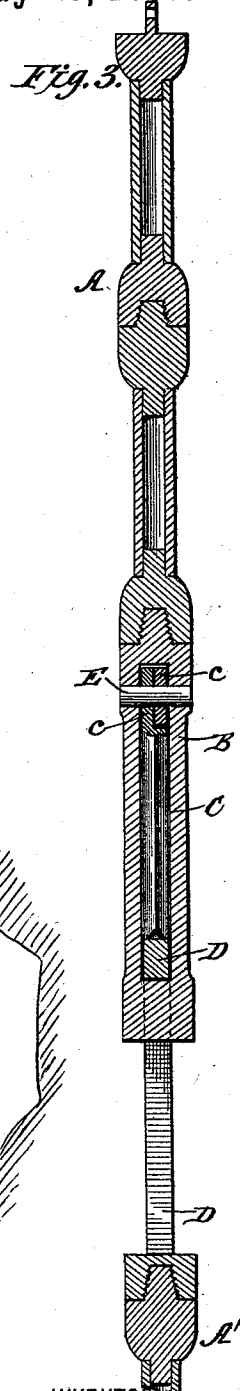
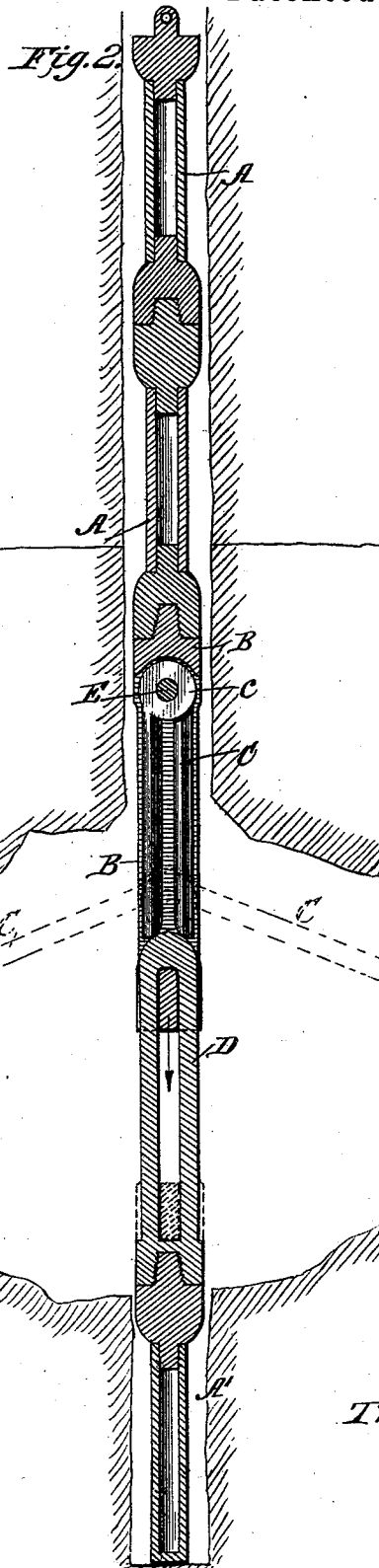
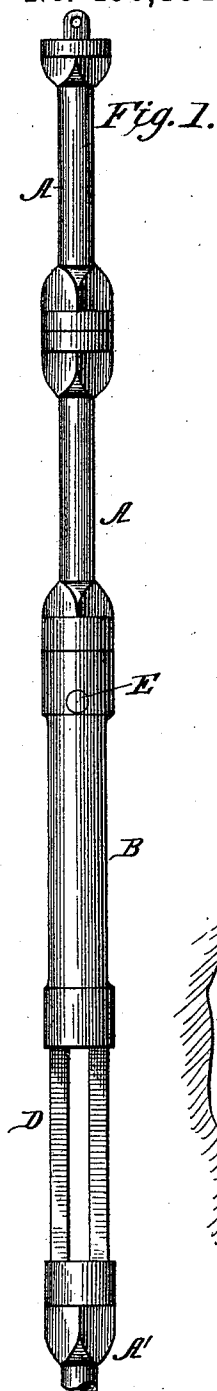


(No Model.)

T. H. GALLAGHER.
AGITATOR FOR OIL WELL CAVITIES.

No. 498,164.

Patented May 23, 1893.



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AGITATOR FOR OIL-WELL CAVITIES.

SPECIFICATION forming part of Letters Patent No. 498,164, dated May 23, 1893.

Application filed January 21, 1893. Serial No. 459,103. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. GALLAGHER, of Olean, in the county of Cattaraugus and State of New York, have invented a new and useful Improvement in Agitators for Oil-Well Cavities, of which the following is a specification.

In sinking oil wells the common method is to drill down to the oil bearing rock or sand and partially through it. The well is then blasted with a nitro-glycerine cartridge which, in exploding near the bottom of the well in the oil bearing rock or sand, forms a cavity in the same of from twenty to forty feet diameter which is in open communication with the well above and its pocket below, which latter is the continuation of the well below this blasted cavity. The blast forms in the cavity a large quantity of comminuted rock and sand which must be taken out in order that the well may be worked advantageously. If allowed to remain it would clog up the channels, tubing and working barrels, and necessitate the pulling of the same out of the well which is expensive. Heretofore this cleaning out of the sand has been done in the following way. The same tools used to drill the well were also used to clean it out. The tool was run down into the well and the limited quantity of sand which happened to be in the pocket was removed by the bailer or sand pump, while the larger bulk which remained in the large cavity outside of the pocket was not disturbed, but the operator was obliged to wait until the sand slowly filled into the pocket from the cavity again, which would take two or three days before there would be sufficient collected to justify putting the tools into the well again. In this way weeks were required to clean a well of the sand, and even then it might soon have to be cleaned again. This entails large delay, expense, and loss of oil, and in old wells also necessitates the rebuilding of the derrick, as a derrick that has stood for two or three years is not strong enough to hold a string of drilling tools, and in old wells also a boiler has to be set up near the well again.

My invention comprises means for thrashing or agitating the large oil well cavity so as

to clean out all the sand at once as soon as the well is blasted, thus avoiding the expense, delay, and difficulties hereinbefore mentioned.

Figure 1 is a side elevation of the device. Fig. 2 is a longitudinal section of the same in the well, and Fig. 3 is a longitudinal section taken at right angles to Fig. 2.

In the drawings A represents one or more hollow stems closed at both ends and formed of a middle tube with solid screw couplings at its ends. To the lower end of these hollow stems are screwed the working sections B C D of my invention. This corresponds in a measure to the construction of an ordinary drill-jar in that it is composed in part of two links B and D which are coupled together to slide the one into the other by reason of their parallel sides. In between the two sides of the upper link section B there is hung upon a bolt E at the top a pair of radially swinging arms C C which normally lie in vertical position in the slots between the two sides of the upper link section B. These arms have round disk shaped heads c where the bolt passes through, so that they may swing in true vertical planes. The lower one D of the link sections is designed to screw to one or more hollow sections A' which rest upon the bottom of the well and with the link D act as a stationary ram. The upper end of link D is directly in the line of the arms C C, which upper end is slightly pointed so that as the upper link section with the arms descend, the latter strike against the upper end of stationary link D and are thrown violently out in a radial swing as shown in dotted lines Fig. 2 and penetrate the blasted cavity their full length, so that when the upper link section is churned up and down by the working of its connections from the top of the well these arms C C thrash about in the blasted cavity like flail arms and agitate the sand and fluid matter in said cavity, causing the sand to pass at once into the pocket or bottom end of the well hole where it can be taken out continuously by the sand pump without delay, and when, through the agency of this device, all the sand in the blasted cavity has thus been removed, the well can be uninterruptedly pumped of its oil

without having to stop to clean it, and without the delay, expense, and trouble which this subsequent cleaning involves.

The object in making the stems A hollow
5 is to render them light and easy to handle, which is a very great advantage in this kind of work, as any old derrick that is strong enough to pump a well is with these hollow stems strong enough to clean it out, and also
10 the same power which is used for pumping is strong enough for handling my device.

In operating my devices the tools are lowered into the well until the thrashing arms C C are opposite the cavity made by the explosion, the lower link D being held stationary
15 by the anchorage of its subjacent stem or stems on the bottom of the well. Then as the upper link B is churned up and down by the mechanism at the top of the well, the link
20 D remains stationary, and causes the arms C C to be violently thrown out their full length into the cavity which, as before stated, agitates the sand and fluid substances and keeps them in motion, causing them to flow into the
25 pocket so that the bailer or sand pump can remove them. There is no waiting for the sand to slowly gravitate into the pocket, but the operation is continuous and the sand is all removed, and when the well is thus once thor-

oughly cleaned there is no necessity for cleaning again until a nitro-glycerine cartridge is again used. 30

I am aware that in rotary reamers or drills the cutting bits have been adjusted out with a radial swing and held there to cut a larger
35 cavity than the well. I make no claim to drilling tools or such expanding reamers with cutting edges. My arms have no cutting edges, are much longer, and simply act like flails with a continuous thrashing action to
40 serve a different purpose.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

An agitator for oil well cavities consisting
45 of two linked sections having a sliding motion one over the other; in combination with radially swinging thrashing arms C C pivotally hung in the upper link section, to lie in the plane of the lower link section and be
50 thrown out by impact therewith when the upper link section is lowered substantially as shown and described.

THOMAS H. GALLAGHER.

Witnesses:

JOHN B. BOSS,
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