

UNITED STATES PATENT OFFICE.

EDWARD A. L. ROBERTS, OF TITUSVILLE, PENNSYLVANIA.

IMPROVEMENT IN PREVENTING THE CLOGGING OF OIL-VELLS.

Specification forming part of Letters Patent No. 119,883, dated October 10, 1871.

To all whom it may concern:

Be it known that I, EDWARD A. L. ROBERTS, of Titusville, in the county of Crawford and State of Pennsylvania, have invented a new and useful Improvement in Process of Preventing Clogging of Oil-Wells, and of cleaning them when clogged; and I do hereby declare the following to be a full, clear, and exact description thereof.

The object of my invention is to provide an economical and efficient mode of preventing the stoppage of the yield of oil-wells caused by the accumulation of paraffine or other substances which are deposited by the oil in the pores or seams of the oil-bearing rock, and to prevent or at least greatly lessen the formation in oil-wells of the thick matter known by oil-producers as B. S., the accumulation of which has a tendency to reduce the yield of the wells, and necessitate their being cleaned out at the cost of great expense and trouble. As the substance which accumulates in oil-wells and chokes the pores may be melted or rendered more fluid by the application of heat, and can thus be in a great measure removed, the injection of hot water or steam into the well has been used with some degree of success; but this process is attended with the serious objection that the mixing of either hot water or steam with crude oil is attended with the formation of B. S. to such a degree as to be seriously injurious to the wells.

I have discovered, however, that the use of hot salt-water, instead of hot fresh water or steam is not attended with this difficulty, and that the clogging of wells can be very materially lessened, if not prevented, by its use. Another advantage arising from the use of salt-water is that a greater degree of heat can be applied, as the boiling-point of a saturated solution of salt in water is about 12° Fahrenheit above that of fresh water.

To enable others skilled in the operation of oil-wells to use my improved process, I will proceed to describe it more fully.

At any convenient place near to the wells I place a large tank containing a solution of salt in water of any desired strength, the more nearly

saturated the better. This saline water is heated by any ordinary means; but I prefer to do it by a coil of steam-pipe placed at or near the bottom of the tank, through which steam is passed from the boiler of the engine employed to pump the wells. The water should be heated to a temperature just below the boiling-point, so as to avoid as much as possible the formation of steam, which would, of course, condense into fresh water; although, where the saline solution is strong, and a greater heat is desired, steam may be employed in connection with the heated salt-water, because, when condensed, it will mingle with the salt-water, merely weakening the strength of the solution. The salt-water thus heated is poured from the tank into the well, (which has been previously pumped out as dry of oil as possible,) and this water is pumped out again as fast as possible and returned to the heating-tank until the water which is pumped out is warm, as it will take some time for the well to heat up sufficiently to preserve the temperature of the water. This operation of pumping the salt-water out of the well and returning it to the heating-tank and thence to the well again is continued until the desired effect of cleaning the well is obtained.

If desired, benzine may be used in connection with the heated salt-water by pouring it into the well at the same time.

In place of a heated solution of salt and water a solution of caustic soda or other alkali, which will prevent the formation of B. S. by the mixture of hot water with the oil, may be employed.

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

The mode of cleaning oil-wells which have become clogged, by the use of heated salt-water, substantially as and for the purposes hereinbefore set forth.

In testimony whereof I, the said EDWARD A. L. ROBERTS, have hereunto set my hand.

EDWARD A. L. ROBERTS.

Witnesses:

GEO. NEUBERT,
ALLAN C. BAKEWELL.

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