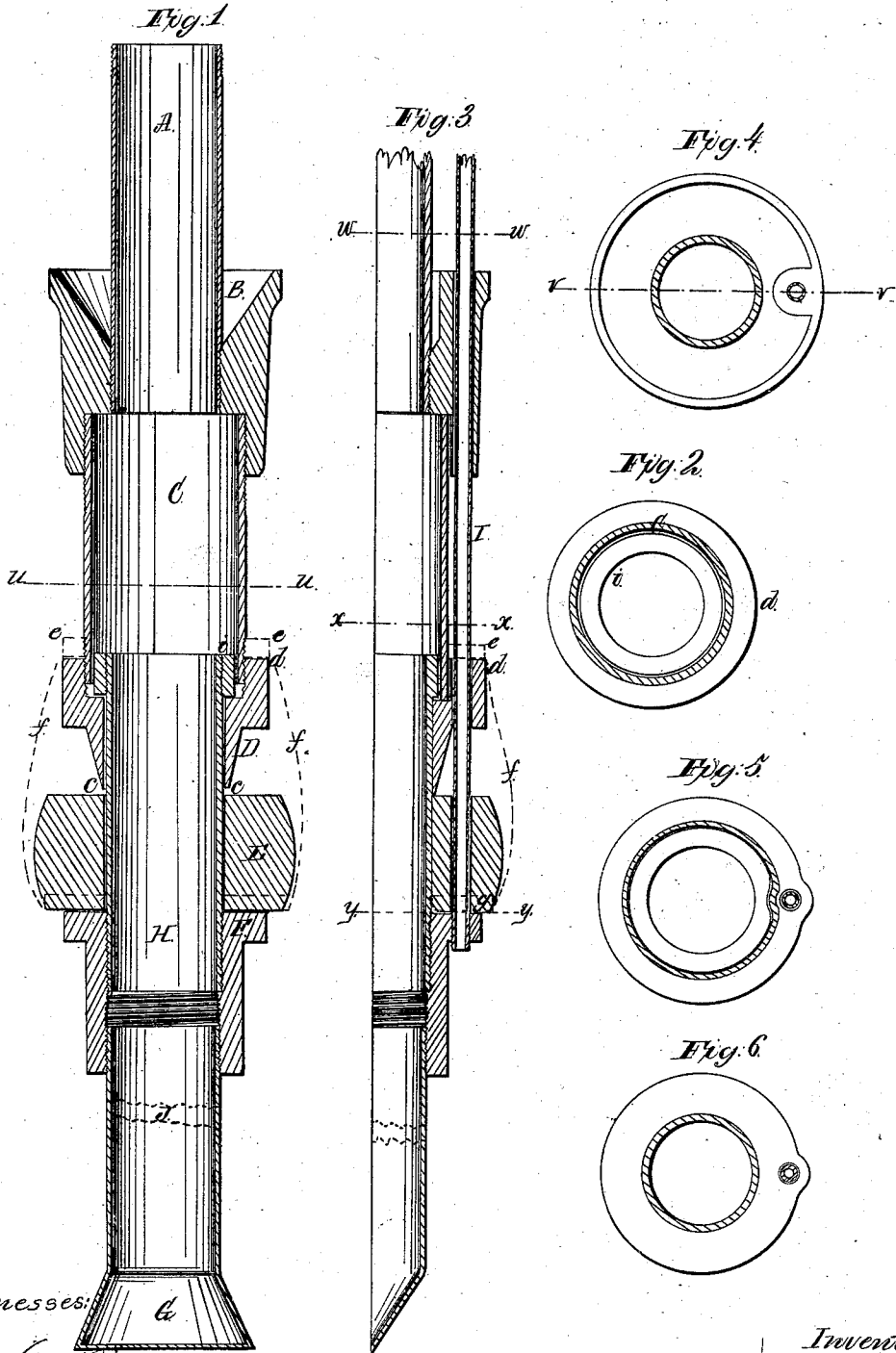


O. B. Latham  
Well Packing.

No. 56,234.

Patented July 10, 1866.



Witnesses:

Geo. E. Penn.  
Wm. J. Brown.

Inventor:

O. B. Latham

# UNITED STATES PATENT OFFICE.

OBADIAH B. LATHAM, OF SENECA FALLS, NEW YORK.

## IMPROVEMENT IN OIL-WELL TUBES.

Specification forming part of Letters Patent No. 56,234, dated July 10, 1866.

*To all whom it may concern:*

Be it known that I, O. B. LATHAM, of Seneca Falls, county of Seneca, and State of New York, have invented a new and useful Shut-Off for Wells; and I do hereby declare that the following is a clear and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a vertical section. Fig. 2 is a transverse section through the line *u u*, Fig. 1. Fig. 3 is a vertical section through the line *v v*, Fig. 4. Fig. 4 is a transverse section through line *w w*, Fig. 3. Fig. 5 is a transverse section through line *x x*, Fig. 3; and Fig. 6 is a transverse section through line *y y*, Fig. 3.

In order that persons skilled in the art may be enabled to construct and operate my machine, I will proceed to describe it.

Like letters in different figures refer to like parts.

This invention consists in certain devices, hereinafter fully described, for the purpose of preventing water or other substance from passing below or above any required point in an oil or water well, and also for the purpose of preventing the apparatus from getting fast in the well from an accumulation of débris above it.

A is the main pump-tube, running from the top of the well down to the funnel-shaped socket B, into which it is screwed. The use of the funnel-shaped socket, which is of a diameter at its upper edge equal to that of the well less an eighth of an inch or thereabout, is to check débris in its downward progress. It is screwed upon the hollow cylinder C, which is slightly elliptical in form, for a purpose hereinafter described. Said cylinder is screwed within the flange *d* of the hollow truncated cone D, the lower edge of which is made about an eighth of an inch blunt, so as to form a shoulder for the purpose of preventing the shut-off E from sliding up on the cone while the apparatus is being lowered into the well.

*i* is a band of a shape corresponding to that of the cylinder C, within which it is fitted to work freely, and is securely fastened to the top of the pump-tube H. Its minor axis is equal to the diameter of the said tube, which ends in a solid chisel, G, resting upon the bottom of the well. The chisel sustains the whole ap-

paratus, prevents any rotation of the tube H, and secures the immobility of the cylinder C by means of the elliptical shape of said cylinder and of the band *i*.

E is the "shut-off," so called, consisting of gutta-percha or other elastic or flexible material, of a diameter a little less than that of the well, so that it may be raised or lowered therein freely. When in use the shut-off is forced tightly against the circumference of the well by the pressure of the hollow truncated cone D, which is driven between the tube H and the shut-off by the weight of the main pump-tube A and of whatever débris may be upheld by the funnel-shaped socket B. As soon as the passage of water past the shut-off is stopped in this way and a vacuum created beneath, the pressure of the superincumbent water is exerted upon the shut-off, together with that of the atmosphere above the shut-off. It will be seen that by this arrangement the power exerted to expand the cut-off is always proportionate to and greater than the resistance to be overcome.

F is a flange screwed upon the tube H for the purpose of sustaining the shut-off under pressure.

Whenever it is desired to change the location of the apparatus, if the mass of débris resting upon the funnel-shaped socket B impedes the operation, it is only necessary to remove the pumping apparatus from within the tubes A and H, unscrew the tube A from the cylinder C, (which is prevented from becoming itself unscrewed during the operation by the immobility secured to it through its elliptical shape from the chisel G,) and raise the tube to a sufficient height to allow the débris to fall into the cylinder C and tube H through the funnel-shaped socket B. The tube A may then be lowered till it strikes the funnel-shaped socket, which cannot fail to guide it to its proper orifice, into which it is to be again screwed. The truncated cone D is then to be lifted up from its position between the tube H and the shut-off E, when the latter will resume its original dimensions. The whole apparatus is then to be raised to the surface, the inclosed débris emptied out, and the apparatus lowered again to any position desired.

The pump-cylinder (not shown in the draw-

ings) is situated between the chisel G and the end of the pump-tube H, and is not subject to change of position. Whenever it is desired to increase or diminish the distance between the shut-off and the chisel, lengths of pipe are to be added to or taken from the tube H. The shut-off can be located and worked to perfection at any depth.

I is a pipe sometimes made use of, running through holes drilled in the funnel-shaped socket B, flange *d*, shut-off E, and flange F, in which latter it is made fast, while the funnel-shaped socket and flange *d* work freely upon it. This pipe is intended as a means of egress for gas confined below the shut-off, or of ingress for air from above the shut-off, forced down by atmospheric or other pressure to promote the flow of oil into the pump-cylinder.

It will be seen from an inspection of Fig. 5 that when the pipe I is used a depression is made in the cylinder C to accommodate said pipe. A corresponding depression being made in the band *i*, the necessity of the cylinder and band being made elliptical is avoided.

*e* is a flange screwed upon the cylinder C and gripping, in conjunction with the flange *d*, the upper edge of a sack, *f*, consisting of leather, bladder, or other suitable material, the lower edge of which is gripped between the flanges F and *g*, screwed upon the cylinder H for the purpose. The sack *f* is made water-tight, and when in use is filled with water. It subserves the double purpose of a packing and protection to the shut-off E from the destructive action of oil, as no oil can penetrate to the shut-off from the outside, and whatever leaks into the sack from the inside floats upon the sur-

face of the water above the shut-off. It is only to be used for this purpose when the shut-off is located at an oil-yielding stratum. It is to be used as a packing when it is desired to locate the shut-off in mud or at a point where the walls of the well are considerably irregular. It possesses peculiar advantages for this purpose. Its diameter can be increased suddenly by the pressure before spoken of, which operates it to any extent required, and it forms an immovable packing as long as the pressure continues.

When it is required to change the location of or withdraw the apparatus, it is easily and quickly elongated, and thus gotten out of the way by the upward pull. It is to be used or not, either in combination or not in combination with the shut-off, as occasion may require.

What I claim as new, and desire to secure by Letters Patent, is—

1. The cylinder C and band *i*, varying from a true circle, and arranged, in relation to the cylinder H and an external packing device, substantially as and for the purpose described.
2. The sack *f*, when used in combination with the parts H, F, G, E, D, and *d*, as and for the purpose set forth.
3. The chisel G, when used in combination with the described apparatus, for the purpose set forth.
4. The whole apparatus, arranged as described.

O. B. LATHAM.

Witnesses:

GEO. E. BROWN,  
A. MOORE.