

I. CORSER.
VAPORIZING OIL BURNER.
APPLICATION FILED FEB. 4, 1910.

1,051,559.

Patented Jan. 28, 1913.

2 SHEETS—SHEET 1.

FIG. 1.

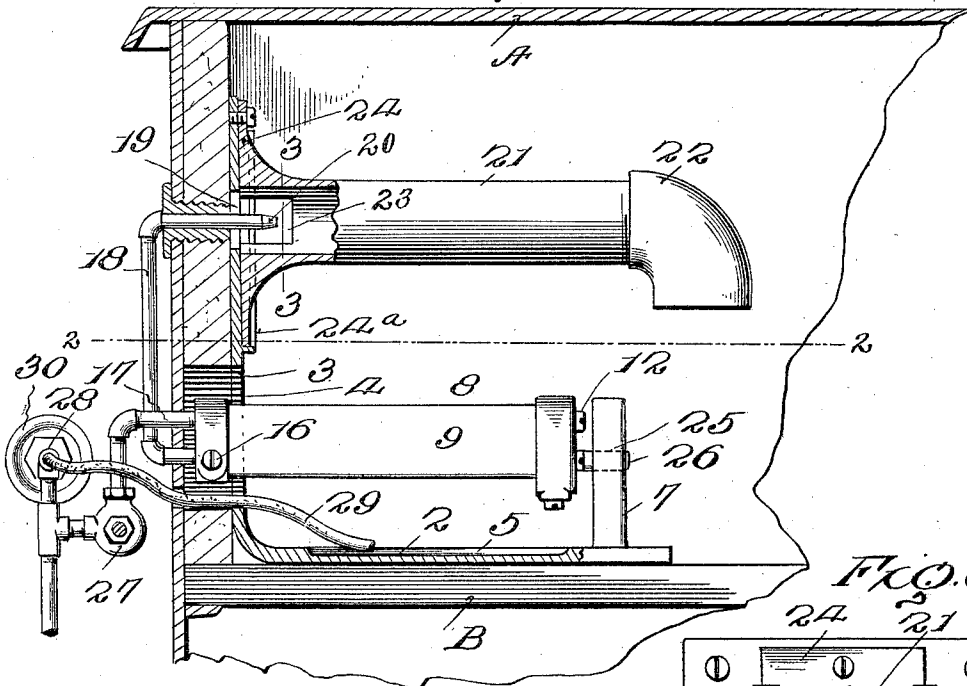
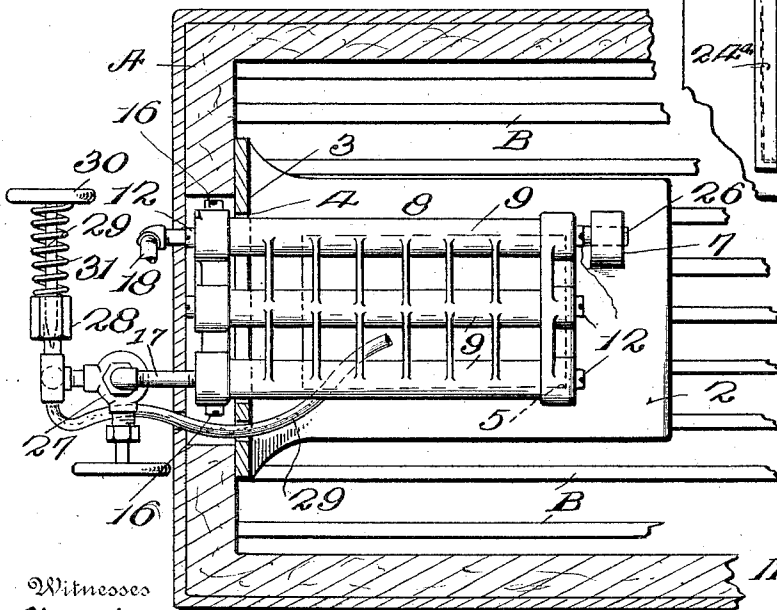
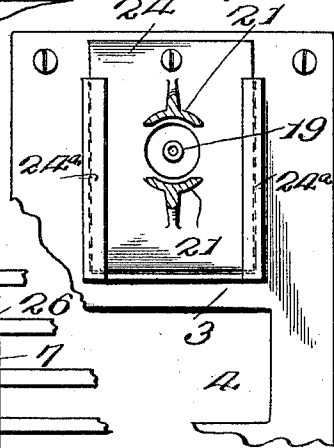


FIG. 3.



Inventor

I. CORSER

Witnesses

W. H. Woodson

James M. Tallin

FIG. 2.

By

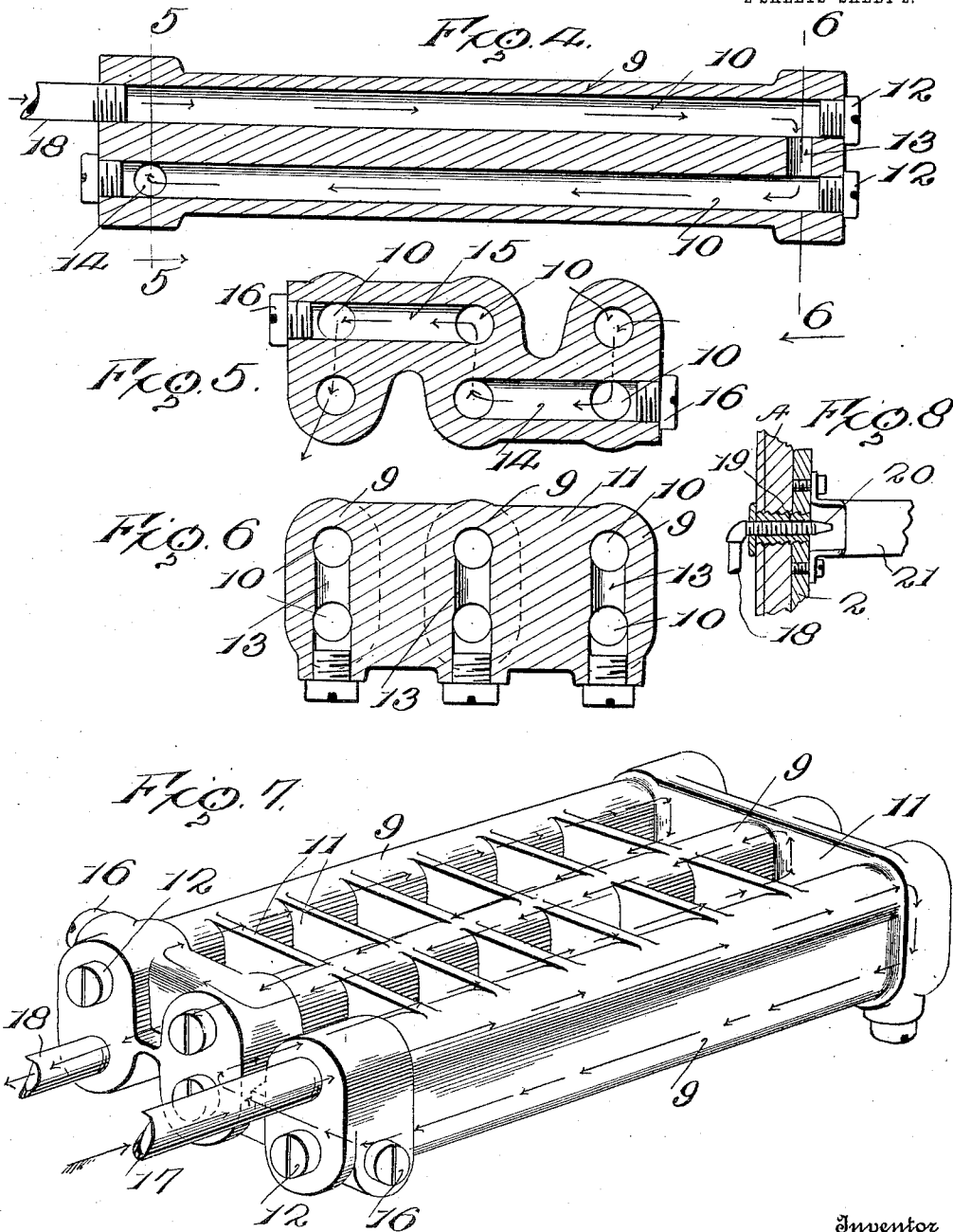
W. H. Macy Attorneys

I. CORSER.
VAPORIZING OIL BURNER.
APPLICATION FILED FEB. 4, 1910.

1,051,559.

Patented Jan. 28, 1913.

2 SHEETS—SHEET 2.



Witnesses

W. P. Woodson

Juana M. Fallin

Inventor

I. Corser

By

W. H. Macy Attorneys.

UNITED STATES PATENT OFFICE.

IRVING CORSER, OF PORTLAND, OREGON.

VAPORIZING OIL-BURNER.

1,051,559.

Specification of Letters Patent.

Patented Jan. 28, 1913.

Application filed February 4, 1910. Serial No. 542,093.

To all whom it may concern:

Be it known that I, IRVING CORSER, citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Vaporizing Oil-Burners, of which the following is a specification.

My invention relates to apparatus for burning crude oil, and particularly to a construction in which the oil is vaporized and mixed with air prior to its combustion.

The objects of my invention are to provide a burner and vaporizer of great simplicity and in which the parts are made detachable from each other so that all the parts of the burner may be kept clean.

Another object of the invention is to provide a vaporizer of a simple form which, however, will not burn out, and in which the oil will travel back and forth a number of times prior to being mixed with air and passing to the burner.

The invention further contemplates the forming of the vaporizer with an oil passage or passages of relatively small dimensions so that in case the vaporizer should burn out at any point, the amount of oil issuing from that point would be relatively small, and thus only a small flame would be produced, thus preventing the chance of accident due to the burning out of large pipes, and the consequent flooding of the stove with burning oil.

My invention also consists in certain details of construction and arrangement of parts as stated in the following specification and particularly set forth in the claims appended.

For a full understanding of the invention and the merits thereof, and to acquire a knowledge of the details of construction, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a fragmentary section of a stove, showing my improved burner in place therein; Fig. 2 is a fragmentary horizontal section on the line 2—2 of Fig. 1; Fig. 3 is a fragmentary section on the line 3—3 of Fig. 1; Fig. 4 is a longitudinal section of the vaporizing grid; Fig. 5 is a transverse section on the line 5—5 of Fig. 4; Fig. 6 is a transverse section on the line 6—6 of Fig. 4; Fig. 7 is a perspective view of the vaporizing grid detached from the remainder of the mechanism; and, Fig. 8 is a detail fragmentary section of the supporting plate, the mix-

ing pipe being shown in elevation, the section illustrating a modified manner of supporting the mixing pipe upon the supporting plate.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to these figures, A designates a stove and B the grate thereof.

2 designates the base plate of the burner which is preferably cast with the upwardly extending side plate 3, this side plate being slotted, as at 4, in order to act as a support for one end of the vaporizing grid. The upper surface of the base plate 2 is formed with the shallow depression 5 constituting a receptacle for priming. The exact form of this receptacle is of course nonessential to the operation of the invention.

Supported in one end of the slot 4 and at the other end upon the standard 7 which extends upward from the upper face of the plate 2 is the vaporizing grid 8. This grid is cast in one piece and comprises a plurality of parallel barrels 9, each formed with the upper and lower channels or bores 10. These barrels are connected by the transverse webs 11. The ends of the bores 10 are closed by the screw-threaded plugs 12. The channels in each of the barrels are connected at their inner ends by the vertically extending bores 13, while at their outer ends the lower bore of the first barrel is connected by a transverse bore 14 to the lower bore of the second barrel, while the upper bore of the second barrel is connected to the upper bore of the third or last barrel by the transverse bore 15. These bores 14 and 15 are closed at their outer ends by means of screw plugs 16. A supply pipe 17 is connected to the uppermost bore of one of the outer barrels 9, and the pipe 18 is connected to the lowermost bore of the other outer barrel and extends upward and enters an opening in the side plate 3. It is here provided with a nozzle 20.

Mounted upon the side plate 3 and extending in therefrom above the grid 8 is the mixing pipe 21 which terminates in any suitable outlet 22. The outer end of the mixing pipe is detachably supported upon the side plate 3 and is also provided with the air inlet openings 23 on the sides thereof. As shown, the outer end of the mixing pipe is provided with the laterally extending plate 24 which engages in the laterally

placed guide flanges 24^a on the plate 3. The plate 24 is provided with a bolt passing through the plate 3, whereby the mixing pipe is supported in position. It will be obvious that the vapor passing up the pipe 18 will enter the pipe 21 and that it will act to draw air into the openings 23, and that this will be mixed with vapor so as to provide a proper mixture for combustion. The mixed air and fuel vapor will then pass along the pipe 21 and be discharged at the outlet 22 where it will be burned. The flame issuing from the burner 22 will keep the vaporizer hot so that the oil passing therealong will be thoroughly vaporized before it passes into the tube 21. It will be seen that the vaporizing grid is so constructed that the liquid fuel is carried in a circuitous course through the grid, longitudinally along each tube, and then back to the entrance end of the tube again, and thence to the tube adjoining. Because of the relatively small bores and the relatively thick walls of the grid, the grid will retain heat, thus adding to its vaporizing qualities. Furthermore, it will be thoroughly and uniformly heated, by reason of the thickness of the walls and also by reason of the fact that the barrels are joined by transverse webs which act to conduct the heat from one barrel to the other and to thoroughly and uniformly distribute the heat. Furthermore, these transverse webs provide a series of passages by which the heat may pass down and around each of the barrels. The vaporizing grid constructed as described is extremely strong and therefore will be amply able to resist the pressure of the vapor, and will not readily burn out. While I may use any means desired for supporting the vaporizing grid 8, I preferably provide the standard 7 with an opening 25 and provide one of the bores of the grid with a screw pin 26 instead of a plug, which screw pin projects through the opening 25. This, while supporting the inner end of the grid, permits the grid to be easily detached and drawn from the slot 4. It will also be obvious that the mixing tube 21 may be easily detached to permit it and the nozzle 20 to be cleaned, while the detachability of the vaporizing grid 8 permits it to be easily removed and cleaned by removing the screw plugs closing the ends of the bores. The fuel pipe 17 is connected to any suitable supply pipe and provided with regulating valves. Preferably, this supply pipe is provided with a main valve 27 and also with a starting valve 28 which controls the passage of fuel to a small pipe 29 which extends through and is supported on the side plate 3 and which discharges fuel into the pan or receptacle 5. One of the chief dangers in oil stoves is the danger of leaving the starting valve open so that oil is continually

supplied to the priming pan or receptacle 5. In order to prevent this, I provide a valve constructed as shown in Fig. 2, including a rotatable valve spindle 29 having the handle 30. A spring 31 surrounds this spindle and acts to hold the valve to its seat. When the valve is opened, it is against the force of this spring, and as a consequence, when the valve is released, the spring will cause it to immediately close, thus shutting off the flow of oil to the pipe 29.

The principal advantages of my invention reside in the fact that the oil is thoroughly vaporized before being mixed with air and before passing to the burner, and that this vaporizing takes place in a cast iron grid of extremely solid formation, through which the oil is passed along six different channels. The bores of this grid are only a quarter of an inch in diameter, and hence, there is a relatively small amount of oil at any time within the grid, this oil, however, passing through rapidly and being rapidly vaporized as needed. Hence, if by any chance the grid should become burned out or crack so that leakage would occur, the opening through which oil or vapor will pass is relatively small, and no flooding of the stove can occur, nor will there be any chance of explosion. The burning out of vaporizers constructed as ordinarily, is one of the main elements of danger in the use of stoves of this character. By my construction, I have minimized and practically obviated all danger of this accident occurring.

The various parts of my burner are so connected that they may be easily taken apart so that the interior of the grid may be thoroughly cleaned and so that the interior of the mixing pipe may also be thoroughly cleaned, as well as the burner. There is thus no chance of soot or other products of combustion being deposited upon the inner surface of the pipes and bores and acting as a nonconductor of the heat.

My invention is simple, may be applied to any ordinary stove, and has been found thoroughly effective in practice.

Having thus described the invention, what I claim is:—

1. In an apparatus for burning oil, a vaporizing grid comprising a plurality of parallel barrels connected to each other at intervals by integral transverse ribs, said barrels being provided with longitudinally extending parallel bores communicating with each other at one end of the barrel, the uppermost bore of one barrel being connected to the like bore of the next adjacent barrel on one side and the lowermost bore of said barrel being connected to the lowermost bore of the barrel on the opposite side, one of the longitudinal bores of one end barrel being connected to an inlet pipe, one of the longitudinal bores of the other end barrel

being connected to an outlet pipe, the said bores forming a series of longitudinally extending communicating passages through which the fuel passes in succession from the inlet pipe to the outlet pipe.

2. In apparatus for burning oil, a base plate having a priming pan, a side plate extending upward from the base plate and formed with a slot, a standard mounted on the other end of the base plate, a vaporizer having at one end a pin extending into the standard, the other end of the vaporizer being supported in said slot, a supply pipe entering the vaporizer, a delivery pipe extending from the vaporizer, a mixing pipe supported on the side plate and extending over the vaporizer and into which said delivery pipe opens, and a burner on the end of the mixing pipe, said mixing pipe being provided with air inlet openings.

3. In an apparatus for burning oil, a base plate having at one end an upwardly turned side plate, transversely slotted, a standard on the other end of the base plate, provided with a passage through it, a vaporizer supported at one end in said slot and at the other provided with a supporting pin entering the opening in the standard, a supply pipe entering the vaporizer, exterior to the side plate, a delivery pipe extending from the vaporizer, exterior to the side plate, inwardly bent at its upper end and extending through the side plate and there provided with a nozzle, a detachable mixing pipe of relatively large diameter attached to the side plate, in alinement with the said nozzle, said mixing pipe at this point being provided with air inlet openings, and a burner carried upon the other end of the mixing pipe and directed toward the base plate.

4. An apparatus for burning oil, comprising a base plate having a priming pan formed in its upper face, an upwardly extending integral side plate at one end of the base plate and transversely slotted, a standard supported from the other end of the base plate and formed with a recess, a vaporizer comprising a plurality of parallel and connected barrels supported at its inner end upon said standard and at its outer end within the slot of the side plate, a supply pipe entering said vaporizer, a valve for controlling the inlet of oil to the supply pipe, a pipe extending upward from the vaporizer, exterior to the side plate and being inwardly turned at its upper end, a nozzle at said upper end, a mixing pipe of larger diameter, surrounding the nozzle, having laterally projecting tongues at its outer end, removably bolted to the side plate, said mixing pipe being provided with air openings at its side, and a burner on the other end of the mixing pipe and extending toward the base plate.

5. In an apparatus for burning oil, a

base-plate, a supporting member extending upward at right angles thereto, a vaporizer removably supported at one end on said supporting member, a standard at the other end and projecting from the base-plate with which the vaporizer has detachable engagement, a supply pipe entering the vaporizer, a delivery pipe extending from the vaporizer and provided at its end with a nozzle, and a mixing pipe of relatively large diameter removably attached to the supporting member in alinement with said nozzle, and a burner carried upon the mixing pipe.

6. In an apparatus for burning oil, a base-plate having at one end an upwardly extending side-plate transversely slotted, a standard on the other end of the base-plate, a vaporizer supported at one end in said slot and at the other detachably engaged with the standard, a supply pipe entering the vaporizer, a delivery pipe extending from the vaporizer exterior to the side-plate, inwardly bent at its upper end and extending through the side-plate and provided with a nozzle, oppositely disposed guides formed on the inside face of the side-plate, and a mixing pipe of relatively large diameter having laterally projecting flanges detachably engaged with said guides, said pipe being in alinement with the nozzle and being provided with air inlet openings, and a burner carried on the mixing pipe.

7. An apparatus for burning oil including a vaporizer connected to a source of supply, a supporting member, a horizontally disposed mixing chamber of relatively large diameter and extending parallel to the vaporizer detachably mounted on said supporting member above the vaporizer and having air inlet openings at its sides, a burner carried on the outer end of the mixing chamber and directed downward, and an inlet pipe of relatively small diameter connecting the vaporizer and the mixing chamber.

8. An apparatus for burning oil including a vaporizer connected to a source of supply, a supporting member, a mixing chamber of relatively large diameter mounted on said supporting member above the vaporizer and having air inlet openings, said mixing chamber extending parallel to the vaporizer and at its outer end having an opening discharging downward, and an inlet pipe connecting the vaporizer and the mixing chamber and having a relatively small diameter, said supporting member and mixing chamber having interengaging members detachably supporting the mixing chamber upon the supporting member.

9. An apparatus for burning oil including a base, a supporting member extending upward from the base, a standard mounted on the other end of the base opposite the

supporting member, a vaporizer having one
end detachably connected to said standard,
the other end of the vaporizer being detach-
ably supported in said supporting member,
5 a supply pipe entering the vaporizer, an
outlet pipe extending from the vaporizer, a
mixing chamber mounted upon the support-
ing member and extending over the vapor-
izer and into which said outlet pipe opens,

and a burner at the end of the mixing cham- 10
ber, said mixing chamber being provided
with air inlet openings.

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

IRVING CORSER. [L. s.]

Witnesses:

A. ROBBIE,

A. E. WILSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
