

(No Model.)

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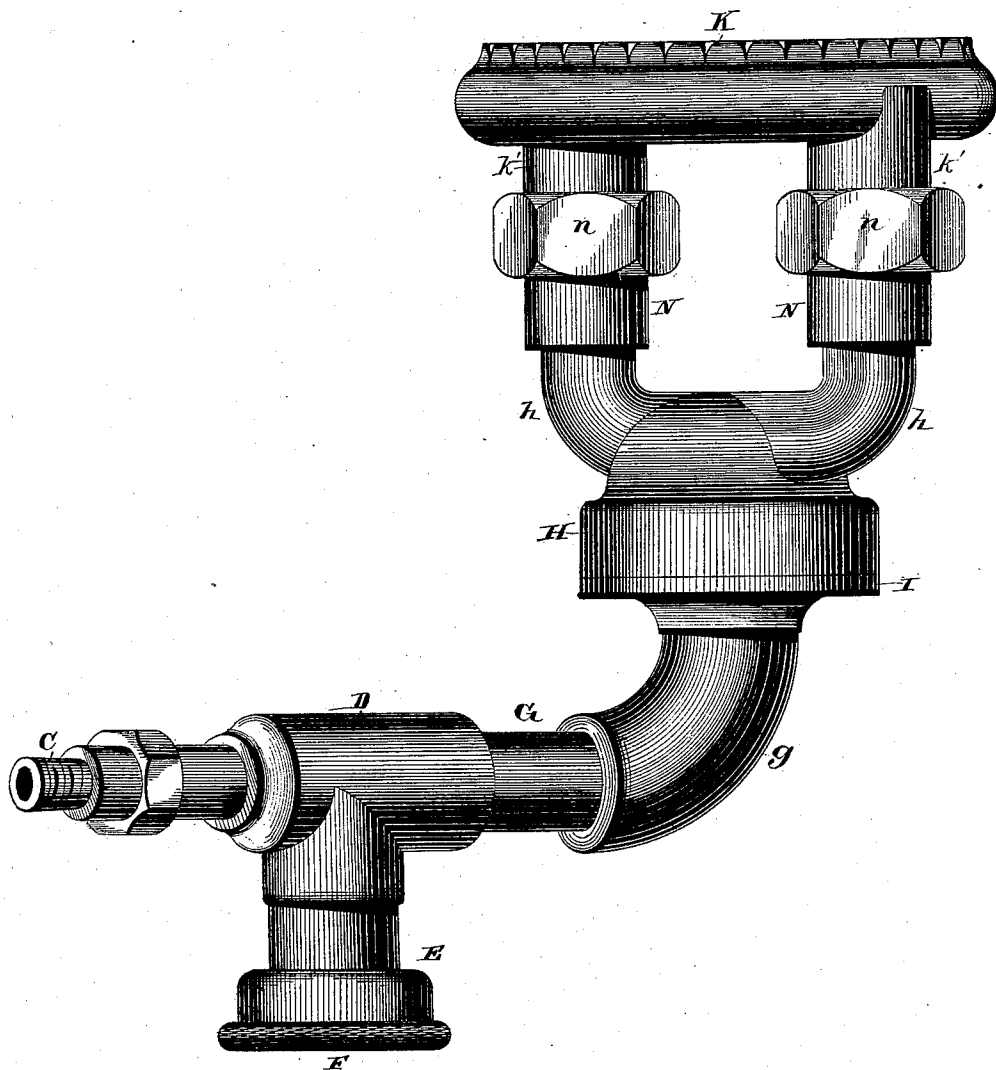
W. M. JACKSON.

GAS BURNER.

No. 310,945.

Patented Jan. 20, 1885.

Fig. 1



WITNESSES

E. J. Nottingham
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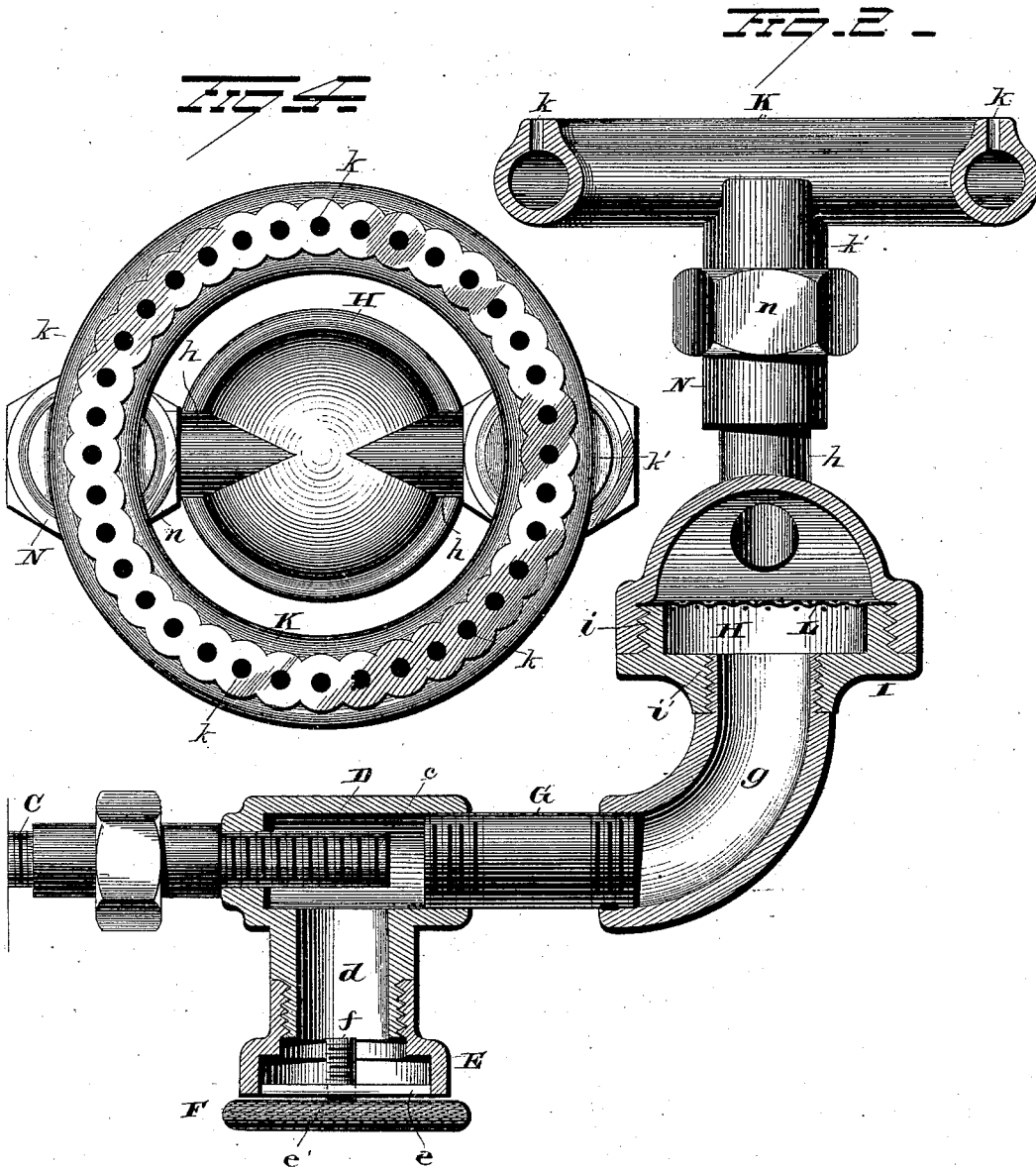
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3 Sheets—Sheet 3.

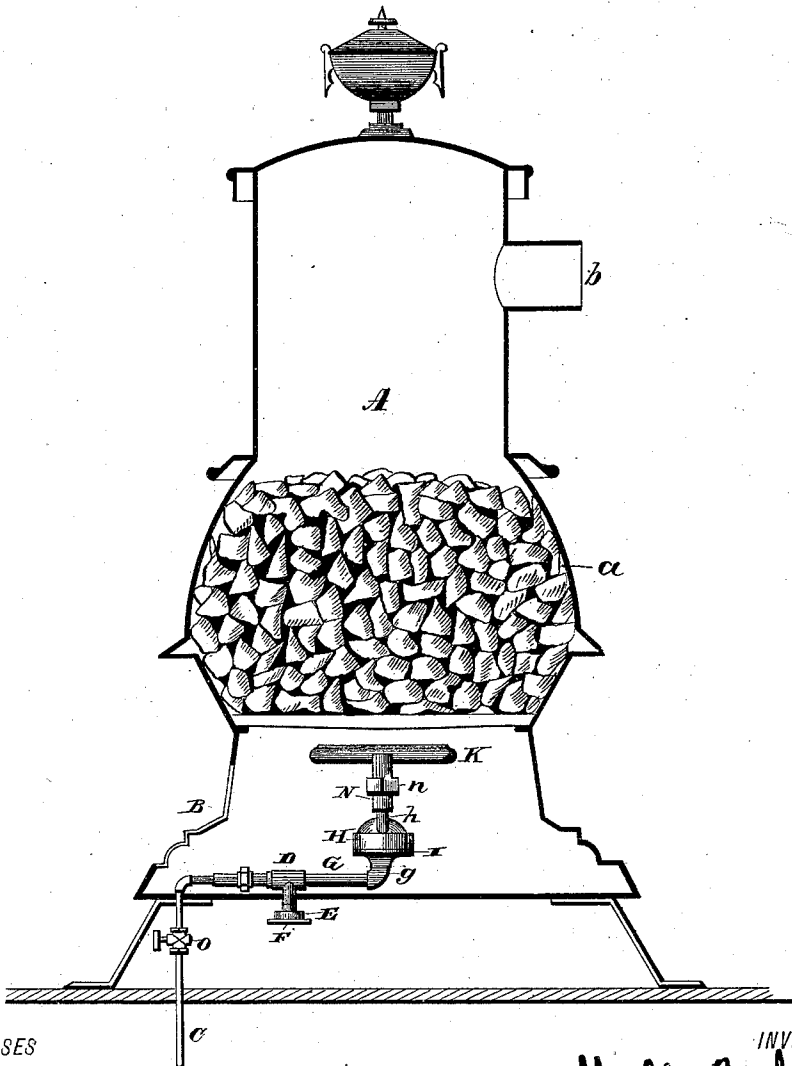
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110. 3



WITNESSES

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UNITED STATES PATENT OFFICE.

WALTER MARSH JACKSON, OF PROVIDENCE, RHODE ISLAND.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 310,945, dated January 20, 1885.

Application filed May 23, 1884. (No model.)

To all whom it may concern:

Be it known that I, WALTER MARSH JACKSON, of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Apparatus for Utilizing Heat Developed by Combustion; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in apparatus for utilizing heat developed by combustion.

15 The explanation of the method by which I generate and arrest heat and turn it to practical use is fully set forth and explained in another application, Serial No. 137,166, filed April 19, 1884, and is dispensed with here.

20 The object of my present invention is to provide an apparatus which shall be particularly adapted to use in connection with a cylinder-stove, or a stove in which the refractory material is arranged in a cylindrical or annular form, a further object being to provide an economical, effective, and convenient apparatus.

25 With these ends in view my invention consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

30 In the accompanying drawings, Figure 1 is a view of the apparatus in perspective. Fig. 2 is a vertical section. Fig. 3 represents the apparatus applied to a stove, and Fig. 4 is a plan view of the burner.

A represents a stove provided with a fire-pot, *a*, filled with refractory material, and having the permanent open-draft opening B and the permanent exit-flue *b*.

40 C represents a gas-supply pipe, which terminates in the enlarged chamber D in a nozzle, *c*, which forms an injector. The lower wall of the chamber D is provided with an opening, *d*, in which is fitted a valve-seat, E, the latter having a cross-bar, *e*, secured diametrically across its mouth. The cross-bar *e* is provided with a threaded perforation, *e'*, centrally located and adapted to receive a screw, *f*, secured at the center of the hand-valve F. By means of the hand-valve F the supply of air is regulated. A pipe-section, G, is screwed into the end of the chamber D, and by means of a

quarter-turn coupling, *g*, connects with the safety-chamber H. The chamber H consists of an enlarged cylindrical lower portion and 55 a dome-shaped upper portion, from the latter of which the two diametrically-opposite upwardly-curved branches *h* lead to the burner K. The bottom of the chamber H is closed by the cap I. The chamber H is provided with 60 a wire-gauze diaphragm, L, resting on the shoulder formed at the point where the dome portion of the chamber meets the cylindrical portion, and held in place by the annular flange *i*, formed on the cap I, which flange fits snugly 65 within the cylindrical portion of the chamber and is secured therein by cement, or the cap may be screwed into the chamber. The cap I is further provided with a female-threaded neck, *i'*, which receives the coupling. The 70 safety-chamber is of such diameter that the gauze diaphragm which stretches across it, the meshes of which are of suitable size to admit a free flow of gas and at the same time to form a fire-stop, shall have a sum total of mesh- 75 openings equal to the opening in the pipe-section G. The safety-chamber with its curved branches leading to the burner is cast integral.

The burner K consists of an annular chamber drawn in at its upper portion and provided 80 with a series of perforations forming a circular line of jets, *k*.

The burner is provided with two sockets, *k'*, opening into the burner-chamber situated diametrically opposite and adapted to receive 85 threaded couplings N, by which, with the coupling-nuts *n*, the burner is connected with the branches *h*, or the burner may be connected with the branches by any other device which experience may prove to be best suited to the 90 purpose.

The burner with its jets and feed-openings is cast integral.

The apparatus as a whole may be placed in the usual hearth or ash-recess commonly found 95 in a cylinder-stove, or in any suitable receptacle provided for the purpose of receiving it, the jets being situated immediately beneath the bed of refractory material. The air-feed connected with the injector-chamber extends 100 conveniently through the lower wall of the hearth, the valve-seat E forming, if desired, a check-nut to lock the apparatus in position. The supply-pipe is provided with a stop-cock,

O, to regulate the flow of gas. The commingling of air and gas in the injector-chamber, the forcing of the mixture onward to the burner, the igniting of the same as it issues from the perforations in the burner, and the permanent draft for supplying additional air and drawing the burning gas through the interstices between the pieces of refractory material are set forth in the application above referred to; in fact the whole operation of this apparatus is quite the same as that described in the said application, and it is deemed unnecessary to repeat it here.

I do not wish to limit myself to the particular form and construction of burner and safety-chamber herein described, as it may be found advisable to provide the burner with three or more feed-openings in the place of two, and the safety-chamber with a like number of branch pipes, or to form concentric annular burner-chambers and connect them with the safety-chamber by any convenient number of branch pipes, or other arrangements might be mentioned in keeping with the spirit and scope of my invention.

I do not in the present application claim the injector-chamber and safety-chamber, broadly; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a gas-supply pipe provided with two or more branches, of an annular burner provided with socket-openings cast therewith, to which the branches are secured, substantially as set forth. 35

2. The combination, with an annular burner having pipe-connections cast integral therewith, of a safety-chamber having branch-pipe connections cast integral therewith, substantially as set forth. 40

3. The combination, with a burner, of a gas-supply pipe and a safety-chamber interposed between the supply-pipe and burner, said safety-chamber provided with a wire-gauze diaphragm and having two or more branch pipes cast integral therewith, substantially as set forth. 45

4. The combination, with an annular burner having two or more branch supply-pipe connections cast integral therewith, of a safety-chamber provided with branch pipes and an injector and commingling-chamber, substantially as set forth. 50

In testimony whereof I have signed this specification in presence of two subscribing witnesses. 55

WALTER MARSH JACKSON.

Witnesses:

J. DEAN BENTON,
CHAS. H. JACKSON.