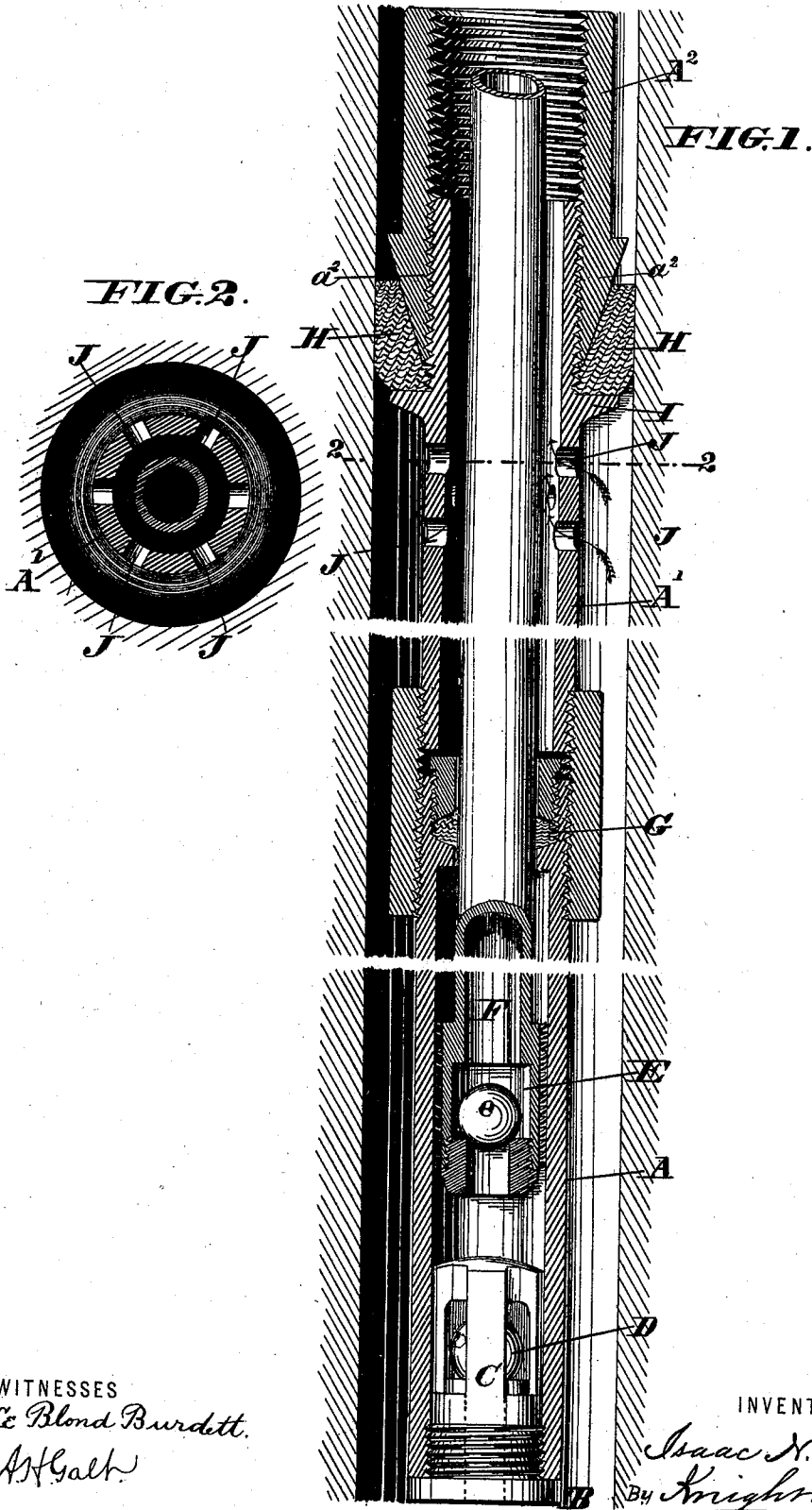


I. N. HOADLEY.
OIL-WELL TUBING.

No. 177,508.

Patented May 16, 1876.



WITNESSES
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UNITED STATES PATENT OFFICE.

ISAAC N. HOADLEY, OF BUTLER, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO STEPHEN BREDIN, OF SAME PLACE.

IMPROVEMENT IN OIL-WELL TUBING.

Specification forming part of Letters Patent No. **177,508**, dated May 16, 1876; application filed April 1, 1876.

To all whom it may concern:

Be it known that I, ISAAC N. HOADLEY, of Butler, in the county of Butler and State of Pennsylvania, have invented a certain new and useful Improvement in Tubing for Oil- Wells, of which the following is a specification:

The subject of my invention is a device by which the gas evolved in oil-wells may be economically utilized without interfering with the working of the oil pump, or with the packing device employed to exclude water from the lower part of the well. To this end I provide the well-tubing with openings below the water-packing, for the discharge of gas from the lower part of the well to the interior of the tube. The invention further consists in an improved construction of water-packing.

In the accompanying drawing, Figure 1 is a vertical section of the lower portion of a well-tube with my invention applied. Fig. 2 is a horizontal section on the line 2 2, Fig. 1.

A A¹ represent the lower two sections of the well-tubing, and B the base of the lower section A, to which is applied the anchor and the cage C containing the check-valve D. E represents the piston working within the tube A, and F the hollow plunger of the pump connected therewith. e is the piston-valve. G is the packing, within which the hollow plunger-rod works. My substitute for the seed-bag or packing ordinarily employed to exclude salt water or other water from the lower chamber of the well is shown at H, which represents an annular body of rubber or other elastic or compressible material resting on a flange, I, of the well-tube, and expanded by the wedge-shaped end a² of the tube A², which is secured to the section A¹, and is turned down for this purpose after the base of the tube A A¹ is in position, the base being held from turning by the anchor at the bottom of the well. J J are apertures in the tube A, directly beneath the packing H, to admit gas to the interior of the well-tube from the oil-rock at the bottom of the well.

The operation is as follows: Having closed the well from ingress of salt water or fresh water, the gas is allowed to escape through the perforations in the tubing, to be used as

fuel, and the oil is pumped through the hollow sucker-rod, and discharged into the tanks by attachment of gum pipe, or in any other suitable manner.

In the ordinary mode of working oil-wells there is no arrangement by which the salt water is shut off and the gas allowed to escape and be used as fuel. The confinement of the gas within the well is not only a decided injury to the production, but makes the use of coal necessary for fuel, and any seed-bag which shuts off the water by being attached to the ordinary well-tubing must necessarily prevent the escape and use of the natural gas.

The large casing, five and five-eighths inches through, to shut off fresh water (which casing is now put in all wells to the depth of about six hundred feet, at an average expense of one dollar and twenty-five cents per foot) was not in general use previous to the year 1870. Since that time it has been used, and, it being put in, the well is drilled to the sand-rock through this casing. The salt water is met with usually about twelve hundred feet below the surface, and in many places is so disastrous to the proper working of the well as to necessitate the use of smaller casing to that depth, of the diameter of about three and one-fourth inches. The presence of the small casing prevents the well being kept clean, and the frequent use of the tools for that purpose involves a great expense.

It will be obvious from this statement that the plan to shut off the salt water, which allows the wells to be cleaned, the gas to be used, and the oil pumped with as little trouble and expense as heretofore, and, further, prevents the water-logging of the sand-rock by preventing the influx of the salt water from above the packing, is a great and permanent improvement without involving any large additional expense, but possibly effecting an actual saving, from avoiding the breakage of wooden sucker-rods and split tubing—a frequent cause of annoyance in all wells. To do this successfully, I attach a seed-bag or packing, as specified, to the ordinary well-tubing, below the point of ingress of salt or fresh water, perforate the tubing below the

seed-bag for the collection of the natural gas for fuel, and use a seven-eighths-inch iron pipe as a sucker-rod, through which I pump the oil to the surface, instead of by the solid wooden rods and ordinary well-tube as now in use.

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

1. A well-tube, $A A^1$, provided with apertures J below the seed-bag or water-packing H , to admit gas from the oil-chamber to the interior of the well-tube above the pump-piston, substantially as described.

2. The combination of the packing-ring H with the well-tube sections $A^1 A^2$, the sections

A^2 being constructed with a wedge-shaped end, a^2 , to expand the packing when screwed down, as explained.

3. The combination of hollow sucker-rod F , well-tube $A A^1$, the packing-ring H , and the perforations $J J$, to permit the passing of gas from the well-tube into the pump-tube above the piston and around the hollow sucker-rod, as and for the purpose set forth.

I. N. HOADLEY.

Witnesses:

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