

(No Model.)

I. K. HALL.
GAS WELL CLEANER.

No. 600,529.

Patented Mar. 15, 1898.

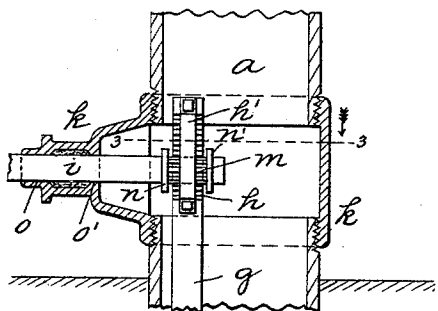


Fig. 1.

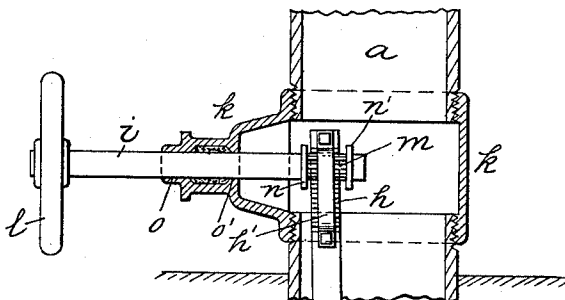


Fig. 2.

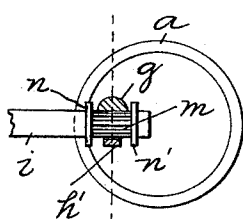


Fig. 3.

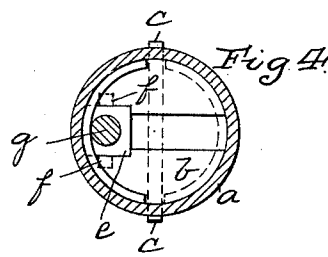


Fig. 4.

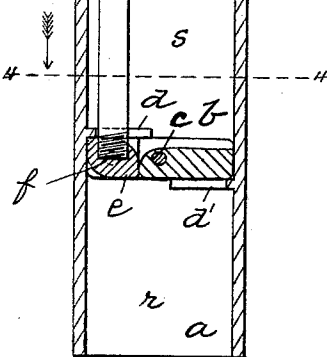
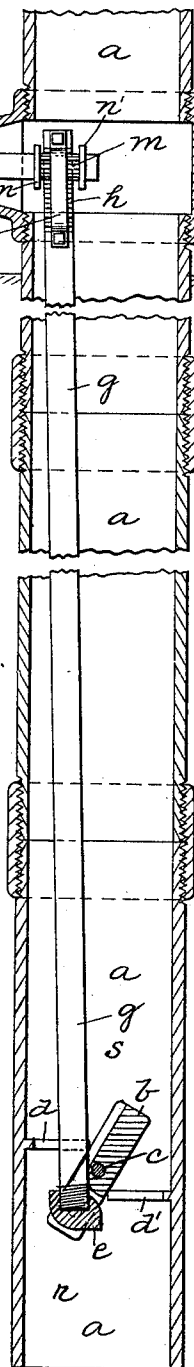


Fig. 5.



Witnesses:
J. S. Wright
C. S. Decker

Inventor:
Israel K. Hall.
By J. H. Cooke
Attorney.

UNITED STATES PATENT OFFICE.

ISRAEL K. HALL, OF PITTSBURG, PENNSYLVANIA.

GAS-WELL CLEANER.

SPECIFICATION forming part of Letters Patent No. 600,529, dated March 15, 1898.

Application filed May 4, 1896. Serial No. 590,251. (No model.)

To all whom it may concern:

Be it known that I, ISRAEL K. HALL, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Gas-Well Cleaners, of which the following is a specification.

My invention relates to gas-well cleaners; and it has especial reference to devices for cleaning natural-gas wells of water.

Heretofore the main difficulty in piping gas from natural-gas wells for commercial use has arisen from the accumulation of water in the well and pipes, which retarded the flow of gas and was a source of loss to the owners.

The objection to prior methods of clearing the gas-wells of water was that without confining or controlling the gas-pressure in the well and without allowing a large volume of water to collect a large quantity of gas would be wasted and the water but partially ejected from the well.

The object of my invention is to overcome these difficulties and objections and to provide an efficient, simple, speedy, and economical means of removing water from gas-wells, so that the same will not run into the gas-line, but may be taken off at the top of the well by using the gas-pressure within the well to supply the power.

To enable others skilled in the art to which my invention relates to make and use the same, I will describe it more fully by reference to the accompanying drawings, in which—

Figure 1 is a longitudinal section of a portion of the casing of a gas-well, showing my invention applied thereto with the valve in its closed position. Fig. 2 is a like view showing the valve open. Fig. 3 is a cross-section on the line 3 3 of Fig. 1, looking in the direction of the arrow. Fig. 4 is a cross-section on the line 4 4 of Fig. 1, looking in the direction of the arrow. Fig. 5 is an enlarged detail view of the upper portion of the valve-rod.

Like symbols of reference indicate like parts in each of the views.

In the drawings, *a* is the casing of the well. Secured at or near the bottom of the casing is the valve *b*, which is hung therein by means of the pivots *c*, fitting in openings in the sides of the casing, said valve being adapted to rest against the shoulders *d d'*, preferably formed integral with the casing.

These shoulders *d d'* are made in semicircular form, the shoulder *d* being located above and the shoulder *d'* below the valve *b*, thus forming seats therefor. Pivoted to the valve *b*, at one side thereof, by means of the pivots *f* is the nut *e*, in which is screwed the lower end of the valve-rod *g*. The upper end of valve-rod is adapted to extend above the top of the well and is provided with a rack *h*, having a clamp *h'* fitting over the same. Extending out at right angles to the valve-rod is the spindle or shaft *i*, having bearings *o o'* in the support *k*, secured to the casing. An operating-wheel *l* is secured to the outer end of the shaft *i*, and a gear-wheel *m*, adapted to mesh with the rack *h*, is connected to the inner end of the shaft *i* between the collars *nn'*.

The operation of my improvement is as follows: The valve *b* being located at or near the bottom of the casing and being in its closed position confines the gas in the space *r* below the valve and the water in the space *s* above the valve. When it is desired to clean the well and eject the water therefrom, the valve *b* is held closed, as shown in Fig. 1, until a strong pressure of gas is accumulated below the valve. The valve is then opened by means of the shaft *i*, gear-wheel *m*, rack *h*, and valve-rod *g*, which allows the gas-pressure to be suddenly exerted against the column of water in the casing above the valve, expelling the same bodily from the well instead of its being thrown out little by little in sprays, as is the case when cleaned by the ordinary flow of gas at relieved or reduced pressure. The valve *b* can be closed by a reverse movement of the parts and the water and gas be again allowed to accumulate in the spaces *s* and *r* and be again taken off, as just described.

It will thus be seen that my improved gas-well cleaner is simple in its operation, durable in construction, and not liable to get out of order. It is cheap and efficient in its action and can be applied to any gas-well and will afford a great saving of gas. By its use the flowing of water into the gas-line is reduced to a minimum and the pressure of the well greatly increased.

I claim—

1. In a gas-well cleaner, the combination with the well-casing, of a valve pivotally mounted in the sides of the casing and ex-

tending across the same, a nut pivoted within said valve, a rod connected to said nut and extending to the top of the well, and mechanism connected to said rod for operating the valve; substantially as described.

2. In a gas-well cleaner, the combination with the well - casing, of a valve pivotally mounted in the sides of the casing and extending across the same, a nut pivoted within said valve, a rod connected to said nut, and having a gear-wheel thereon adapted to engage with a gear-face or rack at the upper end of said rod; substantially as described.

3. In a gas-well cleaner, the combination with the well - casing, of a valve pivotally mounted in the sides of the well-casing and extending across the same, a nut pivoted within said valve, a rod connected to said nut and extending to the top of the well, a shaft having a gear-wheel thereon adapted to engage with a gear-face or rack at the upper end of said rod, and means for operating said last-named shaft; substantially as described.

4. In a gas-well cleaner, the combination with the well-casing having shoulders or projections extending therefrom at different levels, of a valve pivotally mounted in the casing and adapted simultaneously to seat against the under and upper sides respectively of said shoulders, and mechanism for operating the valve; substantially as described.

5. In a gas-well cleaner, the combination with the well-casing having shoulders or projections extending therefrom at different levels, of a valve pivotally mounted in the casing and adapted to seat against the under and upper sides respectively of said shoulders, a nut pivoted within said valve, and mechanism connected to said nut for operating the valve; substantially as described.

In witness whereof I have hereunto set my hand this 23d day of March, 1896.

ISRAEL K. HALL.

Witnesses:

EDITH F. GARWOOD,
GEO. W. ACKLIN.