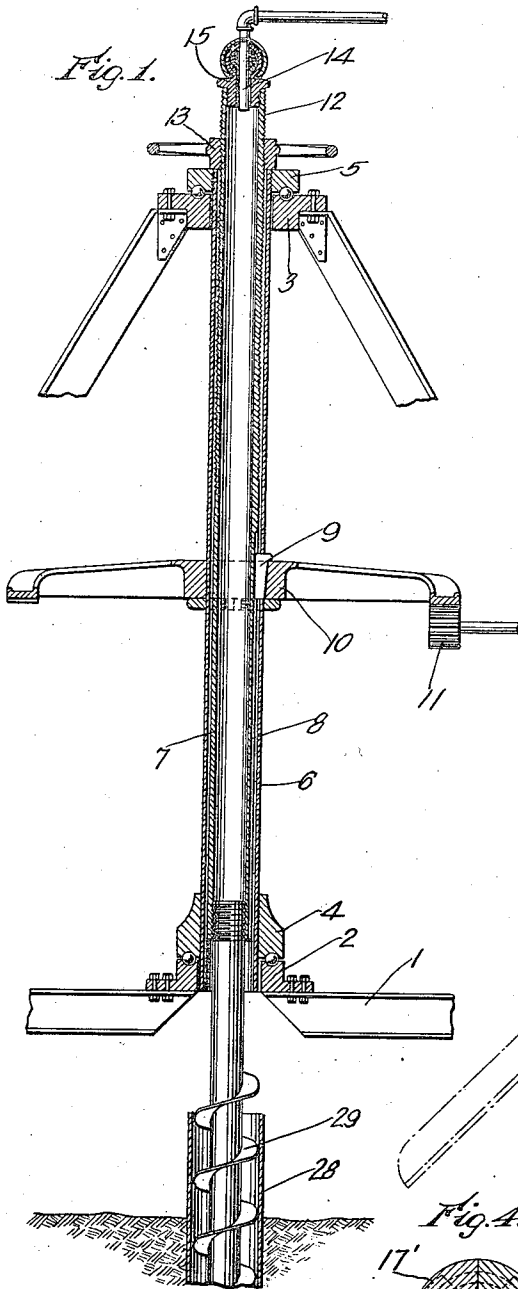


A. OTTO.
 REAMER FOR OIL AND GAS BEARING SAND.
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1,285,347.

Patented Nov. 19, 1918.



WITNESSES

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REAMER FOR OIL AND GAS BEARING SAND.

1,285,347.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALBERT OTTO, a citizen of the United States, and a resident of Kansas City, in the county of Jackson and State of Missouri, have invented a new and Improved Reamer for Oil and Gas Bearing Sand, of which the following is a full, clear, and exact description.

This invention relates to appliances for oil wells and has for an object the provision of an improved construction for removing part of the gas and oil bearing sandstone of an oil well so as to allow a freer flow of oil and gas.

Another object in view is to provide a reaming device for oil wells furnished with a centrifugal reaming structure, and means for removing the removed sand and deposit.

In the accompanying drawing:

Figure 1 is a longitudinal vertical section through the upper part of the reaming structure disclosing certain features of the invention.

Fig. 2 is a side view with certain parts in section of the lower part of the reaming structure.

Fig. 3 is a sectional view through Fig. 2 on line 3—3.

Fig. 4 is a transverse sectional view through Fig. 2 on line 4—4.

Referring to the accompanying drawing by numerals, 1 indicates a supporting frame which carries bearing or pivot blocks 2 and 3 of any suitable structure coacting with the blocks 4 and 5 so as to retain suitable anti-friction balls in place and to rotatably support the casing 6. Arranged interiorly of the casing 6 is a tube 7 having a keyway 8 accommodating the key 9 which key extends through a suitable slot in the casing 6 and is connected to the hub of the driving gear 10. Gear 10 meshes with a pinion 11 which pinion is driven by any suitable power whereby the casing 6 and tube 7 are rotated so as to rotate the boring or reaming device hereinafter fully described.

The upper part of the tube 7 is provided with threads 12 accommodating the threaded hand wheel 13, which is used for raising or lowering the tube 7 without disturbing the casing 6, so as to raise or lower the reamer as occasion may demand and as the reamer operates for providing the desired reservoir at the bottom of the well. A pipe 14 extends through the upper part of the

tube 7 which upper part is provided with a suitable cap 15 whereby water or other cleaning fluid may be introduced into tube 7 and finally discharged through the nozzle pipe 16 (Fig. 3) at the bottom of the well. This water flows downwardly to the bottom of the well and then upwardly carrying with it the removed sand and deposit which has been dislodged by the cutting members 17 and 18 of the reamer 19.

In oil wells it has been found that after continued use for a time there will be accumulated a deposit of paraffin or other more or less solid substance at the point where the crude oil and gas enter the well. As this deposit increases the openings through which the oil and gas flow are gradually closed so that some means must be provided for removing this deposit or again providing openings in the sand surrounding the well. Sometimes this has been done by an explosion which is commonly known as "shooting the well," while other devices have been provided for melting or using some force for removing the deposit. Shooting of the well will cure that defect for some time, but it is not unusual that such a procedure will ruin the well. In the present invention it is aimed to secure the same results aimed to be secured by the device above mentioned and others which are well known, namely, to remove the deposit and provide a more ready flow of the gas and oil into the well. When it has been found that a given well is flowing slowly, or has ceased to flow the reamer 19 is lowered into the well to a point opposite the oil and gas bearing sand after which the power or driving pinion 11 is operated for rotating the tube 7 to which the reamer 19 is connected whereupon said reamer will begin to ream or grind the side walls of the well for removing the deposit and also some of the sand. Reamer 19 is provided with a head 20 having a passageway therethrough which registers with the passageway of the pipe 16 so that the water from the tube 7 may freely enter pipe 16. Head 20 is provided with a threaded extension 21 which is screwed into the lower end of the tube 7 as shown in Fig. 2, and if desired is locked in position by a suitable locknut 22. The head 20 is also provided with cut away portions 23 and 24 having apertures through which the pins 25 and 26 extend, said pins also extending through the respective ears 27 of the reaming or grinding

members 17, 18, 17' and 18'. These reamers may be steel or may be carborundum, or may be steel covered with carborundum. In fact the reaming members may be of any material which will cut or grind the surface of the well so as to remove some of the sand and the deposit.

During the operation of the reamer there is preferably provided a constant stream of water from pipe 14 which will keep the removed sand and deposit in a loose condition and which will force same upwardly through the well casing 28. In order to assist the upward movement of the water, sand and deposit the tube 7 is provided with a screw 29 which preferably extends from near the reamer as shown in Fig. 2 to the upper end of the casing 28. As the reamer is raised and lowered the screw will, of course, be raised and lowered, but will be substantially in the same position, as the up and down movement of the reamer is merely to cause the same to act on the oil bearing sand from the upper surface thereof to the lower surface. In this way there is provided a large reservoir for the accumulation of oil in the well and in addition a free passage is provided for the oil and gas so that the life of the well is renewed

without the usual danger of ruining the well which goes with the process of shooting, or which goes with some of the other processes now in use.

The members 17, 17', 18 and 18' are loosely pivotally mounted on head 20 and will consequently operate under the action of centrifugal force when the tube 7 is rotated. Four of these driving members are shown, but it is evident that one or more may be used without departing from the spirit of the invention.

What I claim is:

A reamer for oil wells comprising a centrifugally operated reaming structure provided with a head, a plurality of pivotally mounted reaming members, and a water nozzle extending from the bottom part of the head, a tube connected with said head for supplying water thereto and for supporting the reamer structure opposite the oil bearing sands of the well, means for supplying water to said tube, and means for rotating said tube for causing said reamer to act against the walls of said oil bearing sand for removing some of said sand and the deposit thereon.

ALBERT OTTO.