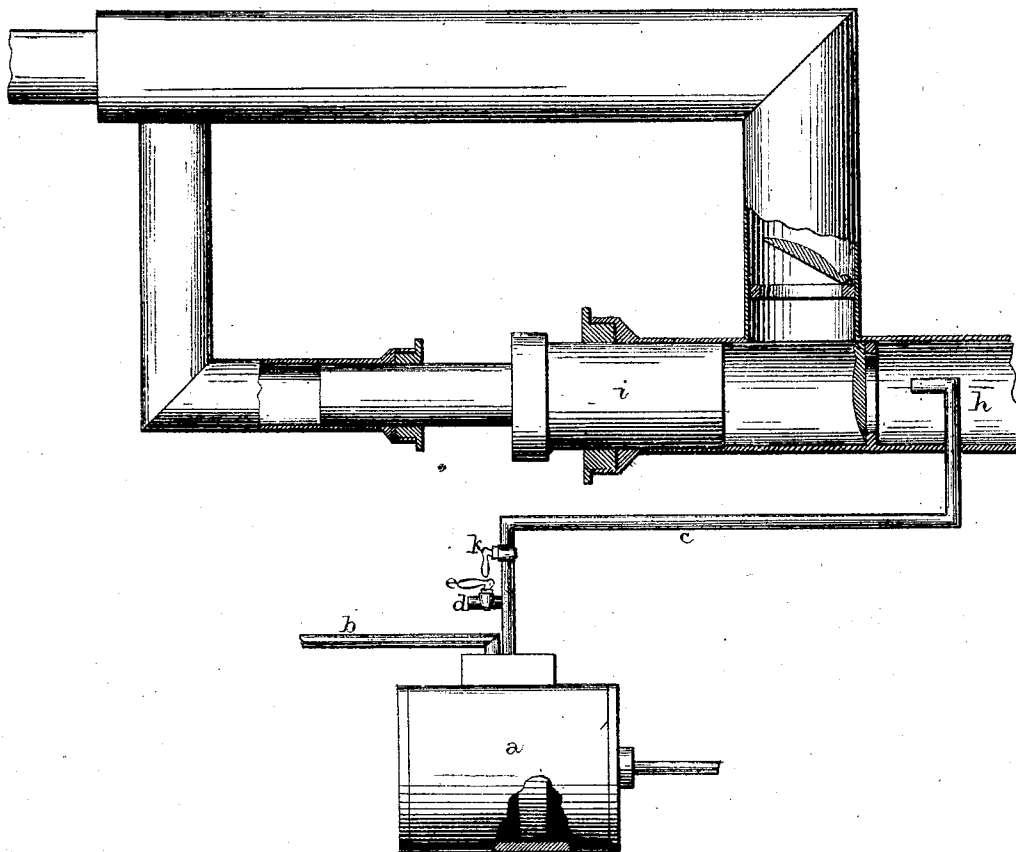


T. FOWLDS, Jr.
Water-Elevators.

No. 135,104.

Patented Jan. 21, 1873.



WITNESSES.
Alex S. Davidson.
J. L. Parkinson

INVENTOR.
Thos Fowlds Jr
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UNITED STATES PATENT OFFICE.

THOMAS FOWLDS, JR., OF TREVORTON, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN H. GABEL, OF SAME PLACE.

IMPROVEMENT IN WATER-ELEVATORS.

Specification forming part of Letters Patent No. 135,104, dated January 21, 1873.

To all whom it may concern:

Be it known that I, THOMAS FOWLDS, JR., of Trevorton, county of Northumberland and State of Pennsylvania, have invented certain new and useful Improvements in Condensing the Exhaust Steam of Steam-Engines, of which the following is a specification:

The nature of my invention relates to the devices for utilizing the exhaust steam from the cylinder of a steam-engine; and consists in conducting the steam through a pipe, provided with two stop-cocks, into the receiving-pipe of a pump, so as to not only assist in elevating the water, but to condense the exhaust steam in the receiving-pipe. By means of the two stop-cocks I can discharge the steam into the air when the pump is not in motion, or can send it into the receiving-pipe, as above described.

The accompanying drawing represents a side elevation of my invention, partly in section.

a represents an ordinary steam-cylinder, which is fed with steam through the pipe *b*, and exhausts through the one *c*, either into the open air through the small pipe *d*, governed by a stop-cock, *e*, or into the receiving-pipe *h* of the pump *i*. Just above the short pipe *d* is placed a second stop-cock, *k*, which is closed when it is desired to exhaust into the air, or opened when exhausting into the receiving-pipe. These two cocks may be united together, so as to operate together, and may be made to work automatically or not, just as may be desired.

When the engine is working down in the mine, when the steam is exhausted into the air, it softens the roof, causes decay in the timbers, and is very objectionable in every way, and is costly and troublesome to get rid of. By carrying the exhaust-pipe into the receiving-pipe of the pump, as soon as the steam

comes in contact with the water it is instantly condensed, serving not only to get rid of the steam, but to heat the water, so that it can be fed into the boiler.

The pump shown in the accompanying drawing is the one patented to me November 5, 1872, but any other one may be used when desired. This pump is connected in any suitable manner to the engine, and it is only while the plunger is in motion that the steam can be exhausted in the receiving-pipe. When exhausting into the air there must be sufficient force in the exhaust steam to overcome the atmospheric pressure of fifteen pounds to the inch, and by carrying this steam into the receiving-pipe of the pump, by actual experiment, I can reduce the working pressure of steam at least ten pounds. For instance, if it takes one hundred pounds pressure to drive the plunger fifty feet per minute by exhausting into the receiving-pipe, a pressure of ninety pounds will drive the plunger the same distance in the same time.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The pipe *c*, provided with the stop-cocks *e* *k*, so as to exhaust into the air or the receiving-pipe of the pump, substantially as shown and described.

2. The combination of the cylinder *a*, exhaust-pipe *c*, and pump *i*, constructed and arranged to operate substantially as specified.

In testimony that I claim the foregoing as my invention I hereunto affix my signature this 17th day of December, 1872.

THOMAS FOWLDS, JR.

Witnesses:

RD. A. HYDE,
A. R. ALLEN.