

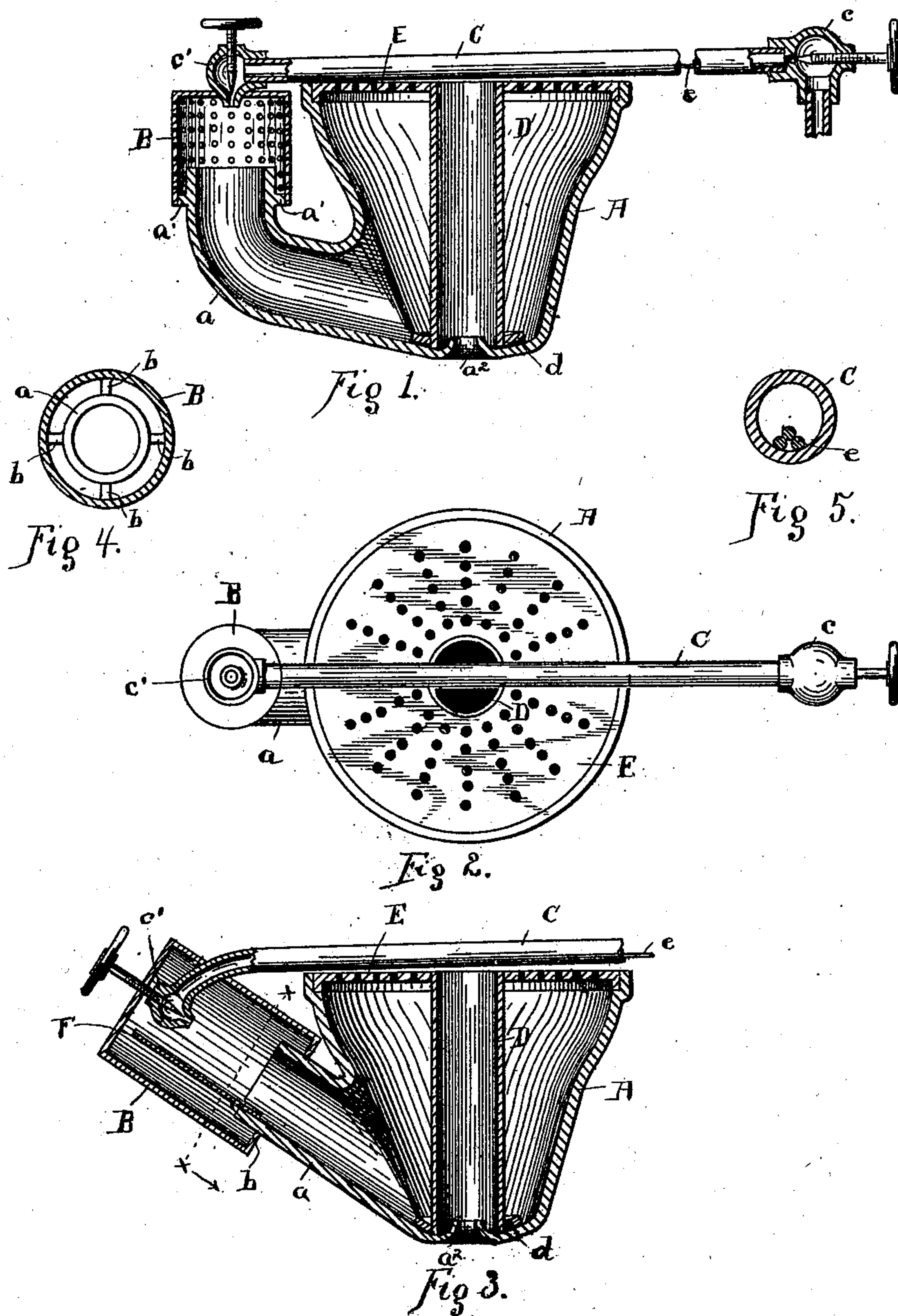
(No Model.)

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VAPOR BURNER.

No. 504,129.

Patented Aug. 29, 1893.



Attest.

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UNITED STATES PATENT OFFICE.

JOHN A. LANNERT AND WILLIAM R. JEAUVONS, OF CLEVELAND, OHIO.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 504,129, dated August 29, 1893.

Application filed August 25, 1891. Serial No. 403,652. (No model.)

To all whom it may concern:

Be it known that we, JOHN A. LANNERT and WILLIAM R. JEAUVONS, citizens of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Vapor-Burners; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to the well known class of vapor burners wherein the gasoline is first converted into vapor and the generated vapor then, under more or less pressure, escapes through a small orifice to entrail sufficient air to assist in its combustion.

This invention consists in a novel construction, combination and arrangement of parts, first to facilitate and simplify what is commonly termed "initial starting;" second, to superheat the vapor so as to entrail sufficient air with less pressure than formerly and thereby allow the oil reservoir to be placed on a lower elevation than has been practicable heretofore; third, to cut off all possibility of flame communication with the unmixed vapor issuing from the escape orifice, and fourthly, to keep the initial flame from interfering with the air supply at the vapor orifice.

In the accompanying drawings Figure 1 is a central vertical sectional view of our improved burner and attachments in one form, and Fig. 2 is a plan view thereof. Fig. 3 is a central vertical sectional view of a burner similar to that shown in Fig. 1 except a slight modification in the construction of the air chamber and lateral arm, a sectional view of which chamber is shown in Fig. 4. Fig. 5 is a cross section of the pipe C.

A represents the burner bowl or casing, constructed with a short arm, *a*, at one side supporting the protector or air cylinder B either as shown in Fig. 1 or in Fig. 3, or in some equivalent way. In Fig. 1 the said protector or cylinder is perforated for the admission of air, and rests on a bead or rim *a'*, on the said arm. In Fig. 3 the said protector is not perforated and is enlarged so as to admit air in its lower end about the arm or neck *a* against which it bears by its inward projections *b*, or their equivalent. It will be understood that

the protector B is designed to shield the vapor inlet to the burner bowl at the point where the air is entrained, and while it serves as a protector for the purposes as herein described it also serves to allow the requisite inflow of air at one point or another.

C is the superheating vaporizing pipe, having a suitable inlet valve, *c*, at its front end to control the inflow of oil, and terminating over the protector or cylinder B where it is provided with a valved head *c'*, said head directing the vapor into said protector through a suitable jet orifice formed in said head.

For the purpose of initially starting the burner the burner bowl or casing has an opening in its bottom having a flange *a²* extending inwardly a short distance, and from about this flange a flame tube, D, rises to the top of the burner. Around the outside of this tube D, at its bottom, is a washer or ring *d*, lying loosely on the casing. The top of tube D is held in position by the burner plate E.

The vaporizing pipe C is set at a slight inclination so as to freely drain the oil to the outlet point, and is shown here as lying closely across the center of the burner so as to be exposed to the heat thereof and superheat the vapor in its passage. There is a tendency however in the drops of oil, owing to the repulsive force of the heat in the pipes, to assume a spheroidal form and roll unvaporized to the end of the pipe, where, striking against the end, they are broken and vaporization occurs. This causes pulsation in said pipe and unsteady feed. We overcome this objection by placing a few small wires or their equivalent, *e*, in the pipe, which causes such detention of the oil on its leaving the inlet valve as to produce vaporization at once and the subsequent superheating of the vapor by the heat from the burner.

For initial starting of the burner, valve *c* is opened, the gasoline runs down pipe C and drips out of the orifice in head *c'* onto the inclined walls of arm or neck *a*, passing through the protector B. Running down this wall the oil passes under the loosely fitting washer *d* to the channel formed by the turning up of the flange or wall *a²* about the air passage in the bottom of the burner bowl, and outside of the tube D. A match being applied to the gasoline thus exposed at the bottom of the

burner, the flame burns in the tube D and rises and heats the pipe B. The tube D being of thin metal—such as tin—quickly becomes hot and causes a draft upward in chamber A.

5 Vapor evolved from the gasoline lodged inside of chamber A, in its course through the said chamber, is thus drawn upward and escapes through the perforated cap or plate E where it is ignited from the flame issuing

10 from tube D and contributes to heat the pipe B. The pipe B becomes heated to a vaporizing condition in a very short time, and vapor then issues from the head *c'* and passes through the air chamber B into the inside of the burner

15 bowl, whence it goes to supply combustion through the plate E. The burner will be operative if the pipe B be heated much less intensely than is contemplated by this construction, but by heating it as described a much

20 bluer and more desirable fire is produced. The washer *d* forms a seat for the tube D and fits loosely on and conforms to the bottom of the chamber A. This arrangement allows the gasoline to run or seep under the washer and

25 tube into the outer channel when starting the burner, and when the burner is in operation and the chamber contains only vapors, this washer serves for and is an efficient barrier to the escape of vapor at this point.

30 The shape of the burner chamber may be considerably modified and yet be within the spirit of the invention as, for instance, in Fig. 3. In this case a lip or extension, F, is provided to conduct the gasoline to the chamber,

35 and the arm or neck *a* is inclined instead of vertical at the top as in Fig. 1.

In lieu of wire any suitable material of any suitable form or construction may be used to obstruct the rolling of the oil globules unva-

porized through the vapor supply pipe. The chamber A into which the vapor is discharged from pipe C, and air is supplied through or about the part B, becomes a mixing chamber for the vapor and air, or what may be termed simply an air and vapor containing chamber.

45 Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A vapor generating burner having a chamber in which vapor and air may be mixed, a walled flame-way within the said chamber and a fuel supply pipe in position to be heated by the flame in said flame-way, substantially as described.

2. A vapor generating burner having a chamber in which vapor and air may be mixed, a walled flame-way within the said chamber and a fuel supply pipe in position to be heated by the flame in said flame-way and arranged to discharge oil or vapor into the said chamber, and the walls of the said chamber constructed to allow the fuel to gravitate to the said flame-way, substantially as described.

3. A vapor generating burner having a chamber in which air and vapor may be mixed, a walled flame-way within the said chamber, and a fuel holder about the lower portion of the said flame-way, in combination with a fuel supply pipe in position to be heated by the flame in said flame-way, substantially as described.

Witness our hands to the foregoing specification this 18th day of August, 1891.

JOHN A. LANNERT.

WILLIAM R. JEAVONS.

Witnesses:

H. T. FISHER,

NELLIE L. McLANE.