

No. 697,030.

Patented Apr. 8, 1902.

G. A. SMITH.
COMBINATION GAS AND OIL BURNER.

(Application filed Mar. 22, 1901.)

(No Model.)

Fig. 1.

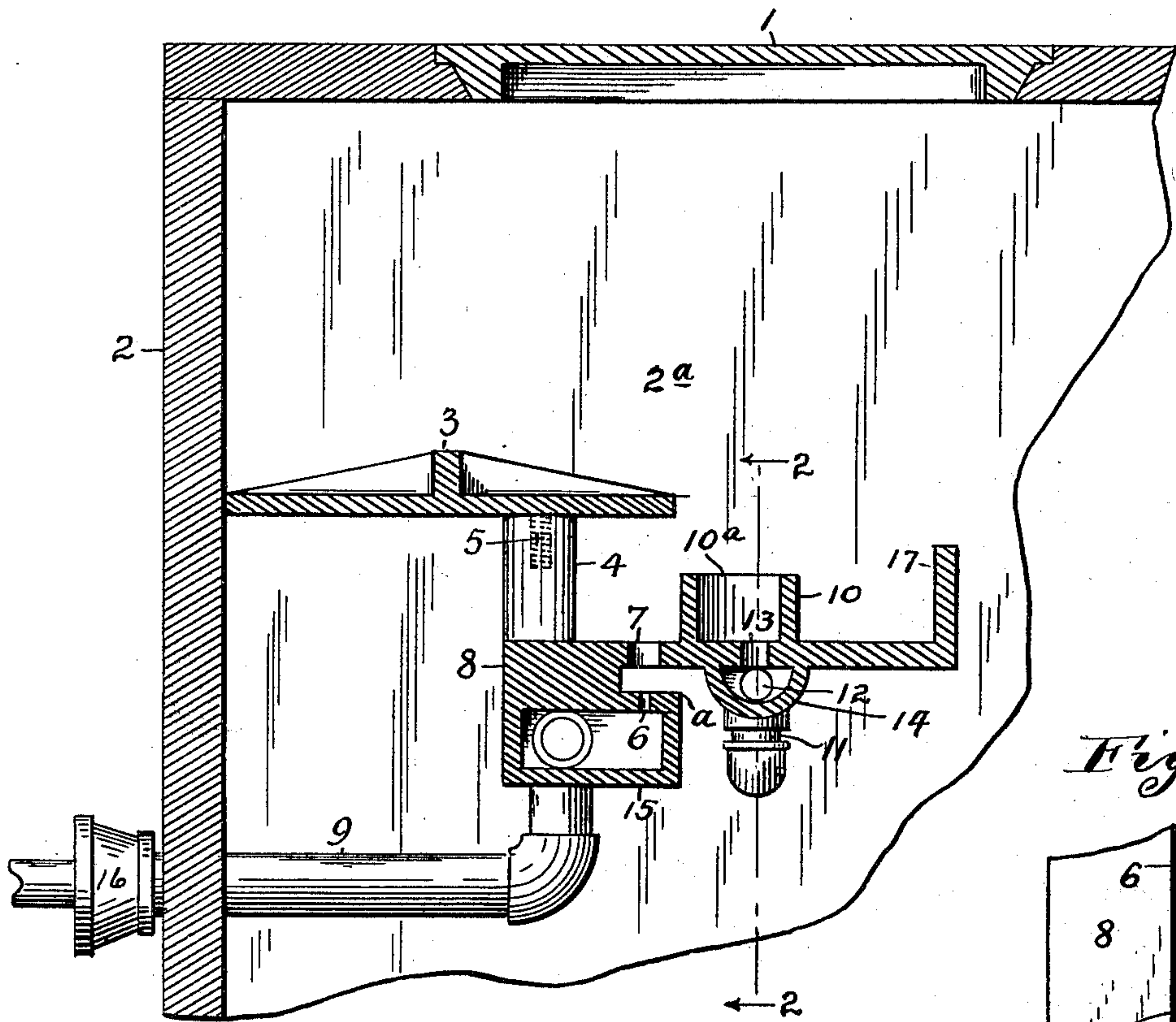
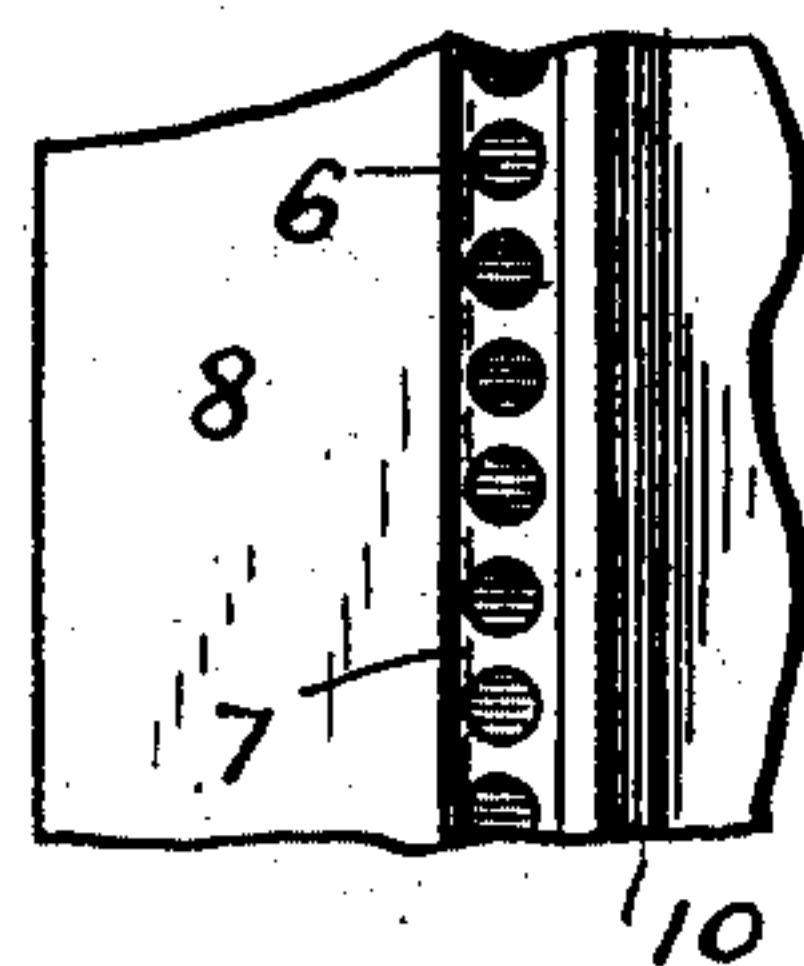
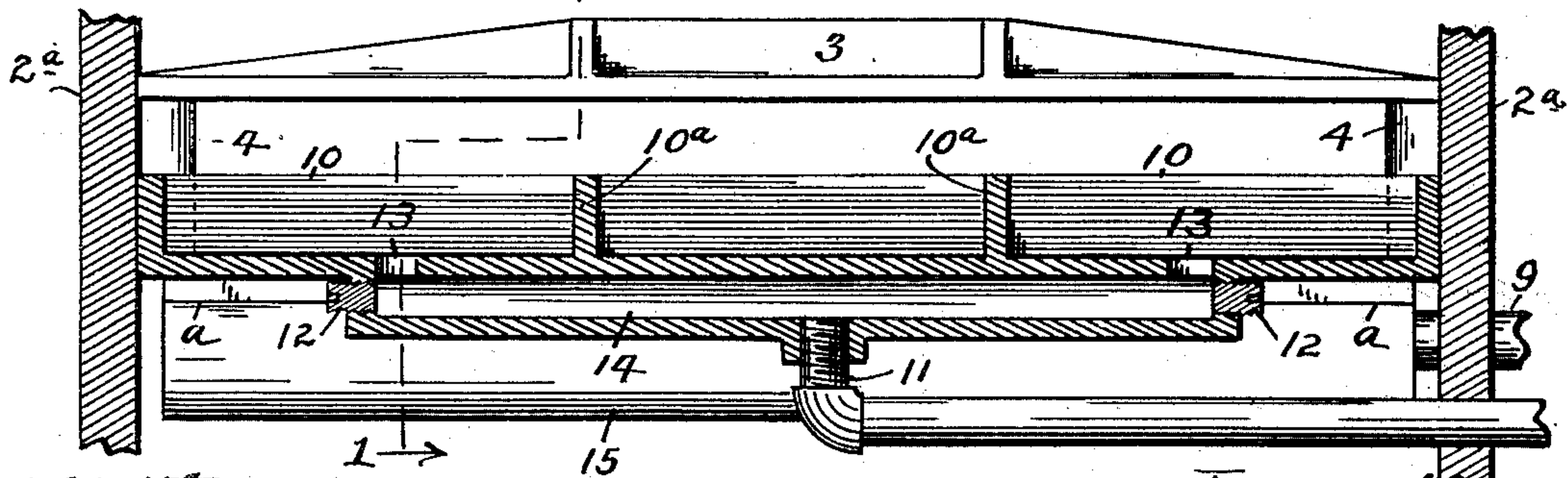


Fig. 3.



1 + Fig. 2.



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UNITED STATES PATENT OFFICE.

GREENE ALLEN SMITH, OF INDIANAPOLIS, INDIANA.

COMBINATION GAS AND OIL BURNER.

SPECIFICATION forming part of Letters Patent No. 697,030, dated April 8, 1902.

Application filed March 22, 1901. Serial No. 52,461. (No model.)

To all whom it may concern:

Be it known that I, GREENE ALLEN SMITH, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Combination Gas and Oil Burner, of which the following is a specification.

My invention relates to a combination gas and oil burner; and the objects of my invention are, first, to provide for a more complete combustion of both the gas and oil; second, to produce more heat with the same amount of expended heat energy; third, to produce additional draft in the stove, and, fourth, to more evenly distribute the flame, so as to heat the entire fire-basin, and also to concentrate the heat directly beneath the lids on the stove, where in cooking it is most needed; also, to so arrange the flow of the air and gas that by a combination of mixers the flow may be increased and the combustion may be more complete. I attain these objects by the machine or burner illustrated in the following drawings, in which—

Figure 1 is a detail, in vertical section, of the fire-box of a stove provided with my invention, the latter being shown in section on the dotted line 1 1 of Fig. 2; Fig. 2, a longitudinal vertical section of burner on the line 2 2 of Fig. 1 looking in the direction of the arrows; and Fig. 3 a, detail in plan view, on larger scale, of slot and underlying gas-outlets forming a mixer.

Like characters of reference indicate like parts throughout the several views of the drawings.

2 and 2^a represent the walls of the stove, and 1 the cover in the top, all of usual and well-known construction.

8 is a horizontal plate or body, to which the other parts of my invention are attached. Extending along its under front edge is a distributing-chamber 15, having the leading-in pipe 9, through which fuel-gas, either natural or artificial, is introduced into said chamber. By means of the mixer 16, of common form, the gas is supplied with air to a certain extent before admission to the distributing-chamber. At the top of the inside or rear wall of the chamber 15 is a longitudinal groove or channel *a*, and leading into this groove from the chamber 15 are the holes 6,

preferably a series of them, equally distributed across the length of the chamber. Immediately above the holes 6 through bottom 8 is a slot 7. This construction forms a second mixer, by means of which air entering the channel or groove *a* is mixed with the gas passing through holes 6 and slot 7.

To the rear of slot 7 and adjacent thereto is the front wall 10 of oil-cups, hereinafter to be described; but this wall performs a function in directing the gas from slot 7 to the place of ignition above the oil-cups. The stove-front 2 has the usual draft-regulating dampers and doors (not shown) near its lower edge, so that air admitted to the fire-box of the stove will enter in front below and pass up and to the rear. This draft will be specially directed in my device by the deflector-plate 3, which is supported by posts 4 from plate 8. It is secured thereto by means of the bolts 5 and preferably bears against the wall 2 for support and more particularly to prevent the upward passage of air along the front. The deflector 3 will terminate a short distance above the front wall 10 of the oil-cup, and the space left between the said deflector and the top of the cup will be the line of ignition of the gas coming from the distributing-chamber 15. An additional and generous supply of air from the dampers at the front of the stove will be given to the gas, making practically three air-mixers, which supply air in quantities to compel a thorough oxidation of the hydrocarbons of the fuel.

The places of ignition of the gas and the open top of the oil-cups are immediately under the stove-lids 1, as seen in Fig. 1, where the most heat is required.

One long cup may be inclosed by the walls 10, or, and preferably, the inclosed space may be divided by the cross-walls 10^a into a series of independent receptacles. Underlying these cups is a distributing and volatilizing chamber 14, into which through pipe 11 the oil to be burned and containing the hydrocarbon elements to supply the heat units will be introduced. The walls and top of this chamber, which latter is the bottom of cups 10, become heated from the combustion which takes place at the tops of the cups and the volatilized oil issues through openings 13 into the cups, where it mixes with the air and is

burned at the mouth of the cups. Sometimes the volatilization is not complete and the oil in liquid form passes through opening 13 into the cups, and it is to meet such emergencies 5 that the cup formation is adopted in order to retain the oil. The drawing Fig. 2 shows three cups, the middle of which is not connected with the chamber 14, as it is not thought necessary for it to be used; but it 10 could be used by the addition of another opening, if desired.

The number and size of cups and shape of same may be varied without departing from the spirit of this invention.

15 In order to direct the heat and products of combustion in an upward direction to cause them to pass over the top of the oven, I provide the flange or wall 17 along the rear edge of the plate 8. Heretofore flanges of this kind have 20 been made to extend up nearly to the top of the stove, thereby shielding the front of the oven and rear of the fire-box from the heat, and I prefer to shorten the height of the flange for the purpose of allowing the heat to 25 come into direct contact with the said parts, believing in so doing that I enhance the heating qualities of my burner.

12 12 are plugs which are removable for the purpose of cleaning out the chamber 14.

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

1. In a combination gas and oil burner, a plate, a distributing-chamber undersaid plate

35 having a groove or indent in its outer wall near the plate, extending into the side of the top of the distributing-chamber, the walls of said chamber having a plurality of holes from the chamber into the groove or indent and 40 said plate having a slot over the holes, a pipe supplying gas to the chamber, a deflector supported above the slotted plate, an oil cup or cups on the plate adjacent to the slot thereon, said plate also having a flange extending 45 upwardly along its rear edge to direct the heat and products of combustion and means for supplying volatilized hydrocarbon to said cup.

2. In a combination gas and oil burner, a plate, a distributing-chamber undersaid plate 50 having an outside groove or indent adjacent to the plate, extending into the side of the top of the distributing-chamber, the wall of said chamber having a plurality of holes leading from the chamber into the groove, said 55 plate having a slot immediately over the holes, a pipe supplying gas to the chamber, a deflector supported above the slotted plate, an oil cup or cups on the plate adjacent to the slot therein, said plate also having a flange 60 along upper rear edge, a distributing and volatilizing chamber under the cups having communication therewith through suitable openings and a pipe supplying oil to said volatilizing-chamber.

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Witnesses:

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