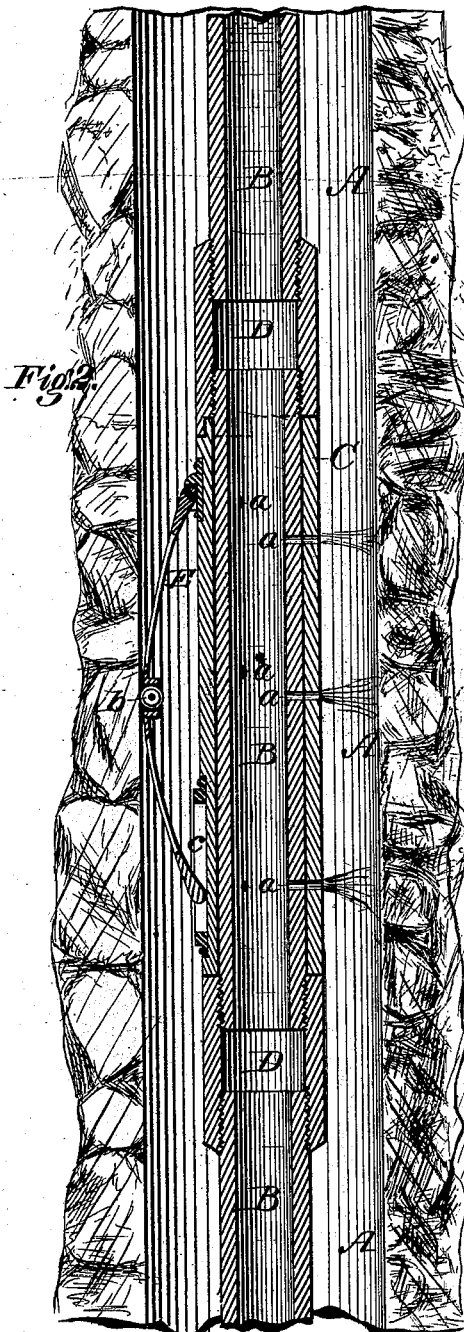
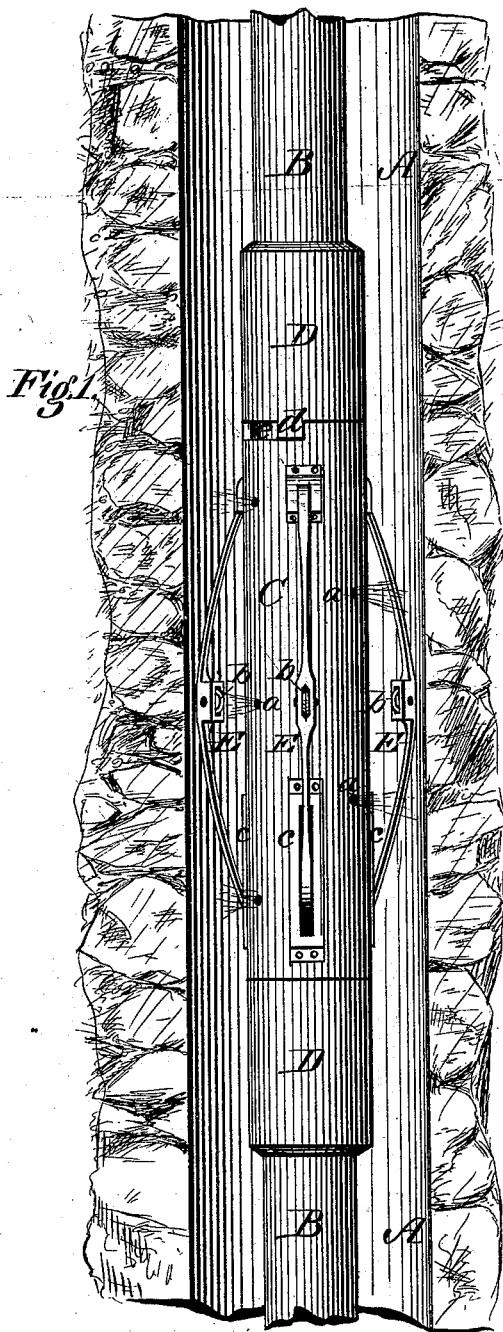


J. C. LORENZ.  
Oil Well Sprinkler.

No. 201,619.

Patented March 26, 1878.



*Witnesses:*  
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His attys.

# UNITED STATES PATENT OFFICE.

JOHN C. LORENZ, OF ST. PETERSBURG, PENNSYLVANIA.

## IMPROVEMENT IN OIL-WELL SPRINKLERS.

Specification forming part of Letters Patent No. **201,619**, dated March 26, 1878; application filed December 29, 1877.

*To all whom it may concern:*

Be it known that I, JOHN C. LORENZ, of St. Petersburg, in the county of Clarion and State of Pennsylvania, have invented certain Improvements in Oil-Well Sprinklers, of which the following is a specification:

My invention relates to a sprinkler to be placed in oil-wells, for the purpose of washing off the face of the oil-bearing rock and keeping it free from paraffine and similar deposits, whereby the closing up of the pores and veins of the rock, and consequent diminution of their yield, is prevented; and it consists in mounting upon the tube through which the oil is pumped a loose encircling sleeve, provided with yielding devices to engage with the wall of the well and prevent its rotation, said sleeve and tube being each provided with a series of holes or openings, which may be arranged in line, so as to form continuous openings through the two, or thrown out of line to close said openings, as desired.

The invention also consists in the peculiar construction of devices, as hereinafter explained, by which the sleeve is held stationary while the tube is turned, by which the sprinkler is placed and held at the center of the well, and by which it is made to accommodate itself to wells of different sizes.

In the accompanying drawing, Figure 1 represents a side elevation, and Fig. 2 a longitudinal central section, of my improved device.

It is a fact well understood that the small veins, crevices, and pores of oil-bearing rock become more or less filled up and closed by the accumulation of paraffine and other substances occurring in connection with the oil, which, in a greater or less degree, prevents the free discharge of oil through the same into the well. Various means have been employed to remove this deposit and restore the wells to their desired condition, the most common of which is to steam the face of the rock, thereby softening or melting the adhering substance, and causing it to run off; but this operation, while it performs the operation in a comparatively satisfactory manner, is expensive and troublesome, requiring fuel and a suitable boiler in which to generate the steam, and it is my object to furnish a device or apparatus which shall accomplish the removal of

the deposit, but which shall require but few additional fixtures and slight expense. To this end I construct the device, as represented in the drawing, in which—

A represents the well, in the center of which is placed the oil-tube B; and C represents a sleeve or tube encircling the oil-tube B, and held in place thereon by thimbles D, one at each end, which also serve to connect the sections of the oil-tube. The tube B is free to turn within the sleeve C a given distance, the movement being controlled by a lip, *d*, projecting into a recess, *e*, in the sleeve C from one of the thimbles D, as shown in Fig. 1. Both the tube and sleeve are provided with a series of holes or openings, *a*, which are so placed that when the tube is turned in one direction in the sleeve the openings in the two parts are brought into line with each other, as indicated in Fig. 2, forming a continuous passage through the two at each hole or opening; but when turned in the opposite direction the holes in one part come opposite, and are closed by the solid or closed portion of the other.

The device is designed to be placed permanently upon the oil-tube and left within the well; and, being out of reach, it is necessary that means should be provided to hold the sleeve C in a stationary position while the tube B is being turned, and to this end a series of bowed spring-arms, E, are arranged upon its sides, preferably hinged at their upper ends, and sliding or working at their lower ends in guides *c*, said arms being furnished at their outer or bowed portion with a V-shaped roller, *b*, projecting slightly beyond the face of said arms and bearing against the interior face of the well, as shown. The form of the arms and the manner of attaching them permit them to adjust themselves readily to wells of varying diameters, while the V-shaped rollers take a firm hold on the face of the well and prevent the sleeve from turning, though permitting the vertical adjustment of the device at will.

When the device is to be used, benzine, or similar material capable of dissolving the paraffine and other substances deposited, is poured into the well, pumped up into the tube B, and then the holes *a* are opened, allowing

the benzine, &c., to be thrown out in jets against the face of the well.

The tube B may be raised and lowered, to allow the sprinkler to act directly upon different portions of the well.

It will be seen that by this apparatus all expense, except that of the benzine used, is avoided, and the operation of removing the deposit is readily and easily performed.

It is apparent that various ways of applying the sleeve to the tube may be employed—as, for instance, by making it in two parts—which could be fastened together after being put in place, in which case the use of the separate sections of pipe and the thimbles at the point where the sprinkler is located would be unnecessary; or a continuous pipe, and a sleeve in one piece encircling it, might be used, collars being arranged to keep the sleeve in place.

I am aware that a perforated sleeve has been used on the perforated lower end of a drive-well tube to exclude the earth from the holes as the tube is driven to its place, and then permit the inlet of water when the tube is fixed in position. This arrangement differs, however, from mine in having the sleeve located at the bottom of the tube, instead of its being inserted at a point above the lower end, and also in that no means suitable for use in an oil-well are provided to hold the sleeve when the tube is rotated, the arrangement being designed for use in ordinary soft earth, where the sleeve and tube are driven tightly to their place, and permitted to remain fixedly and immovably in position after the flow of water is once established, while my tubing, on

the contrary, is suspended loosely in a smoothly-bored hole in the rock, the nature of which necessitates the use of my yielding devices to hold the sleeve.

Having thus described my invention, what I claim is—

1. An oil-well tube provided at a point or points between its ends with a series of perforations, in combination with a loose perforated sleeve, provided with yielding devices to engage with the walls of the well and prevent the rotation of the sleeve, substantially as shown and described.

2. The combination of the tubing B and sleeve C, both provided with perforations, and the spring retaining devices to prevent the rotation of the sleeve.

3. In combination with the sleeve C, arranged as shown, the spring-arms E, provided with the wheels or rollers *b*.

4. The oil-well tube B, having the inserted perforated length or section, in combination with the collars or thimbles D and the loose perforated sleeve C, having yielding devices to retain it in place.

5. In an oil-well tube, two concentric perforated sections, one capable of a rotary motion in relation to the other, in combination with yielding devices, arranged to engage with the walls of the well and hold one of the sections from rotating, substantially as described.

JOHN C. LORENZ.

Witnesses:

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