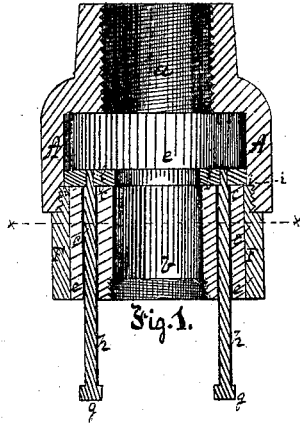


*H. Millingar,*

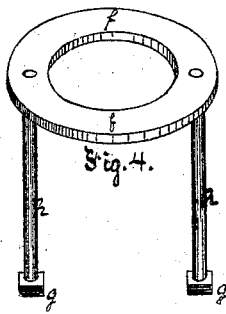
*Oil Pump.*

*No. 110,230.*

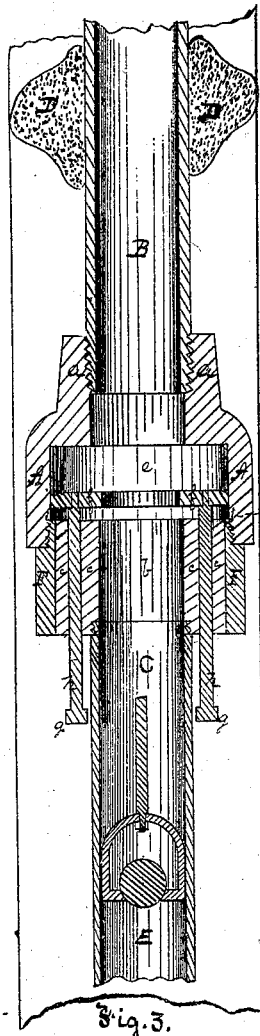
*Patented Jan. 10. 1871.*



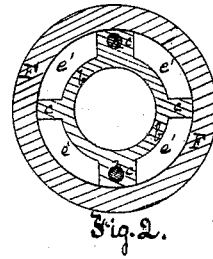
*Fig. 1.*



*Fig. 4.*



*Fig. 3.*



*Fig. 2.*

*Witnesses:*

*R. C. Orenhall*

*E. G. Tilton*

*Inventor:*

*Henry Millingar,*  
*by Bakewell & Christy,*  
*his Attys.*

# United States Patent Office.

HENRY MILLINGAR, OF PITTSBURG, PENNSYLVANIA.

Letters Patent No. 110,930, dated January 10, 1871; antedated December 30, 1870.

## IMPROVEMENT IN VALVES FOR OIL-PUMPS.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, HENRY MILLINGAR, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Gas-Valves for Oil-Pumps; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a vertical section through the center of my improved gas-valve;

Figure 2 is a horizontal cross-section through my valve at the line *x x* of fig. 1;

Figure 3 is a vertical section of part of an oil-well, showing the arrangement of the gas-valve in relation to the pump and seed-bag; and

Figure 4 shows, in perspective, the valve detached. In the several figures like letters refer to similar parts.

It is well known in oil-wells a large amount of gas is generally emitted from the oil-bearing seams or veins, which, when the pump is inserted with the seed-bag around it, finds no other vent than through the working barrel of the pump into the tubing above, and that the passage of gas through the valves of the pump impedes and often prevents their action.

Various devices have been employed to get rid of the gas by giving it a vent, by means of gas-pipe and otherwise, to a point above the seed-bag and outside of the tubing, these devices being troublesome, complicated, and liable to get out of order; besides, that by withdrawing the gas from the well-tube the advantage which would be gained from its upward pressure in aiding to lift the column of oil in the well-tube is lost.

My improvement then consists in the placing of a simple self-acting gas-valve in the well-tubing at any point above the pump-valves and below the seed-bag, in such manner that the gas may pass through it upward from outside of the tubing below to the inside of the tubing above the valve.

My improved gas-valve is designed to be screwed to the lower end of one piece of tubing, and to the upper end of the piece of tubing next below it, so as to form a connection between them, not being placed within the tube.

A is the outer shell of the gas-valve, which is of considerably larger diameter than the well-tubing B, excepting at the neck or upper end, where it is contracted to such dimensions as to permit a section of well-tubing, B, to be screwed into it at *a*.

The interior of this shell A is cylindrical, forming the gas-valve chamber *e*.

Into the lower end of the shell A is screwed a short cylinder, F, the interior diameter of which is slightly smaller than that of the valve-chamber *e*, so as to form a shoulder at *i*, on which the circumferential

edge of the gas-valve *f* rests so as to form a closely-fitting joint to prevent the down-flow of oil when the valve is closed.

The short cylinder F has an inner tubular piece, *b*, connected with it by radial ribs or arms *c c*, and leaving a space, *e*, outside of the inner tubular piece *b*, and between it and the cylinder F, as shown in fig. 2, for the upward passage of gas into the chamber *e* when the valve *f* is raised.

The bore of the tubular piece *b* corresponds with that of the lower tubing or pump-chamber C, which is screwed into it, as shown in fig. 3.

An annular disk, *f*, forms the gas-valve, which covers the spaces *e* between the shell A and the tubular piece *b*, preventing (when closed) the passage of oil downward outside of the tubing C.

From this annular disk or valve *f* depend two pieces *h h*, which pass down through suitable holes in two of the radial ribs or arms *c*, the holes being large enough in diameter to allow the valve *f* to rise freely, and the pins being so long as to extend a little below the ribs *c c*, and having buttons *g g* at their lower end to prevent the valve rising too far from its seat.

The pins *h h* keep the valve-disk *f* level, and prevent its being tilted over and thus getting out of place.

The operation of this gas-valve is shown in fig. 3, where D is the seed-bag around the well-tubing, which prevents the escape of gas in that direction outside of the tubing.

E is the pump-chamber below the gas-valve.

As the gas is emitted from the veins in the well it rises upward outside of the well-tubing C, below the gas-valve, and passes up through the spaces *e e*, around the tubular piece *b*, fig. 2, and, lifting the valve-disk *f*, passes into the valve-chamber C and well-tubing B, where it aids in lifting the column of oil in the well-tubing, and passes out with it at the top of the well.

Having thus described my invention,

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

The gas-valve, consisting of the combination of the tubular piece *b*, the valve-disk *f*, and the shell A F, constructed and arranged substantially as described, for the purpose of giving a passage for the gas into the well-tubing at any point above the pump and below the seed-bag of oil-wells, in the manner hereinbefore set forth.

In testimony whereof I, the said HENRY MILLINGAR, have hereunto set my hand.

HENRY MILLINGAR.

Witnesses:

DAVID LOWRY,  
JOHN GLENN.