(No Model.)

R. M. GARDNER.

HYDROCARBON VAPORIZER AND BURNER.

No. 435,692. Patented Sept. 2, 1890.

Fig. 1.

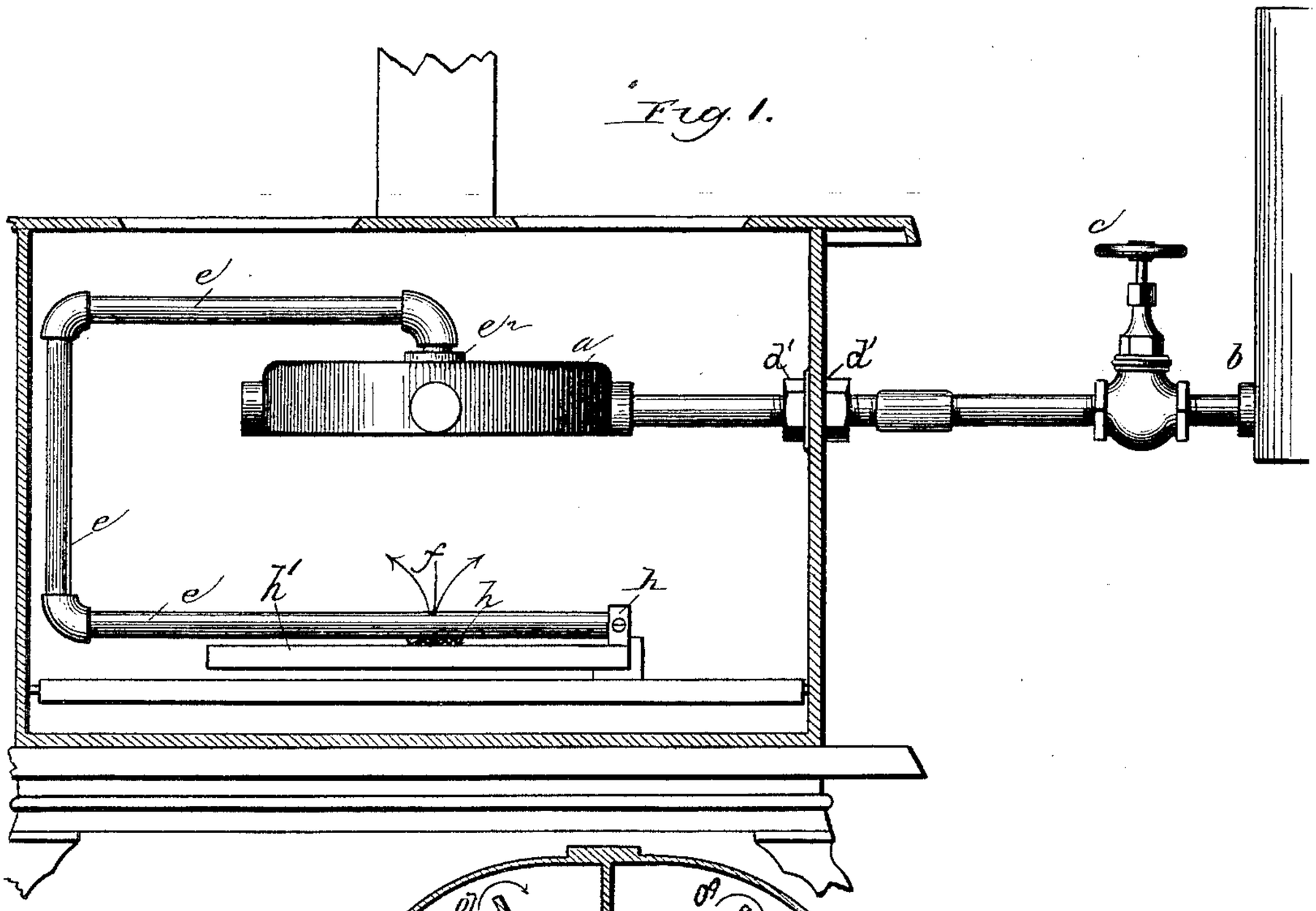
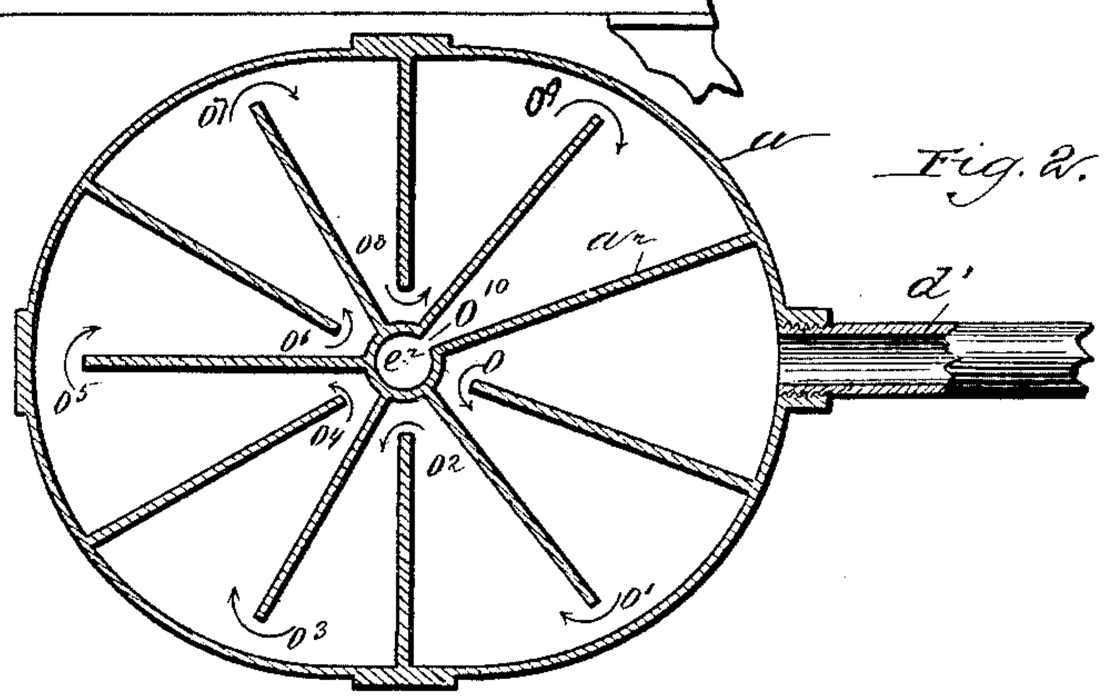


Fig. 2.



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HYDROCARBON VAPORIZER AND BURNER.

SPECIFICATION forming part of Letters Patent No. 435,692, dated September 2, 1890.

Application filed June 12, 1889. Serial No. 314,073. (No model.)

To all whom it may concern:

Be it known that I, RICHARD M. GARDNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hydrocarbon Vaporizers and Burners, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 shows a longitudinal section of the fire-box of a cook-stove with my improved hydrocarbon-burning apparatus applied to it, and shown in perspective. Fig. 2 shows the converter-chamber *a* in plan view below the cutting-plane *x x*, as shown in Fig. 1.

Like letters refer to like parts.

The object of my invention is to construct what is generally known as a "hydrocarbon-vaporizer" which shall thoroughly convert carbon oil into vapor before it is burned and at the same time be of such simple construction as to be managed without any difficulty by any intelligent person; and to that end I construct my said improved hydrocarbon-burner substantially as follows, namely: Into the longitudinal center of the fire-box of a stove I place a vaporizing-chamber *a*, which is connected to an oil-reservoir *b* by means of a pipe *d*, passed through the side of the stove at the end of the fire-box, as shown, and secured on each side of the wall by means of a nut *d'*, and to the center of the top of said vaporizing-chamber e^2 is attached an elbow, to which is attached a pipe *e*, parallel with pipe *d* and extended toward the opposite end of the fire-box, as shown, where it descends to near the grate, from which point it again returns toward the opposite end of the fire-box and passes under the center of the said vaporizing-chamber and terminates at or near the point where the feed-pipe *d* ends, at which point it is fastened into a block *h*, which closes the end of said train of pipes, and said block is fastened to the end of a shallow and narrow pan or trough *h'*, which extends back about as far as the vaporizing-chamber, about as shown in the drawings. The vaporizing-chamber *a* is an oval chamber, which is about five inches long and four inches wide at its greatest dimensions for an ordinary stove and about one inch high, preferably cast of brass, although cast-iron will answer the same purpose quite as well, and the shell thereof is made as thin as practicable. The interior of said vaporizing-chamber is divided into a series of triangular chambers by means of a series of partition-walls and a central chamber e^2, as clearly shown in Fig. 2. All said partition-walls are connected to the top and bottom of the chamber, and only one wall a^2 extends from the outer rim of the vaporizer to its central chamber e^2 and is connected at its ends to both side walls, while all the other partition-walls are connected only either with the outer rim or central chamber alternately and so as to leave a series of passages o o' o^2 o^3 o^4 o^5 o^6 o^7 o^8 o^9 between the end of the partition and chamber wall, while another opening o^{10} on the rear side of said wall a^2 passes through the wall into the area of the chamber e^2. By means of this construction of the vaporizing-chamber a series of large chambers are formed, through which the oil led from the tank through the pipe *d* must pass, and said chambers are all equally well acted upon by the flame of the burner *f*, and are therefore well adapted to completely vaporize the oil or convert it into gas, which said volatilized substance then passes from the pipe or pipes *e* through a burner *f* on the pipe *e* and under the converter and under said burner, and into the trough or pan *g* is placed a quantity of asbestus *h'* to catch the overflowing oil before being ignited.

To put the said apparatus in operation, the valve *c* is opened and the oil allowed to flow until a small quantity has run out of the burner *f* and saturated the asbestus. The valve *c* is then closed and the oil ignited. The heat produced from this fire soon vaporizes the oil in the vaporizing-chamber, the burning of which causes increased heat to act on the vaporizing-chamber, which soon brings said chamber to a red heat, the valve being meanwhile again opened to a point which will permit a required flow of oil for a continuous operation of the apparatus.

What I claim is—

1. A hydrocarbon vaporizer and burner consisting of a vaporizing-chamber provided with a side oil-supply opening and pipe, a central outlet e^2, to which is attached an outlet and burner pipe *e*, said chamber being

provided with a main partition-wall located between and separating the said openings, and a series of radial partition-walls surrounding said outlet, provided with openings at their alternate ends, substantially as specified.

2. A hydrocarbon vaporizer and burner consisting of a vaporizing-chamber provided with a side oil-supply opening and pipe, a central outlet e^2, to which is attached an outlet and burner pipe *e*, said chamber being provided with a main partition-wall located between and separating the said openings, a series of radial partition-walls surrounding said outlet, provided with openings at their alternate ends, a burner *f* under said chamber *a*, and a pan *h'* under said burner, substantially as specified.

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