W. H. GWYNNE.

Manufacture of Gas.

No. 40,925. Patented Dec. 15, 1863.

FIG. 1.

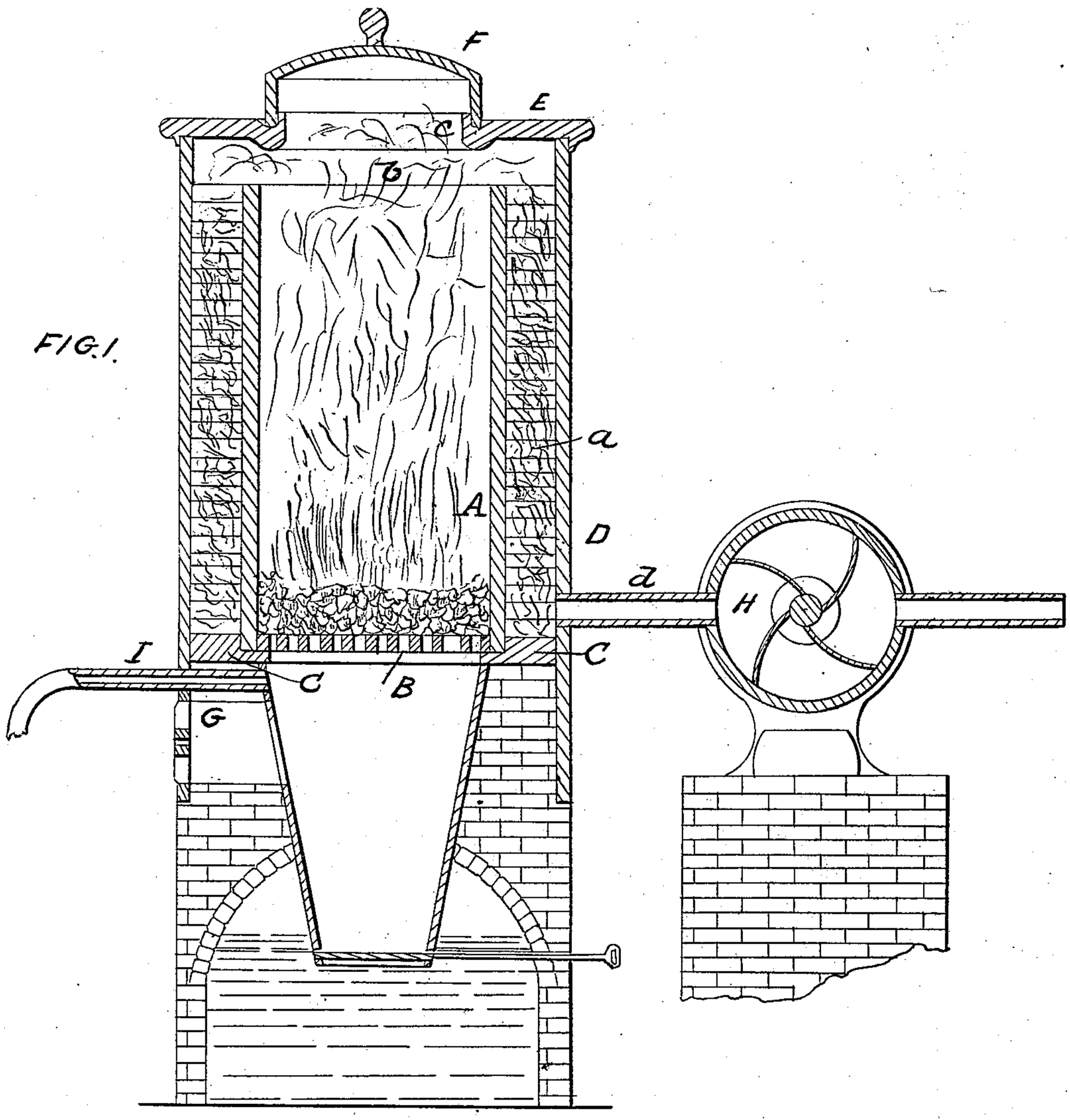
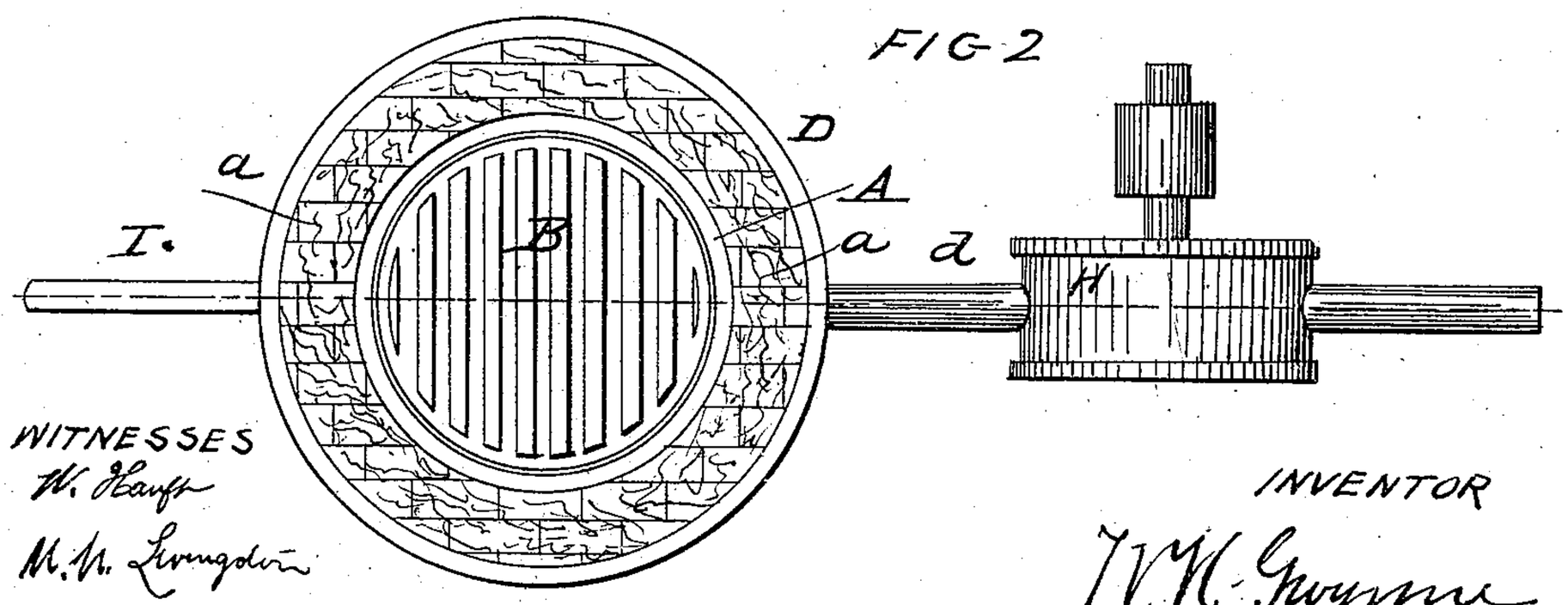


FIG 2



WITNESSES
H. Haupt
M. M. Livingston

INVENTOR
W. H. Gwynne

UNITED STATES PATENT OFFICE.

W. H. GWYNNE, OF WHITE PLAINS, NEW YORK.

IMPROVEMENT IN THE MANUFACTURE OF COAL-GAS.

Specification forming part of Letters Patent No. **40,925**, dated December 15, 1863.

To all whom it may concern:

Be it known that I, W. H. GWYNNE, of White Plains, in the county of Westchester and State of New York, have invented a new and useful Improvement in the Manufacture of Illuminating-Gas; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a vertical longitudinal section of the apparatus which I use to carry out my invention. Fig. 2 is a plan or top view of the same.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to produce illuminating-gas without a retort; and the invention consists in exhausting the gas which rises from burning a mass of coal in a cupola by means of a fan-blower, which is applied in such a manner that the gas, on leaving the cupola, is compelled to pass down through an annular space filled with coke, brick, or other incandescent material, whereby it is freed from all tar and impurities which may be mixed with it when it rises from the cupola. Furthermore, by the action of the fan-blower, the necessary quantity of air is drawn in to keep up combustion, said quantity being regulated by a register or valve in the side of the cupola.

To enable those skilled in the art to make and use my invention, I will proceed to describe it with reference to the drawings.

A represents a cupola, made in the form of an upright cylinder, of cast-iron, lined with fire-brick, or of any other suitable material. The bottom of this cupola is provided with a fire-grate, B, of any desirable construction, and it is set in a circular plate, C, of cast-iron, or on a suitable base of brick-work.

D is a cylinder, which surrounds the cupola A, having an annular space, *a*, between its inner surface and the outer surface of said cupola, as clearly shown in the drawings. This space is filled with coke, fire-brick, or other incandescent material up to a level with the top edge of the cupola, the cylinder D being higher than the cupola, so as to have a space, *b*, for the gas to accumulate and to draw down the annular space *a*. A cover, E, is firmly luted to the top edge of the cylinder, and this cover is provided with a central opening, *c*, which is closed by the lid F, the joint between this lid and the cover E being made tight by means of liquid metal or in any other suitable manner. Through this lid the cupola is charged with coal, a fire having been first lighted on the grate B, and the necessary quantity of air to keep up combustion is admitted through a register, G, under the grate. The gas rising from the burning mass of coal is exhausted by a fan-blower, H, set on the side of the cylinder D, and communicating with the same through a pipe, *d*. This pipe extends in the annular space *a*, above the bottom plate, C, and the gas is compelled to pass down through the incandescent material in said annular space before it reaches the discharge-pipe *d*. By the suction of the fan-blower a certain draft is created, which causes the atmospheric air to rush in through the register with such velocity as may be required to keep up combustion in the cupola, the quantity of air which is admitted to the fire being regulated by the register. If desired, steam may be introduced under the grate B through a pipe, I, to facilitate the formation of hydrocarbon-gas. The discharge of the coal from the cupola ought to be so arranged that no atmospheric air is allowed to rush in when the fire-grate is tilted.

By this apparatus the use of a retort is avoided. The coal heats and decomposes itself in the cupola A, which, being surrounded by brick or other incandescent material, does not lose any of its heat by radiation. This cupola is not liable to crack, or when it cracks the gas escaping is not lost, being retained in the annular space *a* and exhausted with the balance by means of the exhauster. The charging and discharging of the cupola is comparatively easy. The charging can be done almost entirely by machinery, and the labor is thus considerably reduced.

The whole apparatus is simple and cheap in its construction and economical in its operation.

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

1. The employment or use of the cupola A, surrounded by the annular space *a*, in combination with the exhauster H, applied and operating substantially in the manner and for the purpose herein shown and described.

2. The within-described process of producing illuminating-gas by exhausting the products of combustion from a cupola, or its equivalent, through a quantity of incandescent material, substantially as specified.

W. H. GWYNNE.

Witnesses:

W. HAUFF,

M. M. LIVINGSTON.