J. Q. MILLER.

Packing for Oil-Well Casing.

No. 205,804. Patented July 9, 1878.

Fig: 1.

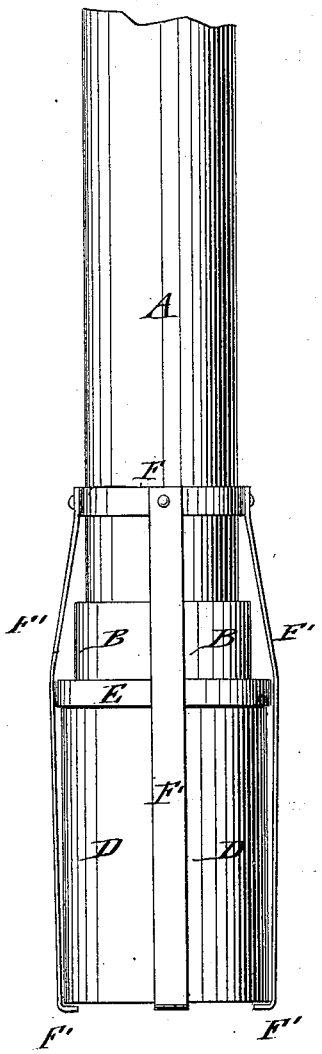
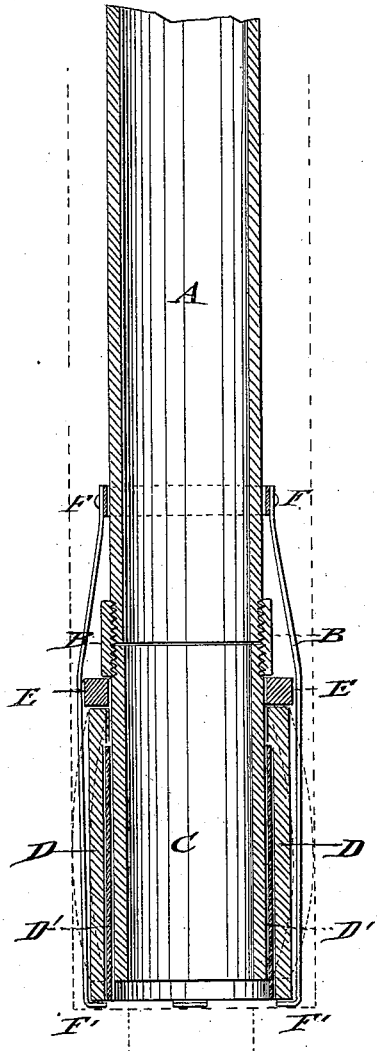


Fig: 2.



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JOHN Q. MILLER, OF EMLENTON, PENNSYLVANIA.

IMPROVEMENT IN PACKING FOR OIL-WELL CASING.

Specification forming part of Letters Patent No. **205,804**, dated July 9, 1878; application filed February 28, 1878.

To all whom it may concern:

Be it known that I, JOHN Q. MILLER, of Emlenton, in the county of Venango and State of Pennsylvania, have invented a new and Improved Packing for Oil-Well Casing, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a side view of my improved packing for oil-well casing. Fig. 2 is a vertical transverse central section of the same.

Similar letters of reference indicate corresponding parts.

This invention has reference to an improved packing for the casing of oil-wells at that point where the oil-well is continued downwardly at a less diameter than in the upper part of the well-hole, the packing being so arranged that the weight of the casing produces the tight closing of the well-hole at that point, so as to positively exclude the water and be not affected by the concussion of torpedoes, or by the jarring of the tools while drilling inside of the casing. The packing also admits of the easy pulling up of the casing without producing the turning of the packing.

In drilling oil-well holes there are usually drilled two holes of different diameters, of which the upper one, from three to five hundred feet in depth, or as far as necessary to cut off or get below the water-courses, is made eight inches in diameter, while the lower hole is made of a diameter of five and one-half inches only. In the upper section a casing of five and five-eighths inches in diameter is placed, which, when properly packed at the lower end, excludes all the water from the lower section of the well-hole, which is drilled dry or with water put in for mixing with the drillings, to facilitate the operation.

The present mode of making the casing water-tight at the bottom of the upper section of the well-hole is to contract the hole to six inches, and filling up the space around the casing with drillings, rice, oats, or similar substances, or expanding the bottom and filling thereby the space at that point. These modes occasion a great deal of trouble in getting the casing water-tight; but the main objection to them is that the sediments form such a compact mass around the casing that it is very difficult and expensive to draw it out when the well is abandoned.

The object of my invention is to remove these difficulties while shutting off the water in the well-hole.

It consists of a short piece of casing, coupled to the lower end of the upper casing, and provided with an exterior sleeve or packing of elastic material, having an interior shorter sleeve of sheet metal. A sliding or loose ring is placed on the lower section of the casing, between the coupling of the bottom section and the upper edge of the elastic sleeve or packing, and the latter retained by straps in the casing proper for removing the same.

By referring to the drawing, A represents the casing of the upper part of the well-hole, to the lower end of which is attached, by an ordinary casing-coupling, B, a short section of casing, C. It rests on the shoulder or bearing formed at the point where the lower continuation of the well-hole of smaller diameter leaves the upper larger section of the well-hole. Around the short bottom piece C of the casing is placed a sleeve or packing, D, of rubber or other elastic material, and between it and the coupling a loose or sliding ring, E, which serves the purpose of forcing down or expanding the rubber packing when it reaches the bottom of the upper section of the well-hole. The ring E is made loose, so that in case the walls of the well should crumble a little, it would not fasten the casing, but permit it to be drawn up, causing the rubber packing to contract so that the dirt could pass around it and be carried to the bottom of the well through the smaller well-hole below.

The rubber packing D is made about eight inches long, and so as to extend about three inches below the bottom of the short casing-section C, so that when it reaches the bottom it is forced upward and expanded by the weight of the casing. When the bottom section of the casing reaches the bottom it sustains the weight of the casing after having expanded the rubber packing. At the inside of the rubber ring, intermediately between the lower section C and the sleeve, is placed a

shorter guide-sleeve, D′, of sheet-iron, by which the upward sliding of the rubber is facilitated, and any possibility of its doubling up under the ends of the casing in going down or when it reaches the bottom prevented. This interior sheet-metal sleeve is only four or five inches in width, and is essential for the reliable working of the packing when it assumes its required position at the bottom of the upper section of the oil-well hole.

From a sliding ring, F, of the casing A are extended downward to the lower edge of the packing galvanized straps F′, that are riveted to packing and sleeve, and bent at the lower ends, so as to take hold of the packing and pull the same upward, together with the loose top ring E, when the casing is being drawn out of the well-hole. These straps also serve in part to protect the rubber in its descent, and are galvanized for the purpose of resisting the action of the salt-water. As the drillers do not always make the large holes fully eight inches in diameter, and as there are frequently projecting lumps or rough places in the walls of the well-holes, it is necessary to allow one-half inch in the size of the packing, making it about seven and one-half inches in diameter. The lower part of the upper well-hole is generally contracted for a quarter of an inch, which will render a less expansion of the rubber necessary, and still permit all sediment to pass it when it is released from the weight that expands it. The straps are made long enough to allow the casing to come up three or five inches before they tighten or pull the packing upward, so as to allow everything to pass the packing that is above it. As the packing is tightly pressed and expanded by the weight of the casing above it, it will positively exclude the water without fastening the casing of the well, so that it can be drawn out and used again and again, if necessary. The concussions caused by torpedoes will not cause it to break, nor the jarring of the tools while drilling inside of the casing, on account of the more reliable and superior packing that is employed.

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

1. The combination, with the section C, of an elastic packing, D, and guide-sleeve D′, extending below said section, as and for the purpose described.

2. The combination, with the section C, the packing D, and sleeve D′, of the ring E and coupling B, all arranged as set forth.

3. The combination, with the sections A C, having the coupling B, the ring E, and the sleeve D′, of the ring F and the straps F′, arranged to operate as specified.

4. The combination of a short bottom section, coupled to the lower end of a casing in the upper larger section of an oil-well hole, with an exterior elastic sleeve or packing extending below the edge of the section, and having a compressing top ring, interior shorter sheet-metal sleeve, and exterior retaining-straps extending below the lower edge of the packing, substantially as and for the purpose specified.

JOHN QUINBY MILLER.

Witnesses:
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DAVID HOUSER.