

No. 708,343.

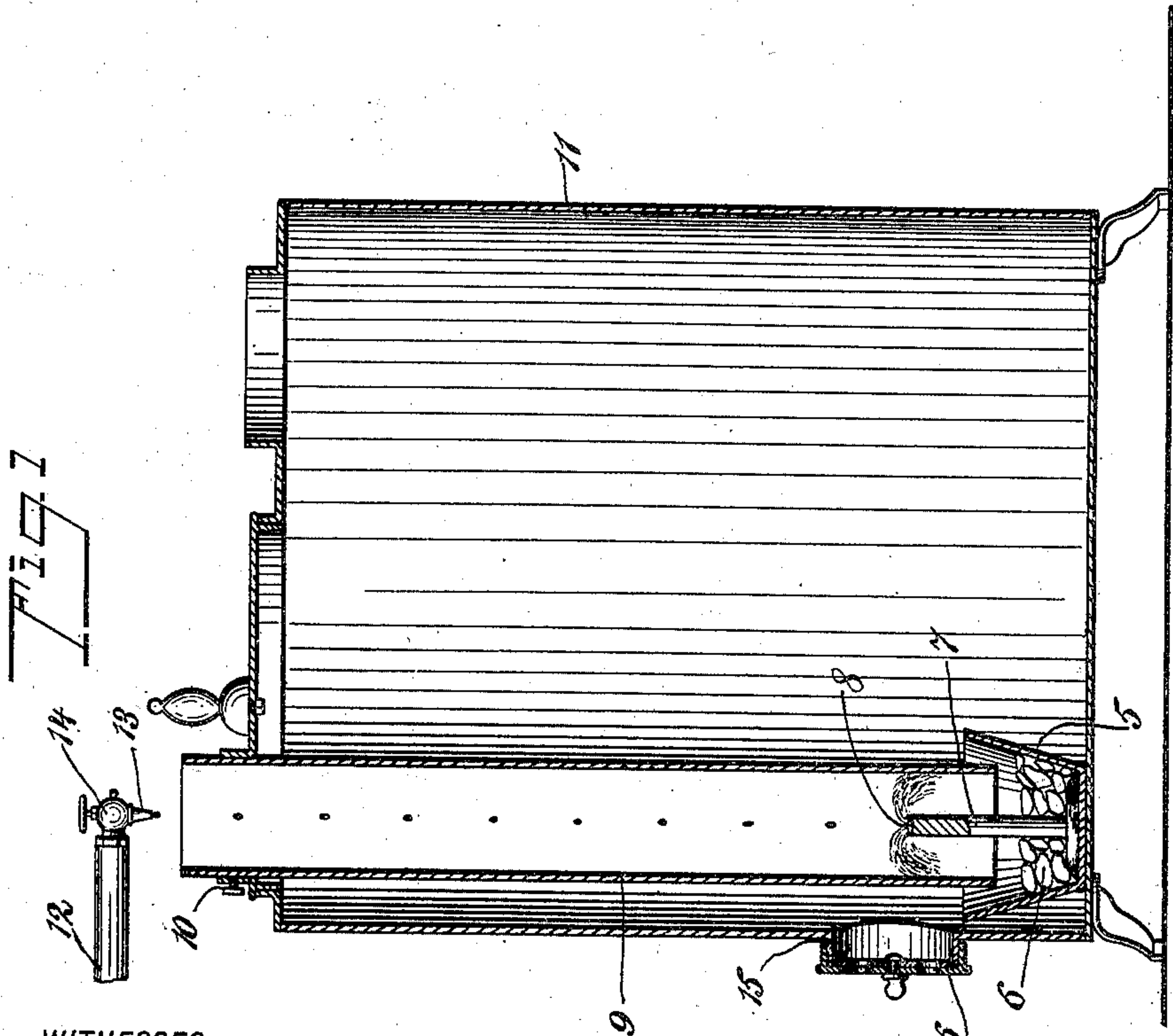
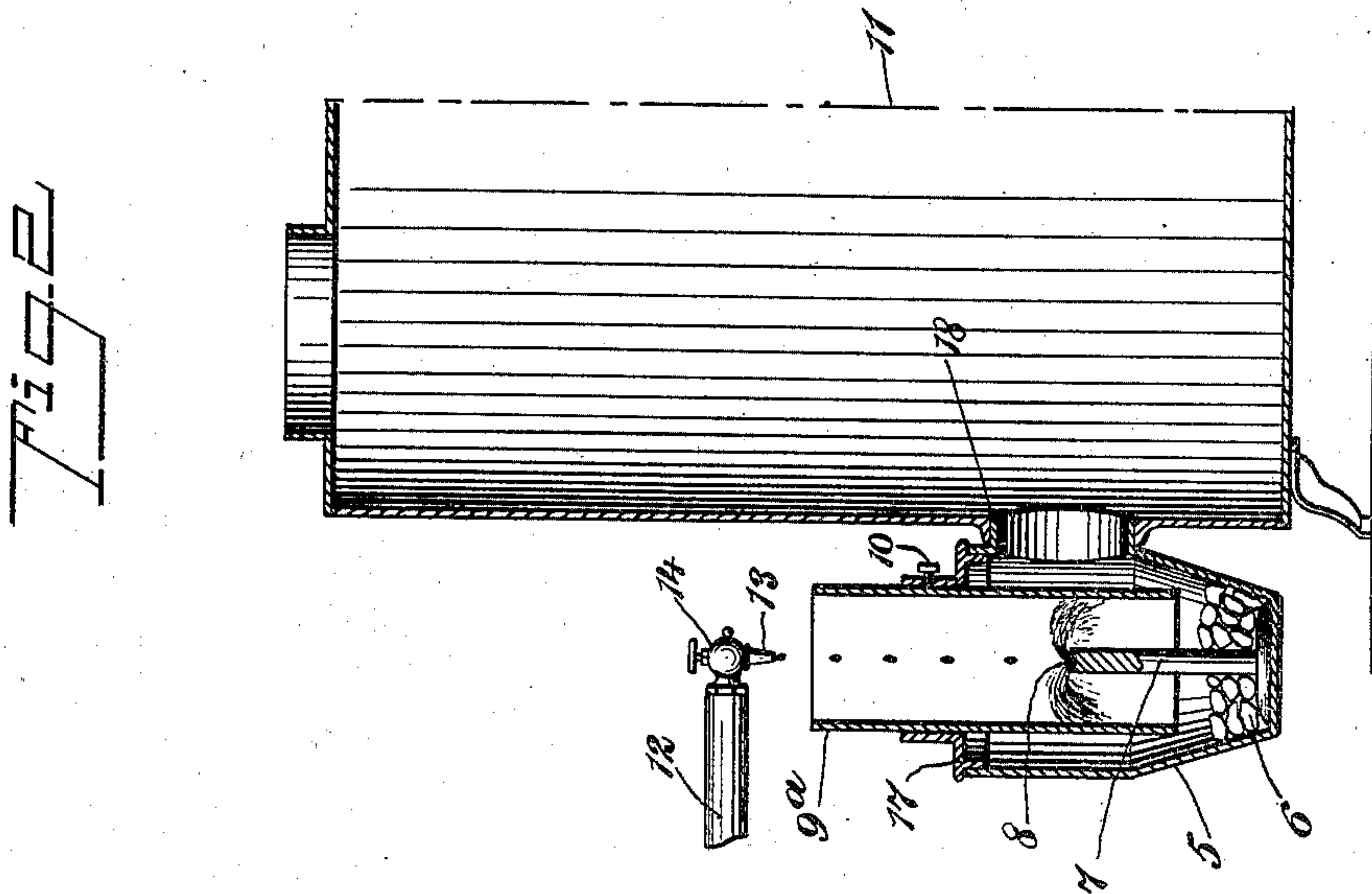
Patented Sept. 2, 1902.

G. A. GREENE.

HYDROCARBON BURNER FOR STOVES OR FURNACES.

(Application filed Dec. 27, 1901.)

(No Model.)



WITNESSES:

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UNITED STATES PATENT OFFICE.

GEORGE A. GREENE, OF ROGERS, TEXAS.

HYDROCARBON-BURNER FOR STOVES OR FURNACES.

SPECIFICATION forming part of Letters Patent No. 708,343, dated September 2, 1902.

Application filed December 27, 1901. Serial No. 87,427. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. GREENE, a citizen of the United States, and a resident of Rogers, in the county of Bell and State of Texas, have invented a new and useful Improvement in Hydrocarbon-Burners for Stoves or Furnaces, of which the following is a full, clear, and exact description.

My invention relates to improvements in hydrocarbon-burners for stoves, furnaces, or the like, the same being more especially intended for the consumption of crude oils, petroleum, and the like.

Among other things my invention has for its objects the provision of an improved burner in which the liquid is vaporized within a confined space by causing it to splash upon a suitable obstacle and against the inner surface of a heated air-tube; to heat the air as it passes to the burner and to commingle the vapor and the heated air, so as to obtain an economical and good combustible mixture; to regulate the volume of air supplied to the burner; to provide an absorbent charge for the non-vaporized liquid which may be supplied to the burner, said absorbent being located adjacent to the zone of combustion and adapted to feed fuel thereto for a short time after cutting off the fuel-supply, and, finally, to provide a slight-feed for the fuel-supply means.

With these ends in view the invention consists in the combination, construction, and arrangement of parts which will be hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both the figures.

Figure 1 is a sectional elevation illustrating one embodiment of the invention, wherein the hydrocarbon-burner is disposed or housed within a combustion-chamber of an ordinary stove or furnace; and Fig. 2 is a similar sectional view illustrating another embodiment of the invention, in which the hydrocarbon-burner is located externally of the stove or furnace.

5 designates a receptacle which forms a chamber adapted to receive a mass of an absorbent material, the latter being indicated by the numeral 6. Said absorbent material

may be asbestos or other non-consumable substance or charcoal; but of course I do not limit myself to any particular material. This receptacle is also equipped with a splasher which is disposed in the path of drip from the sight-feed. This splasher is given the form of an upstanding column or post 7, that is rigid on or integral with the bottom of the receptacle 5 and is preferably of a length to extend above the receptacle, the upper extremity of said post or column having a cavity 8.

9 designates a tube which is arranged in vertical position and has its lower end extending into the receptacle 5. This tube serves the double purpose of supplying air to the receptacle and of combining the air thus supplied with the vapor resulting from the splashing of the liquid hydrocarbon upon the post or column 7. The tube 9 is arranged concentrically with the receptacle and the splash post or column, and the said post or column extends upwardly into the tube for a suitable distance, so that the tube will surround the operative end of the column. This air-tube is open at its upper end, and it is intended to be suspended in place by any suitable means which permit the vertical adjustment of the tube with relation to the receptacle. As shown in Fig. 1, the tube is suspended by a set-screw 10, mounted in a collar on the stove or furnace 11, and these parts may be adjusted for the purpose of raising or lowering the tube, thus making the lower end of the tube extend more or less into the chamber of the receptacle 5.

12 designates a hydrocarbon-feed pipe, which terminates in a drip-nozzle 13 and is equipped with a stop-cock or valve 14. The drip-nozzle is arranged centrally over the air-tube 9, and said nozzle lies at a suitable distance above said air-tube in order that the hydrocarbon as it escapes from the pipe 12 will be visible or exposed to view before it enters the air-tube 9. The drip-nozzle 13 is arranged in the vertical plane of the post or column 7, and the liquid is thus adapted to drop directly into the cavity 8 of said column.

In Fig. 1 of the drawings the receptacle and the air-tube are housed or contained within the furnace, and said receptacle is adjacent to an air-inlet nipple 15, the same having suitable openings by which air may flow over the

receptacle when the burner is in operation. This air-inlet nipple may be partly or wholly closed by a suitable regulating-valve 16.

In the operation of the burner (shown by Fig. 1) the hydrocarbon liquid is conveyed to the burner by opening the valve 14 a limited distance and regulating the feed of the liquid through the nozzle 13. The liquid passes through the tube 9 and strikes against the bottom of the cavity 8 in the post 7, thereby splashing the liquid against the inner surface of the surrounding lower portion of the air-tube 9. This air-tube is heated when the burner is in service, and the impingement of the liquid against the hot post and the hot lower part of the air-tube serves to vaporize the liquid. The air in passing through the heated tube 9 is also heated by impingement against the wall of the tube, and this warmed air and the vapor are combined or commingled at the lower portion of the tube, thus producing a combustible mixture, which is ignited on its passage from the receptacle 5. The tube 15 and the damper 16 afford a lateral air-inlet to the burner, which air-inlet is independent of the air-flue formed by the vertical air-tube. The draft through the stove or furnace and the described lateral air-inlet carries the flame out and over the receptacle 5, so that the air will flow freely through the tube, and the flame will be prevented from passing up said tube. There is a small portion of the hydrocarbon which will not be vaporized by contact with the tube, and this portion of the liquid will saturate the absorbent material which is in the bottom of the receptacle. After the supply of hydrocarbon from the pipe 12 is cut off by closing the valve 14 the absorbed fluid in the mass itself will be given off and the flame at the burner will thereby be kept up for a considerable length of time. The volume of air admitted to the burner may be regulated by the vertical adjustment of the pipe 9, and this end may also be obtained by adjustment of the damper 16, which controls the air-inlet nipple 15.

As shown in Fig. 2, the receptacle 5 may be closed partly at its upper end by the cover 17, and through this cover is adapted to extend the upper portion of the air-inlet tube 9^a. The receptacle 5 is operatively connected with the stove or furnace 11 by the neck 18, and said receptacle contains the mass of absorbent material 6 and the splash-post 7, the latter having the cavity 8. If desired, the cover 17 may be provided with air-ports and a valve or damper similar to the parts 15 and 16 in the construction shown by Fig. 1. The tube 9^a is suspended from the cover of the receptacle by means which permit said tube to be adjusted vertically. The usual feed-pipe 12, having the nozzle and the valve, is employed to supply the hydrocarbon to the tube 9^a. In this embodiment of the invention all the parts of the burner are out-

side of the stove or furnace 11, and said burner has operative connection with the stove or furnace through the neck 18, thus making provision for the circulation of the products of combustion through the stove or furnace.

Of course I may use my improved hydrocarbon-burner in connection with any style of furnace.

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

1. A hydrocarbon-burner, comprising a receptacle, an air-inlet tube having its lower portion terminating within said receptacle and forming therewith an intermediate space or opening for the passage of a combustible fluid, and a splash device extending upwardly from the receptacle and terminating within the lower open portion of said air-tube.

2. A hydrocarbon-burner comprising a receptacle, an air-inlet tube having its lower open end terminating within said receptacle and forming therewith an intermediate space or opening for the free passage of a combustible fluid, a splash device within the lower end of the tube, an air-inlet independent of the air-tube and arranged to supply air to the receptacle around or outside of the tube, and means for feeding liquid fuel to the splash device.

3. The combination with a stove or furnace, of a burner-receptacle having communication therewith and adapted to be charged with a mass of absorbent material, an air-inlet tube extending into said receptacle to terminate above the level of the absorbent material therein and forming with said receptacle an intermediate space or opening for the free passage of a combustible mixture, a splash device within the lower open end of the air-tube and adapted to permit a liquid spray to impinge the tube, and means for feeding liquid fuel against the splash device.

4. A hydrocarbon-burner comprising a receptacle, an air-inlet tube extending into said receptacle and adjustable vertically with relation thereto, whereby the volume of air supplied by the tube to the receptacle may be varied, a splash device surrounded by said tube, and means for feeding hydrocarbon against the splash device.

5. A hydrocarbon-burner, comprising a receptacle, an air-tube extending into the same and having an open upper end, a splash device surrounded by said air-tube, and a sight-feed device having a drip-nozzle disposed to view above the air-tube and adapted to drop a liquid directly upon the splash device.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE A. GREENE.

Witnesses:

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J. S. NEALEY.