(No Model.)

G. YOUNG.

RETORT VAPORIZER.

No. 558,247. Patented Apr. 14, 1896.

Fig. 1.

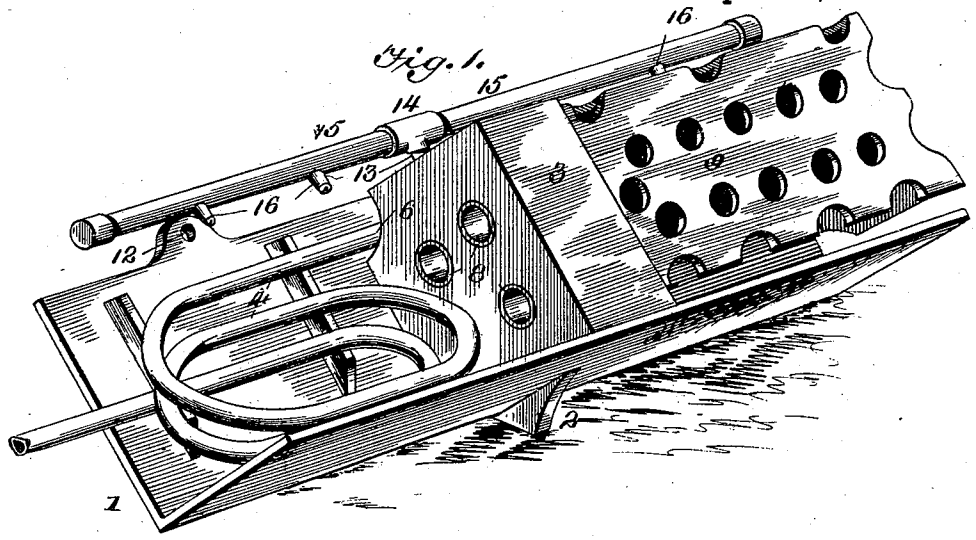


Fig. 2.

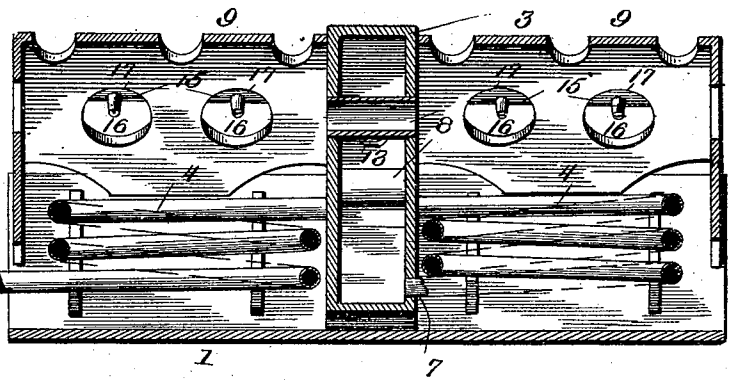


Fig. 4.

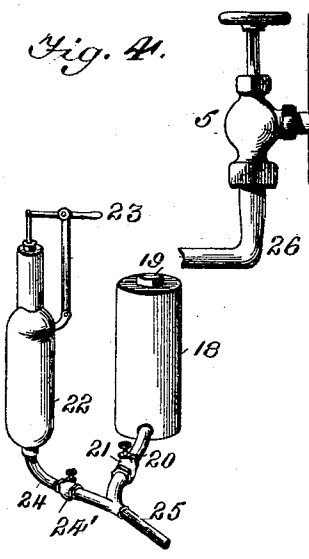
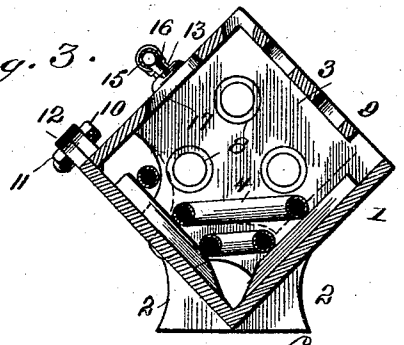


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE YOUNG, OF ALMOND, NEW YORK.

RETORT-VAPORIZER.

SPECIFICATION forming part of Letters Patent No. 558,247, dated April 14, 1896.

Application filed August 22, 1895. Serial No. 560,157. (No model.)

To all whom it may concern:

Be it known that I, GEORGE YOUNG, a citizen of the United States, residing at Almond, in the county of Allegany and State of New York, have invented a certain new and useful Improvement in Retort-Vaporizers, of which the following is a specification, reference being had to the accompanying drawings.

This improvement is designed to provide an oil-burner of that class known as "retort-vaporizers" that will be particularly adapted for use with crude or refined petroleum, but may be used with any of the hydrocarbons.

To this end the invention consists in the peculiar construction hereinafter more fully described and then definitely claimed at the end hereof.

In the accompanying drawings, Figure 1 is a perspective view of a vaporizer constructed according to my improvement with part of the cover removed. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a vertical cross-section through the line *x x*, Fig. 1. Fig. 4 is a perspective view, on a smaller scale, of air and oil tanks and a pump to be used with my burner.

Referring now to the details of the drawings by figures, 1 indicates the lower part of the casing, preferably of trough-like shape, having feet 2, on which it may stand in a stove or furnace. In this casing is set the mixing and superheating chamber 3, consisting of a hollow box substantially fitting the casing, into which enters one end of a coiled pipe 4, the other end of which is connected to a needle-valve 5. The pipe is designed to have the coil divided, about one-half of the coils being on each side of the mixing-chamber. That part of the pipe connecting the two sets of coils passes behind the mixing-chamber, as shown at 6 in Fig. 1, and the connection with the same is made at 7.

The mixing-chamber is provided with a series of short tubes 8, which pass entirely through the same and serve two purposes—viz., to form more heating-surface and to more thoroughly mix the gas and air as they enter the chamber.

The casing is provided with a two-part perforated cap 9, secured by bolts 10 and nuts 11, which pass through lugs 12 on the casing and cap.

Screwed into the mixing-chamber is a nipple 13, to which is secured a T 14, into the opposite ends of which are screwed short pipes 15, having their outer ends closed and provided with jet openings or pipes 16, which are arranged opposite apertures 17 in the cap 9.

Referring now to Fig. 4, 18 indicates an oil-tank provided with a suitable inlet 19 and a discharge-pipe at 20, having a valve 21. At 22 is shown an air-tank, and a pump 23 is arranged so as to fill it with compressed air. Below this are a discharge-tube 24 and valve 24′. Both the pipes 20 and 24 terminate in an injector-pipe 25, the lower end of which is connected to the bottom of the needle-valve 5 by the pipe 26.

When in operation, the oil-tank is filled with petroleum or other suitable material in any convenient manner and the air-tank is filled with compressed air by means of the pump 23, and then, when the burner has been heated in the usual manner, the valves are opened to the proper degree and the compressed air draws the oil from the tank and forces the same into the coils of the pipe, where the mixed air and oil are heated, and then into the mixing-chamber, from whence they pass into the pipes 15 and out through the jet-pipes 16, where gas-jets of intense heat are formed, which enter among the coils of pipe and keep them and the mixing-chamber heated, so that the coils and said mixing-chamber are continuously heated and the stream of mixed oil and air vaporized, thus keeping up a very hot fire, and the products of combustion therefrom rising up through the openings in the cap may be utilized for any desired purpose—such as heating, cooking, &c.

The arrangement of the mixer and superheater in the center of the casing and having jets of gas entering on both sides thereof makes and keeps said superheater very hot, so that the mixed oil and air are thoroughly vaporized and this heating of the chamber and the vaporizing of the oil are much facilitated by the tubes passing through said chamber, which the heated products of combustion keep intensely heated, so that as the mixture of oil and air or gas rises through the cham-

ber it comes in contact therewith, and is thus very highly heated and vaporized.

What I claim as new is—

1. The combination, in a vapor-burner, of a coiled pipe 4, the central mixing and superheating chamber 3 arranged between the coils of said pipe 4, the casing 1 and perforated cap 9 inclosing said coiled pipe and chamber, and jet-pipes connected with the mixing-chamber, substantially as described.

2. The combination in a vapor-burner, of a coiled pipe 4, a central superheating and mixing chamber 3 arranged between the coils of said pipe 4, a casing 1 and perforated cap 9 inclosing said pipe and chamber, and pipes 15 connected with the mixing and superheating chamber, and provided with jet-openings, with air and oil tanks and means for compressing the air in the air-tank and forcing the oil through the heating-pipe and superheating-chamber, substantially as described.

In testimony whereof I affix my signature, in the presence of two witnesses, this 17th day of August, 1895.

GEORGE YOUNG.

Witnesses:
T. J. W. ROBERTSON,
W. E. CLENDANIEL.