

(No Model.)

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GASOLINE OR VAPOR BURNER.

No. 552,305.

Patented Dec. 31, 1895.

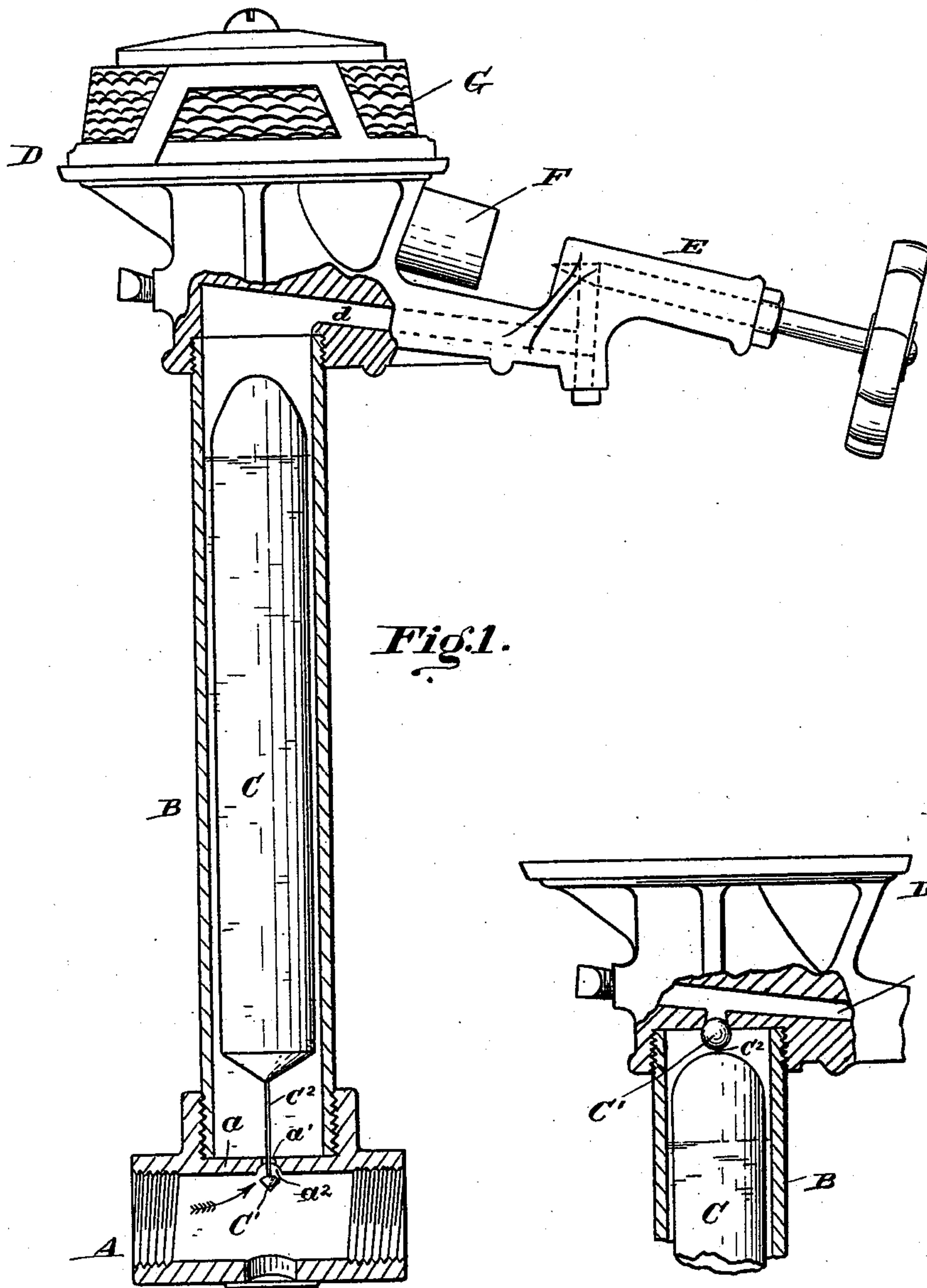


Fig. 1.

Fig. 2.

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GASOLINE OR VAPOR BURNER.

SPECIFICATION forming part of Letters Patent No. 552,305, dated December 31, 1895.

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To all whom it may concern:

Be it known that I, JOSEPH STUBBERS, a citizen of the United States, and a resident of the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Gasoline or Vapor Burners, of which the following is a specification.

The object of my invention is the production of a hydrocarbon-vapor burner adapted for use on what are commonly called "gasoline-stoves" that will be reliable in operation and perfectly safe as regards explosions in or out of operation, which object I have attained in a novel construction and combination of a burner-head provided with a vapor-channel having a valve-controlled vapor-outlet, a retort secured to the burner-head in communication with said channel, and means for automatically limiting the level of the hydrocarbon liquid flowing into the retort to a point below the vapor-channel in the burner-head when the retort is cool, and also to automatically lower the level of the hydrocarbon liquid in the retort as the latter becomes heated, so as to compensate for the accumulation of vapor therein when generated faster than it can pass off through the vapor-outlet, these functions being performed without in any way interfering with the flow of vapor from the retort to the burner, through which medium the principal causes of accidents in the use and handling of gasoline-stoves are avoided.

The invention consists in combining with a burner-head provided with a vapor-channel having a valve-controlled vapor-outlet a retort secured to the burner-head below said channel and connected to a suitable supply-pipe, said retort being of sufficient capacity to hold a requisite quantity of hydrocarbon liquid to be converted into vapor primarily by heating the retort by any of the well-known means, after which vaporization will be maintained by heat communicated from the burner, in arranging within the retort or in juxtaposition thereto a cut-off valve and a corresponding valve-seat, and placing within the retort a float suitably balanced and arranged to close the cut-off valve when the liquid in the retort rises to its limited level below the vapor-channel in the burner-head, which occurs only when the liquid is cool, as

when it is heated and vaporization takes place more rapidly the pressure of the vapor opens the cut-off valve and forces the liquid back through the supply-pipe and into the supply-tank.

The invention further consists in certain other details of construction and combination of parts, which will first be described in connection with the accompanying drawings, and then pointed out in the claims.

The greater number of accidents arising from the use of gasoline-stoves are due to one of three causes, which may be enumerated as follows: first, in allowing the drip-cup to overflow, (said cup being used for holding hydrocarbon liquid to be ignited for the purpose of initially heating the retort, to start generation of vapor,) in which case the liquid runs down onto the floor or into the drip-pan of the stove, and when coming into contact with the atmosphere in this manner rapidly forms into vapor, which may be ignited at a considerable distance from the liquid itself; secondly, by the flame being sometimes accidentally extinguished by the wind or otherwise, in which case, as the burner parts cool off and generation practically ceases, the liquid will flow out at the vapor-outlet with dangerous results when a flame is brought into contact with the resultant vapor, and, thirdly, by children or others not familiar with the danger inadvertently opening the needle-valve, thereby allowing the liquid to flow out at the vapor-outlet, with liability of disastrous results.

As will be seen from the description following, the present invention practically avoids the possibility of accident from any of the above-named causes.

Figure 1 of the drawings is a view in section, partly in elevation, illustrating the application of my invention. Fig. 2 is a similar view, showing my invention in a modified form.

Referring to the drawings, A represents a supply-pipe leading from a suitable reservoir, (not shown,) and having connected thereto the lower end of a retort B. Although I have shown but one retort, it is evident that any number may be connected to a single supply-pipe. At the lower end of the retort is fixed a diaphragm *a*, provided with a central valve-opening *a'* having a surrounding valve-seat *a''*.

C is a float, preferably of metal, and adapted to operate within the retort B. To the lower end of this float is secured a valve-stem c^2 , which carries at its lower end a cut-off valve c' , adapted, when in operation, to bear against the valve-seat a^2 and close the valve-opening a' .

D is a burner-head, in which is formed a vapor-channel 1 having a small outlet 2 controlled by a valve d , in the present instance a needle-valve. On the head is formed a ring 4, in which is seated what I term a "mixing-bowl" E, into which extends one end of an air-tube e , the other end of said tube being in proximity to the vapor-outlet 2. On top of the ring 4 is seated a burner-cap F, of any suitable construction. This burner-head is adapted to be connected to the retort B in such manner that the latter will be in open communication with the vapor-channel 1.

In Fig. 2 it will be seen that the modification consists in placing the diaphragm, valve-opening, valve-seat, and cut-off valve at the top of the retort instead of at the bottom, as in the previously-described case. With this exception the construction and operation in the two cases are identical.

The operation of my improved hydrocarbon-burner is as follows: The hydrocarbon liquid being admitted to the supply-pipe, it enters the retort through the opening a and rises therein. This action causes the float to rise gradually until a predetermined quantity of the liquid has entered the retort, when the cut-off valve will close against its seat and stop further admission. Now the auxiliary heater being lighted to initially generate vapor, the vapor passes out at the upper end of the retort, through the vapor-channel, past the needle-valve and into the air-tube, and thence to the mixing-bowl and burner-cap, where it is lighted. The heat from the burner now generates vapor in the retort more rapidly than it can pass the needle-valve and be utilized, and therefore there exists a pressure from the vapor within the retort, which if not relieved would cause the flame at the burner to be extinguished or some more serious damage. By my invention this pressure is instantly and automatically relieved, for it acts on the float, causing the latter to sink and open the cut-off valve, and when this valve is open the pressure acting on the liquid forces the latter back through the supply-pipe and into the supply-tank. As the pressure is gradually relieved and gets below the normal the liquid will again rise in the retort, this operation being a continuous automatic regulation of the level of the liquid in the retort by the pressure of the vapor therein. As the parts gradually cool when the burner is extinguished, the vapor in the retort will gradually condense or pass out the vapor-outlet, permitting the liquid to rise in the retort to its ordinary level. By this construction it is evident that only a predetermined quantity of hydrocarbon liquid is admitted to the retort at any time, that by no

possibility can the liquid be forced into the vapor-channel, and that the level of the liquid in the retort is subjected, when the burner is lighted, to a continuous automatic regulation by the pressure of the vapor therein, thus perfectly compensating for the too-rapid generation of vapor and insuring a steady flame at the burner.

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

1. In a hydrocarbon-burner, the combination, with a burner-head having a vapor-channel and a valve for regulating the flow of vapor through said channel, of a retort adapted to be heated by the burner, said retort being connected with a hydrocarbon-liquid-supply pipe and with the burner-head so as to be in communication with the vapor-channel, a float located in the retort and operative below said channel, a valve-seat, and a valve operated by the float adapted on a predetermined inflow of the liquid into the retort to close against the valve-seat and to open under pressure exerted on the liquid in the retort, whereby the liquid level in the retort is automatically governed under varying circumstances.

2. In a hydrocarbon-burner, the combination, with a burner-head having a vapor-channel and a needle-valve for regulating the flow of vapor through said channel, of a retort adapted to be heated by the burner, said retort being connected at its lower end with a hydrocarbon-liquid-supply pipe and at its upper end with the burner-head so as to be in communication with the vapor-channel, a float located in the retort and operative below said channel, a valve-seat at one end of the retort, and a valve carried by the float adapted on a predetermined inflow of the liquid into the retort to close against said valve-seat and to open under pressure exerted on the liquid in the retort, substantially as described and for the purposes set forth.

3. In a hydrocarbon-burner, the combination, with a burner-head having a vapor-channel and a valve for regulating the flow of vapor through said channel, a mixing-bowl, a burner-cap, and an air-tube leading into said bowl from a point near the vapor-outlet, of a retort adapted to be heated by the burner, said retort being connected with a hydrocarbon-liquid-supply pipe and with the burner-head so as to be in communication with the vapor-channel, a float located in the retort and operative below said channel, a valve-seat, and a valve operated by the float adapted on a predetermined inflow of the liquid into the retort to close against the valve-seat and to open under pressure exerted on the liquid in the retort, substantially as described and for the purposes set forth.

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