(No Model.)

D. L. LEWIS.

OIL WELL PACKER.

No. 266,848. Patented Oct. 31, 1882.

Fig. 1.

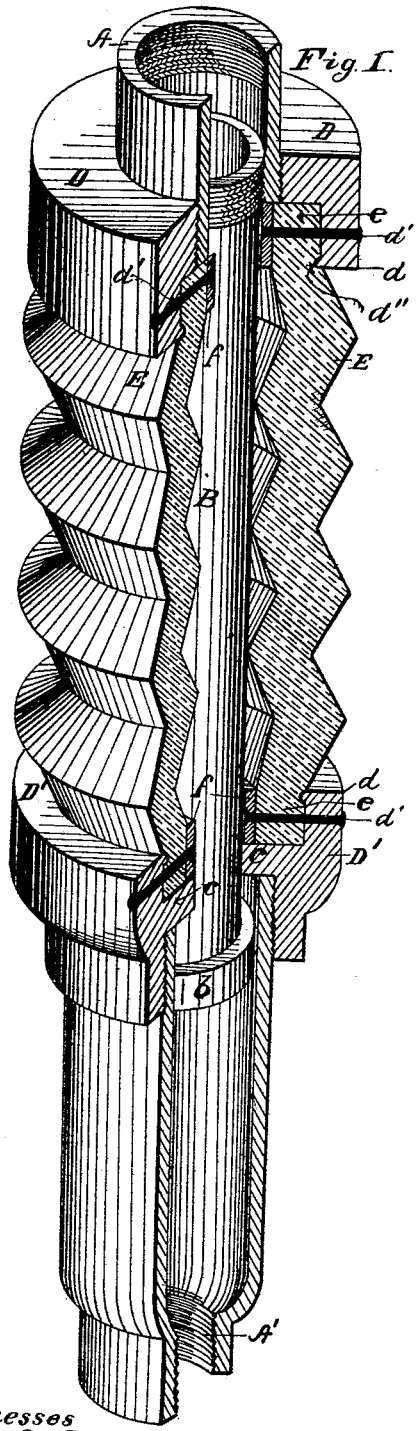
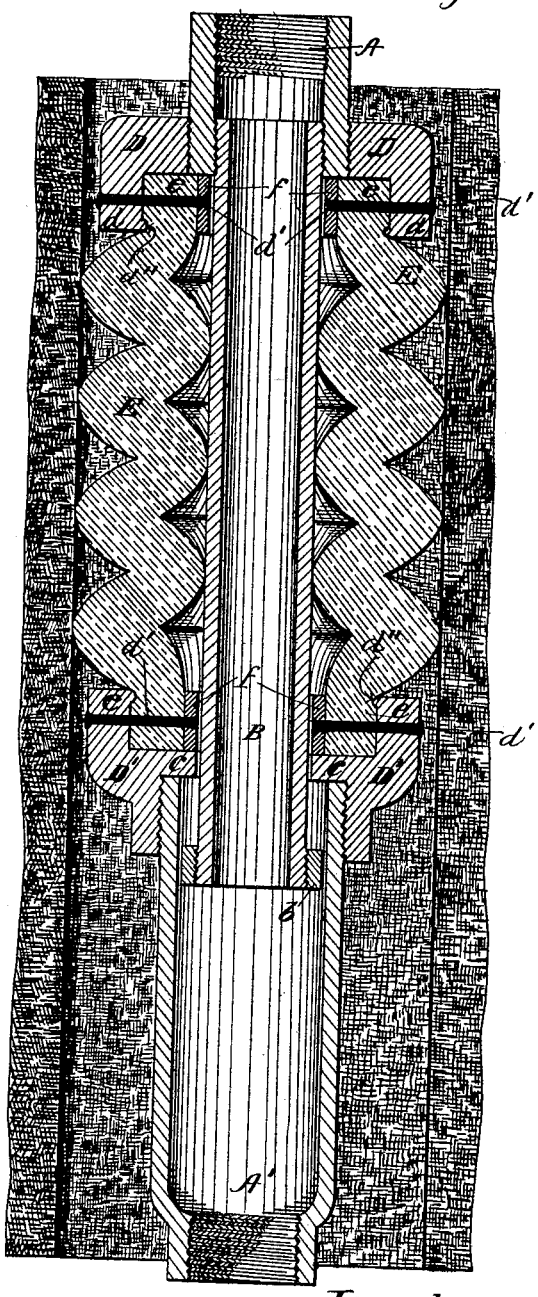


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

DANIEL L. LEWIS, OF BRADFORD, PA., ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO ISAAC LEWIS, OF JOHNSONSBURG, N. Y., AND L. C. HALLOCK, OF ERIE, PA.

OIL-WELL PACKER.

SPECIFICATION forming part of Letters Patent No. 266,848, dated October 31, 1882.

Application filed October 28, 1881. (No model.)

To all whom it may concern:

Be it known that I, DANIEL L. LEWIS, a citizen of the United States, and a resident of Bradford, in the county of McKean and State of Pennsylvania, have invented new and useful Improvements in Oil-Well Packers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and the letters or figures of reference marked thereon.

My invention relates to the construction of packers for oil or other deep-bored wells; and it consists in improvements in the form of the pressing-flanges and their connection with the packing material, and incidentally in the form of the packing material.

My device is illustrated in the accompanying drawings, as follows:

Figure 1 is a perspective elevation of my device with a section cut out to show internal construction. Fig. 2 is a vertical section of the same shown as under pressure.

Previous to my invention the packing material has been compressed between two flat flanges, or by an expanding cone which enters the rubber annulus and wedges it out against the wall of the well. In either case great difficulty has been experienced in withdrawing the packer when found necessary so to do, for the reason that the upper outer corner of the annulus has become adhered to the wall of the well, and any attempt to raise it, even after all pressure is removed from it, tends to turn the annulus wrong side out, and of course entirely prevents its removal until these corners are removed from the wall of the well. Whether the pressing-flanges be flat or conical the above ill effects are encountered.

It is the object of my present invention to remedy this defect. To this end I have constructed the parts of the packer as follows:

A A′ represent the upper and lower sections of the well-tubing, respectively, the part A′, or lower section, being sometimes called the "anchor."

B is the small inner tubing forming the slip-joint, and is in effect a part of the upper section.

D and D′ are the "compressing-flanges," so called because the annulus or packing material is compressed between them in packing the well.

E is the rubber annulus or packing material, and is a solid block of rubber pierced longitudinally, so as to fit around the tubing. The peculiar form of this annulus, as shown, as well as some of the other features shown in the drawings, constitutes the subject-matter of another application for a patent filed by me, and hence will not be described here.

It will be seen that the flanges D and D′ are provided with vertically-projecting annular flanges or rims *d d*, forming a ring or section of a cylinder between the ends of the annulus and the wall of the well. This is for the purpose of preventing the ends of the annulus from bulging out toward or against the wall of the well when under pressure. The ends of the annulus may be narrowed down, forming necks, as shown at *e e*, leaving the thicker part of the annulus to extend outward under the edge of the flange or ring *d*. A bead or lip, *d″*, may also be formed on the inside of the ring or flange to embed itself in the rubber and assist in holding the neck firmly within the cap-shaped flange. This is of advantage when drawing out the tubing or lowering it into the well, as it insures the keeping of the packing material in place within the cap-shaped flange.

It will be seen that with a flange constructed in substantially the form shown—*i. e.*, so as to encircle or embrace the end of the annulus—the said annulus is fully supported against outward pressure at the end when under longitudinal pressure, and hence the packing material will, when under said longitudinal pressure, bulge out in its intermediate surface, which is the most effective in packing the well and the easiest to disengage from the wall of the well.

I am aware of the patent to F. Martin, September 12, 1865, and I hereby disclaim as forming any part of my invention the subject-matter therein shown.

I am aware that it is old to provide the rubber annulus of an oil-well packer with a ring or section of a cylinder to prevent contact of the end of the annulus with the wall of the

well, and to support the rubber against outward pressure, as such a construction is shown in patent to Robinson and Strong, No. 52,448, February 6, 1866—well-packing—and to that I make no claim.

What I claim as new is—

1. In combination with the tubing of an oil-well, a cylindrical elastic block pierced with a central longitudinal opening, and provided with a neck at the end thereof, adapted, as shown, to fit within a cap-shaped pressing-flange, for the purposes mentioned.

2. In an oil-well-packing device, a solid elastic annulus provided with a neck at the end, in combination with a flange for pressing the same, which is provided with an annular rim for embracing said neck, substantially as and for the purpose set forth.

3. In an oil-well-packing device, a solid elastic annulus provided with a neck at the end, in combination with a flange for pressing the same, which is provided with an annular ring or rim for embracing the said neck, which rim is provided on its inside with a lip or bead, substantially as and for the purposes mentioned.

4. In an oil-well packer, the combination, substantially as shown, of the following elements: a telescopic or slip joint, a pressing-flange attached to each of the parts of said tubing, and provided with annular rims for overreaching part of the packing material, and a solid rubber annulus provided with necks or thin extensions therefrom at each end thereof, said annulus being placed between said flanges and the said necks embraced by the said annular rims on said flanges.

5. In an oil-well packer, a compressing-flange adapted, substantially as shown, to cap over or encircle the end of the rubber annulus, for the purposes mentioned.

In testimony that I claim the foregoing I have hereunto set my hand this 25th day of October, 1881.

DANIEL L. LEWIS.

Witnesses:

JNO. K. HALLOCK,

W. S. BROWN.