

J. J. HASKIN.

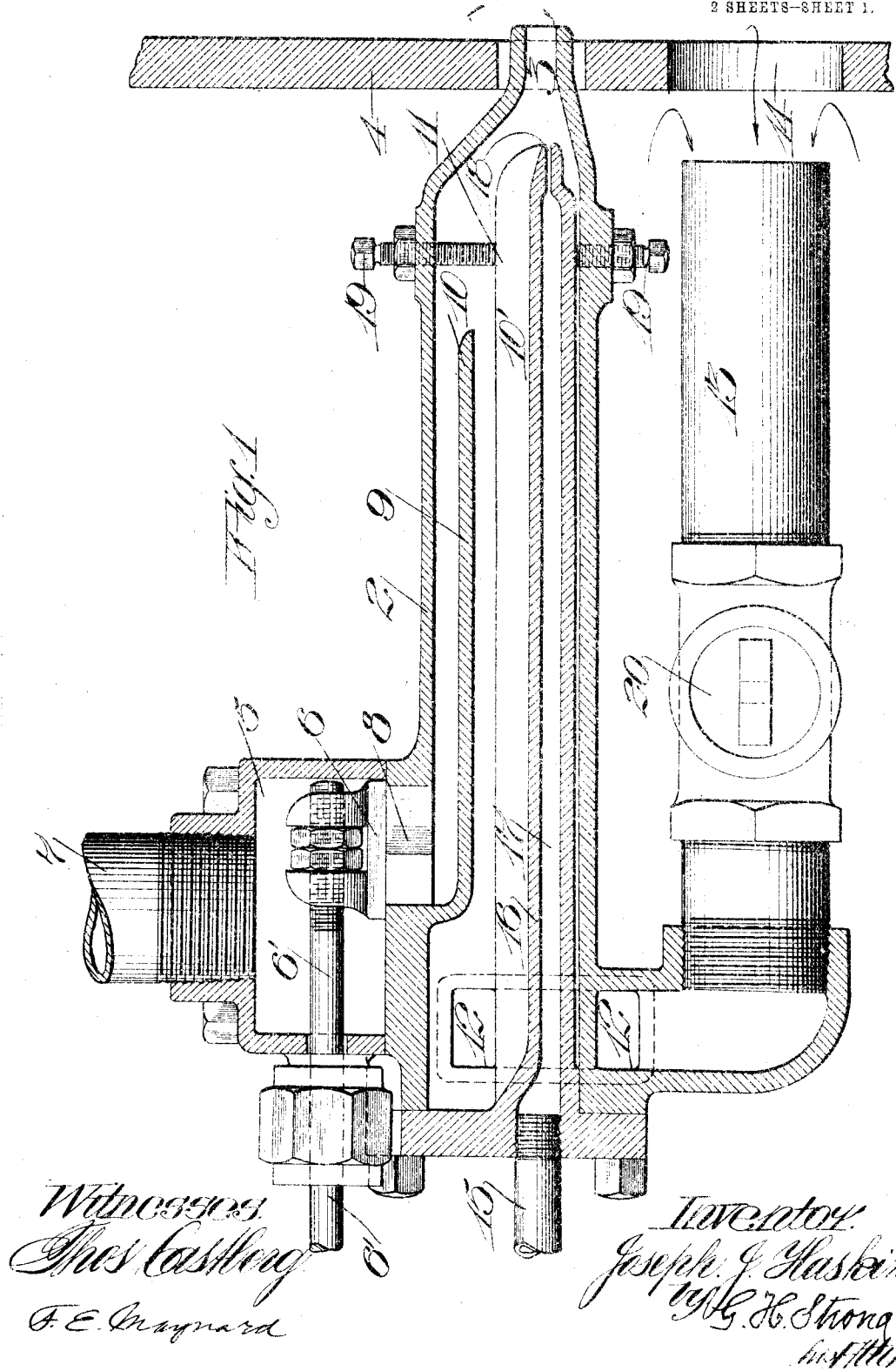
OIL BURNER.

APPLICATION FILED MAY 4, 1911.

1,029,927.

Patented June 18, 1912.

2 SHEETS—SHEET 1.



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2 SHEETS-SHEET 2.

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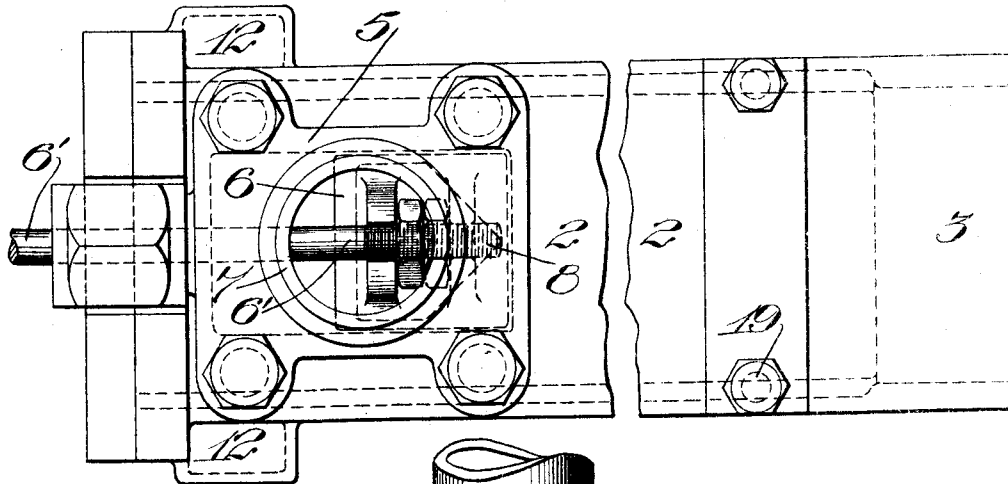


Fig. 2.

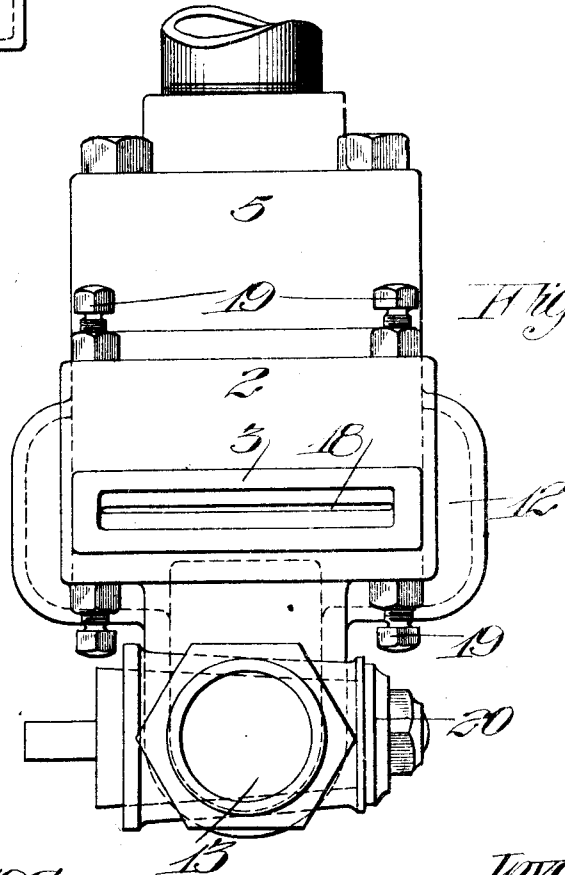


Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

JOSEPH J. HASKIN, OF TUCSON, ARIZONA.

OIL-BURNER.

1,029,927.

Specification of Letters Patent.

Patented June 18, 1912.

Application filed May 4, 1911. Serial No. 624,933.

To all whom it may concern:

Be it known that I, JOSEPH J. HASKIN, citizen of the United States, residing at Tucson, in the county of Pima and State of Arizona, have invented new and useful Improvements in Oil-Burners, of which the following is a specification.

This invention relates to oil burners.

The object of the present invention is to provide an improved form of oil burner adapted to be attached to the front or rear of a fire box or furnace, and which is provided with a means for inducing a portion of the heated gas from within the fire box into the oil burner to aid in the volatilization of the oil; to provide means for adjusting the feed of the oil, and which has for its object the production of maximum efficiency in the vaporization and combustion of the oil.

The invention consists of the parts and the combination and construction of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section through the burner. Fig. 2 is a plan view. Fig. 3 is a view of the discharge end of the burner.

In the illustrated embodiment of my invention, 2 represents a suitably shaped casing, having, preferably, a polygonal cross section, and which is formed at its forward end with a reduced portion forming a spray-nozzle or tip 3, which is adapted to project slightly into a fire box or furnace, the front of which is indicated at 4.

The casing 2 is provided with a valve-chest 5, in which is slidably mounted a valve 6, which is oblong or rectangular in plan view, and effective to cut off the flow of oil which is led into the valve chest 5 through a pipe 7, and which passes, when the valve 6 is open, through a port 8, having a V-shape toward the front of the burner. The purpose of this particularly shaped port 8 is to enable the operator to minutely control the volume of oil as it passes the slide-valve 6 and flows into the casing 2. By moving the valve 6 outwardly, a very small V-shaped opening is presented at the forward end of the valve so that a very small quantity of oil can pass.

The oil flowing through the port 8 falls upon a shelf or longitudinal diaphragm 9, which projects forwardly and terminates in

a lip 10, from which the oil is discharged onto a trough 10' which forms the top wall of the steam passage, and mixed in a space indicated at 11 in the burner, in which the oil is atomized and mixed with a quantity of preheated air conducted into the interior of the casing 2 below the diaphragm 9 through opposite ports or passageways 12 formed in the casing 2 at that end adjacent the valve chest 5.

A current of hot air is induced in these passageways 12 when the burner is in operation, the air being conducted to the passageways 12 through a horizontal, longitudinal suction-pipe 13, which projects toward the front 4 of the fire box or furnace and terminates, preferably, at a distance of about one and one-half inches, more or less, from the front, leaving ample space for air outside of the furnace front to flow into the suction pipe 13. The furnace front 4 is perforated, as at 14, forming an opening considerably larger than the diameter of the suction pipe 13, and through which perforation 14 a volume of the heated gas or air from the furnace may flow into the suction pipe when the burner is in operation.

For the purpose of assisting in atomizing the oil fed into the burner casing 2, and discharging the atomized oil into the furnace, the steam pipe 15 is connected with the inside of the casing below the oil passage, to deliver a volume of steam into a steam head 16, having an interior chamber 17, through which the steam is conducted forwardly and discharged through a reduced mouth 18 just inside of the reduced spray-nozzle 3 of the burner.

In operation, steam is admitted through the pipe 15 into the steam chamber 17 and thence discharged through the nozzle 18, and oil is admitted from the supply pipe 7 by shifting the controlling valve 6 so as to gradually open the V-shaped port 8 when the oil admitted will descend upon the shelf 9 and thence onto the trough 10' to be partially volatilized by the heat of the gas and air induced in the passageways 12 from the furnace plate 4. This is a very important feature of the present invention in that certain oils are vaporized more readily than others, and such portions of the oil as flow along the shelf 9 are quickly heated and thinned so that by the time the oil is discharged over the lip 10 it is readily atomized in the mixing chamber 11, and when

drawn through the tip 3 by the blast of steam from the mouth 18 is perfectly comminuted.

The effect of the steam blast from the mouth 18 is to create a vacuum in the mixing chamber 11 and interior of the burner casing 2; and this vacuum induces a suction of preheated air through the suction pipe 13, thus heating the interior of the burner casing 2 and materially assisting in vaporizing the oil as it runs along the diaphragm 9.

The steam nozzle 16 is shown as removably attached to the outer end of the casing 2 and projects forwardly, the inner end being supported between adjusting screws 19 projecting into the interior of the casing 2 and engaging the upper and lower portions of the steam head 16, thereby holding it rigidly in its adjusted position.

I have found it expedient, by long experience with oil burners, to feed the oil in a somewhat heated condition to burners, and the temperature of the oil thus fed in is usually between 100° and 125° F. While this heated oil is readily atomized in the burner, this condition is facilitated by the use of the hot air induction pipe 13, which conveys the heated air beneath the diaphragm 9, greatly increasing the temperature of the oil before it is atomized. The heating effect of the air and gas in the induction pipe 13 is nicely controlled by means of an adjustable valve 20, provided in the suction pipe, and which can be closed when necessary to entirely cut off the inflow of hot air and gas.

Attention is particularly directed to the peculiar formation of the port 8 of the burner casing 2, by which means the control of the fuel from the burner is so perfect that a very small volume of oil may be admitted when desired, or the volume can be quickly increased to the maximum capacity of the port 8 by moving outwardly the slide valve 6, to which is connected an operating rod 6' projecting through the valve chest 5.

Having thus described my invention, what I claim and desire to secure by Letters-Patent, is—

1. A hydrocarbon burner, comprising a casing having a tapering discharge mouth,

and having an extended inclosed valve chest at one side, said casing having a port connecting with the valve chest, a valve controlling said port, a steam head extending longitudinally through the casing, the upper surface of said head being trough-shaped in cross section and the forward end of the head forming a contracted steam outlet back of the contracted mouth of the casing, means for sustaining and adjusting the forward end of the steam head, a steam pipe entering the rear portion of the steam head, said casing having a diaphragm spaced from a wall thereof and from the upper surface of the steam head, and leading from the oil port, and having its front end adapted to deliver oil onto the trough-shaped upper surface of the steam head, said casing having, also, a connection which leads into its rear portion above the steam head, and means for conducting the hot products of combustion from a furnace to said connection.

2. In a hydrocarbon burner, the combination of a casing having a tapering discharge mouth, valve controlled means for admitting oil to said casing, a steam head extending longitudinally through the casing, the upper surface of said head being trough-shaped in cross section and the forward end of the head forming a contracted steam outlet back of the contracted mouth of the casing, means for sustaining and adjusting the forward end of the steam head, a steam pipe entering the rear portion of the steam head, said casing having a diaphragm spaced from a wall thereof and from the upper surface of the steam head, said diaphragm having its front end adapted to deliver oil onto the trough shaped upper surface of the steam head, and means for conducting hot products of combustion from a furnace to the space at the rear portion of the steam head.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOSEPH J. HASKIN.

Witnesses:

JOHN H. HERRING,
CHARLES EDELMAN.