T. B. DEXTER.

Hydrocarbon Burner.

No. 218,619. Patented Aug. 19, 1879.

Fig. 1.

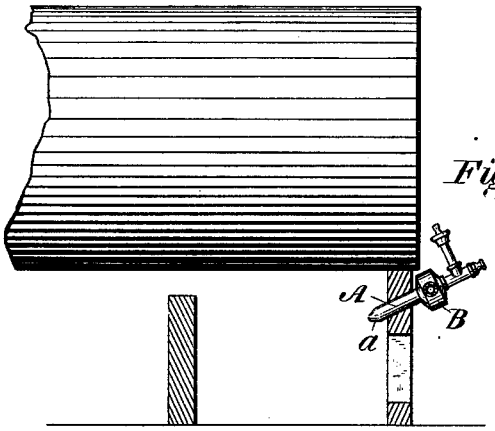


Fig. 2.

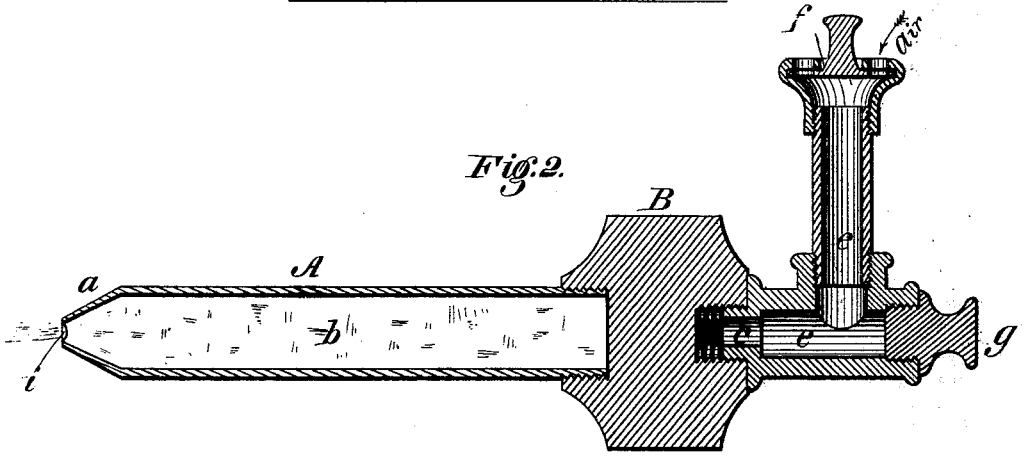
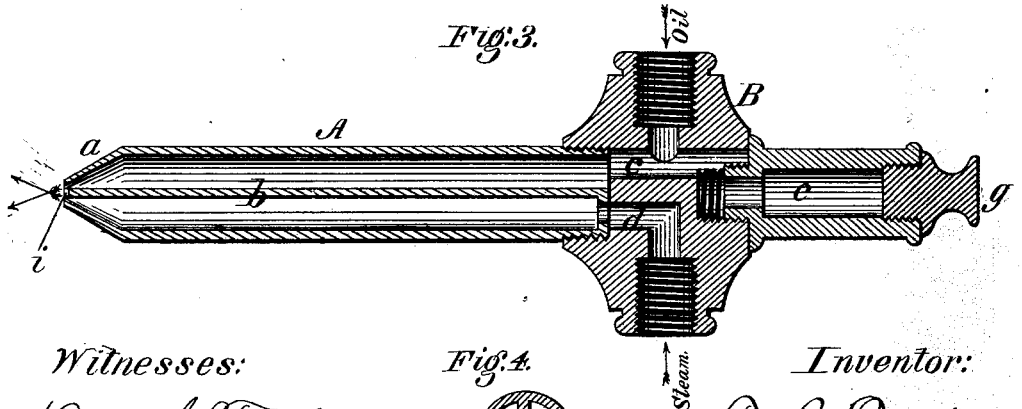


Fig. 3.



Witnesses:

Donn J. Twitchell

William W. Dodge

Fig. 4.

Inventor:

T. B. Dexter

By his Attys.

Dodgerson

UNITED STATES PATENT OFFICE.

THOMAS B. DEXTER, OF LYNN, MASS., ASSIGNOR OF ONE-HALF HIS RIGHT TO THE GILMANTON MILLS, OF BELMONT, N. H.

IMPROVEMENT IN HYDROCARBON-BURNERS.

Specification forming part of Letters Patent No. **218,619**, dated August 19, 1879; application filed December 23, 1878.

To all whom it may concern:

Be it known that I, THOMAS B. DEXTER, of Lynn, in the county of Essex and State of Massachusetts, have invented certain Improvements in Hydrocarbon-Burners, of which the following is a specification.

My invention relates to a device of improved construction for burning kerosene and other hydrocarbons; and consists more particularly in a tube or burner divided through the center by a longitudinal diaphragm, with the end of peculiar form, so that the steam, air, and oil are thoroughly combined and delivered in the form of a wide flat sheet.

Figure 1 is a view illustrating my device in position beneath a steam-boiler; Fig. 2, a longitudinal vertical section of the device; Fig. 3, a longitudinal horizontal section of the same; Fig. 4, a vertical cross-section.

A represents the tube or body of the burner, having its nose or delivery end *a* reduced in size, and having through its middle a vertical longitudinal diaphragm, *b*, the end of which is slightly recessed or cut away within the nose *a*, as shown at *i*, Figs. 2 and 3. B represents a head or body, into which the tube A is screwed at its rear end, and which is provided with two passages, *c* and *d*, communicating with the interior of tube A on opposite sides of its partition and extending outward through opposite sides of head B, as shown, the head being tapped or threaded to receive the feed-pipes. The rear end of the head B is provided with an air-admission tube, *e*, opening into the oil-passage *c*, and provided with a rotary valve or register, F, to control and vary the admission of the air. The outer end of the tube *e* is closed by means of a removable screw-plug, *g*, arranged, as shown, directly in line with the passage *c*, so that when the plug is removed a cleaning-rod may be inserted directly through the passages and passed forward through the nose of the burner, in order to remove any deposit or other obstructions that may have lodged therein.

As the steam produces a constant forward draft or suction through the oil-passage, the removal of the plug and the cleaning of the passage may take place at any time without stopping the operation of the apparatus or extinguishing the fire—a very important and valuable feature when the device is employed beneath a boiler. In applying the device it is inserted through the front of the fire-box with a downward inclination, as represented in Fig. 1, and with the partition *b* standing in a vertical position.

Steam being admitted through the passage *d*, it blows forward through one side of the tube A, and escapes at the contracted nose, and in so doing it produces a forward draft or suction through the opposite side of the tube and through the oil-inlet *c* and air-inlet *e*. Oil being admitted at *c* in properly-graduated amounts it mingles with the air entering at *e*, and the two rush forward through the tube A and escape at its nose. In their passage through the tube the mingled air and oil are subjected to a high temperature from the steam on the opposite side of the diaphragm, the oil being thereby vaporized and caused to combine thoroughly with the air. As they issue at the nose they are deflected inward toward the issuing steam, which is also deflected toward them, and, owing to the fact of the partition being cut away at *i* within the mouth of the tube, the two jets impinge against each other in such manner as to cause an instantaneous and thorough combination of the elements and spreading of the same into a thin and wide horizontal sheet. This sheet taking fire produces a sheet of flame filling the whole, or nearly the whole, interior of the fire-box.

The peculiar construction of the device admits of its being made cheaply, produces better results than are attainable with burners of the ordinary constructions, and admits of the passages being cleared while the device is in action.

It is to be noted that although the steam and air mingle within the burner, and the oil is vaporized in the interior, the combination does not take place until the mouth is reached. This is of importance for the reason that it prevents the danger of an ignition or explo-

sion in the interior, and because it avoids the deposition of carbon or sedimentary matters in the interior.

Having described my invention, what I claim is—

1. The hydrocarbon-burner consisting of the tube A, provided with the contracted end and the central longitudinal diaphragm *b*, extending to the end, and the head B, provided with the steam-port on one side of the partition and the air and oil ports on the other side of the same, as shown.

2. The hydrocarbon-burner having the tubular contracted end and the longitudinal diaphragm *b*, with its end cut away within the tube, as shown.

3. The burner consisting of the divided tube A, the body B, provided with the passages *c d*, and the air-admission tube provided with the valve or register, and communicating with passage *c* at a point in rear of that at which the oil enters, as shown.

THOMAS B. DEXTER.

Witnesses:
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