3 Sheets—Sheet 1.

W. McKNIGHT.

GAS-GENERATOR.

No. 171,578. Patented Dec. 28, 1875.

Fig 1

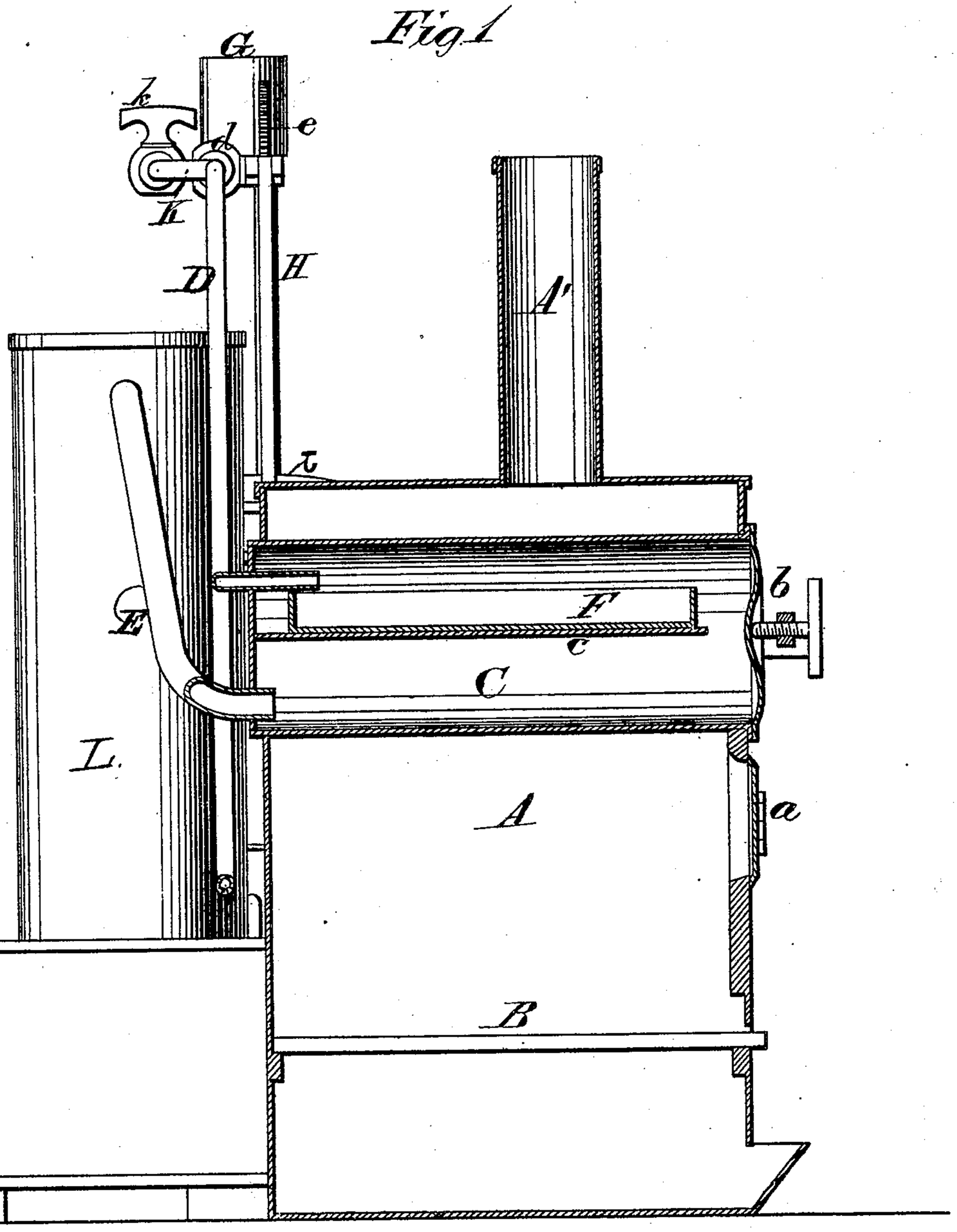

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Fig. 2

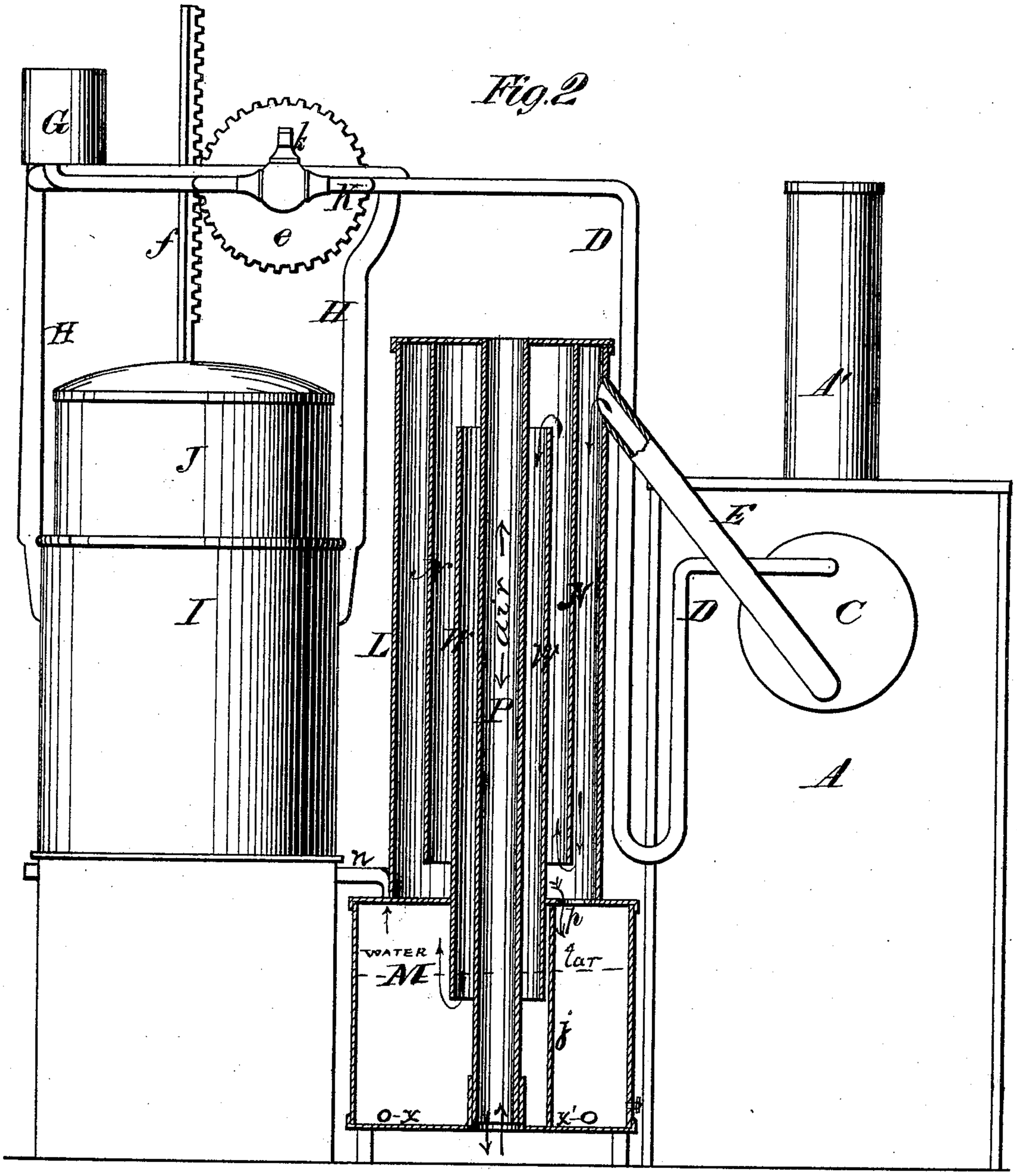

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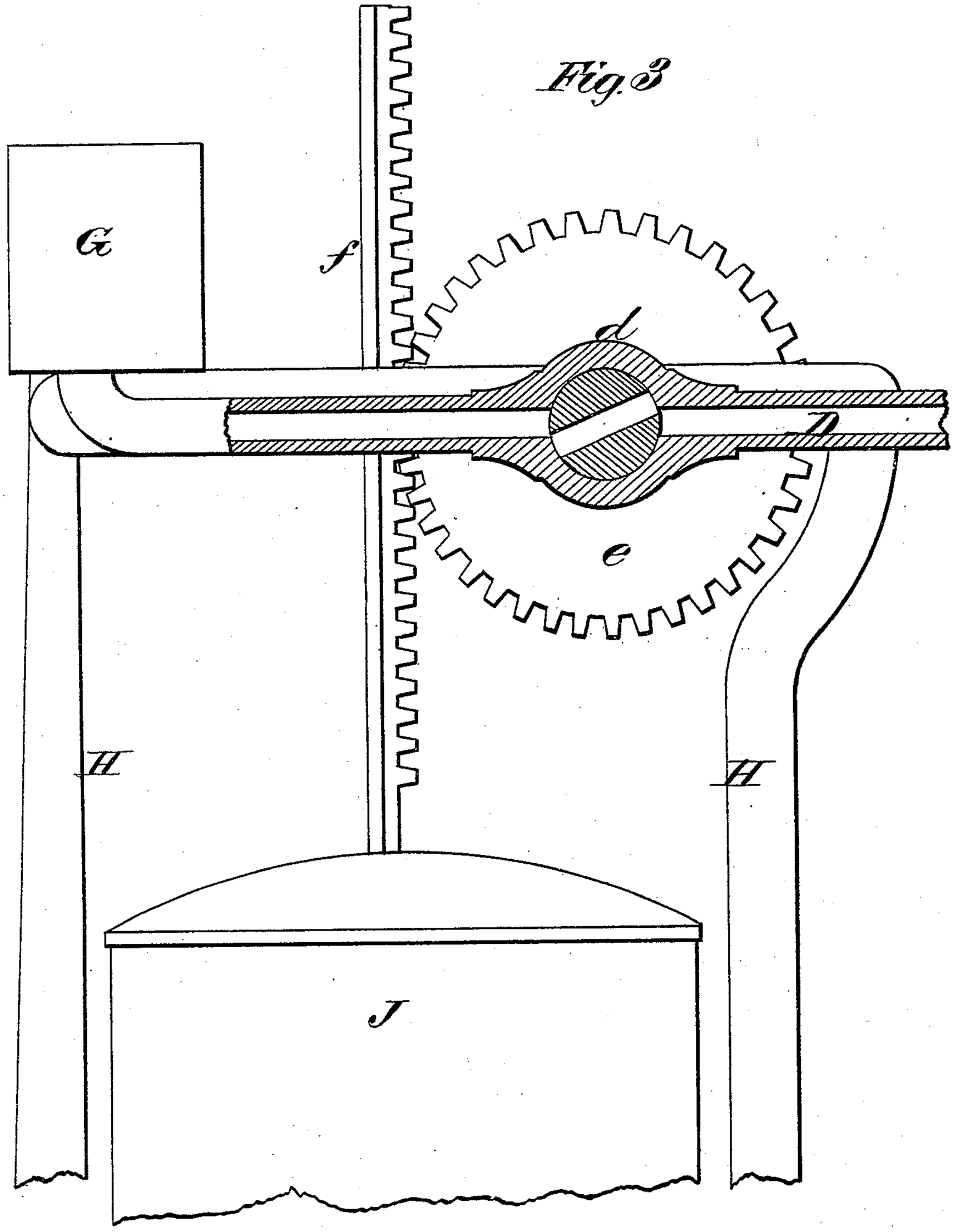
Fig. 3



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UNITED STATES PATENT OFFICE.

WILLIAM McKNIGHT, OF TROY, OHIO.

IMPROVEMENT IN GAS-GENERATORS.

Specification forming part of Letters Patent No. **171,578**, dated December 28, 1875; application filed September 18, 1875.

To all whom it may concern:

Be it known that I, WILLIAM MCKNIGHT, of Troy, in the county of Miami and State of Ohio, have invented a new and valuable Improvement in Gas-Generators; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side view, part vertically sectional, of my generator; and Fig. 2 is a rear view, part vertically sectional, of the same. Fig. 3 is a detail view thereof.

This invention has relation to apparatus for the manufacture of illuminating-gas; and the nature of my invention consists in a reversible gas-retort having a horizontal partition or shelf in it, which sustains a pan containing oil, in combination with an automatic mechanism which will feed oil to the retort, and cut off the feed by the rise and descent of the gas-holder.

The invention finally consists in a novel construction of a condenser for purifying the gas on its way from the retort to the gas-holder, as will be hereinafter explained.

In the annexed drawings, A designates a furnace, from which rises a smoke-pipe, A′. B designates the fire-grate, and *a* the feed-door for fuel. C is a cylindrical retort, to the rear end of which two pipes, D and E, are attached by suitable couplings. By detaching the pipes D and E from the retort C the latter can be turned around in its bearings, and an unburned part presented to the fire of the furnace A. I thus make the retort reversible. The retort C has a horizontal shelf or partition, *c*, in it, extending from its rear end nearly to its sealed door *b*, on which shelf is sustained a removable pan, F, which receives from the pipe D the oil for generating gas. The pipe E enters the retort C below the shelf *c*, and communicates with the interior of a condenser near the upper end thereof; and this pipe may be provided with a regulating-faucet. (Not shown in the drawings.) The pipe D enters the retort C above the shelf *c*, and has a siphon or U-shaped bend. This pipe D communicates with an elevated oil-reservoir, G, which, in the drawing, Fig. 2, is represented secured to the frame H of the gas-holder tank I. This reservoir G supplies the oil to the pan F in the retort G, and to the highest portion of the supply-pipe D a single-way cock, *d*, is applied, on the plug of which a spur-wheel, *e*, is keyed, which engages with a rack, *f*, fixed centrally to the head of the gas-holder J. By these means the rise and descent of the gas-holder will operate the plug of cock *d*, and thus automatically regulate the supply of oil to the pan F. K designates a side way-pipe, in which is applied a cock, *k*, which is opened by hand when it is desired to supply oil to the pan F, to start the operation of making gas. When a sufficient quantity of gas been made to raise the gas-holder, cock *k* is shut, and the feed will be continued automatically. L designates the external cylindrical case of the condenser, which is closed on top, and secured upon a hydraulic seal, M, which is separated into two apartments by a partition, *j*. Inside of the case L, and secured to the top thereof, is a sleeve, N, which extends down nearly to the top of the seal-box M, and inside of the sleeve N is a dip-pipe, W, which extends nearly to the top of the case L, and nearly to the bottom of the seal-box M, and is secured to the top of the seal-box, as shown in Fig. 2. Inside of the dip-pipe W is a ventilating-pipe, P, which forms an air-passage vertically through the condenser, for the purpose of keeping the contents therein cool.

The gas from the retort enters the condenser between the case L and sleeve N, and descends to the lower end of this sleeve; thence passes up between it and the dip-pipe W; thence descends again between the pipes W and P into the seal M, and finally escapes through a pipe, *n*, into the gas-holder J.

It will be observed that the oil is vaporized in the upper chamber of the retort, and thence passes through the length of the lower or more highly-heated chamber to the outlet from the retort.

The tar and other matter eliminated from the gas while passing through the condenser will be conducted through an aperture, *p*, into the smaller one of the two chambers in the

seal-box M, and may, from time to time, be drawn off by means of a cock, *x*. The water in the largest chamber of the condenser may be drawn off by means of a cock, *x'*, when it becomes too highly charged.

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

1. A gas-retort, C, having the horizontal partition or shelf, *c*, and an outlet, E, below the closed end of the partition *c*, which sustains the removable oil-pan F, in combination with an automatic mechanism which feeds the oil to the pan in the retort, substantially as and for the purpose set forth.

2. The condenser consisting of case L, sleeve N, pipes W P, and seal-box M, divided as described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM McKNIGHT.

Witnesses:

H. H. WILLIAMS,

E. S. WILLIAMS.