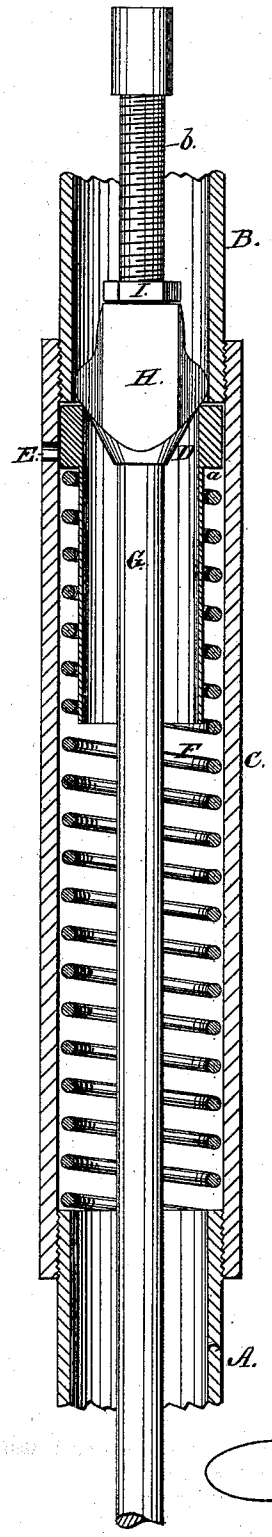
L. W. YOUNG.
Oil-Well Valve.

No. 203,235. Patented April 30, 1878.



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UNITED STATES PATENT OFFICE.

LEMUEL W. YOUNG, OF ELK CITY, PENNSYLVANIA.

IMPROVEMENT IN OIL-WELL VALVES.

Specification forming part of Letters Patent No. **203,235**, dated April 30, 1878; application filed March 5, 1878.

To all whom it may concern:

Be it known that I, LEMUEL W. YOUNG, of Elk City, in the county of Clarion and State of Pennsylvania, have invented a new and useful Improvement in Oil-Well Valves; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to a new valve, and its arrangement in a pump especially designed to be used in oil-wells, although it may be found useful in other situations.

It consists more particularly in such a construction and arrangement of parts as will admit of an intermittent stream of oil passing through the sides of the tube at each stroke of the plunger.

In operating oil-wells it has lately been the practice to allow a steady stream of oil to escape from the side of the pump or tube, which, owing to the immense pressure of the column of oil above it, has a great effect in enlarging the hole in the rock through which the pump passes, and in breaking up any accumulation of matter that would tend to prevent successful pumping. A pump-tube has also been provided with a tapered valve, which remains permanently seated in a contracted portion of a pump-tube, except when the pump-rod is detached from the operating-lever and lifted for the express purpose of allowing escape of oil through apertures in the side of said tube.

In carrying out my invention, I attach to the pump-rod a tappet or analogous device for depressing a valve at every stroke, thereby uncovering a small aperture in the side of the coupling-tube or working-barrel, which valve is reversed automatically by a spring as the pump-rod rises.

The accompanying drawing, forming part of this specification, shows a vertical section of my valve and its arrangement.

A represents a portion of the working-barrel of the pump, and B is the tube, connected with the working-barrel by a long coupling, C, in lieu of the short coupling ordinarily employed. Between the tube B and working-barrel A is the tubular valve D, which normally remains seated upward against the lower end of said tube, and thus closes the lateral port E, except when depressed or moved downward by the tappet H.

The valve is supported in this position by a spiral spring, F, whose upper end bears against the shoulder *a* of the valve, and its lower end upon the upper end of barrel A.

G represents the stem or pump-rod, which is threaded at *b* to fit threads cut in the tappet H and jam-nut I, to provide for securing said tappet H to the valve-stem and its adjustment thereon.

By adjusting the tappet H so as to strike the valve D, the latter will be depressed at each stroke, thereby opening the port E and allowing a small but powerful stream of oil to escape, which acts against the surrounding material, and by its percussive force crumbles, breaks, and washes away the rock and other matters, thus enlarging the hole, the stream acting in the same manner as in hydraulic mining, except that in the latter a steady stream is used, and by this means frequently saving the drawing of the tubing, &c., and the expense of blasting with torpedoes.

The motion to be given to the valve to accomplish a certain effect will depend upon the depth of the pump below the surface, as the greater the depth the more will be the force of the ejected stream; and the duration of the time during which the stream is ejected at each stroke can be correspondingly lessened. A movement of from one to five inches will be sufficient in ordinary oil-wells.

When it is desired to withdraw the tubing from the well, the rod G is forced down far enough to cause the tappet H to depress the valve D, and thus open port E to allow escape of the body of oil above it, which would otherwise require to be lifted with the tube.

What I claim is—

1. The combination, with an oil-pump tube having an aperture, as described, of a valve depressed at each reciprocation of the pump-rod, whereby an intermittent stream of oil is discharged from the aperture, as and for the purpose specified.

2. The combination of the coupling C, having a port, E, with the hollow valve D and spring F, substantially as specified.

3. The combination of the coupling C with the hollow valve D, spring F, and tappet H, substantially as described.

LEMUEL W. YOUNG.

Witnesses:

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