

No. 762,969.

PATENTED JUNE 21, 1904.

E. N. WHITE.
CRUDE OIL BURNER.

APPLICATION FILED MAR. 10, 1903.

NO MODEL.

Fig. 2.

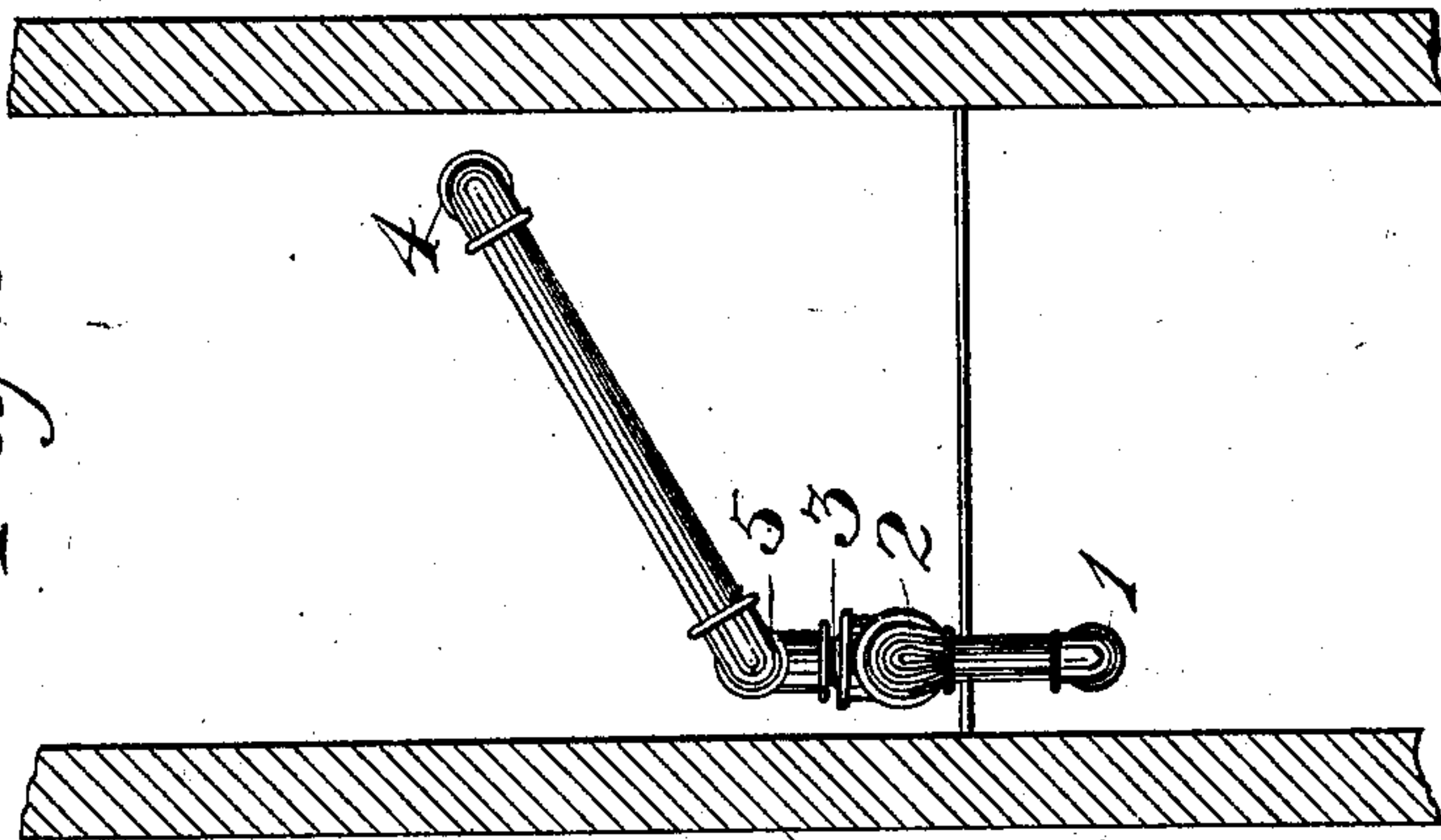
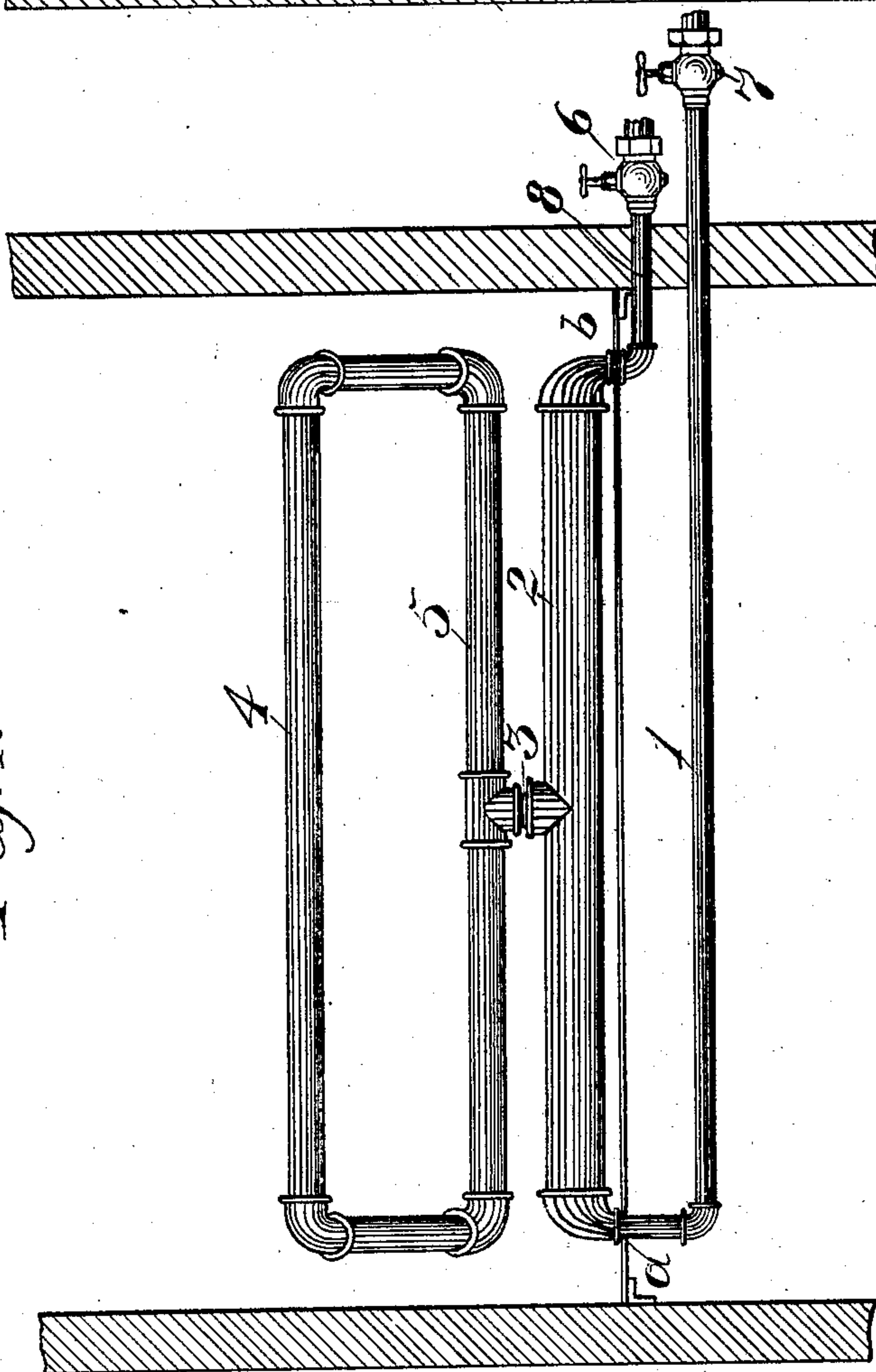


Fig. 1.



WITNESSES:

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CRUDE-OIL BURNER.

SPECIFICATION forming part of Letters Patent No. 762,969, dated June 21, 1904.

Application filed March 10, 1903. Serial No. 147,094. (No model.)

To all whom it may concern:

Be it known that I, EDGAR NOBLE WHITE, a citizen of the United States, residing in the city of Oakland, county of Alameda, State of California, have invented a new and useful Improvement in Apparatus for the Combustion of Crude Fuel-Oil, of which the following is a specification.

My improvement relates to oil-burners adapted to use the cruder forms of fuel-oil, and to that species of such burners as add the vapor of water to the vapor of oil in the process of treating the crude oil in the combustion apparatus.

The objects of my improvement are to dispense with parts of the mechanism usually employed in such apparatus and to provide a burner more economical in construction and operation. I attain these objects by means shown in the accompanying drawings, in which—

Figure 1 is a front view of the apparatus, and Fig. 2 a side view thereof.

Similar letters and numerals refer to similar parts in both views.

1 is a pipe joined, through valve 7, with a source of water-supply and connected at the end *a* with the vaporizer 2. 8 is a similar pipe connected through the valve 6, with a source of supply of crude fuel-oil and united with the vaporizer 2 at the end *b*. The vaporizer 2 is joined, through the T 3, with the superheater 5, and the superheater joins the burner 4 through the arms shown in the drawings. As shown by the side view, Fig. 2, the oblong-shaped part formed by the pipes 4 and 5 and their connecting-arms is inclined toward the plane included by the vaporizer 2 and the superheater 5. A number of burner-holes, preferably 3 or more, is made in the pipe 4 in such a position as to turn the flame against the upper part of the vaporizer 2.

To operate the apparatus, oil is admitted to the pipes through the valve 6 until it appears at the burner-holes, and there it is ignited. The flame from the burner vaporizes the oil. Water is then gradually admitted to one end of the vaporizer 2 through pipe 1 and valve 7 and its flow adjusted to the point where the flame ceases to smoke. The flame acts upon

the water and oil, vaporizing and combining them in the vaporizer 2. In order to accomplish this with the requisite steadiness of burning, the rate of flow of the water and the rate of flow of the oil must be adjusted in such a ratio to each other and to the rate of consumption that both are wholly vaporized before reaching the T 3. The flame from the burner is directed, as aforesaid, against the vaporizer 2. The oil stands in the pipe 8 to a point just above the level of the lowest part of vaporizer 2 and acts so as to prevent the vapor formed in 2 from blowing back through the valve 6. Similarly, the water standing in 1 is maintained to a point just above the level of the lowest part of the vaporizer at *a* and acts to prevent the steam from blowing back through the valve 7. By suitably adjusting the valves 6 and 7 this condition may be attained, and the adjustments must correspond with the rate of vaporization in 2. This rate must be such that by the time the oil and water meet near the T 3 they are both wholly vaporized. The character of the flame enables these adjustments to be readily made, the valves being opened or closed, as the flame is more or less smoky, until all trace of smoke disappears. The flame striking against the vaporizer 2 rebounds against the superheater 5, which is heated to a very high temperature, and induces great pressure in the contained oil-vapor and steam. This pressure blows the mixed vapors through the burner-holes with great force and clears the passages of all unconsumed carbon, which is thereupon burned in the fire-box. It is therefore possible to operate my apparatus without the use of a boiler to create the steam required. My apparatus also dispenses with the use of a number of valves requiring expert attention and the consequent expense in construction and operation.

Having described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. Apparatus for the combustion of crude fuel-oil comprising a vaporizer of elongated form, a valve-controlled pipe connected with one end of said vaporizer and normally full of oil, said oil standing to a point just above the

lowest part of said vaporizer, a valve-controlled pipe connected with the other end of said vaporizer and normally full of water, said water standing to a point just above the
5 lowest part of said vaporizer, a burner disposed to project its flame against said vaporizer, and to vaporize the water and oil contained therein, a superheater disposed to receive the mixed oil-vapor and steam from said
10 vaporizer, and to permit its superheating by the flame from said burner, and a connection between said burner and said superheater, said burner and vaporizer being disposed in one plane and the vaporizer and superheater disposed in a different plane, and the plane of
15 the combined superheater and burner being inclined to the said plane of the superheater and vaporizer.

2. Apparatus for the combustion of crude

fuel-oil, comprising a burner, a superheater, 20
two arms connecting said burner and superheater, said combined burner, arms, and superheater being disposed in one plane; a vaporizer joined to said superheater, with a valve-controlled oil-pipe and a valve-controlled wa- 25
ter-pipe connected to said vaporizer, said vaporizer and said superheater being disposed in one plane; said apparatus having the plane of said combined superheater, arms and burner inclined to the said plane of superheater and 30
vaporizer as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

EDGAR NOBLE WHITE.

Witnesses:

GUSTAVE J. MCGREGOR,
FRED. R. DEREMER.