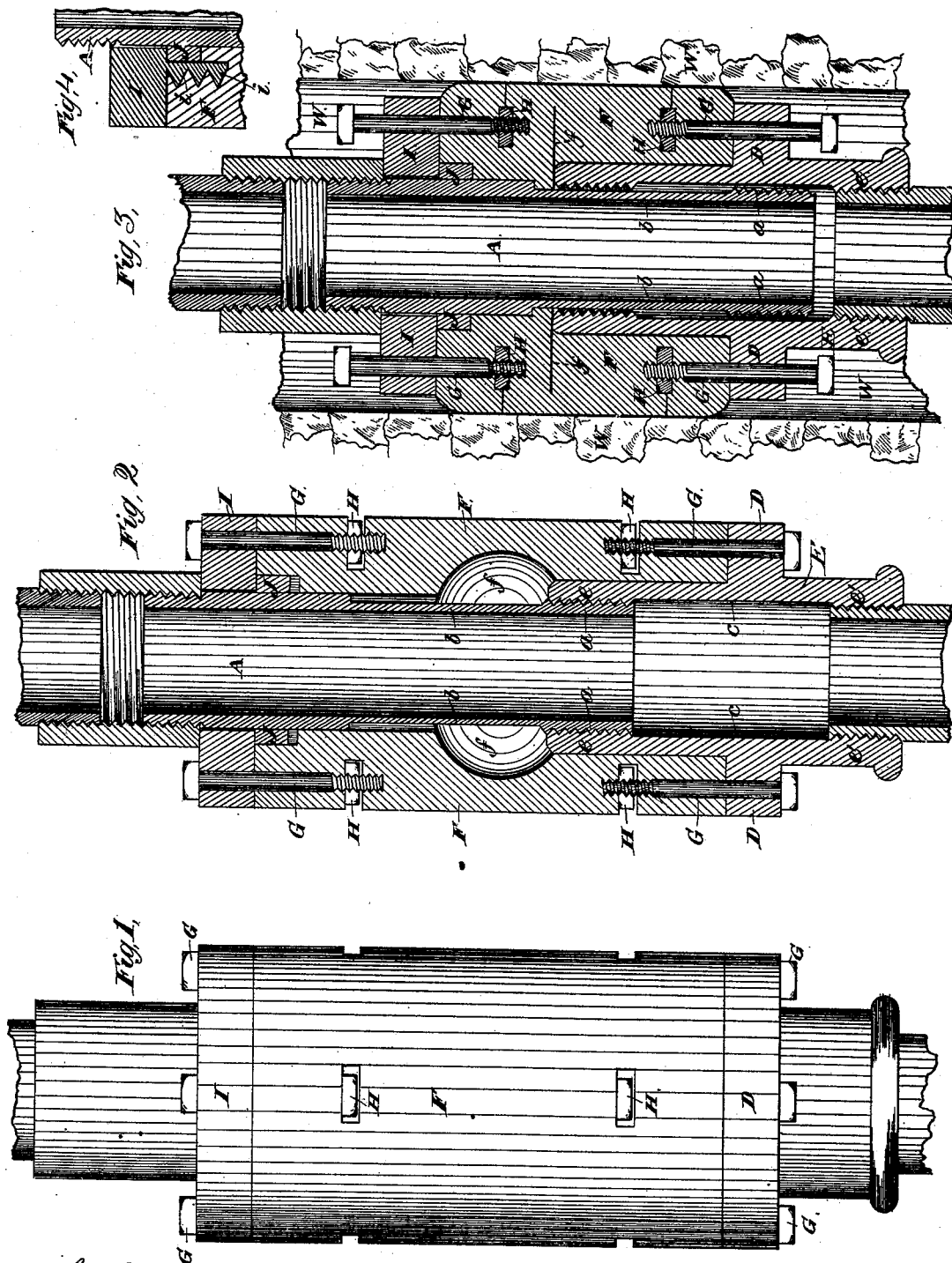


I. N. HOADLEY.
Salt or Oil Well Packing.

No. 214,914.

Patented April 29, 1879.



Attest:
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UNITED STATES PATENT OFFICE.

ISAAC N. HOADLEY, OF BRADFORD, PENNSYLVANIA.

IMPROVEMENT IN SALT OR OIL WELL PACKINGS.

Specification forming part of Letters Patent No. 214,914, dated April 29, 1879; application filed February 10, 1879.

To all whom it may concern:

Be it known that I, ISAAC N. HOADLEY, of Bradford, in the county of McKean and State of Pennsylvania, have invented a new and useful Improvement in Salt and Oil Well Packings, of which the following is a specification.

The present invention is an improvement on the packer described in the application of William E. Hoadley, filed the 21st day of March, 1878, and assigned to myself. The said application describes a rubber packing which is expanded laterally by endwise compression applied by screwing down the tube, to flanges of which the extremities of the rubber are connected, the connecting-bolts being applied within recesses in the packing in such a manner that when the tube is screwed up a forcible upward tension will be applied to the coupling, so as to draw it out lengthwise, and thereby contract it in diameter.

My improvement consists in part in turning out the central part of the screw-couplings, so that their internal screw-threads will be near the ends only, and turning off the external screw-threads excepting for a short distance at the extreme end of the tube section, the effect being to allow the tube to slip within the coupling after it has been turned into the same to the extremity of the screw-threads. By this means I am enabled to maintain a rigid connection between the bottom section and anchor and the remaining portion of the tube, and hold the rubber packing in its elongated condition while the tube is lowered into the well, and then by turning the tube down until its external screw-thread drops freely within the unthreaded portion thereof the weight of the tube is applied to the packing to press it out.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is an elevation of the packer in its elongated condition ready to be lowered into the well. Fig. 2 is a longitudinal section of the same. Fig. 3 is a longitudinal section, showing the tube lowered and the packing expanded laterally. Fig. 4 is a partial section illustrating a modification in the manner of attaching the packing.

A A represent a tube section having a screw-thread, *a a*, on its extremity, and above this a depressed portion, *b b*, equal in depth to the screw-thread. This depression may be produced by turning down the tube to about one-half its thickness. This recess or depression extends to the full length occupied by the screw-thread in W. E. Hoadley's packer, before referred to, the object of the present improvement being to allow the endwise movement of the tube relatively to the coupling and packing by a free slip instead of by screwing the tube into the coupling the whole distance, as in the former mode.

E is the coupling, formed with short internal screw-threads *e e'* at its ends, between which is a cavity, *c*, allowing the free passage of the thread *a* on the extremity of the tube section A. The coupling E has on its exterior a flange, D, to receive the lower end of the recessed packing F, which is secured to the said flange by bolts G, screwed into nuts H, applied within external recesses in the rubber packing, as shown in Figs. 1, 2, and 3. The upper end of the packing is bolted in a similar manner to a collar, I, confined to the tube by a fixed flange, J, so as to permit the tube to turn within the packing and its attachments. Instead of these bolts and nuts the tube, flange, or collar at either end of the packing may be attached thereto by a screw-thread, *i*, taking into a corresponding thread prepared first in the rubber, as illustrated in Fig. 4.

From the above description it will be evident that by turning the upper part of the tubing above the packer a sufficient number of revolutions to exhaust the screw-thread or screw the external tube-thread, *a*, completely through the internal coupling-thread, *e*, after the tube is lowered into the well, the whole weight of all the tubing above the packer will bear on the loose collar I, on top of the rubber packing F, compressing said packing endwise toward its center, and so as to close the recess *f* therein, expand the packing laterally, and tightly press it against the wall of the well, forming in effect a solid rubber packing.

The form which it will take when the weight of the tubing is resting on it is illustrated in Fig. 3, W W showing the wall of the well against which the rubber spring is to pack.

Should the wall of the well be rough, enlarged, or irregular from the use of torpedoes or from crevices, the spring or elastic packing is designed to and will take the form of the walls of the well, be they ever so irregular, and will effectually prevent the ascent or descent of gas or liquid outside of the tubing.

The spring being recessed on the inside, it will expand in the middle to nine inches, and pack the wall the whole length of the spring. It cannot expand inwardly, as it meets the resistance of the tubes. When the tube is to be removed from the well it is drawn up until the screw threads *a* and *c* come together, when the turning of the tube backward screws its thread *a* upward within the coupling-thread, so as to stretch the rubber packing endwise, contract it in diameter, and detach it from the walls of the well.

My improvement possesses an important advantage for a pumping-packer as well as for flowing. If it is necessary to pump the well, the tubing being raised, but not enough to lift it off the bottom, it can be turned so as to screw the nipple *a* up into the female coupling, and the well may be pumped from any point desired without drawing out the tubing and taking off the packer. Other packers

cannot be pumped through unless the tubing stands on the bottom of the well.

My spring constitutes a tight packer whether expanded by the weight of the tubing or not.

My packing may be made with either one or more recesses, and the recessed packing may be made in one or more parts.

Some parts of the invention are available and useful without bolting the packing to the tube-flanges.

I do not claim connecting the packing at its extremities to the tube so that it may be drawn endwise, as this was invented by William E. Hoadley, and is described and claimed in his application hereinbefore referred to.

The following is what I claim as new and desire to secure by Letters Patent:

The combination of the tube *A*, having a short external thread, *a*, and a depression, *b*, the coupling *E*, having a short internal thread, *e*, and a cavity, *c*, and a suitable elastic packing, *F*, to operate in manner substantially as and for the purposes herein set forth.

I. N. HOADLEY.

Witnesses:

C. TAYLOR,

JNO. W. WILLIS.