

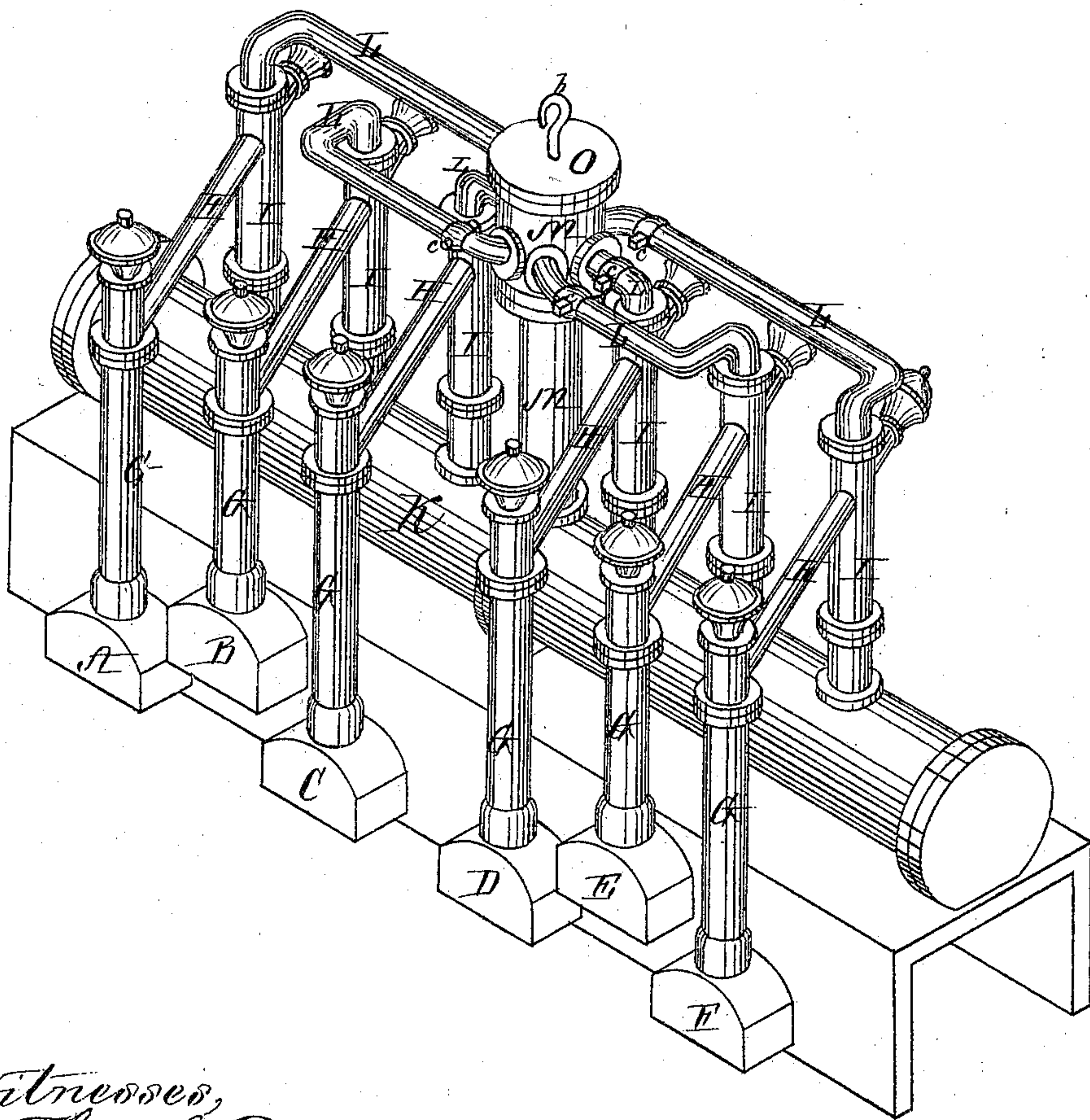
A. M. GILES.

Improvement in Apparatus for the Manufacture
of Coal Gas.

No. 125,043.

Patented March 26, 1872.

Fig. 1.



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Fig. 2.

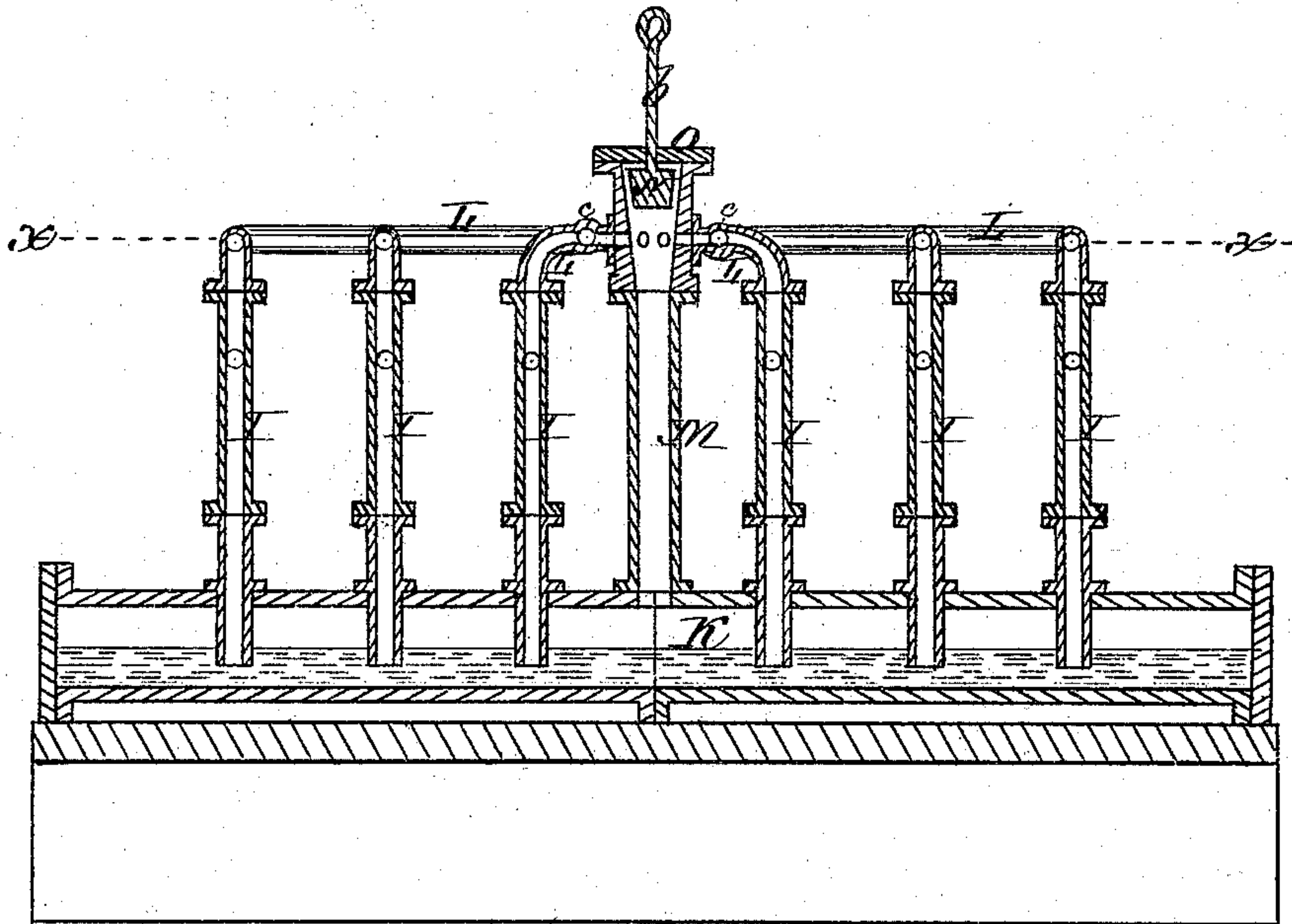
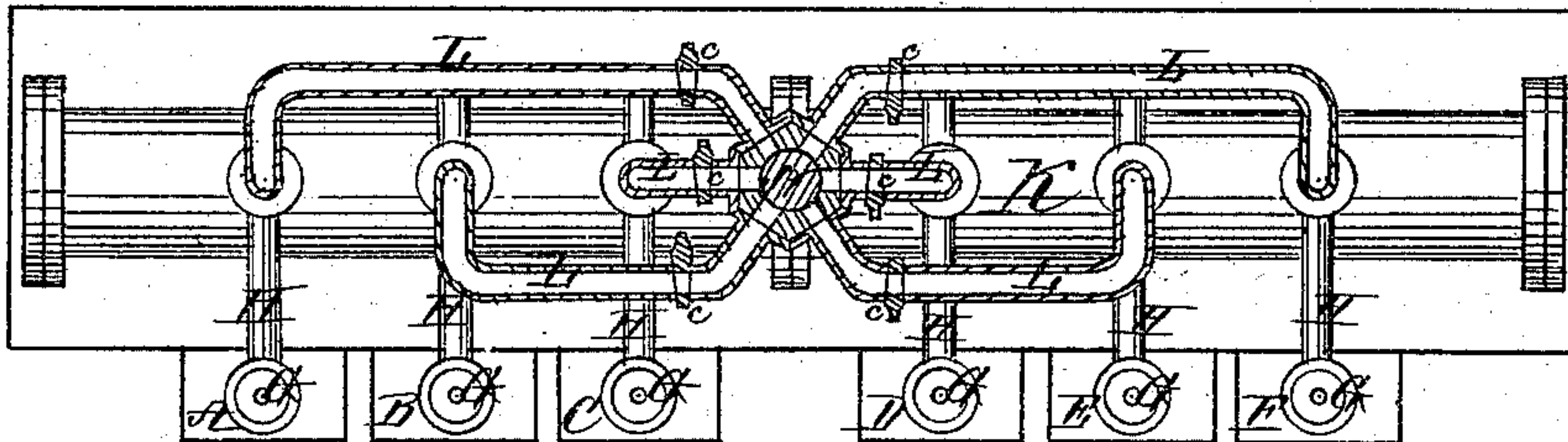


Fig. 3.



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UNITED STATES PATENT OFFICE.

ALONZO M. GILES, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN APPARATUS FOR THE MANUFACTURE OF COAL-GAS.

Specification forming part of Letters Patent No. 125,043, dated March 26, 1872.

To all whom it may concern:

Be it known that I, ALONZO M. GILES, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Apparatus used in the Manufacture of Coal-Gas, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a perspective view of my improved apparatus. Fig. 2 is a vertical section through the same. Fig. 3 is a horizontal section through the same on the line *x x* of Fig. 2, the valve being down.

This invention relates to that class of apparatus used in the manufacture of coal-gas, in which the retorts are operated without pressure. This has heretofore been accomplished by dispensing with dip-pipes and introducing a valve or cut-off at some convenient point between each retort and the hydraulic main. The number of valves thus required, (one for each retort,) however, renders the apparatus complicated and greatly increases its cost, while much time, care, and intelligence are required in operating these valves and keeping them free from the tar with which they become obstructed; furthermore, the handles of these valves, which project down to near the mouths of the retorts, are frequently in the way and are liable to be accidentally struck, which often deranges the valves and causes them to leak. My invention has for its object to overcome these difficulties and to greatly simplify and cheapen the apparatus, while at the same time all of the advantages of operating the retorts without pressure are retained and perfect safety insured; and my invention consists in connecting the pipes leading from a series of any number of retorts, with a single pipe provided with a valve or cut-off, and communicating with the upper portion of the hydraulic main or with a secondary main or receiver, the valve being so arranged as to command the pipes leading from all of the retorts, and these pipes, when the valve is closed, are thus prevented from communicating with each other or with the common pipe with which they are connected, by which construction the opening of a single valve will allow the gas to pass without pressure from all of the retorts in the series through a common pipe to the

desired point; while in the event of the valve being allowed to remain closed during the production of the gas, through the negligence of the person in charge, the gas will pass from each retort through its dip-pipe into the hydraulic main in the ordinary manner, thus avoiding all danger of explosion or accident.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawing, A B C D E F represent a series of six retorts, each of which is provided with an ordinary stand-pipe, G, which is connected by a bridge-pipe, H, with a dip-pipe, I, which extends down into the liquid contents of the hydraulic main K, in the usual manner. Each of the dip-pipes I is connected by a pipe, L, with a vertical pipe, M, which opens into the upper portion of the hydraulic main K, but does not descend into the liquid contents thereof. The interior of the upper portion of the pipe M, at the point where the pipes L open into it, is made slightly conical, forming a seat for a valve, N, which is operated by a cord (not shown) led over pulleys and secured to a rod, *b*, which passes through a stuffing-box in the removable cap O, and is attached to the valve, the weight of which is sufficient to carry it down onto its seat when the cord is slackened. By means of the connecting-pipes L all of the retorts in the series are brought into communication with the common pipe M, and when the valve N is raised the gas from these retorts will flow freely and without pressure through this pipe into the hydraulic main K. When it is desired to draw the charges from the retorts the valve N is lowered down onto its seat, as seen in Fig. 3, which simultaneously cuts off communication between all of the retorts and the hydraulic main through the pipe M, while the gas is prevented from returning through the dip-pipes I, as their lower ends are sealed in the liquid contents of the hydraulic main. It will be seen that the valve N when down not only cuts off all communication between the pipes L and the pipe M, but, by closing the mouth of each pipe L, prevents the gas from one retort from passing into the pipes connected with the others during the operation of recharging, and consequently each retort can be opened

with safety to remove its charge, the gas from the retorts previously charged passing by their respective dip-pipes into the hydraulic main until the whole series of retorts has been charged, when the valve N is raised and the gas allowed to flow freely and without pressure through the common pipe M, as before described. Instead of the valve N, any other suitable valve or cut-off which will close the communication between the pipes L and the common pipe M may be used; for instance, a hollow rotary valve, provided with a number of openings corresponding to the number of pipes L; and this rotary valve may be so constructed as to admit of each retort being brought in succession into communication with the pipe M as soon as it is charged, and the necessity of working a portion of the retorts under pressure until the whole series is charged (as is the case where the valve N is used) may thus be avoided. Should the valve N be allowed to remain closed during the production of gas, through the negligence of the person in charge, the gas will pass under pressure through the dip-pipes I in the usual manner, and all liability of accidents or explosion is thus avoided. Each of the connecting-pipes L is provided with a valve or stop-cock, *c*, so as to admit of any particular retort or retorts being shut off for repairs; or, if it should not be desired to work the whole series of retorts connected with the pipe M at the same time, the pipe M, instead of communicating with the hydraulic main, may be led into a secondary empty main communicating with the main pipe that conducts the gas to the condensers, or to any other desired point. It is evident that the pipes L, instead of being connected with the dip-pipes, may be connected with the bridge-pipes or stand-pipes, if preferred, the result being the same in either case. Any desired number of retorts may be connected together, as above described. I prefer only six, however, as that number can be most conveniently operated together.

An apparatus constructed in accordance with my invention presents the following advantages: First, cheapness and simplicity of construction, one valve being sufficient for a series of any number of retorts, whereas a valve

has heretofore been required for each retort; second, economy, there being a great saving of time and labor, as but one valve requires to be operated, instead of a large number of valves, as heretofore, while the labor and care heretofore necessary to clear these valves of tar is also avoided; third, freedom from leakage, the single valve N being out of the way and not liable to be accidentally injured; fourth, my improvements can be easily applied to gas-works now in use, without any change in the stand-pipes and dip-pipes, by simply removing the plugs from the tops of the dip-pipes and applying the connecting-pipes *l* thereto, which may be secured by flanges, bolts, or in any other suitable manner.

I do not claim a valve between the retort and hydraulic main, as shown in the patent of William Gibson, October 5, 1869; nor the provision of two outlets for the gas from the retort, one by a dip-pipe and the other by a free passage capable of being closed by a valve, as shown in the patent of E. I. Jones, January 27, 1871.

Claims.

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

1. A series of retorts, each provided with a dip-pipe and connected with a common pipe, M, communicating with the upper portion of the hydraulic main or with a secondary main or receiver, in combination with a valve or cut-off so arranged that when shut it will prevent the gas from passing from the retorts into the pipe M, or from the pipe of one retort into that of another, and when open will allow the gas to flow freely and without pressure from the whole series of retorts to the desired point, substantially as described.

2. I also claim, in combination with a gas apparatus constructed as above described, the valves or stop-cocks *c*, as and for the purpose set forth.

Witness my hand this 5th day of January, A. D. 1872.

ALONZO M. GILES.

In presence of—

P. E. TESCHEMACHER,
W. J. CAMBRIDGE.