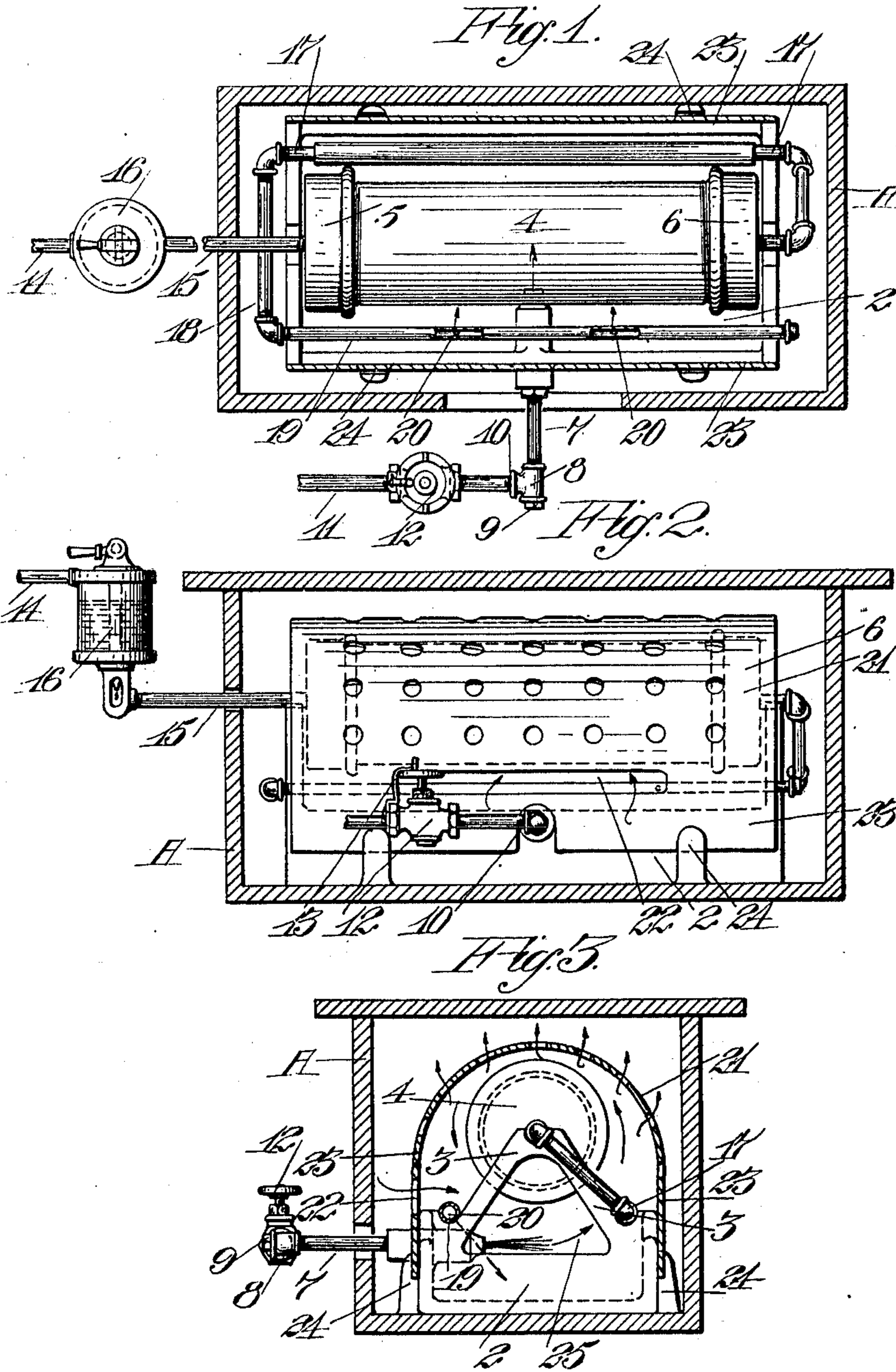


W. H. BRADLEY.  
OIL BURNER.  
APPLICATION FILED DEC. 14, 1909.

970,300.

Patented Sept. 13, 1910.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

WILLIAM H. BRADLEY, OF HALF MOON BAY, CALIFORNIA.

## OIL-BURNER.

970,300.

Specification of Letters Patent. Patented Sept. 13, 1910.

Application filed December 14, 1909. Serial No. 532,989.

*To all whom it may concern:*

Be it known that I, WILLIAM H. BRADLEY, a citizen of the United States, residing at Half Moon Bay, in the county of San Mateo and State of California, have invented new and useful Improvements in Oil-Burners, of which the following is a specification.

This invention relates to portable burners, and pertains especially to such fluid or hydrocarbon burners as are adaptable to stoves, ranges and the like.

A purpose of my invention is to provide a burner embodying means whose function is to assist in the combustion of fluid fuel, and which means is entirely separate from the oil feeding mechanism thus facilitating the operation and simplifying the construction of the burner.

A further purpose is to provide a generator in combination with an oil burner, so positioned and constructed that there is practically no residual soot or smoke; and to provide means whereby the combustion of the fuel is under perfect control, and whereby the burner elements may be readily adjusted to adapt the burner to the use of thick or thin fuels.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a sectional plan view of the burner in a fire box of a stove. Fig. 2 is a side elevation of the burner and fire box shown in Fig. 1. Fig. 3 is a sectional end view of the burner and fire box shown in Fig. 1.

The burner as actually constructed and successfully operated embodies an oil pot or pan 2 of suitable size and shape, though as represented it is oblong, and has upwardly extending end walls 3, upon which is removably seated a steam or gas generating cylinder 4, preferably formed of standard piping having heads 5 and 6, and extending lengthwise above the burner pan 2.

Projecting through and secured in one of the sides of the pan is a small tube 7, upon the outer end of which is screwed a T connection 8, and in the outer opening of this is a removable plug 9. Occasionally this plug 9 may be taken out, and a rod or wire inserted whereby the tube 7 may be cleared of sediment should any be deposited.

To the transverse branch 10 of the T con-

nection 8 is connected a fuel supply pipe 11, carrying any suitable form of valve at 12, and preferably this valve is provided with a safety lock or latch 13 so that it may not be tampered with, or accidentally moved after having been adjusted to suit the fuel being used.

The cylinder 4 is provided at its head 5 with a pipe section 14, and a joint 15, and I supply water from a suitable source not shown, to the cylinder and connections 14—15 through a sight feed valve 16 of such character that the volume of water admitted may be accurately regulated.

In operation, fuel is turned on at valve 12 and ignited in the pan 2, and then the water-controlling valve or regulator 16 is slightly opened, so that drop by drop, water is admitted to the generator 4, and this, being located centrally above the pan 2, is heated by the flame, converting the water in the generator 4 into steam which passes out of cylinder head 6 into a horizontal conductor 17 extending lengthwise above the adjacent side of the pan 2. The conductor 17 is connected, as at 18, across the end of pan 2, to a spray arm 19 paralleling the arm 17, but on the opposite side of the pan 2, the arm 19 being perforated at 20—20 and directing jets of steam inwardly and slightly downwardly toward the pan 2, and in proximity to the discharge of the fuel tube 7.

An important element in the burner is a hood 21 having a curved, perforated upper portion, and vertical sides 23—23, the bottom edges of which rest in seat lugs 24 cast or formed upon the pan 2. The purpose of the hood is to somewhat confine the flame of combustion, and cause it to have a swirling, rotary motion around and around the cylinder 4 due partly to the tendency of the rising flame, the cylindrical contour of the hood, and mostly to the impulse of the steam generated in the cylinder 4 escaping through the perforations 20 in the spray arm 19. In this manner of causing the flame to revolve about a horizontal axis over the pan 2 the combustible gases generated are thoroughly commingled and totally consumed, no residue accumulating save heavy non-burning minerals sometimes found in the fluids; and when such residue does occur it may be removed through an opening 25 formed in one end of the pan 2. Air to aid combustion is admitted through the side wall 23 of the hood 21 via an aperture 22 extend-

ing lengthwise, and just above the fuel tube 7, and the spray arm 19, the relative location of this draft opening having an important influence upon, and accelerating the rotary cycle of the flame. Thus by the combination of a removable, perforated hood of the form described, a conveniently movable steam generator so located and constructed as to form an axis about which the flame rotates, and a sight feed valve for controlling the admission of fluid to the generator, I am enabled to produce a liquid fuel burner of maximum efficiency, devoid of dangerous complex parts or adjustments, and easily knocked down and packed for shipment. As shown the burner may be applied, as desired, in a fire-box A of a stove.

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

1. The combination in an oil burner having a fuel nozzle, of a pan, a superposed horizontal cylinder, means to deliver fuel to the nozzle so that it may discharge transversely of the pan and beneath the cylinder, a perforated inclosure for the cylinder and products of combustion, said inclosure being outside of and spaced from the cylinder and adapted to retard the escape of the products of combustion, means to admit water to the cylinder, and a steam pipe leading from the cylinder and having jets discharging into the pan contiguous to said nozzle.

2. The combination in an oil burner having a nozzle, of a pan, a superposed horizontal cylinder, means to deliver liquid fuel to the nozzle so that it may be delivered transversely of the pan and beneath the cylinder, a perforated inclosure for the cylinder, said inclosure being spaced from the cylinder and adapted to retard the escape of the products of combustion from thereabout, means to admit water to the cylinder, and a steam pipe extending from one end of the cylinder along both sides and across the other end of said cylinder, the terminal, side pipe lying above the fuel nozzle and discharging steam jets into the pan contiguous to said nozzle.

3. The combination in an oil burner, having a nozzle, of a pan, a superposed horizontal cylinder, means to deliver liquid fuel transversely of the pan and beneath the cylinder, means to admit water to the cylinder, a steam pipe extending from one end of the cylinder parallel with both sides thereof and across the opposite end thereof, the terminal side pipe lying above the fuel nozzle, and having steam jets into the pan contiguous to the fuel nozzle, and an arched, perforated hood supported from the pan sides and inclosing the cylinder.

4. The combination in an oil burner, having a nozzle, of a pan, a superposed horizontal cylinder, means to deliver liquid fuel transversely of the pan and beneath the cylinder, means to admit water to the cylinder, a steam pipe extending from one end of the cylinder parallel with both sides thereof and across the opposite end thereof, the terminal side pipe lying above the fuel nozzle, and having steam jets into the pan contiguous to the fuel nozzle, and an arched perforated hood supported from the pan sides and inclosing the cylinder, said hood having an open air admission slot above the fuel nozzle.

5. The combination in an oil burner, having a nozzle, of a pan, a superposed horizontal cylinder, means to deliver liquid fuel transversely of the pan and beneath the cylinder, means to admit water to the cylinder, a steam pipe extending from one end of the cylinder parallel with both sides thereof and across the opposite end thereof, the terminal side pipe lying above the fuel nozzle, an arched perforated hood supported from the pan sides and inclosing the cylinder, said hood having a curved top and parallel sides and an open air admission slot above the fuel nozzle, and a controlling lock for the fuel supply.

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

WILLIAM H. BRADLEY.

Witnesses:

WILLIAM NELSON,  
JOHN W. GILCREST.