

H. H. EDGERTON.

Improvement in Condensing Apparatus for Gas-Works.

No. 129,723.

Patented July 23, 1872.

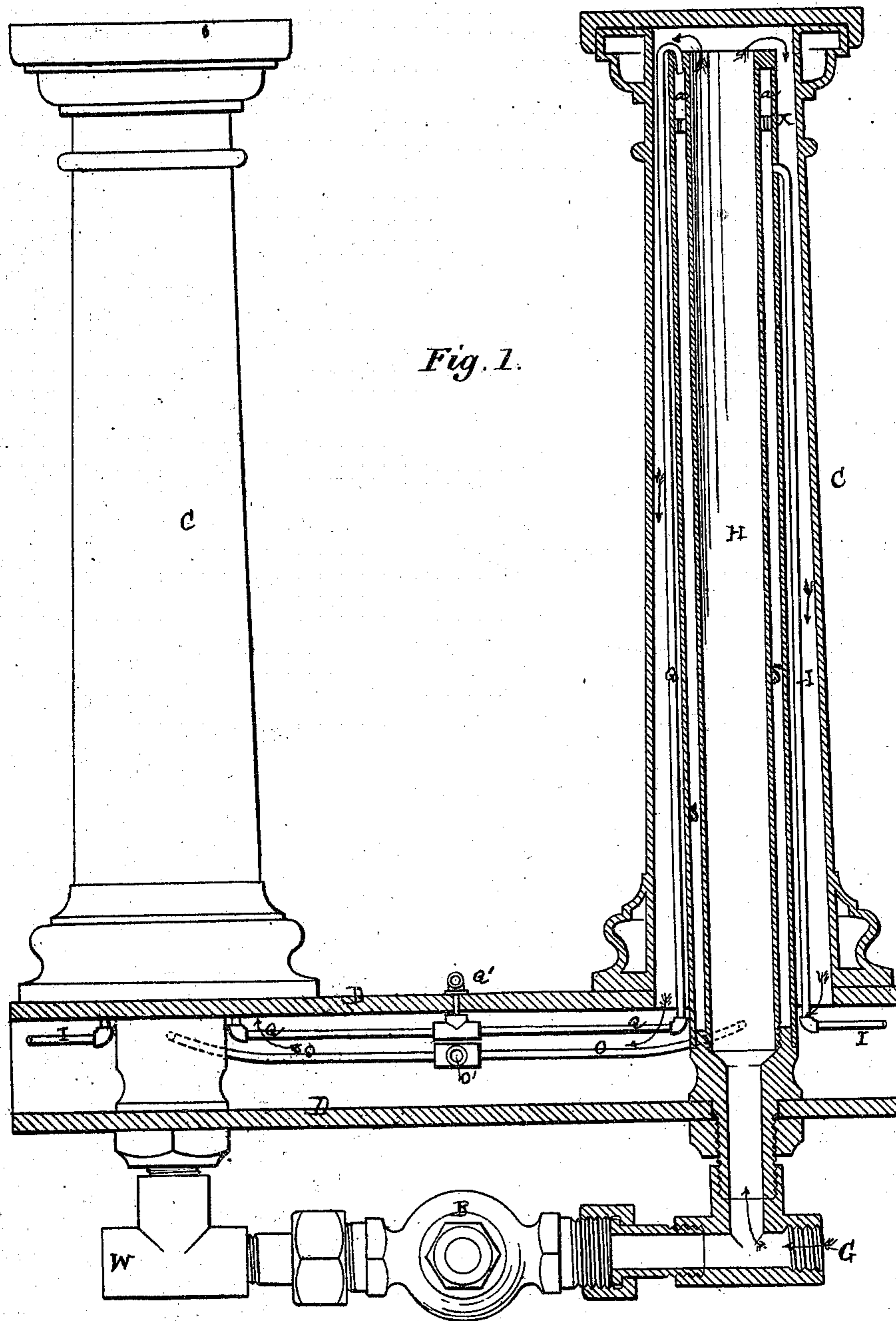


Fig. 1.

Witnesses  
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Fig. 2.

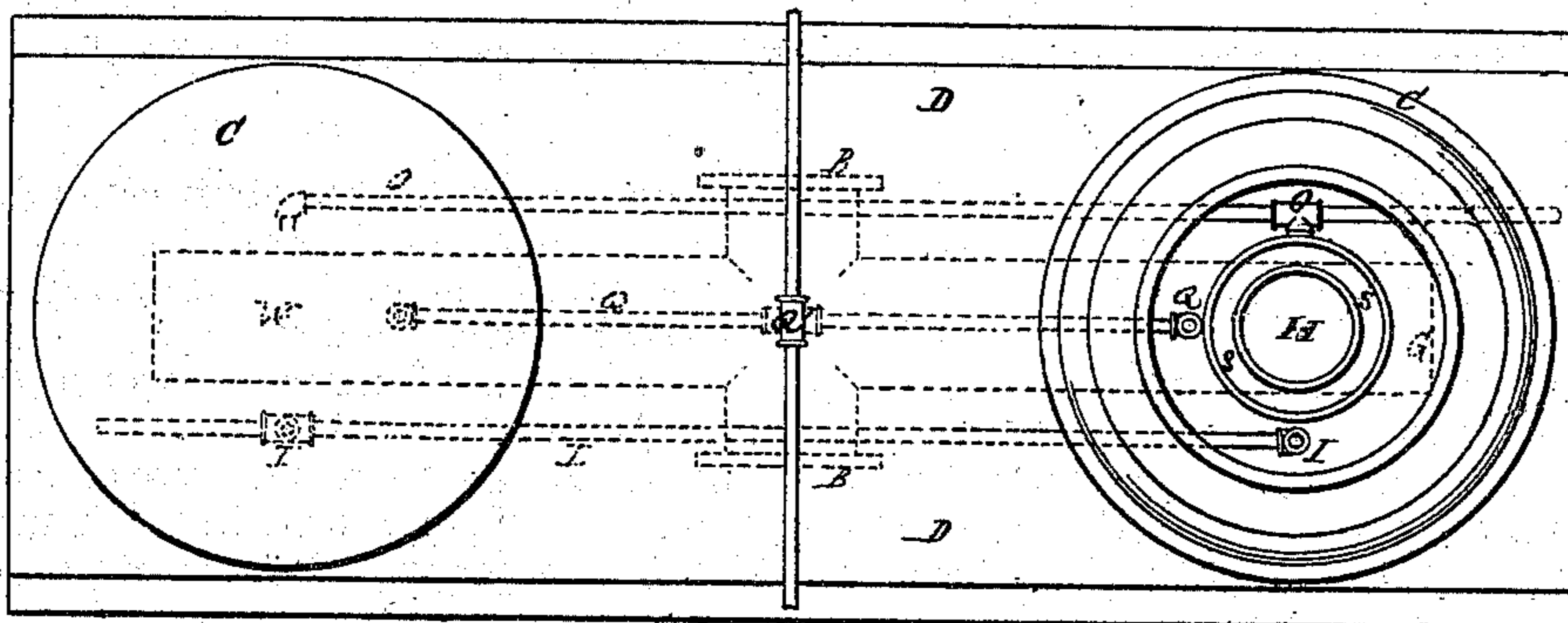
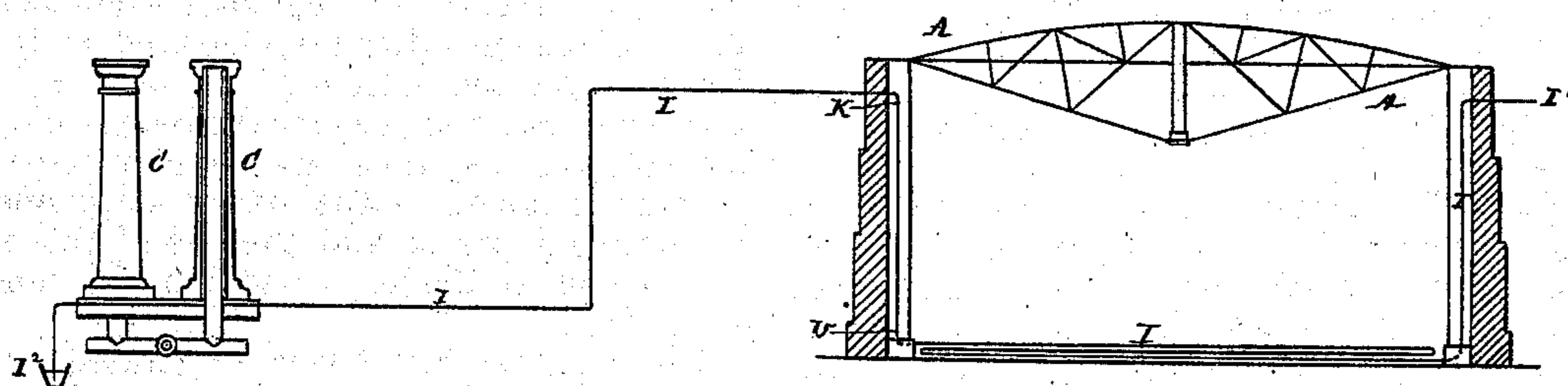


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN CONDENSING APPARATUS FOR GAS-WORKS.

Specification forming part of Letters Patent No. 129,723, dated July 23, 1872.

### *To whom it may concern:*

Be it known that I, HENRY H. EDGERTON, of Fort Wayne, Allen county, Indiana, have invented certain new and useful Improvements in Gas-Condensing Apparatus, of which the following is a specification:

My invention relates to apparatus for condensing gas, in which the condensing action is brought about by means of the passage of the gas over or in contact with surfaces cooled with water. It consists in forming the condenser of one or more columns, each provided with a double or jacketed interior pipe having a water-space through which water can circulate, the gas being caused to pass through said pipe and column, substantially as hereinafter described. It also consists in effecting the circulation of water through the said water-space by means of siphon action, substantially as hereinafter described. It also consists in drawing the water-supply for the condenser from or through the bottom or lower part of a gas-holding tank, as and for the purposes hereinafter stated.

In the accompanying drawing I have represented an apparatus in which is embodied my invention.

Figure 1 is an elevation, partly in section, of the condenser. Fig. 2 is a plan of the same. Fig. 3 is a diagram illustrative of the mode of obtaining the water-supply.

The improved gas-condenser consists essentially, in this instance, of the columns C C, closed at the top and bolted onto the base D. Within each column is placed a double or jacketed pipe, H, with a water-space, S. The inlet-water pipe is shown at I, the outlet-water pipe at O, and the siphon-pipe at Q. These pipes, by their combined action, supply and remove the water to and from the water-space S. But one column is shown in section; but the arrangement of pipes is the same in both. The inlet-pipes connect with a common source of supply, and the outlet-pipes have a common exit, O'. The inlet-gas pipe is shown at G and the outlet at W. The gas-connections are the same in each column. B is a bye-pass, by which the gas may be passed directly from G to W without going through the condenser.

An essential feature of the improvement is shown at Fig. 3—namely, the source and manner of water-connections. A exhibits a gas-

holder tank with its contained holder, and C the improved condenser. I shows a water-pipe of convenient size, doubled, and circulated around bottom of tank A.

I have found that the water in the bottom of a gas-holder tank is from 15° to 20° Fahrenheit colder than well-water of the same depth, and I therefore, in the improved condenser, propose to take advantage of this fact, and, by passing water from any convenient source through the pipe I, Fig. 3, to cool the condensing-water to a temperature of the tank-water at the bottom of the holder. To preserve such temperature during transit the pipe I, from the point U to the point K, should be enveloped with a non-conducting cement, and from the point K to the condenser it may be placed in coke or charcoal dust, so that the water arriving at the condenser may have gained as little in temperature as practicable. In certain cases it may be necessary that the inlet I<sup>1</sup> shall be from two feet upward higher than the outlet I<sup>2</sup> of the water-connections. The condensing-water may, if desired, be drawn directly from the bottom of the tank G; but, as it is generally deemed inexpedient to change the water in gas-tanks on account of impoverishment of the gases, the plan of an independent source of water and the use of the grid-iron or coil in the pipe I within the tank is preferred.

The improved condenser is operated as follows: The gas is made to arrive in the inlet G, and, following the course of the arrows, ascends by the double pipe H, Fig. 1, to the top, turns, and descends between the double pipe H and the exterior column C into the open or hollow base D, which is, of course, closed at the ends and on all sides to prevent escape of gas, and from thence it ascends in the left-hand column C, Fig. 1, in the same manner that it descends the right-hand column between the inner double pipe and the column. Upon arriving at the top of the left-hand column C it enters the inner double pipe, and thence arrives at W. In case of any obstruction, the opening of the valve B allows the gas to pass directly between G and W.

The operation of the condensing-water is as follows: By attaching a pump to the siphon-pipe Q at Q', and having both the inlet and outlet I<sup>1</sup> and I<sup>2</sup>, Fig. 3, under water, the work-

ing of the pump will fill the water-space S, Fig. 1, which, when full, will establish a siphon, the water arriving in the water-space by I, Figs. 1 and 2, and leaving by O, Fig. 2, the pipes I entering the water-spaces S of the double pipes at the top, below the point X. As air accumulates in the space *a*, Fig. 1, at the top of the double pipe, it may be removed by the pump attached to Q. If the water-space S is made ordinarily tight the siphon action will be maintained readily for a considerable time.

Having now described my invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. In a gas-condensing apparatus, the combination of a column and an interior double pipe containing an annular water-space, through which pipe and exterior column the gas is caused to circulate up and down, substantially as herein shown and set forth.

2. In a gas-condensing apparatus, two or more columns provided each with an interior double or jacketed pipe with an annular water-space, in combination with means for con-

ducting the gas from one column to the other in succession, and for circulating the same up and down through said columns, substantially as herein shown and set forth.

3. The mode herein described of circulating the water through the water space or spaces of the condensing apparatus by siphon action, substantially in the manner and by the means shown and set forth.

4. The mode herein described of obtaining the water-supply for the condensing apparatus by drawing the same from or through the bottom or lower part of the gas-holding tank and conducting it to the condenser, substantially in the manner and for the purposes described.

5. A gas-condensing apparatus constructed and operating substantially as herein shown and set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

H. H. EDGERTON.

Witnesses:

GEO. MANIERRE,  
R. G. PATTON.