O. HUNZIKER.

LIQUID FUEL BURNER.

APPLICATION FILED JUNE 5, 1911.

1,051,111.

Patented Jan. 21, 1913.

2 SHEETS—SHEET 1.

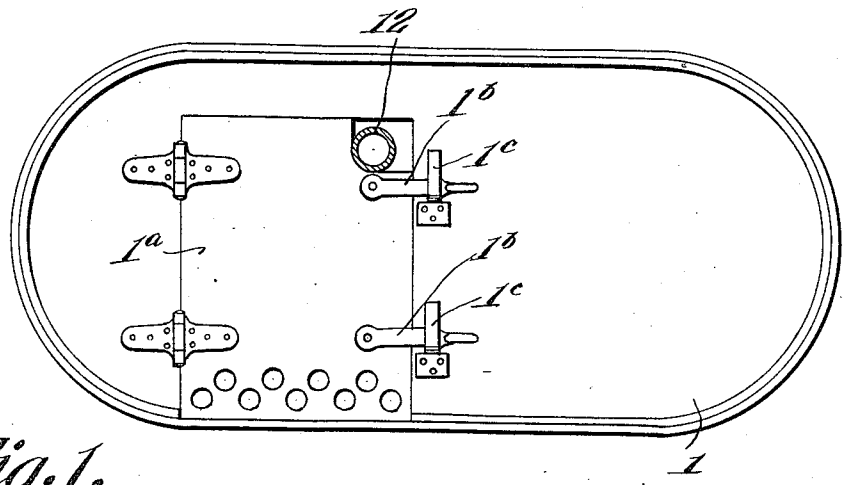


Fig. 1.

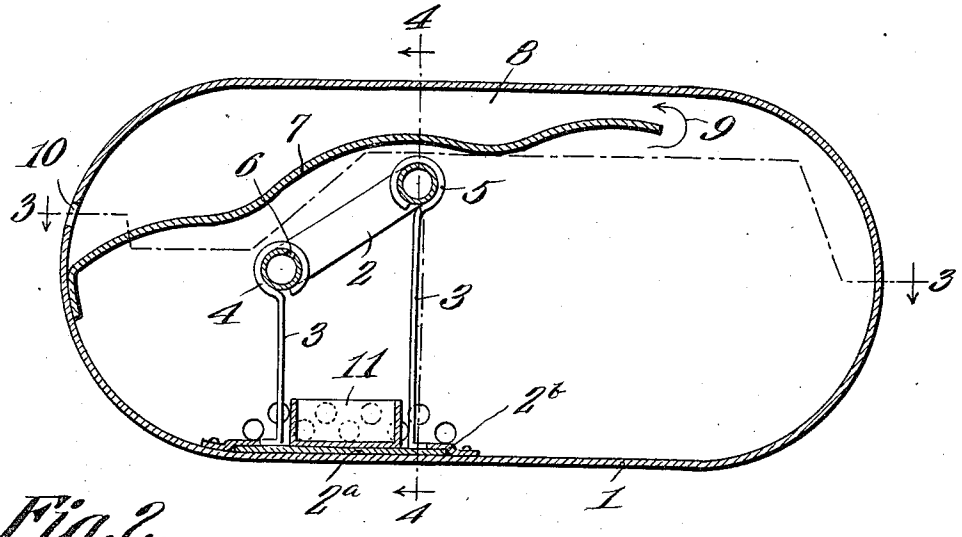


Fig. 2.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

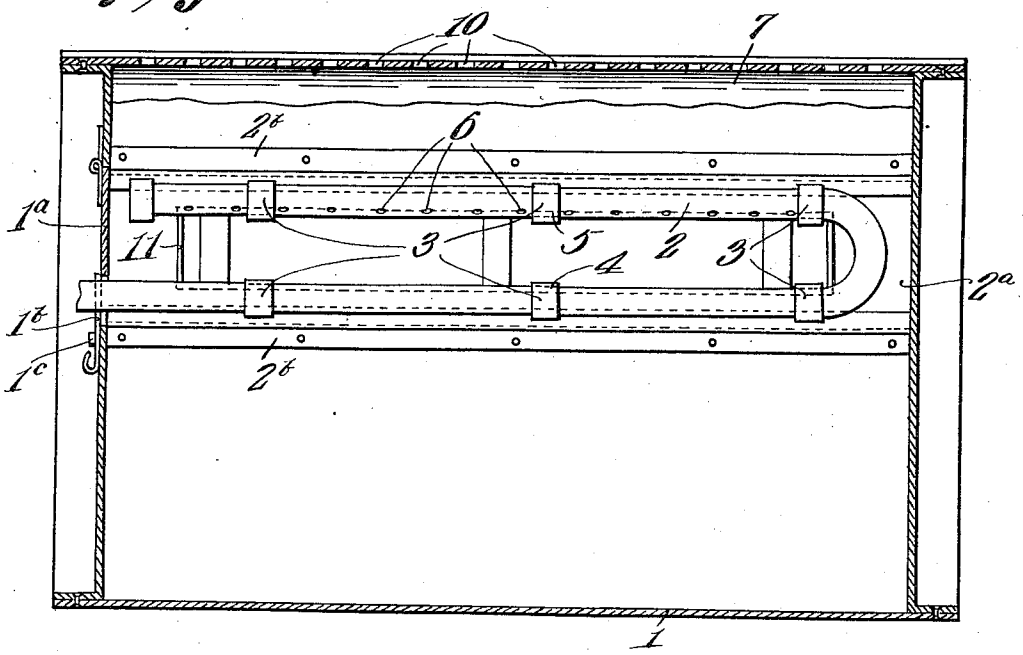
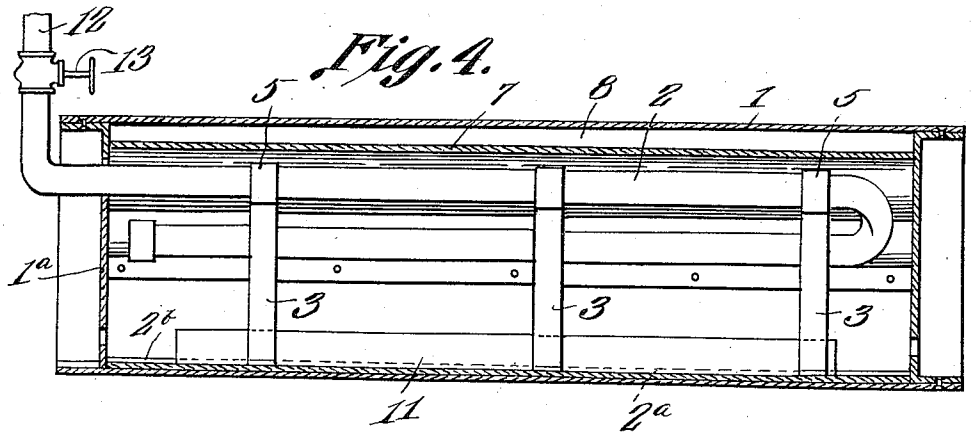



Fig. 4.

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# UNITED STATES PATENT OFFICE.

OTTO HUNZIKER, OF WICHITA, KANSAS.

## LIQUID-FUEL BURNER.

1,051,111. Specification of Letters Patent. Patented Jan. 21, 1913.

Application filed June 5, 1911. Serial No. 631,263.

*To all whom it may concern:*

Be it known that I, OTTO HUNZIKER, a citizen of the United States, residing at Wichita, in the county of Sedgwick and State of Kansas, have invented a new and useful Liquid-Fuel Burner, of which the following is a specification.

The present invention aims to provide a liquid fuel burner having novel means whereby one arm of a fuel delivery element is made effective to heat another arm of the fuel delivery element.

The invention consists of certain instrumentalities and features substantially as hereinafter fully disclosed and defined by the claim.

In the accompanying drawing, illustrating the preferred embodiment of my invention, wherein it will be understood that various changes and modifications may be made therein as relate to the detailed construction and arrangement of the parts without departing from the spirit of the invention, Figure 1 is a front view of the foot-warmer or stove; Fig. 2 is a transverse section thereof; Fig. 3 is a longitudinal section produced upon the line 3—3 Fig. 2, viewing in the direction of the arrows, and Fig. 4 is a section produced upon the line 4—4 Fig. 2, viewing in the direction of the arrows.

In carrying out my invention, I provide a casing 1 adapted to house the burner proper. The casing 1 is provided with an opening in one end, controlled by a hinged door $1^a$ preferably equipped with duplicate latches $1^b$ engaging keepers $1^c$ secured to the casing. A generator 2, preferably a U-shaped pipe, is supported in elevated position upon upright supports 3 of different lengths and secured to a separate base plate $2^a$ arranged in the casing. Said generator is, therefore, arranged in an inclined position, with respect to its transverse section so that one leg 4 of the U will be below the other leg 5 thereof and the two legs will be arranged in relatively parallel horizontal lines, as clearly seen especially in Fig. 2, while said legs are also spaced a short interval apart, the purpose of which will presently appear.

The lower pipe-leg or member 4 has suitable jet or burner openings 6 therein relatively at an angle of about forty degrees to the perpendicular, whereby the flame resulting from the ignited gas, ejected therefrom will be directed upwardly in an inclination toward or in the direction of the upper pipe-leg 5 of the generator, and intermediate of the two legs. The directing of the flame, as indicated, has the effect to produce a heating action upon the generator and thus aid in generating the gas from the gasolene, for instance, when used as the heating agent.

The base-plate $2^a$, to which are secured the generator supports, is received at its lateral edges, under keepers or guides $2^b$ secured to the bottom of the inclosure or casing 1, whereby said base-plate is adapted to be readily inserted into or removed from said inclosure or casing with the generator, as occasion may require.

A suitable deflector or septum 7, having one end suitably secured to the casing or inclosure 1, upon its inner surface, and preferably undulatory or waved in outline, for the more or less retarded movement of the heat currents, extends intermediate the generator and the top of the casing or inclosure. This prevents undue heating of the top or foot-engaging surface of the casing, also serves to direct or distribute the heat-currents throughout the generator-containing chamber of the device, and finally to provide for forming a return-passage or flue 8 for the heat-currents, as per arrow 9, back to the heat-current starting or generator side of the generator-containing chamber of the casing. The return-passage of the heat-currents is aided by providing through that side of said casing or inclosure, at a point above the septum or deflector 7 preferably a line of perforations 10 serving as exhausts or outlets, and promoting a draft action through the circulation thus produced, as will be readily appreciated. Also by this arrangement, it is apparent that a modifying or abated action of the heat results, while the heat-currents are intercepted against prematurely escaping or before being effectively or fully utilized, as it is also thought is obvious. A shallow receptacle or pan 11 is also supported by, and suitably attached to the slidable base-plate or member $2^a$ for receiving a suitably prepared torch-member (not shown) saturated with an inflammable liquid, as oil or alcohol, initially heating the generator or retort as in effecting the conversion of the liquid fuel, as gasolene, for instance, into a vaporous and gaseous state. It is apparent that, with the generator or retort, disposed as shown, *i. e.*, so that the burner-forming leg 4 will

occupy a position below that of the vaporizer-forming leg 5, the angularly arranged openings of said burner-forming leg will deliver the flame, issuing therefrom when the retort or generator is under way, toward, and upon the upper leg 5, and thus provide for effecting the generating operation in an exceedingly simple, inexpensive and effective manner.

It is clearly apparent that, in starting the heating operation, it is only required that a saturated torch, such as above described, be suitably ignited and deposited in the pan 11 so as to expose the burner-member or leg 4 of the generator to the heat of the flame of said torch and sufficiently long enough for the conversion of the liquid into vapor or gas. The heating action, thus having been initiated, will practically automatically continue as long as the gasolene or oil is delivered or fed through the valved supply pipe 12 to the generator, the valve being designated as 13, a suitable tank (not shown) and to which is connected said pipe, containing the hydrocarbon, being provided for supplying such liquid to the generator. It is to be observed that the axes of the openings 6 in the leg 4 are acutely disposed with respect to a plane passing through the legs 4 and 5. Consequently, the flame proceeding from the openings 6 will be thrown upwardly, into one of the corrugations of the deflector 7, which corrugation as clearly shown in Fig. 2, extends from a point above the leg 4 to a point beyond the leg 5. The member 7, therefor, is heated to a maximum degree, and at the same time, the leg 5 is heated to the necessary extent, it being obvious that if the flame proceeding from the openings 6 traveled directly toward the leg 5, the deflector 7 would be heated to a less degree than under the construction shown.

What is claimed is:

In a liquid fuel burner, a U-shaped pipe comprising upper and lower branches lying in a plane acutely disposed with respect to the horizontal; a deflector located above the pipe and disposed at an acute angle to the plane of the branches, the deflector having corrugations, one of which extends from a point above the lower branch to a point above the upper branch, the lower branch having an opening disposed at an acute angle to the plane of the branches and discharging into said corrugation of the deflector.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

OTTO HUNZIKER.

Witnesses:
G. R. BAYSINGER,
ALMA WAGNER.