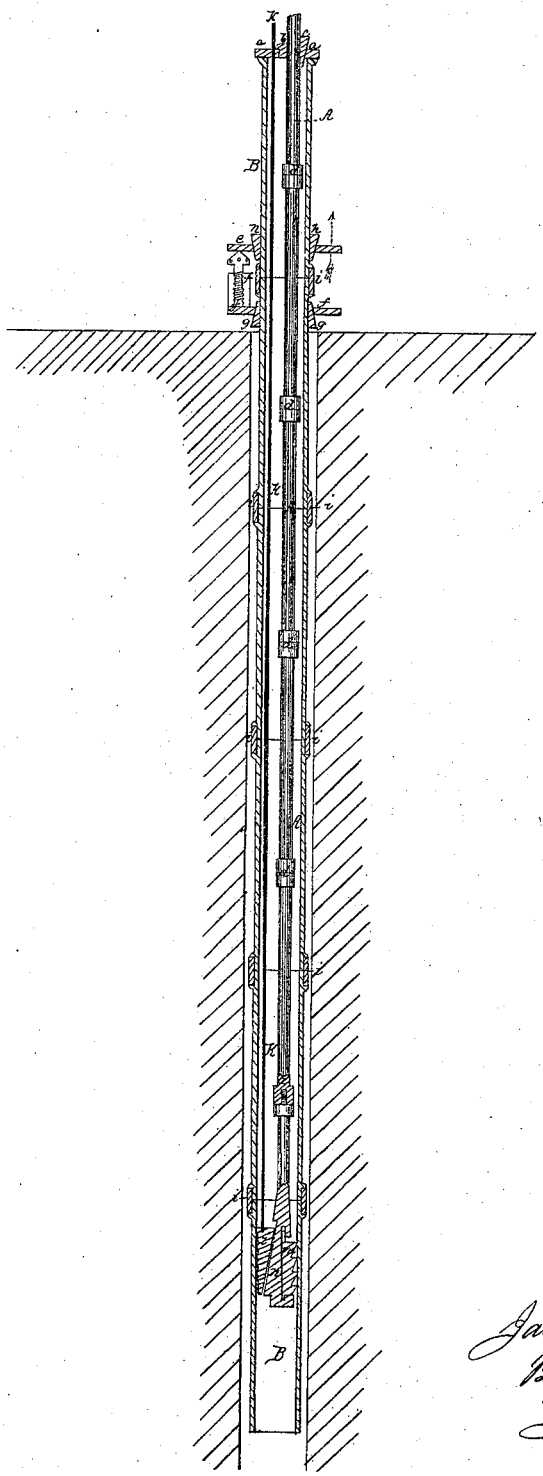
J. H. Luther,

Tube Clamp.

No. 52,866. Patented Feb. 27, 1866.



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UNITED STATES PATENT OFFICE.

JAMES H. LUTHER, OF PETROLEUM CENTRE, PENNSYLVANIA.

IMPROVED OIL-WELL-TUBE EXTRACTOR.

Specification forming part of Letters Patent No. **52,866**, dated February 27, 1866.

To all whom it may concern:

Be it known that I, JAMES H. LUTHER, of Petroleum Centre, of Venango county, in the State of Pennsylvania, have invented a new and useful Apparatus for Extracting Tubes from Artesian Wells; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

In the boring or forming of Artesian wells it is customary, as is well known, to drive down a tube or tubing which is made in sections coupled together and driven down one after another, and this tubing, which is of considerable value, has heretofore, in wells which have become useless, been left in or abandoned for the want of some practical method of getting them out. In the oil regions of our country such a large quantity of this tubing has been left in wells which have failed or never produced oil as to make the recovery of this tubing in an uninjured condition a great desideratum.

I have invented a successful and thoroughly practical method of recovering this tubing, which is at the same time an economical mode, and enables me to extract the tubes and also their couplings or connecting-bands in a perfect condition.

To these ends my invention consists in introducing within the tube a rod extending down to the lowest tube, (a section of the tubing,) and having attached to it or formed upon it serrated surfaces or teeth, which, when the rod is pulled upward, will wedge or crowd against and bite into the internal surface of the tube and lift it, as will be hereinafter more fully explained; and my invention also consists in so clamping the upper end of the rod by which the lowest tube is lifted, as above mentioned, to the top of the tubing as to lock all the sections of tubing in the well securely together, whereby I am enabled, after the tubing has been started, to apply the lifting-power directly to the upper end of the tubing, as will be presently more full described; and my invention also consists in drawing the sections apart as each section of the tubing is lifted above ground, locking the balance together, and then lifting again, as will be hereinafter more fully explained; and my invention further consists in the peculiar construction of the griping device or mechanism at the lower end of the lifting-rod, whereby I am enabled, at pleasure and with ease, to remove said lifting-rod and its mechanism without injury to itself or the tubing, as will be hereinafter fully set forth; and my invention also consists in the employment of peculiarly-constructed collars and serrated wedges to lift the tubing by and for separating the sections, as hereinafter more fully described.

To enable those skilled in the art to make and use my invention, I will proceed to describe the construction and operation of my apparatus for extracting tubing from deep wells.

In the accompanying drawings I have represented, in vertical section, an Artesian or oil well with the usual lining or tubing in process of extraction by my method and apparatus.

B is the well-tubing, which is made in sections, as usual, (of cast iron,) which are turned at their ends and coupled together by wrought-iron bands shrunk on, as seen at *i i*, &c.

A is the extractor or lifting-rod, which has an enlarged lower end, as seen at *u*, and which rod I propose to make in sections about equal to the lengths of tubing, and coupled together, as seen at *d d*, &c.

In the lower end or tool-stock *u* of the lifting-rod are arranged two griping-jaws, *m* and *l*. The former, *m*, is a block nearly rectangular in its contour, but having large serrations or ratchet-like teeth formed in that edge or side which is adjacent to the internal face or surface of the tubing B. This toothed block or jaw *m* is permanently connected to the stock *n*, but in such a manner as to have a little play in its seat vertically or longitudinally, for purposes to be presently explained. The other jaw, *l*, is of a wedge form, as shown, having much finer teeth on its edge or side that comes against the tubing, and this serrated wedge *l* lies against the tapering or oblique surface of stock *u*, and is attached to the lower end of a wire or small rod, K, by which it may be withdrawn at pleasure, as will be presently explained.

a is a cap-plate, which is placed on top of the tubing, and through which the rod A passes and to which said rod is secured by a friction-wedge, *c*, having one of its sides serrated.

e and *f* are two collars, which are placed around the tubes and secured by serrated

wedges *g* and *h*, for purposes explained hereinafter.

The operation of my extracting apparatus may be thus explained: When it is desired to withdraw the tubing from a well the rod A is dropped down into the tube B, with the wedge *l* placed in its seat, as shown. Where it is practical to lift all the tubing at once, (which is the best plan,) the rod A and its griping-blocks *m l* should be run down so far that the latter will come just below the top of the lowest section of tubing B, as illustrated. Then by pulling upward on the rod A the oblique surface of the portion *n*, moving up against the oblique back side of wedge *l*, will induce the serrated surface of said wedge *l* and also the toothed surface of piece *m* to gripe or bite against the bore of the tube B sufficiently to effect the lifting of the tubing with the application of sufficient power to the upper end of rod A. The power may be applied to upper end of said rod by lifting-jacks or in any other desired manner.

In the use of my lifting apparatus I propose, as soon as the upper end of the uppermost section of tubing has been raised sufficiently above ground, (by pulling on the rod and through it on the lowest section, as just explained,) to place around said tube a collar or dog, *e*, formed with notches in its eye to accommodate two or more wedges, *h*, which are serrated on the side which is placed next to the tube, so as to gripe the latter. I then apply the jacks or lifting power to said collar and lift on the tubing instead of the rod, having first, however, locked or tied all the sections of tubing together by the said rod A in the following manner, viz: I place a plate, *a*, over the upper end of top section and around the rod A. This plate *a* has a hole in it sufficiently large to allow the passage through it of the couplings *d* of the rod, and is provided with a plug, *b*, and a serrated wedge, *c*, by which latter the said rod A and plate *a* are clamped or dogged together, and all the sections of tubing from the top to bottom of well thus tied securely together. When one length of tubing has been lifted entirely above ground, as seen in the drawings, and the top end of the next length, I apply to the latter another collar, *f*, and set of serrated wedges *g*. I then unfasten the plate *a*, and, placing a set of lifting-jacks between the collars *e* and *f*, I force them apart, as illustrated by the red arrows, and thereby disconnect the top section of tube from the section below it, uncoupling a length of rod A. I then drop plate *a* down on top of next section of tube, again tie the sections together, and again proceed to lift on collar *f*, pulling on the series of tubes until the section to which collar *f* is secured is entirely above ground and part of the next lower section, when I repeat the operation of disconnecting a section, shortening up rod A, and tying the sections together, as already explained.

Of course the method of lifting all the sections from the bottom by the rod A and then tying them together and lifting by the tube may be departed from, and the essential part of my invention still be used.

In lieu of the collars *e* and *f* to lift tubing and force apart the sections, (with the aid of jacks, screws, wedges, or other well-known mechanical appliances,) other means may be employed, and, if deemed expedient, the griping mechanism can be applied to one of the tubes higher up, and the sections may be drawn out and apart one at a time, and thus dispense with a portion of the operations explained; but I do not desire to limit myself to any precise mode of carrying out my invention either in whole or in part.

Whenever it is necessary from any cause to remove the lifting-rod this may be effected by a slight blow or blows on the top of said rod, and at the same time pulling upon the wire *k*, for it will be seen that piece *m*, having a sufficient vertical play, will allow the portion *n* to descend a short distance and relieve the back side of wedge *l* from pressure, which may be then drawn up by wire *k*, and the rod A, with piece *m*, may then be extricated.

The angle or obliquity of the teeth of piece *m* should about correspond to the angle of the wedge *l*, so that the tendency of the lifting force will be to cause the teeth of *m* and *l* to bite against the bore of the tube, but not to spread or upset the said tube.

Having fully explained the construction and operation of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A griping and lifting mechanism constructed and operating substantially in the manner described.

2. In combination with a mechanism which can be inserted within and made to gripe one of the tubes, a means of locking the rod of such griping mechanism to an upper tube for the purpose of clamping or tying several tubes or sections together, whereby the lifting power may be applied to the upper end of the tubing itself, as set forth.

3. Separating the sections, as described, and shortening up the rod A, as and for the purposes described.

4. The construction of the griping mechanism, as specified, with sufficient play to jaw *m*, and with a removable jaw, *l*, whereby the whole may be readily removed at pleasure, as hereinbefore set forth.

5. The employment of collars or dogs *e* and *f*, in combination with serrated wedges *g* or *h*, substantially as set forth, as a means of affording a ready application of the lifting machinery to the tubes.

In testimony whereof I have hereunto set my hand and seal this 11th day of December, 1865.

JAMES H. LUTHER. [L. S.]

In presence of—
JAMES STRAWBRIDGE,
RICHARD IRWIN.