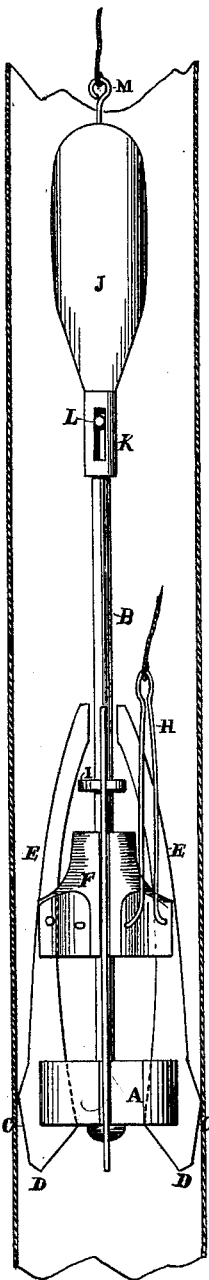


J. M. CREAL.

Device for Perforating Artesian-Well Tubes.

No. 197,105.

Patented Nov. 13, 1877.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN M. CREAL, OF LOS ANGELES, CALIFORNIA.

IMPROVEMENT IN DEVICES FOR PERFORATING ARTESIAN-WELL TUBES.

Specification forming part of Letters Patent No. **197,105**, dated November 13, 1877; application filed April 19, 1877.

To all whom it may concern:

Be it known that I, JOHN M. CREAL, of the city and county of Los Angeles, and State of California, have invented a Device for Perforating Artesian-Well Tubes; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings.

My invention relates to a novel device for perforating the sides of artesian-well tubes, so that the water which may be met with at various depths can all be admitted to the tube, and the greatest flow obtained.

My invention consists of a cylinder having peculiarly-constructed cutters which are projected from its sides, so as to make a series of cuts around the pipe of a desired length without materially reducing its strength or roughening its interior.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a side elevation of my device.

A is a cylindrical or other suitably-shaped block, secured at the lower end of a spindle, B. This block is made of a size to move freely in the well-tube, and its sides are slotted, so as to act as guides for as many cutters or knives C as it may be desired to use. These knives are made with angular projecting corners at D, and have arms E formed therewith and extending upward, so as to be pivoted in the block F, while their upper ends are drawn toward the spindle B, as shown. The block F fits loosely upon the spindle B, and is provided with links H for the attachment of ropes, which extend to the top of the well, and which are used to support this block when the cutters are to be operated. A disk or ring, I, is secured to the spindle B above the block F, and just at a point where the upper ends of the arms E approach the spindle. The inner edges or backs of the cutters C also approach each other at the bottom, so that with their arms they form a curve, pivoted near its center to the block F, and approaching the spindle at each end.

It will be manifest that when the block F is suspended by its links H, and the spindle B is forced down, the block A will act to separate the knives C and force their cutting-corners D outward through the sides of the pipe, the up-

per ends of the arms E at the same time approaching the spindle B. When the spindle is again drawn up through the suspended block F the ring or disk I will force the arms apart and close the cutters together, thus withdrawing them from the cuts which they have made.

In order to operate this device I use a weight, J, which has a tube, K, extending from its lower end large enough to pass over the spindle B. The sides of this tube are slotted, and a transverse pin, L, through the spindle enters these slots, as shown, so that the weight may be lifted far enough to acquire some momentum in its fall, and thus first drive the spindle B and block A downward into the space between the knives, and afterward force the whole device downward as far as desired.

The operation will then be as follows: The apparatus is suspended by a rope from the ring M at the top of the weight, and is let down to a point (previously marked) where the first stream of water was tapped. The knives C, with their cutting-corners, remain drawn into the cylinder or block A until this point is reached, when the ropes which are attached to the links H upon the cylinder or block F are made fast, so as to suspend the device from them. By allowing the rope from the ring M to slacken, the weight H will force the block A into the space between the knives, after which the weight is raised and allowed to fall until it has forced the block completely into its place, and thus caused the cutters to pass through the sides of the pipe. The weight is then drawn up enough to withdraw the cutters from the sides of the pipe, after which the apparatus is again raised or lowered until it reaches the next stratum of water, where the operation is repeated, and thus until all the streams have been tapped. The slot in the tube K allows an upward, as well as a downward, blow, and this upward blow is necessary to release the cutters from the sides of the pipe.

Direct pressure might be used to operate the knives or cutters in some cases, but I have found the operation of the weight giving a blow to be the best.

By this operation a smooth, even series of cuts is made all at one time, the pipe is not torn or roughened inside, or bent out of shape,

so as to prevent the insertion of a sand-pump, if it should ever be needed to clear the well of sand, and I am enabled to produce a maximum flow of water from the well. The cuts being all made at one time, the pressure outward upon the pipe is evenly distributed, and the strain diminished.

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

1. The cutters C, with their arms E, curved, as shown, and centrally pivoted to the suspended block F, in combination with the movable block A, attached to the spindle B, and capable, as is the spindle, of being forced down without axial rotation between the knives, so as to expand them and cut the surrounding tube, substantially as herein described.

2. The cutters C and arms E, curved so that each end approaches the center, and pivoted

to the suspended block F, in combination with the vertically-moving spindle B, with its expanding-block A and disk I, so fitted that the knives or cutters will be forced outward by a downward movement of the spindle and retracted by withdrawing it, substantially as herein described.

3. The weight J, with its slotted tube, or equivalent device, connected with the spindle B, so that it may be raised and dropped to force the spindle and block A down and expand the cutters, or give an upward blow to return the cutters, substantially as herein described.

In witness whereof I have hereunto set my hand and seal.

JOHN M. CREAL. [L. S.]

Witnesses:

GEO. H. STRONG,

FRANK A. BROOKS.