

(No Model.)

A. K. MURRAY.
GAS PRODUCER.

No. 486,491.

Patented Nov. 22, 1892.

Fig. 1.

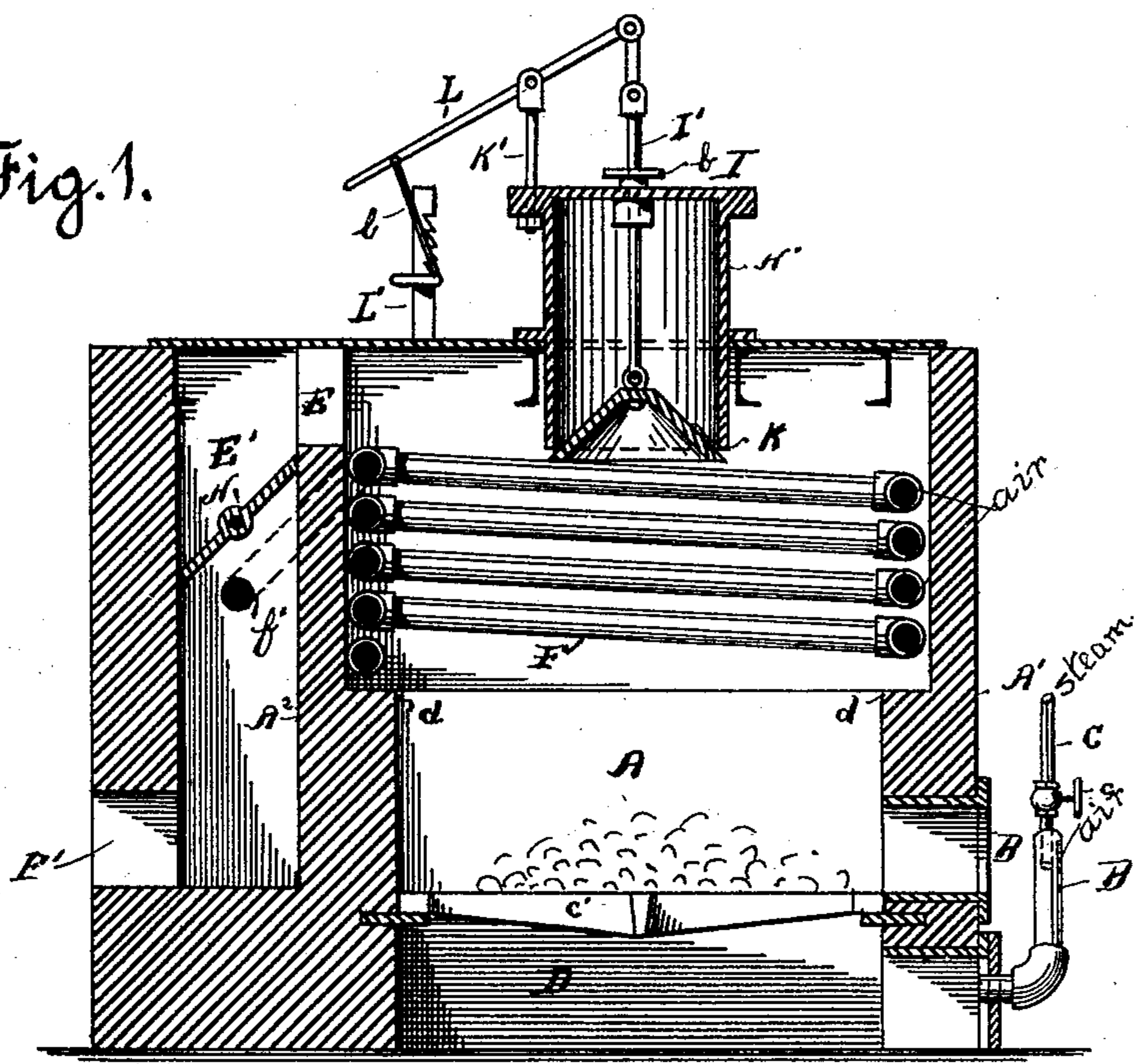


Fig. 2.

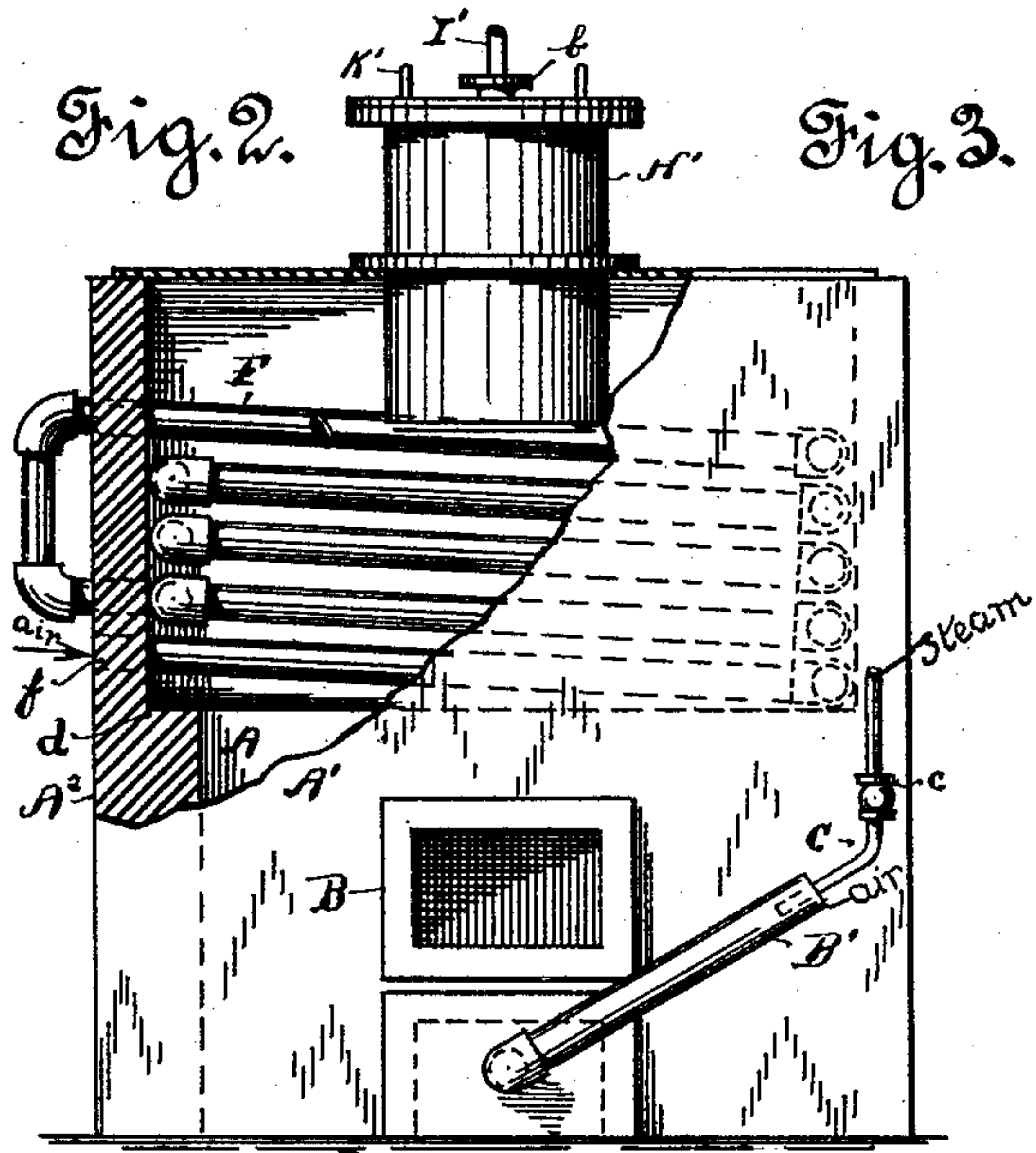
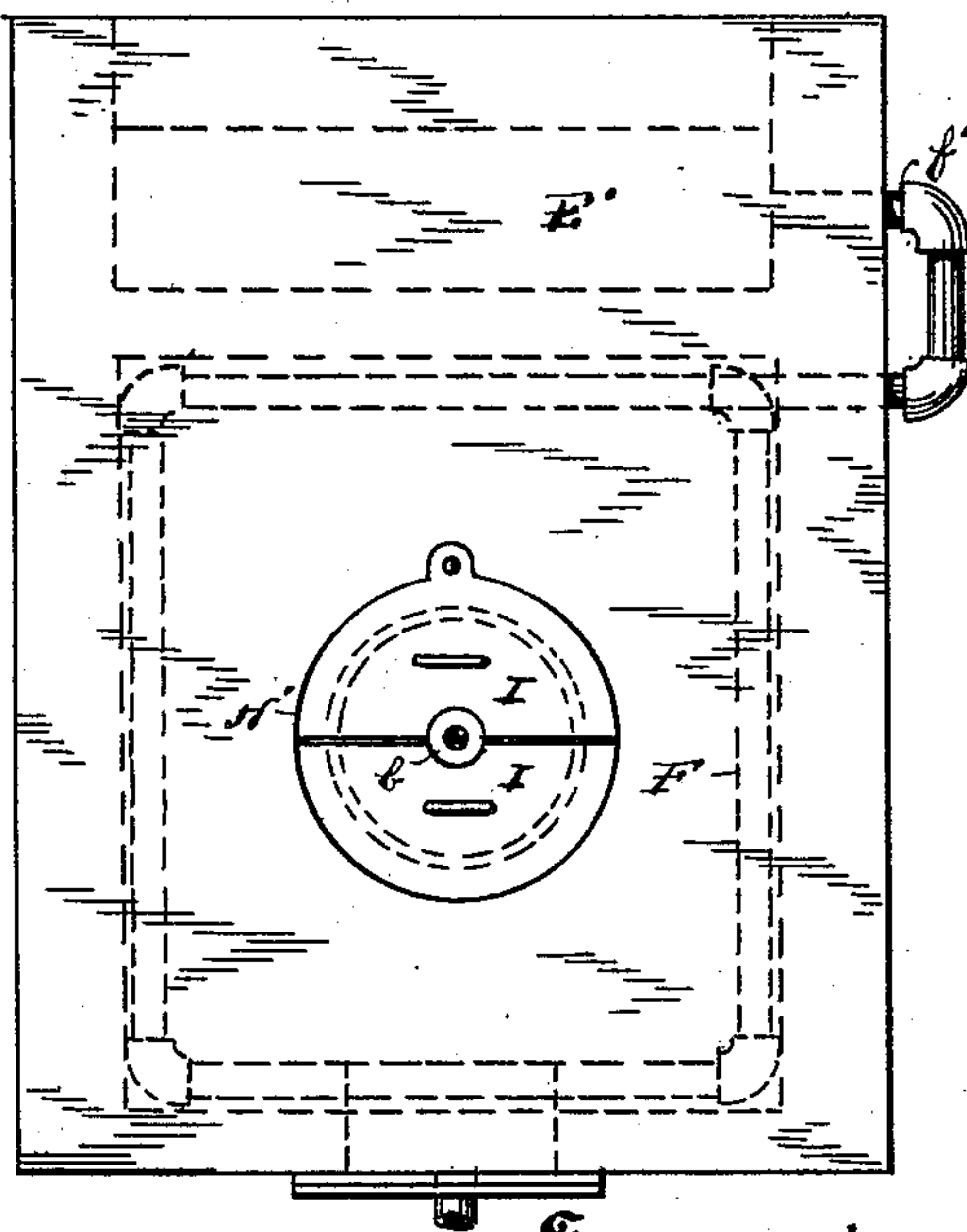


Fig. 3.



Witnesses.

H. Houteverde
J. R. McKee

Inventor.

Alexander K. Murray

By W. A. Acker
att.

UNITED STATES PATENT OFFICE.

ALEXANDER K. MURRAY, OF BRADFORD, PENNSYLVANIA.

GAS-PRODUCER.

SPECIFICATION forming part of Letters Patent No. 486,491, dated November 22, 1892.

Application filed October 27, 1891. Serial No. 410,018. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER K. MURRAY, a citizen of the United States, residing at Bradford, in the county of McKean and State of Pennsylvania, have invented certain new and useful Improvements in Gas-Producers; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

My invention has relation to certain new and useful improvements in gas-making apparatus, which consists in the arrangement of parts and details of construction, as will be hereinafter more fully set forth in the drawings and described and pointed out in the specification.

The object of my invention is to provide for the making of hydrocarbon gas to be utilized for smelting or other purposes at a less expense and in a simpler manner than has heretofore been accomplished, and at the same time provide a better burning gas than is now generated.

Referring to the drawings forming a part of this application, wherein similar letters of reference denote corresponding parts throughout the entire specification and several views, Figure 1 is a vertical sectional side elevation of my machine; Fig. 2, a front elevation, partly broken away; and Fig. 3, a top plan.

The letter A is used to indicate the furnace, preferably constructed of brick, and B the door thereof, located through the front wall A'. Through this wall and into furnace A runs draft-supply pipe B', which is designed for the purpose of supplying air to fuel contained within furnace in order to keep same properly ignited, and into said pipe runs the steam-supply pipe C, the passage of steam through which is controlled by stop-cock c. By this means intermingled air and steam is admitted to the retort below the burning fuel and passes upward therethrough, thus creating sufficient draft to keep the fuel ignited within the furnace. Upon the grate-bars c' rests the fuel contained within the lower portion of the furnace, and beneath said bars is formed the ash-pit D. The upper portion of the furnace is somewhat enlarged by means of offsets d' of walls A' A², which allows for

the combustion of gas contained within the fuel. To the rear of the furnace and connected thereto by means of passage-way E is located the chamber E', which serves as a reservoir for the gas generated from the fuel contained within the furnace. In order to supply or give sufficient amount of oxygen to the generated gas, so as to allow for ignition thereof, I provide the supply-pipe F, which is located within the furnace and rests upon offsets d. This pipe circulates within the furnace, as shown fully in the drawings, thereby allowing for the heated generated gas circulating therearound perfectly, in order to heat the air passing therethrough and remove all moisture therefrom prior to its discharge within the gas-reservoir. As shown in Fig. 2, the end f of supply-pipe passes through wall A² and air is admitted therein, the supply of which may be regulated by any suitable mechanism. The opposite end f' passes into chamber or reservoir E', and the discharged air therefrom commingles with the generated gas contained therein in a heated dry condition and supplies thereto the requisite amount of oxygen. After the air enters end of supply-pipe f it circulates freely within the serpentine supply-pipe F, contained within the furnace, until all moisture is extracted therefrom, and, as above stated, is finally discharged into the reservoir E', where it intermixes with the generated gas contained therein. From this reservoir the gas is conveyed or withdrawn, as, for instance, through passage-way F', as desired for smelting or other purposes.

By means of controlling valve or damper H, I am enabled to regulate the flow of generated gas from furnace to reservoir during the withdrawal of the gas from within reservoir as required. The fuel is supplied to the furnace through the medium of feed-dome H', which passes through the top of the furnace, as shown. The top of the feed-dome is provided with the removable cover or covers I, and through the stuffing-box b works the rod I', the lower end of which is provided with bell K, which when the rod is lifted its full height contacts with the lower end of the feed-dome. To the standard K' is fulcrumed the lifted lever L, which is pivoted to rod I', as shown. Said lever is held in position by means of chain or rod l, depending therefrom, the

lower end of which engages with teeth of rack-bar or standard L'. After the requisite amount of fuel has been placed within the furnace the same is set fire and the door B
5 hermetically sealed, which prevents admission of air, except through draft-supply pipe B', and escape of generated gas therefrom, except through passage-way E.

The admission of air through pipe B' is so
10 regulated as to suffice to keep the fuel perfectly ignited in order to extract all gas contained therein. As the gas generates the same passes through passage-way E into reservoir E'. Steam is only admitted when
15 greater amount of moisture is necessary to be given to the fuel. The gas as generated does not contain sufficient amount of oxygen. Consequently I have provided the supply-pipe F, which furnishes the necessary oxygen to the
20 generated gas contained within the reservoir. After the furnace has been sealed and fired extra fuel as required is supplied through the feed-dome by removing the covers and filling the same with fuel. The covers are then re-
25 placed and the fuel entered into the furnace by uplifting the lever L, which causes rod I' to descend, so as to allow the fuel to fall from within the dome into the furnace, passing between the coils of the supply-pipe F.
30 By this arrangement escape of generated gas is prevented, which would occur if the furnace was opened in the first instance, so as to admit the fuel directly therein. By only permitting to the furnace admission of air to
35 act as a draft for the fuel I overcome crusting of the fuel's surface, which would result in case a sufficient quantity of air was ad-

mitted to act as a draft and supply requisite oxygen for the gas generated. Consequently
in order to overcome the banking or crusting 40 of the fuel I supply the necessary per cent. of oxygen above the burning fuel by causing the same to pass within a passage formed within the furnace above the burning fuel and discharge the same directly within the 45 reservoir containing the generated gas in a dry heated condition, as before stated. The generated gas, as required for heating purposes, may be withdrawn from within the reservoir E' by any suitable means and conveyed 50 to any desired place.

I preferably employ a fuel consisting of bituminous coal, pitch, and adobe; but the exact nature of the fuel is not very material, and any rich hydrocarbon fuel may be used. 55

Having thus described my invention, what I claim as new, and desire to secure protection in by Letters Patent of the United States, is—

The combination, with the furnace having 60 a grate and provided with an internal annular shoulder in its walls above the grate, of a gas-reservoir in rear of the furnace and communicating therewith and an air-supply pipe resting on said annular shoulder, extending 65 around the walls of the furnace-chamber and entering the gas-reservoir.

In testimony whereof I affix my signature in presence of two witnesses.

ALEXANDER K. MURRAY.

Witnesses:

N. A. ACKER,
J. W. KEYS.