

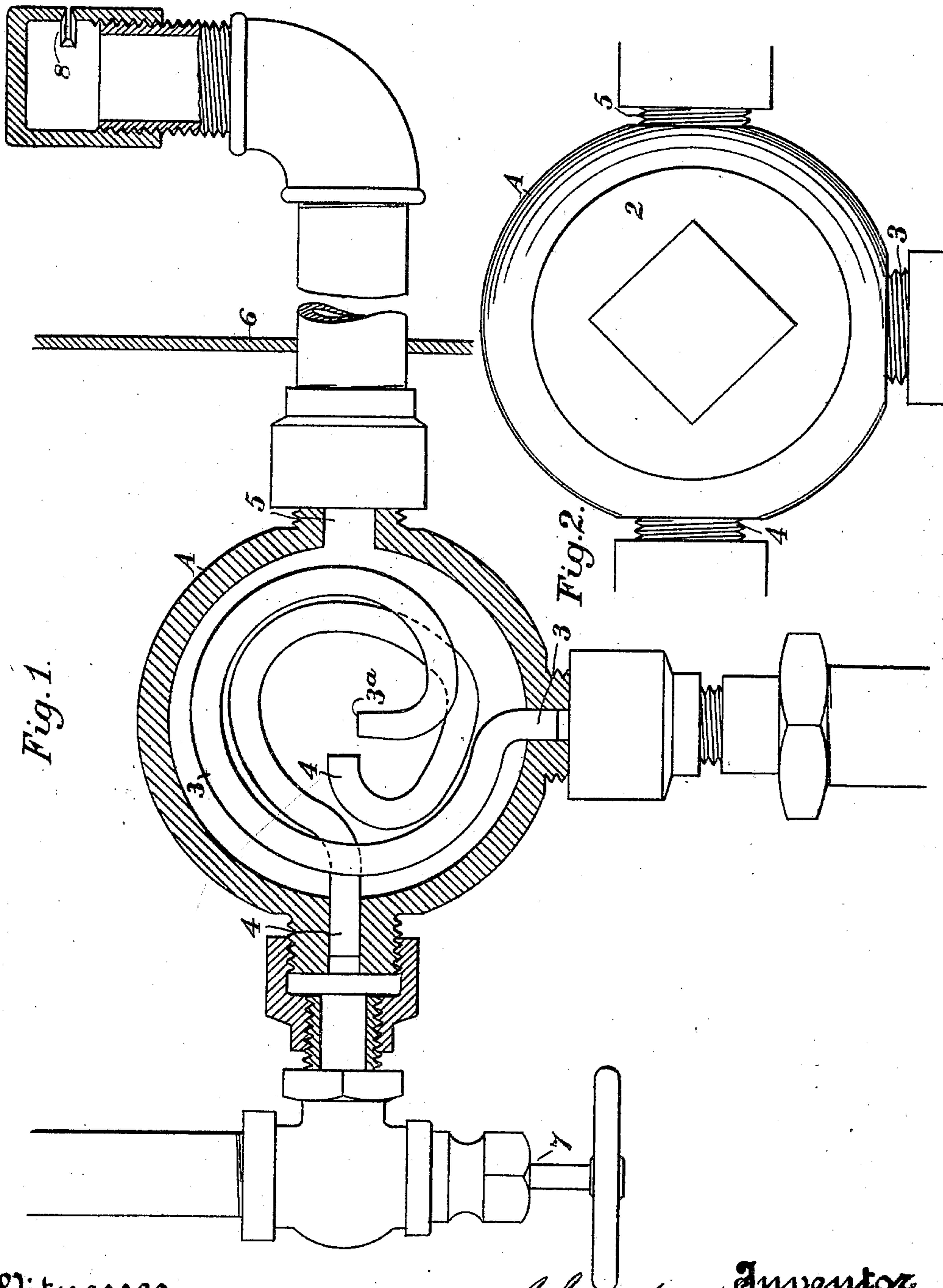
No. 696,591.

Patented Apr. 1, 1902.

C. W. POOLE.
HYDROCARBON BURNER.

(Application filed June 18, 1901.)

(No Model.)



Witnesses,
E. A. Brandau,
J. H. Hume

Inventor
Charles W. Poole
By Dewey Strong & Co. Attys

UNITED STATES PATENT OFFICE.

CHARLES W. POOLE, OF SAN JOSE, CALIFORNIA.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 696,591, dated April 1, 1902.

Application filed June 18, 1901. Serial No. 64,987. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. POOLE, a citizen of the United States, residing at San Jose, county of Santa Clara, State of California, have invented an Improvement in Hydrocarbon-Burners; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in burners for furnaces and the like, in which it is customary to form the fuel-gas by the mixture of crude oil and steam.

It consists particularly in the arrangement and use of coil-pipes carrying separately the oil and steam, said pipes contained within a spherical generating-chamber and lying contiguous to each other, whereby the heat from the steam is communicated to the oil and volatilization assisted.

It also comprises details of construction, which will be more fully hereinafter set forth, having reference to the accompanying drawings, in which—

Figure 1 is a part vertical section and part longitudinal elevation of my invention. Fig. 2 is an exterior view.

A represents the casing of my burner. In the present instance this casing is shown as ball form and having an aperture through which access may be had to the interior. This aperture is closed by a screw cap 2. Respective oil, steam, and discharge pipes 3, 4, and 5 pierce the casing. Within the chamber the oil and steam pipes make one or more coils and have their ends terminate in such position that the oil emitted from the pipe 3 will be volatilized by the steam or other heating medium from the pipe 4 and be expelled through the pipe 5 and into the furnace 6. The steam-supply may be controlled by a valve 7. The oil and feed pipes are so coiled as to lie contiguous to each other, so that the heat from the steam will be readily imparted to the oil, so that when the oil reaches the orifice 3^a after passing through the oil coil-pipe it is of a degree of temperature approximating that of the steam and is readily, if not already partly, volatilized. The coils are made of block-tin, which throws off its heat quickly.

The heated vapor in the chamber or "generator," as it may be termed, not only assists also in heating the oil-pipe, but forms a cushion,

as it were, which entirely overcomes the pulsations of the oil-pump.

The generator is entirely outside of the furnace or boiler front, is easy of access, and there is absolutely no baking or carbonizing of the oil in the generator, as all the oil is ejected therefrom, and the heat of the steam is insufficient to effect such carbonization. Hence this has the advantage of cleanliness.

The superheating of the oil within the chamber obviates all necessity of heating it in the storage-tank or pump, as is usually done. When the superheating is done in the tank or pump, gases are invariably formed, which have an injurious effect on the proper operation of the pump by varying the quantity of oil, either causing a wasteful or an insufficient supply of oil to the burner. This variation in the quantity of oil causes an unsteadiness in the flame within the furnace, and sometimes the flame will become extinguished by reason of the lack of sufficient feed.

In my device the size and extent of the flame may be positively regulated by regulating the supply of oil and steam. This oil-supply may be under a high or low pressure, varying from five to fifty pounds. As a rule oil-burners are ineffectual when operated with an oil-pressure of less than forty pounds. Consequently in my burner a considerable saving in the amount of fuel is effected. Furthermore, in this device the flame will not go out, because of the coils, the superheating within the chamber, and the reserve of gas within the chamber always tending to equalize the effect of the flowing oil and the flame. The operator is thus able to control his oil-pump and oil-pressure absolutely, to introduce the oil into the generator in a constant uniform flow, and varying this flow only as he varies the pressure. The reduced oil-tip tends to even greater regularity in the flow. As I have already stated, the pressure or reserve of gas in the generator insures a steady feed of vapor to the burner-tip 8 and withal reduces the amount of attention usually demanded of the operator.

I have sometimes found it sufficient to coil only the steam-pipe, allowing the oil-feed pipe to enter from the bottom of the casing as a short section. The two pipes will terminate

near each other and volatilization is effected as in the first instance.

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

1. A hydrocarbon - burner, including a spherical casing having a discharge, an oil-feed pipe entering the casing and coiled therein, and a coiled steam-pipe within the casing having its coils substantially following the coils of the oil-feed pipe whereby said pipes lie contiguous to each other and the heat of the steam will be imparted to the oil to raise the temperature of the oil approximately to that of the steam, said oil-pipe having its mouth adjacent to the discharge end of the steam.

2. In a hydrocarbon - burner the oil and steam pipes, both coiled and with the coils of one substantially following and adjacent to the coils of the other, one of said pipes having its discharge end adjacent to the discharge end of the other pipe, and a closed spherical casing having a chamber which in-

closes both of said pipes and forms a receiver for heated vapor whereby the vapor in the chamber assists in heating the oil-pipe and forms a cushion substantially as and for the purpose described.

3. In a hydrocarbon-burner a spherical casing having radially-disposed steam-inlet, oil-inlet and discharge, said casing having an opening in one side, and a removable closure for said opening; steam and oil pipes coiled substantially concentrically within the chamber, one of said pipes having its discharge end proximate to and in line with the discharge of the other pipe, said pipes discharging into the chamber and said chamber serving as a superheater for the oil delivered to the same.

In witness whereof I have hereunto set my hand.

CHARLES W. POOLE.

Witnesses:

CHAS. H. HOGG,

CHRIST P. ANDERSON.