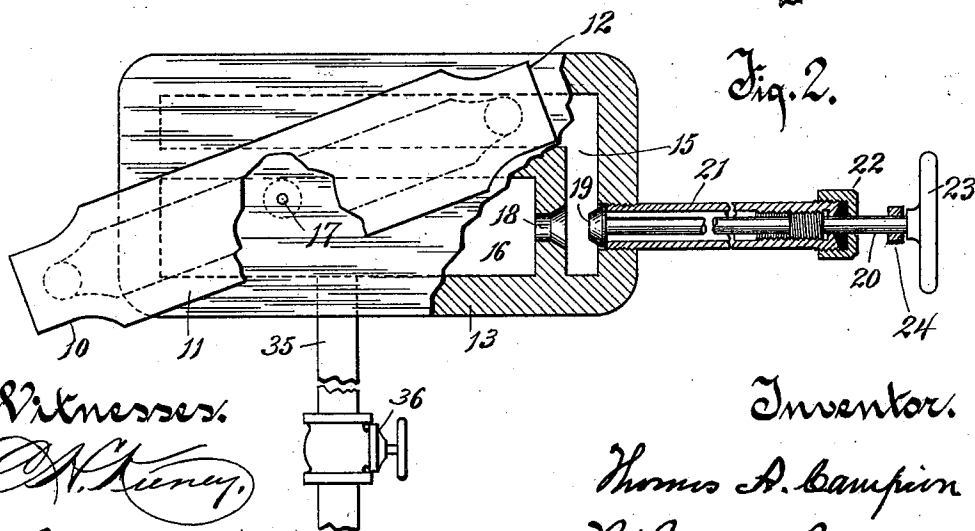
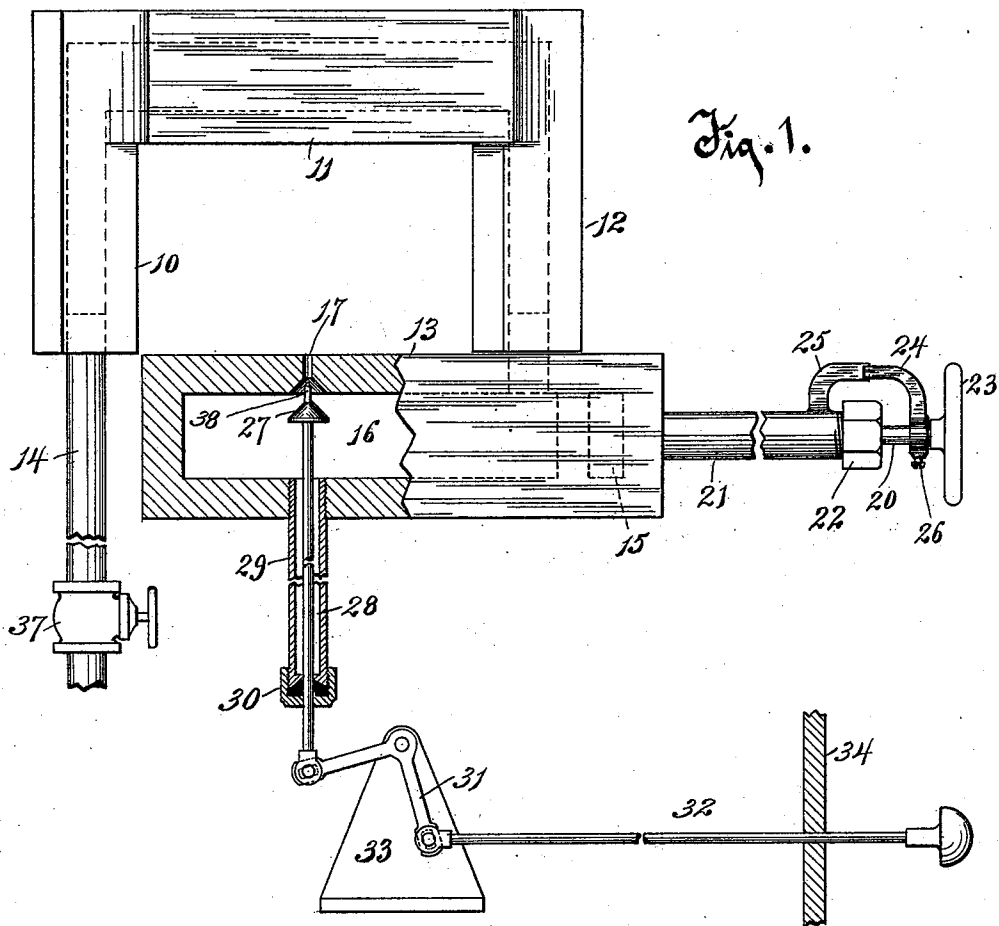


T. A. CAMPION.
VAPOR BURNER.

No. 541,717.

Patented June 25, 1895.



Witnesses.

A. H. Kieny
E. L. Dickinson

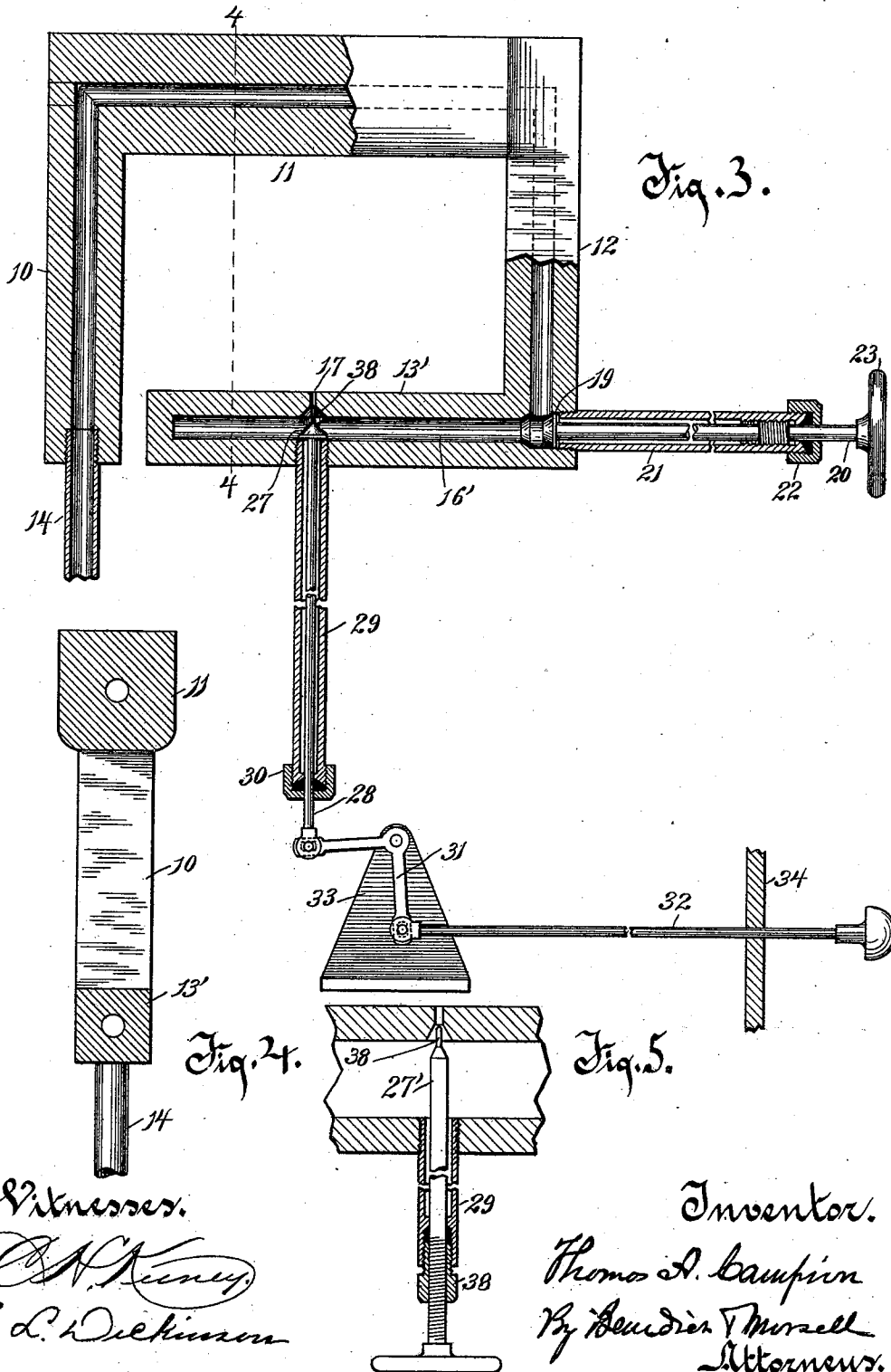
Inventor.

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Witnesses.

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UNITED STATES PATENT OFFICE.

THOMAS A. CAMPION, OF MILWAUKEE, WISCONSIN.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 541,717, dated June 25, 1895.

Application filed September 18, 1894. Serial No. 523,357. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. CAMPION, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Vapor-Burners, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

The object of my invention is to provide a vapor burner that is more convenient, and better adapted for ready and satisfactory use than any heretofore known; and in which burner means, and devices incidental thereto, are provided for retaining, regulating and controlling the liquid hydro carbon fuel supply, and the vapor of gas obtained therefrom; the burner being also by reason of its novel construction and arrangement especially strong and durable.

The invention consists of the devices hereinafter described and claimed, or their equivalents.

In the drawings, Figure 1 is an elevation of the improved burner, parts being in section to illustrate interior construction and other parts being broken away for convenience of illustration. Fig. 2 is a top plan view of the improved burner, parts being broken away and parts being in section for better illustration. Fig. 3 is an elevation of a modified form of the burner, parts being in section for better illustration. Fig. 4 is a vertical section on line 4 4 of Fig. 3, looking toward the left. Fig. 5 is a modified form of the gas-controlling valve, parts being in section.

The burner is necessarily constructed of metal, and preferably the chief parts are constructed of wrought or malleable iron.

In the drawings the upright leg 10, the horizontal bar 11, the depending leg 12, and the horizontal plate 13, represent parts that are preferably constructed of wrought or malleable iron, and may be made integrally. The supply pipe 14, leads into the leg 10, and a continuous duct extends therefrom through the leg 10, the bar 11, and the leg 12 into a chamber in the burner plate 13. This duct or passage is adapted for conveying the supply of liquid hydro carbon from a tank or reservoir to the vapor-converting chamber in the bar 11, which chamber consists of a somewhat

enlarged duct therethrough, and thence for conveying the vapor to the chamber in the plate 13, which is provided with a burner orifice 17, from which, when in use, vapor escapes and is burned. The bar 11, having therein the vapor-converting chamber is arranged to pass directly over the orifice 17, so that the vapor burning thereat, produces a flame that rises against the bar 11, and heats it to such extent, as to convert the liquid hydro carbon therein, into vapor.

An orifice 18 is provided in the wall separating chamber 15, from the chamber 16, for the passage of vapor, and this orifice is closed by the plug valve 19 mounted on a spindle 20, which is provided with a screw-thread, which turns in a corresponding screw-thread in a pipe-bracket 21 fixed in the plate 13. A screw-threaded cap stuffing-box 22 turns on the end of the pipe-bracket, and the stem 20 passes through the stuffing-box and is packed vapor tight therein. The spindle 20 is preferably provided with a hand wheel 23 for rotating it. For regulating the supply of liquid or gaseous fuel that can pass the valve 19, it is to be so adjusted as to open the orifice 18, only to such extent as is necessary therefor. For limiting the adjustment of the valve, a dog 24 is secured adjustably revolubly on the spindle 20, and is so arranged as to contact with the horn 25 fixed on the bracket 21. The dog is secured adjustably to the spindle by means of a set-screw 26. By this construction the valve being on its seat in the orifice 18, can only be opened to such extent as occurs by the revolution of the spindle until the dog 24 engages the horn or stop 25.

For closing the orifice 17, a plug valve 27, is provided. This valve is fixed on a stem 28, which extends through the pipe-bracket 29, fixed in the plate 13, and through the cap stuffing-box 30, by which means it is packed vapor tight in the bracket. For operating this valve the extremity of the stem is pivoted to one arm of the bell-crank 31, and a rod-handle 32, is pivoted to the other arm of the bell-crank, and extends therefrom to such distance as is required. The bell-crank is pivoted on a fixed support, which in most cases consists of a bracket 33, secured to the stove in which the burner is located, and in

other cases to such support as is convenient. When used in a stove the handle 32, extends through the side of the stove, shown at 34.

By means of the chamber 15, a considerable supply of vapor can be provided and held in readiness for escape into the chamber 16, with such rapidity and to such extent as is permitted by the duly adjusted valve 19, from which chamber 16, the vapor constantly escapes through the burner orifice 17.

When the burner is extinguished, the orifice 17 is first closed by the valve 27, and thereupon a supply of vapor is trapped and held in the chamber 16, under such pressure, that when the burner is to be re-lighted the orifice 17 is first opened and the vapor under pressure in chamber 16, escapes therefrom and can be lighted, and thus sufficient heat will readily and quickly be produced, to vaporize the liquid hydro carbon in the bar 11, before opening the valve 19, thus providing means for obviating the smoke and odor that is usually produced in burners where the hydro carbon is first lighted for vaporizing the supply of hydro carbon in a duct or chamber. The chamber 15, will also, when the burner is extinguished and the chamber closed in the manner hereinafter described, trap and retain therein a supply of mingled vapor and liquid hydro carbon, which is quickly reduced to vapor on the burning of the supply of vapor in the chamber 16, at the time of re-lighting the burner. I also provide a pipe 35, leading from the chamber 16, and provided with a stop-cock 36, which pipe leads to any part of the room or building in which the burner is located, and is provided with a gas-illuminating tip or burner, which is adapted for lighting the room in which it is located. The burner tip is of such form and construction as is in common use.

37 is a stop-cock in the supply pipe 14, adapted for shutting off the flow of hydro carbon therethrough.

In the modified form of device shown in Figs. 3 and 4, the plate 13' has only one chamber 16', which answers to the chamber 16, in the other form of device, and the vapor is admitted past the valve 19, directly thereto, from a duct in the leg 12, the chamber 15, being omitted from this form of device. Otherwise the modified form of device is substantially like the one shown in Figs. 1 and 2.

In the modified form of device shown in Fig. 5, a modified form of plug valve 27' is shown, which may, where the valve stem is readily accessible, be used instead of the form shown in Figs. 1 and 3. In this form of device the valve stem is provided with a screw-thread and hand wheel, and the screw-thread turns in a plug-nut 38, which plug-nut is

screw-threaded into the bracket 29. The nut 38 assists to form a stuffing-box on the stem of the valve.

The bar 11, is made thick, and thereby enduring, the edges at the under side being rounded off for more satisfactorily deflecting the flame that impinges against it.

The valve 27, is provided with a needle 38' that projects into the burner orifice and serves as a guide for the valve and to clear the orifice of foreign matter. The enlarged portion of the valve proper below this needle is adapted to fit a correspondingly enlarged lower portion of the valve orifice, while the needle is adapted to fit the straight prolongation of the orifice. The needle is of sufficient length to enter and clear this prolongation of the orifice, before the valve finally reaches, and is closely seated in, the enlarged portion of the orifice, whereby a cleaning or clearing may be effected at any time, without the necessity of entirely closing the exit orifice, and while the vapor is still burning.

What I claim as my invention, and desire to protect by Letters Patent, is—

1. In a vapor burner, the combination, of a horizontal bar having a duct serving as a chamber for converting liquid hydro-carbon fuel into vapor, a burner plate provided with an interior chamber having inlet and outlet orifices, but otherwise closed throughout, said outlet orifice being located beneath the horizontal bar, a valve for regulating the inlet orifice, and a valve for regulating the outlet orifice, said valves, after the flame from the outlet opening is extinguished, adapted to be operated to close both inlet and outlet orifices, in order to store the vapor remaining in the chamber for a subsequent lighting, substantially as set forth.

2. In a vapor burner, the combination, of a horizontal bar having a duct serving as a chamber for converting liquid hydro-carbon fuel into vapor, said duct being in communication at one end with a source of supply, and having its opposite end provided with a depending tubular leg, a burner plate having a primary chamber with which the depending leg of the bar communicates, and a succeeding or vapor chamber provided with an outlet orifice, and being in communication with the primary chamber by an orifice in the wall separating the two chambers, and valves for closing the respective orifices, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS A. CAMPION.

Witnesses:

C. T. BENEDICT,
E. L. DICKINSON.