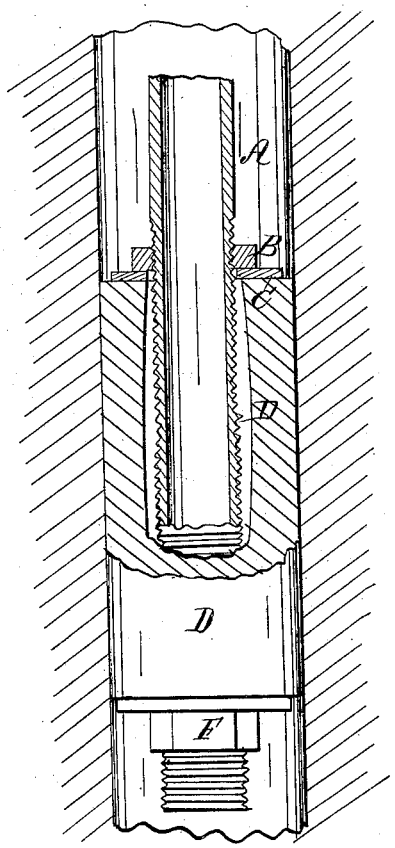
Fowler & Morgan.

Well Packing.

No. 51,167. Patented Nov. 28, 1865.



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UNITED STATES PATENT OFFICE.

A. H. FOWLER AND E. J. MORGAN, OF ITHACA, NEW YORK.

IMPROVEMENT IN PACKING DEEP WELLS.

Specification forming part of Letters Patent No. **51,167**, dated November 28, 1865.

To all whom it may concern:

Be it known that we, A. H. FOWLER and E. J. MORGAN, of Ithaca, in the county of Tompkins and State of New York, have invented a new and useful Improvement in Packing the Tubes of Oil and other Wells; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification.

The drawing, consisting of only one figure, represents our improvement.

This invention consists in a novel method of packing the tubes of oil and other wells, the packing material being applied to the tube in such a way as to become expanded and contracted by rotating the well-tube about its own axis.

A designates a well-tube placed in a well. The section of the tube which is placed in that part of the well where a packing is to be applied, has a screw-thread cut on it, as seen in the drawing.

B is a nut screwed up to the highest part, or nearly to the highest part, of the screw-thread, so that it will remain firmly in place.

C is a washer or annular plate fitting loosely upon the tube next beneath the nut B.

F is a nut working in the same screw-thread lower down on the tube, and having an upper flange or washer, E, which forms part thereof. Between the two washers we place any suitable packing which is capable of becoming expanded by being compressed between the two annular plates or washers.

In the example of our invention here given we have shown a packing made of a section of a hollow cylinder of gutta-percha whose diameter in its normal condition is a little smaller than the diameter of the well, so that it may be passed down without crowding, but which, when compressed, will fill the annular space between the tube and the sides of the well, so as to prevent surface and other water from flowing into the lower part of the well. The packing, if it is a cylinder with unbroken sides, like that here shown, is applied before the lower nut and plate are placed on the tube. The diameter of the lower plate, E, is to be very nearly equal to the diameter of the well. In this example we have connected the lower nut and washer so as to form one piece; but they may be separate pieces, if desired, providing they are so applied as to move together. The upper surface of the washer E, with which the gutta-percha cylinder D is in contact, is roughened or corrugated so that it may take hold thereof by friction, and thereby the nut F be turned or held stationary with the cylinder.

The operation of the apparatus is as follows: The several parts being placed in their proper order on the well-tube, the tube is lowered into the well till the section which contains the packing-cylinder has reached the point where the latter is to be applied, when the tube is rotated. In the act of rotating the tube the packing-cylinder will be kept stationary by reason of frictional contact with the sides of the well, and which contact need only be slight, since the cylinder, being held loosely between the nuts, will readily turn if its sides only occasionally touch the sides of the well. This action of the sides of the well on the sides of the cylinder D will cause the nut F to ascend the screw-thread, and thereby compress the packing-cylinder D beween the washers, and so increase its diameter. The continuation of this action will increase its diameter until it completely fills the annular space between the tube and the sides of the well, and thus make an effectual packing about the tube.

The inner sides of the packing-cylinder will leave the sides of the well-tube when it is compressed between the washers, so that there will be no resistance produced by their contact to the rotation of the well-tube, and the cylinder may have that shape given to it in its normal condition—that is, its interior diameter may increase gradually from each end up to the middle of its length, so that little or no resistance shall be made on the tube to prevent its rotation in the well.

Any suitable material may be used for a packing-cylinder, such, for instance, as felt, leather, cloth, or other material which can be expanded or enlarged in its diameter by means of compression applied to its ends.

When the well-tube is to be removed from the well it is only necessary to rotate the well-tube in the opposite direction, when the nut

F and its washer E will run down the screw-thread and the cylinder will resume its natural dimensions. The tube can then be withdrawn without difficulty or hinderance from the packing.

For the upper nut, B, may be substitued a shoulder formed on the tube, or a strong collar may be shrunk thereon, with a flange to take the place of the collar C, which latter we have here made loose to prevent friction.

The lower nut, F, may be made of such enlarged diameter as to enable us to dispense with the flange or washer E.

We claim as new and desire to secure by Letters Patent—

Packing the tube of a well by means of a compressible packing, D, applied between the wall and the tube, said packing being compressible by the adjustment of the nut and washer, or their equivalents, on the threaded tube, substantially as described.

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