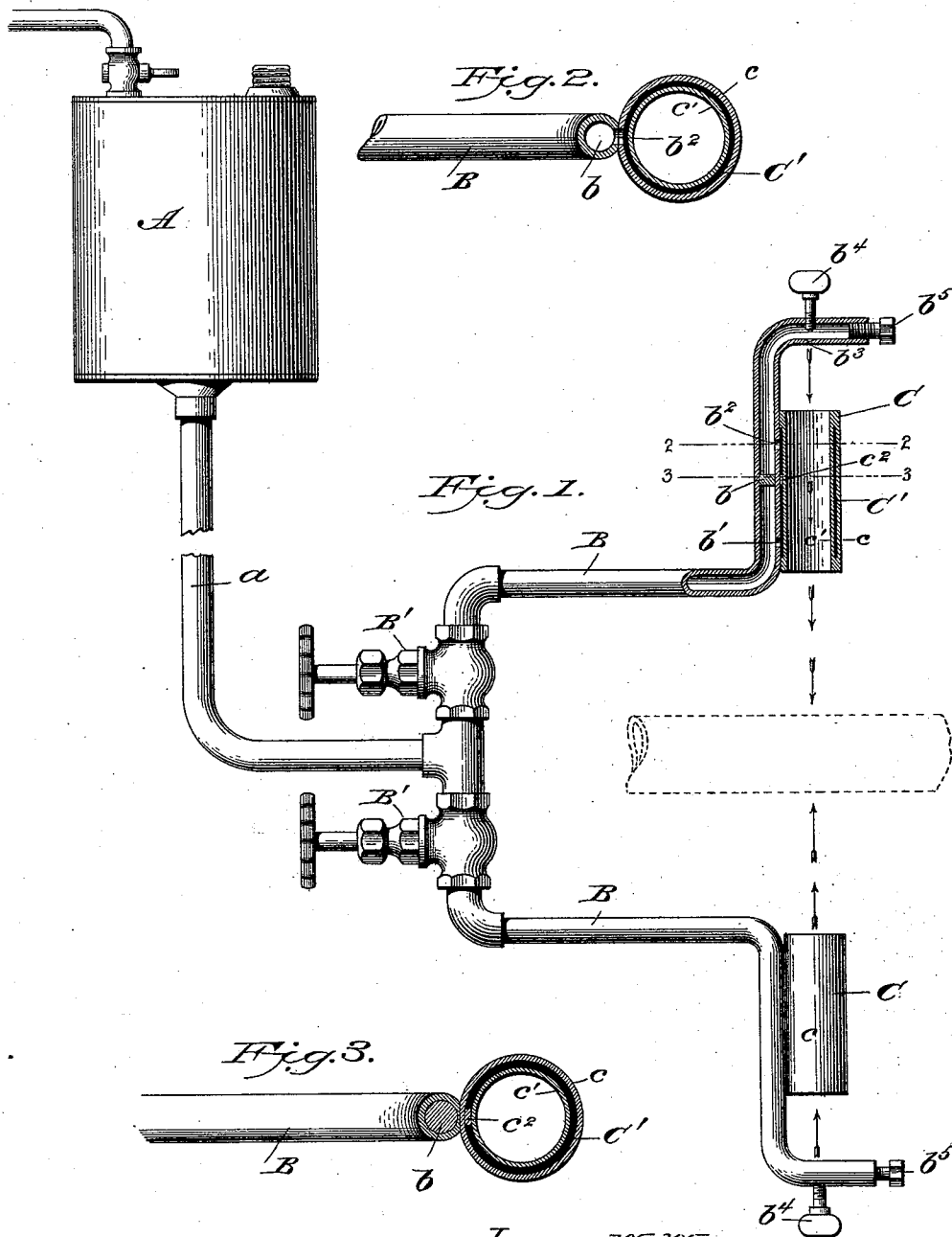


(No Model.)

J. W. WEAVER.
VAPOR BURNER.

No. 540,565.

Patented June 4, 1895.



Joseph W. Weaver,
INVENTOR

WITNESSES

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by *[Signature]* Attorney

UNITED STATES PATENT OFFICE.

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VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 540,565, dated June 4, 1895.

Application filed February 21, 1895. Serial No. 539,250. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH WALTER WEAVER, a citizen of the United States of America, residing at Lebanon, in the county of Lebanon and State of Pennsylvania, have invented certain new and useful Improvements in Vapor-Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide an improved apparatus for burning hydrocarbon vapors when mixed with air, so that a clear fire or flame will be provided which may be used effectively in brazing.

With the above end in view the invention consists in arranging a plurality of vapor burners opposite each other so that the flame from each burner will be projected to impinge upon the flame of the opposite burner to provide between the burners an intense heat of such a character that the device may be used as a forge for working metals, especially in brazing and analogous operations where a flame free from smoke and soot is essential.

The invention further consists in the particular construction of the burners, as well as the combination of a pair of such burners.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation, partly in section, of an apparatus constructed in accordance with my invention, showing two burners arranged one above the other. Fig. 2 is a sectional view on the line 2 2 of Fig. 1, and Fig. 3 is a sectional view on the line 3 3 of Fig. 1.

A designates a suitable tank for containing liquid or hydrocarbon fuel, preferably gasoline or equivalent oil. This tank has an opening for filling the same which is provided with a cap, and the tank is also provided with a pipe which leads therefrom to a suitable air compressor, a stop-cock being placed within said pipe. The air compressor may be of any suitable character or may be dispensed with provided the tank is sufficiently elevated above the burners to give the desired pressure.

To the lower part of the tank is connected a pipe *a* leading to pipes B B to which the burners are secured, said pipes having suitable regulating cocks B'. The pipes B B are preferably bent as shown and provided with plugs *b*, and on each side of said plugs are apertures *b'* and *b''*, and the pipes B near their terminal portions have small apertures *b³* opposite which are apertures to receive thumb-screws *b⁴*. The apertures which receive the thumb-screws *b⁴* are of larger diameter than the apertures *b³* and provide a convenient means for drilling the latter apertures and cleaning them should they become clogged. The ends of the pipes B are plugged by means of headed bolts *b⁵*.

CC designate the vaporizers, each consisting of inner and outer tubes *c* and *c'* which are of different diameters and suitably connected to each other at their ends to form between them a vaporizing chamber C', and said chamber is partially divided by a strip or plug *c²*. The thickness of the metal comprising the inner tube is preferably much less than the thickness of the outer tube, and the outer tube and pipe B are flattened to provide suitable surfaces for connecting them to each other, the outer tube having apertures or perforations which register with the apertures or perforations *b'* and *b''* in the pipe B.

The successful operation of a burner constructed as hereinbefore described depends to a great extent upon the following elements: The pressure of the liquid fuel; the diameter and length of the direct opening in the vaporizer, and the distance and size of the opening *b³* through which passes the vapor, as the pressure of the gas should be sufficient to force the same through the vaporizer and commingle with it the proper amount of air to cause a complete combustion of the vapor. In a device thus constructed a single burner will operate, but not so effectively or with such results as a pair of burners placed opposite each other; for when the burners are placed opposite each other, either in a vertical or horizontal position, the flame will be projected from one burner toward the other. Thus to a great extent one vaporizer is heated by the other, and the flames meeting at the center cause an intense and clean heat between the burners or vaporizers.

It will also be noted that by arranging the vaporizers and burners opposite each other the oil supply may be entirely cut off from one of the burners and the supply cock of the other turned so as to only admit sufficient oil to maintain combustion, and by such an arrangement the forge can be gotten ready for use in an instant as it is only necessary to turn on both of the cocks and the increased supply of oil in the one burner will increase the flame of that burner so that it will be projected to the other burner to heat the same, generate gas and ignite it. Thus it will be observed that by arranging the burners opposite each other cups to hold igniting fluid and other such accessories to burners are dispensed with. This is also a desirable feature as one of the burners may be positioned at a point where it is not readily accessible.

Though in the accompanying drawings I have shown but a pair of burners arranged one above the other it is obvious that as many pairs can be used as may be desired.

In operation the quantity of oil fed to the burners is regulated by the cocks B' and passes through the opening b' in the pipe B to the vaporizing chamber C' and is there formed into gas under considerable pressure which passes from the vaporizing chamber into the continuation of the pipe on the other side of the plug b and is forcibly ejected through

the opening b³ located on a line with the longitudinal opening of the vaporizer.

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

1. A burner and vapor generator consisting of a supply pipe B having openings b' and b³, a plug positioned between said openings, a vaporizer having a central opening and a surrounding chamber which communicates with the openings b' and b³, an exit opening b³ in the pipe opposite the central longitudinal opening of the vaporizer, substantially as shown and for the purpose set forth.

2. In a vapor burner, the combination, of a pipe having a plug b, openings on each side of said plug, and a vaporizing chamber consisting of an outer and inner shell connected to each other at their ends, the inner shell being of less thickness than the outer shell, the pipe B having at a point opposite the longitudinal opening in the vaporizer an aperture b³, substantially as shown and for the purpose set forth.

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

JOSEPH WALTER WEAVER.

Witnesses:

HARRISON KALBACH,
ALLISON Z. KALBACH.