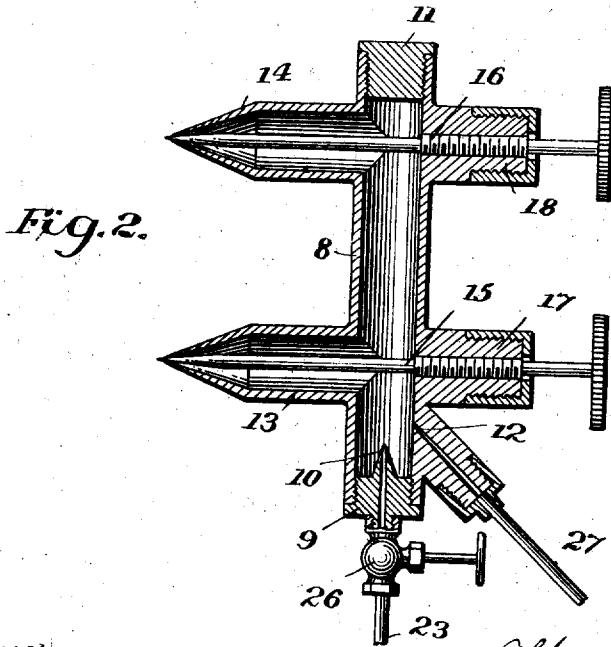
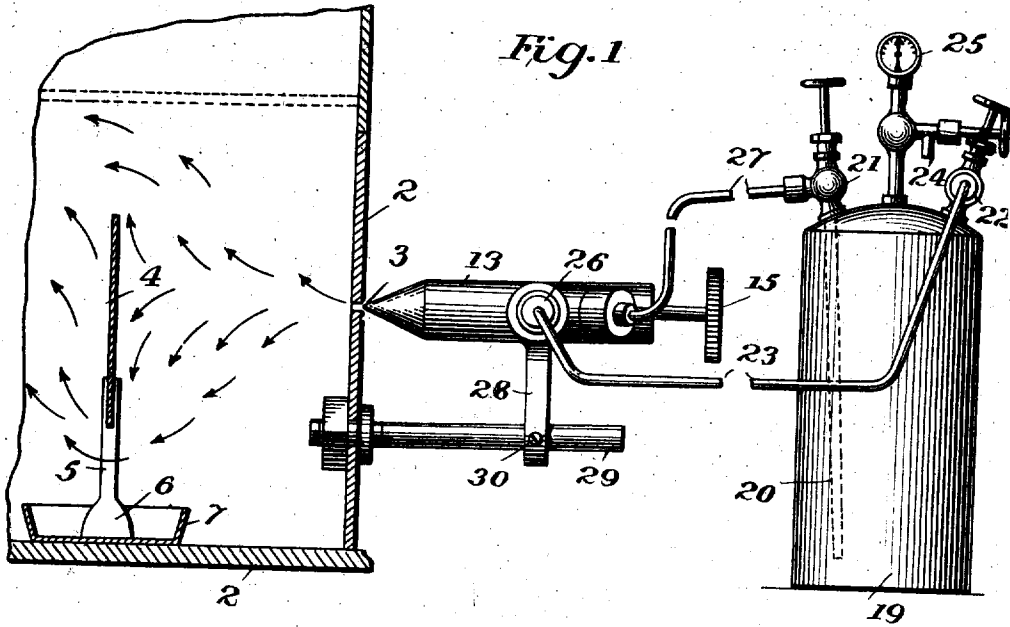


A. R. KUNKEL.
 APPARATUS FOR BURNING CRUDE OIL.
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Patented Nov. 22, 1910.



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UNITED STATES PATENT OFFICE.

ALBERT R. KUNKEL, OF PALESTINE, TEXAS.

APPARATUS FOR BURNING CRUDE OIL.

976,268.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALBERT R. KUNKEL, a citizen of the United States, and resident of Palestine, in the county of Anderson and State of Texas, have invented certain new and useful Improvements in Apparatus for Burning Crude Oil, of which the following is a specification.

This invention relates to means for burning crude oil and is particularly adapted for use in stoves, such as cook stoves. Its objects are to secure a thorough and complete mixture of the crude oil and air, an effective combustion of this mixture, and to secure these results in an apparatus which is of simple construction and of convenient form for handling.

With these objects in view the invention consists in the novel features which will be apparent from the following description taken in connection with the accompanying drawing.

In the drawing,—Figure 1 is a side view partly in section showing my device in operation; and Fig. 2 is a horizontal section through my mixing chamber and discharge nozzles.

In the drawings I have diagrammatically shown in section a portion of a stove or furnace to which my invention is applied, that stove being provided with a floor or support 1, and a side wall 2, which may be the door of the stove. The wall 2 is provided with one or more small perforations 3 according to the number of discharge nozzles which are used, and directly in front of these openings I place a splash plate 4 in vertical position so that when a mixture of oil and air is discharged through these openings it will be directed toward the splash plate. The splash plate is carried by supports 5 which may be made of metal or other refractory material with enlarged weighted lower ends 6 which serve to balance and hold in position the splash plate. These supports rest in a splash pan 7 which in turn rests either upon the floor of the stove, as shown in Fig. 1, or upon the grate bars.

In order to supply the combustible material directed against the splash plate I make use of the mixing chamber and discharge nozzles constituting the burner shown in Fig. 2. The mixing chamber 8 is made elongated and preferably in tubular form, having in one end the screw plug 9 provided with the

central discharge nozzle 10 for supplying air under pressure to the mixing chamber. The opposite end of the mixing chamber is closed by a removable screw plug 11 and immediately adjacent the air inlet nozzle 10 I provide an inlet nozzle 12 for the crude oil under pressure, and this last mentioned nozzle discharges across the air inlet at an angle preferably in a diagonal direction, so that the oil will move across the air which is discharged into the mixing chamber. This mixing chamber is provided with any suitable number of lateral nozzles 13, 14 having small discharge outlets, and those nozzles are provided with needle valves 15 and 16, passing across the mixing chamber and held in position by screw threaded connection with bosses 17, 18. These needle valves are provided with the usual hand wheels for operating them, and the usual packing joints to prevent leakage.

In order to supply the air and crude oil under pressure to the mixing chamber I make use of a tank 19 so constructed as to retain air under pressure, and an oil outlet pipe 20 leads from near the bottom of this tank to the outlet connection 21 provided with a valve. An outlet connection 22 communicates with the tank at its upper end so as to admit compressed air to the pipe 23 leading to the burner and this connection 22 is provided with a valve. There is also a valved inlet connection 24 through which the air under pressure may be introduced into the tank from an air pump or other source of supply, and the device may be provided with a pressure indicator 24. The air pipe 23 has an atomizer valve 26 immediately adjacent the point where this pipe connects with the inlet nozzle 10 of the mixing chamber so that the operator may control the action of the air in the mixing chamber. The pipe 27 conveys the crude oil under pressure from the tank to the discharge nozzle 12, and since the oil and air are both under the same pressure and are discharged by the compressed air longitudinally of the mixing chamber there will be a thorough mixing of the oil and air and the two will pass together out of the nozzles 13 and 14 as a combustible mixture. The mixture in passing through the openings 3 will draw in more air, and thus there will be thorough combustions within the stove at and surrounding the splash plate 4. If any

particles of oil strike the splash plate they will fall to the splash pan 7 and will there burn.

It will be observed that my pressure tank 5 as well as the mixing chamber and burners are of convenient form for removal and that they may be applied to an ordinary stove as distinguished from large furnaces requiring great heat and considerable room for the combustion. As shown in the drawings, my burner may be mounted on the door or side wall of a stove by means of a bracket or other suitable means of connection. I have shown a bracket 28 connected to the mixing 15 chamber and supported at its lower end upon a rod or bracket 29 which is passed through the wall of the stove and secured in place by nuts. A screw 30 may be used for giving an adjustable connection between the 20 bracket 20 and the arm 29 so that the position of the discharge nozzles 13 and 14 with reference to the openings 3 may be regulated.

Having thus described the invention, what 25 is claimed is:

1. In a device of the class described, the

combination with a stove, the wall of which is provided with a burner opening, of a splash plate within said stove in front of said opening, supports for said plate having 30 enlarged weighted lower ends, a splash pan in which said supports rest, a mixing chamber for crude oil and air supported on said wall, a nozzle communicating with said chamber and discharging through said 35 opening against said splash plate, and means for supplying oil and air under pressure to said mixing chamber.

2. A crude oil burner comprising an elongated tubular mixing chamber, a nozzle for 40 compressed air discharging into said chamber at one end, a nozzle for crude oil under pressure discharging across said air inlet, discharge nozzles for the mixed air and oil leading laterally from said chamber, and 45 needle valves in said nozzles.

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

ALBERT R. KUNKEL.

Witnesses:

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MAE SPEEGLE.