(No Model.)

J. REIDENBAUGH.

HYDROCARBON BURNER.

No. 603,740. Patented May 10, 1898.

Fig. I.

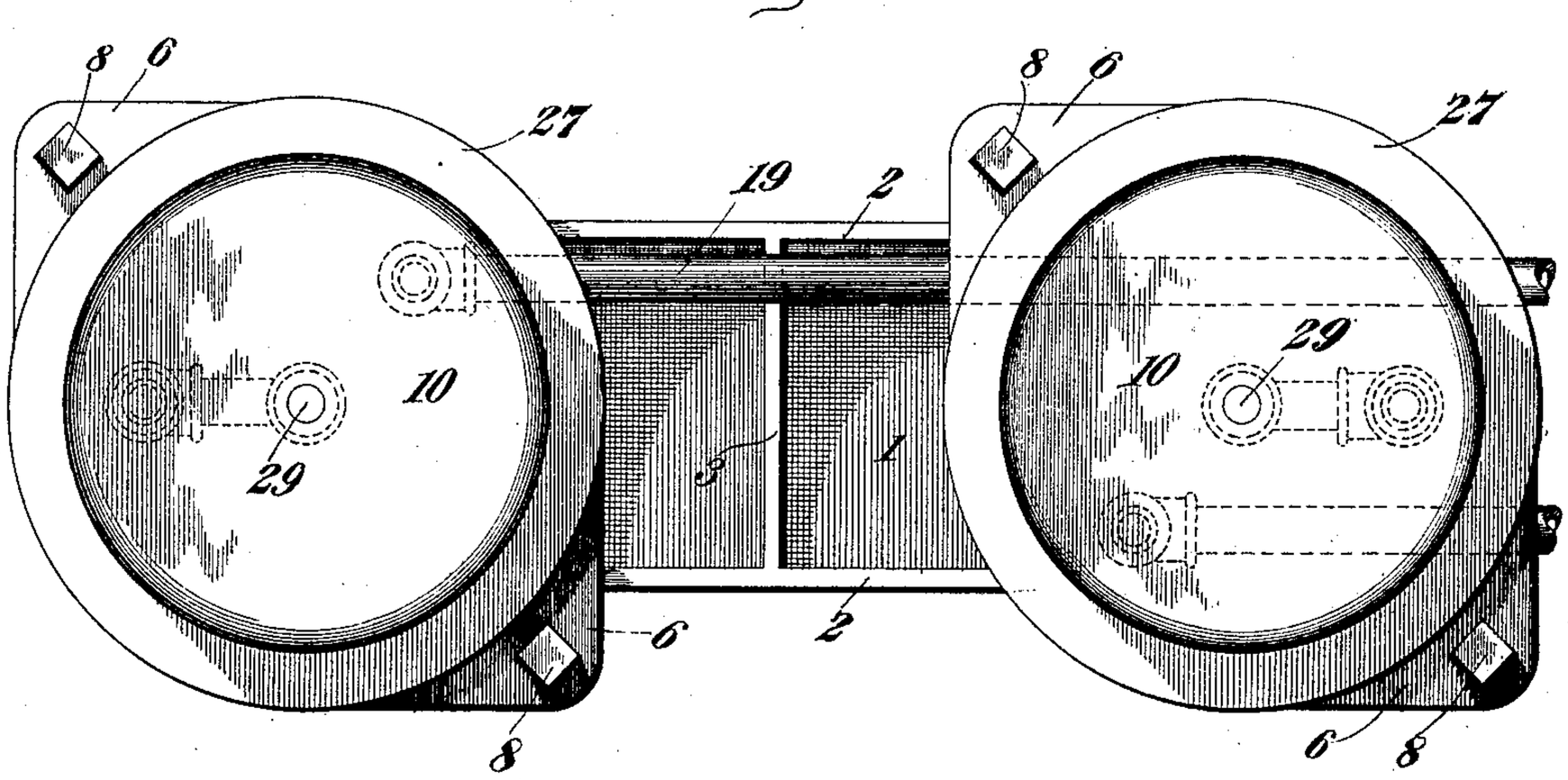
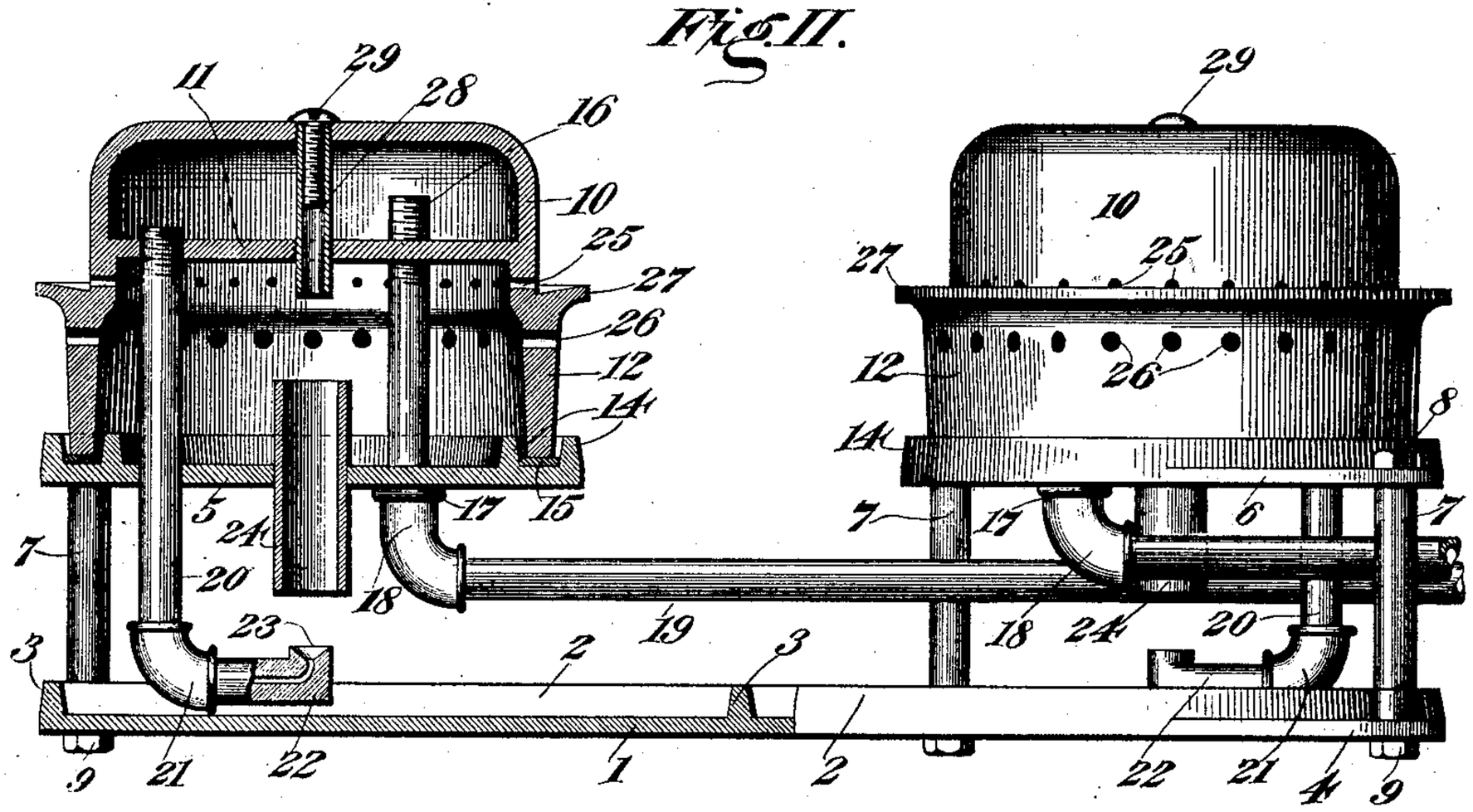


Fig. II.



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UNITED STATES PATENT OFFICE.

JOHN REIDENBAUGH, OF MARION, OHIO, ASSIGNOR OF ONE-HALF TO EDWARD C. DRESHER AND JOHN T. MONNETT, OF SAME PLACE.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 603,740, dated May 10, 1898.

Application filed May 17, 1897. Serial No. 636,921. (No model.)

To all whom it may concern:

Be it known that I, JOHN REIDENBAUGH, of Marion, in the county of Marion, State of Ohio, have invented certain new and useful Improvements in Hydrocarbon-Burners, of which the following is a complete specification, reference being had to the accompanying drawings.

The object of my invention is to produce an improved, simple, and durable hydrocarbon-burner so constructed as to promote the efficiency of the apparatus and to produce in operation a constantly-clear blue flame without the objectionable accumulation of carbon deposits.

I accomplish my object, mainly, by providing means for maintaining the heat of the generator, whereby the liquid hydrocarbon may be constantly supplied to the burner in a perfectly vaporous state, and also by insuring the uniform commingling of the vapor with air and converting it into a homogeneous volume before it reaches the point or points at which it is ignited.

In the accompanying drawings, Figure I is a top plan view of two of my burners complete. Fig. II is a side elevation of the same, partially in section.

Referring to the figures on the drawings, 1 indicates a pan or supporting member provided with side flanges 2 and transverse flanges 3, which divide it into separate compartments, one for each of the burners which it carries. The pan 1 is provided with obliquely opposite lugs 4, one pair of which is provided for each of the burners.

5 indicates the bottom plate of my burner, whose generally circular contour is broken by oppositely-projecting lugs 6, which correspond in position and location with the lugs 4, to and above which at a suitable elevation they are securely united.

For the purpose of uniting the lugs of the bottom plate to the lugs of the pan I illustrate spacing-tubes 7, through which bolts are passed. The heads 8 of the bolts are illustrated in Fig. I, and the nuts 9 upon the lower ends thereof are shown in Fig. II.

Above the bottom plate is superimposed the generating-chamber defined by a canopy 10 and a transverse partition-wall 11, the generating-chamber being supported by a preferably cylindrical wall 12, which, when united to the bottom plate 5, defines an inclosed commingling-chamber between the bottom plate 5, which is a part thereof, and the generating-chamber. I prefer to make the walls 10, 11, and 12 of a single casting, as clearly illustrated in Fig. II, and to separately unite the casting to the bottom plate 5. For that reason I prefer to provide adjacent to the edge of the bottom plate a pair of annular parallel flanges 14, which define an intermediate trough in the bottom of which is located a packing-ring 15, upon which the lower edge of the wall 12 is seated. The bottom is secured to the casting as by means of a section 16 of the oil-supply pipe, which, being threaded to correspond with a threaded aperture in the wall 11 and extending through an aperture in the bottom plate 5, carries upon its lower end a projection 17, that abuts firmly against the lower surface of the bottom plate 5. As illustrated, the projection 17 is afforded by an elbow 18, which communicates with the supply-pipe 19.

I prefer to provide each burner with an independent supply-pipe 19, two being illustrated in the drawings to accommodate the two burners.

The pipe 16 preferably extends well into the interior of the generating-chamber to one side of its center, while at a little distance from it the gas or exit pipe 20 is screwed into a suitably-threaded aperture provided for it in the wall 11.

The pipe 20, whose upper end within the generating-chamber is preferably lower than the upper end of the pipe 16, preferably extends downwardly through an aperture in the bottom plate 5 and carries at right angles to it, as by the aid of an interposed elbow 21, a burner-tip 22. The burner-tip is preferably made of brass, as being less liable to produce or permit carbon deposits. Its discharge-orifice 23 is preferably inversely conical and is located in alinement with the vertical axis of the bottom plate 5 and the superimposed casting.

At a suitable distance above the discharge-orifice 23 I provide a commingling-tube 24, which, being secured to or made integral with the bottom plate 5, preferably projects below the same toward the orifice 23 and upwardly

into the interior of the commingling-chamber, defined by the bottom plate 5 and the walls 11 and 12, respectively.

Through the body of the wall 12 I provide, preferably, two sets of annular series of apertures, the one set being represented by the annular series 25 and the other set by the annular series 26. Each of the apertures of the series 25 is preferably comparatively minute and is located close to the generating-chamber, directly under the partition-wall 11, the object of the comparative size and location of those apertures being to produce an independent flame for preserving a constant degree of heat within the generating-chamber. For this reason the apertures 25 are located close to the generating-chamber, and their size compels the flames which issue from them to hug the outer wall of the generating-chamber and to bestow upon it exclusively a large proportion of the heat generated by them. The apertures 26, on the other hand, are intended to radiate their heat over a proportionately wide area and are for that reason made considerably larger than the apertures 25. Moreover, I prefer to provide as a spreader, for example, an annular flange 27 directly above the line of the series to enlarge the area of radiation and at the same time protect the apertures 25 from the draft created by the flame supported by the vapor issuing from the apertures 26.

As above stated, I prefer to provide two sets 25 and 26, arranged in annular series, and illustrate in each set one annular series. Additional apertures, however, may be provided, the two series illustrated being shown merely by way of example.

Above the commingling-tube 24 and concentric therewith I provide a tube 28, which, being secured, as by screw-threads, to the walls 10 and 11 of the generating-chamber, extends entirely through the same and affords means for gaining access to the orifice 23, as by inserting a wire picker, for cleaning the burner-tip when required. When the burner is in use, the tube 28 is kept closed, as by a headed pin 29.

It may be observed that the assembling of a plurality of burners upon a single pan is designed to afford means for equipping an ordinary stove or a stove of usual pattern with my apparatus, so that the burners, respectively, may be located directly under the lids of the stove. When so used, the pipes 19, being located upon opposite sides of the commingling-tube 24 of one of the burners, as illustrated, may be used independently to supply their respective burners with fuel.

The operation of my apparatus is as follows: Any suitable liquid hydrocarbon being supplied through one of the pipes 19—for example, as by the turning of a cock (not illustrated)—is admitted to the interior of the generating-chamber and flows out upon the floor thereof defined by the wall 11. Thence it readily issues in its liquid state through the tube 20, and thence out through the tube 22, where it escapes into the appropriate compartment of the pan 1. When sufficient oil has been accumulated in the compartment of the pan 1, its flow is interrupted and the oil in the pan is ignited and allowed to burn until the generating-chamber is sufficiently heated to generate vapor within itself. Thereupon oil is again supplied in required quantity through the pipe 19, and issuing into the generating-chamber through the pipe 16 is immediately vaporized and passed down through the pipe 20 and out through the orifice 23 of the burner-tip 22, whence it passes upwardly through the commingler-tube 24, carrying with it a required proportion of air, which within the commingling-chamber becomes thoroughly incorporated with the vapor. From the commingling-chamber the combined air and vapor being ignited issues through the apertures 25 and 26 in clear blue flames, the flames from the apertures 25 contributing to the heat supplied from the burner, but serving chiefly to maintain a uniform degree of temperature within the generating-chamber, the flames from the apertures 26 spreading outwardly and affording a wide heating area around the burner.

What I claim is—

In a hydrocarbon-burner, the combination with a generating-chamber and burner, of a commingling-chamber between the burner and the generating-chamber, an external annular spreader on the wall of the commingling-chamber below the generating-chamber, and an independent series of apertures through the wall of the commingling-chamber above and below the spreader, substantially as and for the purpose specified.

In testimony of all which I have hereunto subscribed my name.

JOHN REIDENBAUGH.

Witnesses:

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