

(No Model.)

2 Sheets—Sheet 1.

H. RUPPEL.
VAPOR BURNER.

No. 520,805.

Patented June 5, 1894.

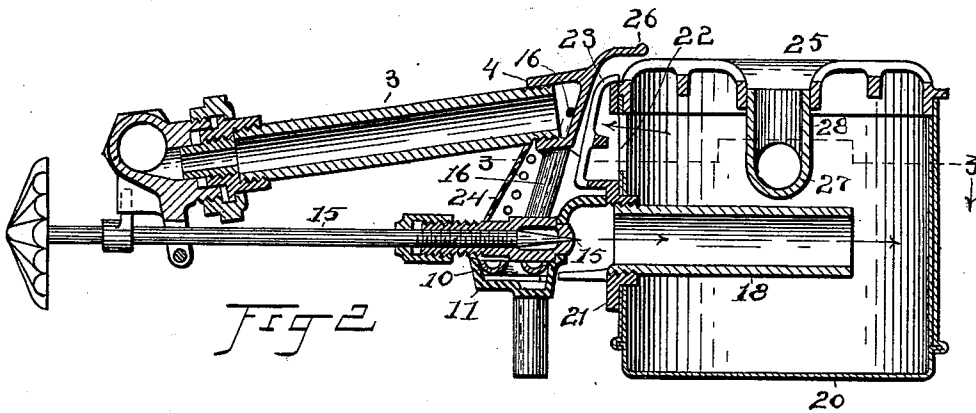
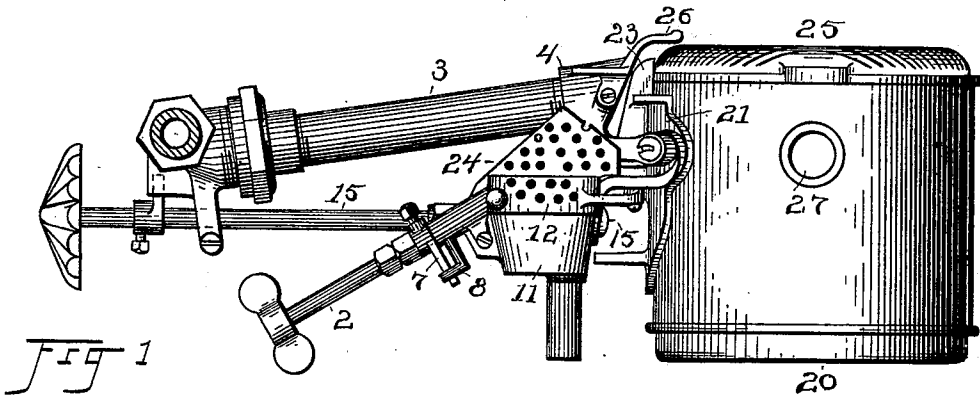


Fig 4

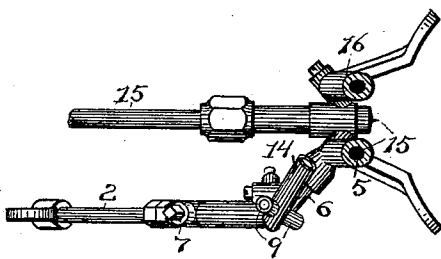
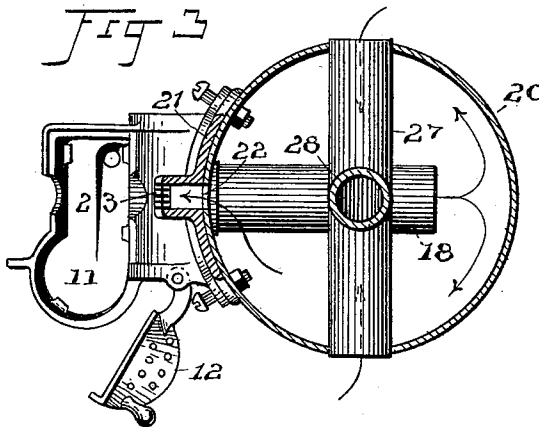


Fig 3



ATTEST.

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L. L. Schaeffer BY

INVENTOR
Henry Ruppel.

H. J. Fisher

ATTORNEY

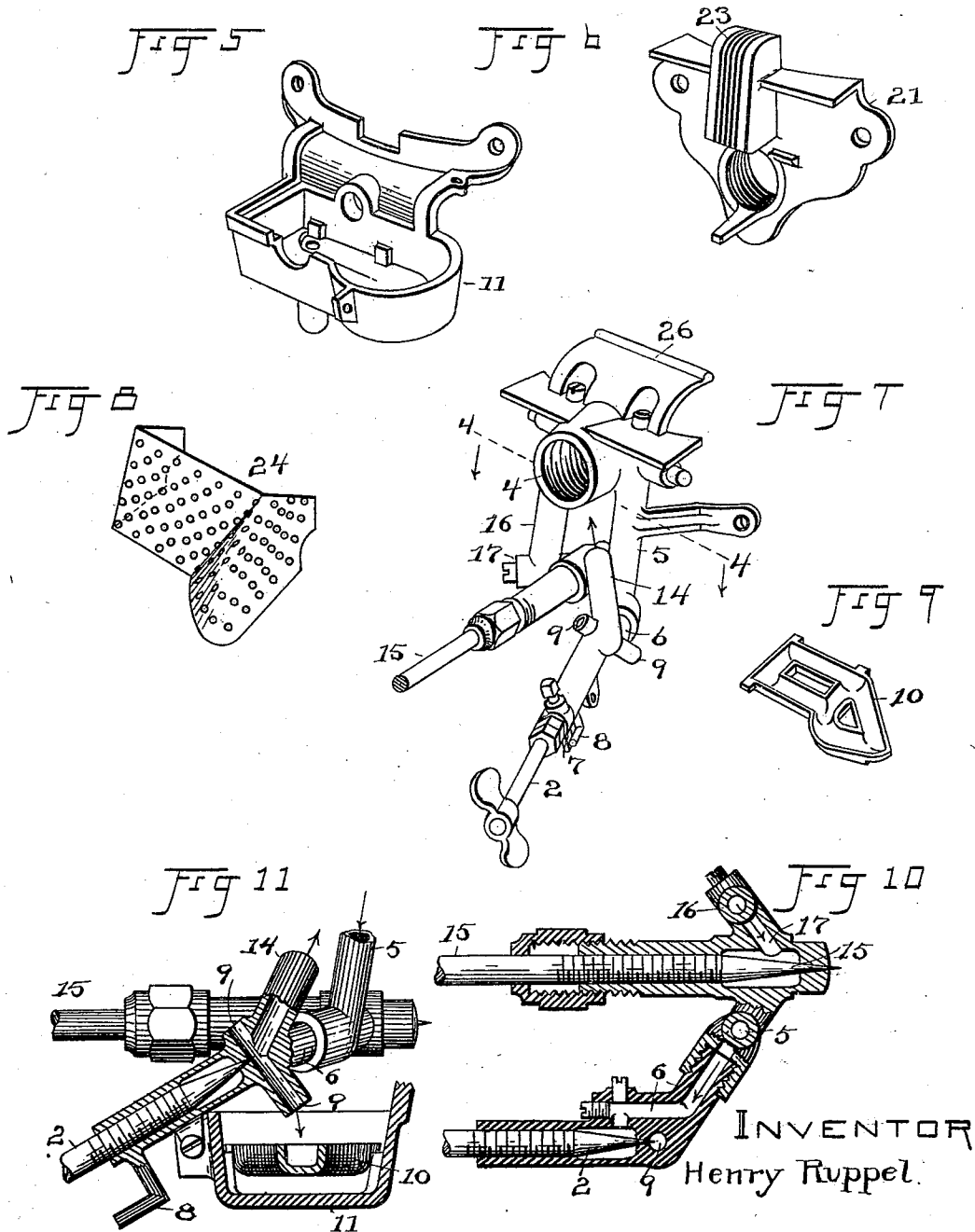
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UNITED STATES PATENT OFFICE.

HENRY RUPPEL, OF CLEVELAND, OHIO.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 520,805, dated June 5, 1894.

Application filed November 18, 1893. Serial No. 491,311. (No model.)

To all whom it may concern:

Be it known that I, HENRY RUPPEL, a citizen 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 I 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.

My invention relates to vapor burners, and the improvement consists in the means for initial lighting and heating and for maintaining the heat of the vaporizing chamber, substantially as herein shown and described and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of my improved burner with all the parts in working position. Fig. 2 is a vertical sectional central elevation thereof. Fig. 3 is a horizontal section on line 3, 3, Fig. 2, with certain parts removed so as to show the construction more clearly. Fig. 4 is a cross section of the attachment containing the oil and vapor ducts shown in Fig. 7, and substantially on line 4, 4, of said figure looking down, or on line 3, 3, Fig. 2. Fig. 5 is a detail in perspective of the receptacle and support for the initial lighting cup and other parts, and Fig. 6 is a perspective in detail of the attachment connected immediately with the drum, and constructed to supply a subsidiary flame from the drum to the vaporizing chamber, as hereinafter more fully described. Fig. 7 is a detail in perspective of the oil or vapor duct attachment, which carries also both the initial lighting and the regular operating valve. Fig. 8 is a perspective view of a perforated plate guard or shield which incloses and protects the outside burner mechanism above the initial lighter. Fig. 9 is a detail in perspective of the drip cup adapted to be independently placed in the receptacle, Fig. 5, and into which the oil is dripped for initial lighting. Fig. 10 is a horizontal sectional view of the duct part of the burner immediately associated with the valves, and showing said part in section so as to disclose the vapor or oil ducts as they lead to the valves. Fig. 11 is a vertical central section of the burner mechanism more im-

mediately associated with the initial lighting valve, and designed to show the oil and the vapor ducts, respectively, immediately outside of said valve.

Referring now to the initial lighting part of the burner, we have the initial needle valve —2— which controls the oil or vapor duct leading from the general oil or vapor supply pipe —3— threaded into the vaporizing chamber —4—, Fig. 7, and following thence down the duct —5— and —6—, Fig. 10, to the said needle valve —2—. Assuming, now, that the burner is cold, and that the valve —2— has been turned so as to open for the purpose of initial dripping, the adjustable collar —7— thereon engages the stop —8—, thus forming a limit to the opening of the valve, and the oil flows in the desired quantity through the transverse open channel —9— immediately outside of the needle point and drops into the initial lighting cup or trough —10—. This trough or cup is an independent part adapted to be set into the receptacle —11—, Fig. 5, and any overflow therefrom will drop into the said receptacle. Now, having swung open the small door —12—, Fig. 3, at the front and side of said receptacle and cup and lighted the oil, the work of initial heating is at once begun, and among the effects is the heating of the duct which leads to the initial valve, and the vaporization of the oil which enters through this duct. Hence, in a few seconds there will be vapor escaping at the initial valve instead of oil, and when this occurs the vapor is ejected through the short duct or tube —14— opposite the valve —2— and which is inclined in an upwardly inclined position and is of such length as to bring the outer end of the said tube to the point where it will be most effective in heating the chamber 4, the relation of said tube —14— to the other parts being shown clearly in Fig. 7. When this change from flowing oil to vapor occurs the vapor escaping from the duct —14— will be ignited by the flame from the initial lighting cup —10—, and a constant flame will thus be maintained at the mouth of the said duct —14— as long as the valve —2— remains open. This valve may remain open continually during the operation of the stove, and longer, if preferred, so that the chamber 4 will be kept in

a vaporizing condition against the time when it may again be wanted. However, it may be turned off after the burner gets well started and is not really needed to keep the chamber 4 heated because there is other provision for this purpose as will hereinafter appear.

Having turned the valve —2— open and applied a match and effected initial lighting in the cup —10—, the hinged door —12— is closed and the burner is left in that condition for a few seconds, by which time it becomes heated about the main valve and duct to a generating condition. This having occurred it is only necessary to turn the said main supply valve —15— as much as may be required, and which likewise is a matter of fixed and certain regulation, and then the vapor will pass from the point —4—, Fig. 7, across to the left and down the ducts —16— and —17—, Fig. 10, to the said needle valve —15— from which it is ejected under the pressure of the vapor into the inlet tube —18—, Fig. 2. In the drum —20— air is commingled with the injected vapor in and through the tube —18—, and the elements thus brought together and mixed are subject to the radiated heat of the burner and heated and expanded and the burner is caused to operate by reason of this construction.

In Fig. 6 I show an attachment —21— which is connected directly with the drum —20—, and which has the construction in cross section shown in Fig. 3. It will be noticed in Figs. 2 and 3 that there is an opening —22— in the drum opposite the vaporizing chamber, and that the attachment —21— has a vertically slotted or slitted portion or bearer —23— through which and the opening —22— a sufficient supply of vapor escapes to maintain a subsidiary flame immediately upon the chamber 4, whereby the chamber is kept constantly in a generating condition. The flame from this part plays directly against the chamber and heats it so thoroughly that it necessarily must vaporize the oil while the burner is in use. Having this provision for maintaining vaporization, I can, if desired, turn off the initial starting valve when the burner has been once started, but, as before stated, I can leave this valve open while the burner is going, if desired; or, I may turn the initial valve off until I am ready to stop the main burner and then again turn it on to keep the burner heated in readiness for subsequent use at any time during the day. It will be seen that there can be no mistake made with the initial heating valve after the burner has been once lighted, whether it be left open or closed, and it may be left open day and night and burn all that time without injurious effects of any kind.

In Fig. 8 I show a perforated sheet metal guard or cover —24— which serves to protect the burner from air currents and drafts, and prevents disturbance especially of the initial lighting and heating flame.

After initial lighting by means of a match

in the cup —10— as already described, all subsequent lighting of the burner is automatic and occurs without any further attention from the operator. To illustrate how this occurs it will be seen that vapor which escapes from the drum —20— through the opening —22— and the supplemental burner —23— will naturally, by reason of its own superior weight, gravitate down toward the initial lighting cup —10—, and on its way will meet the flame from the tube —14— and itself be lighted. This will communicate flame to the vapor escaping from the burner —23—, and from there to the vapor which will begin to flow through the top of the slotted burner cap —25—. A curved shield or deflector —26— extends over the part —23— and up over the edge of the burner cap at one side so as to make a covered way for vapor or flame and thus more effectually promote ignition of the vapors from one point to the other. The vapor channel thus established between the part shown in Fig. 7 and the attachment —21—, Fig. 6, is further protected by the perforated guard —24—.

I have found it desirable that the center of the burner should be supplied by a volume of fresh air, and to this end have introduced a transverse air pipe —27— with its open ends extending through the drum to take air from the outside thereof, and having at its center a vertical elbow —28— discharging through the center of the burner cap. This, however, does not interfere with the operations of the drum, wherein the vapors or the commingled air and vapor is heated and expanded and fed to the burner the same as if the central fresh air supply were not present.

I have not entered into minute description of the minor details and features of construction because these are in a large sense mechanical and can be changed or varied without departing from the spirit of the invention.

What I claim is—

1. In a vapor burner, a vapor generator provided with a vapor-controlling valve and an oil and vapor duct leading from said generator and provided with a valve, a drip passage 9 for the oil at the orifice of said valve and an upwardly inclined duct for the vapor discharging from said valve, in combination with a drip cup beneath the drip passage 9, provided with a trough or cavity situated below the end of the drip passage, substantially as described.

2. The burner described, having a vapor expanding drum with an induction tube for the vapor and air and a subsidiary burner 23 at the side of the drum above said induction tube, and communicating with said drum through opening 22, in combination with a vapor generator exposed to said subsidiary burner, and a shield over the entrance to the induction tube and separating the same from the said subsidiary burner, substantially as described.

3. In a vapor burner, the vaporizing cham-

ber 4, tube 16 17 leading from said chamber
and connected with the main supply nozzle,
the said nozzle and valve 15 therein, tube 5
6 also leading from chamber 4 and communi-
5 cating with a drip cup, valve 2 for said tube,
the vapor tube 14 arranged to convey vapor
from the orifice of tube 5 6 and direct a flame
against chamber 4, the said drip cup located
so that ignited oil therein will heat the fluid
10 in tube 5 6 and light tube 14, the main burner
in close proximity to chamber 4 having a sup-

plemental burner 23 at its side arranged to
heat said chamber 4 and located over tube 14
so that either burner 23 or tube 14 may be
automatically lighted one by the other, sub- 15
stantially as shown and described.

Witness my hand to the foregoing specifi-
cation this 1st day of November, 1893.

HENRY RUPPEL.

Witnesses:

S. Q. KERENISH,

H. T. FISHER.