

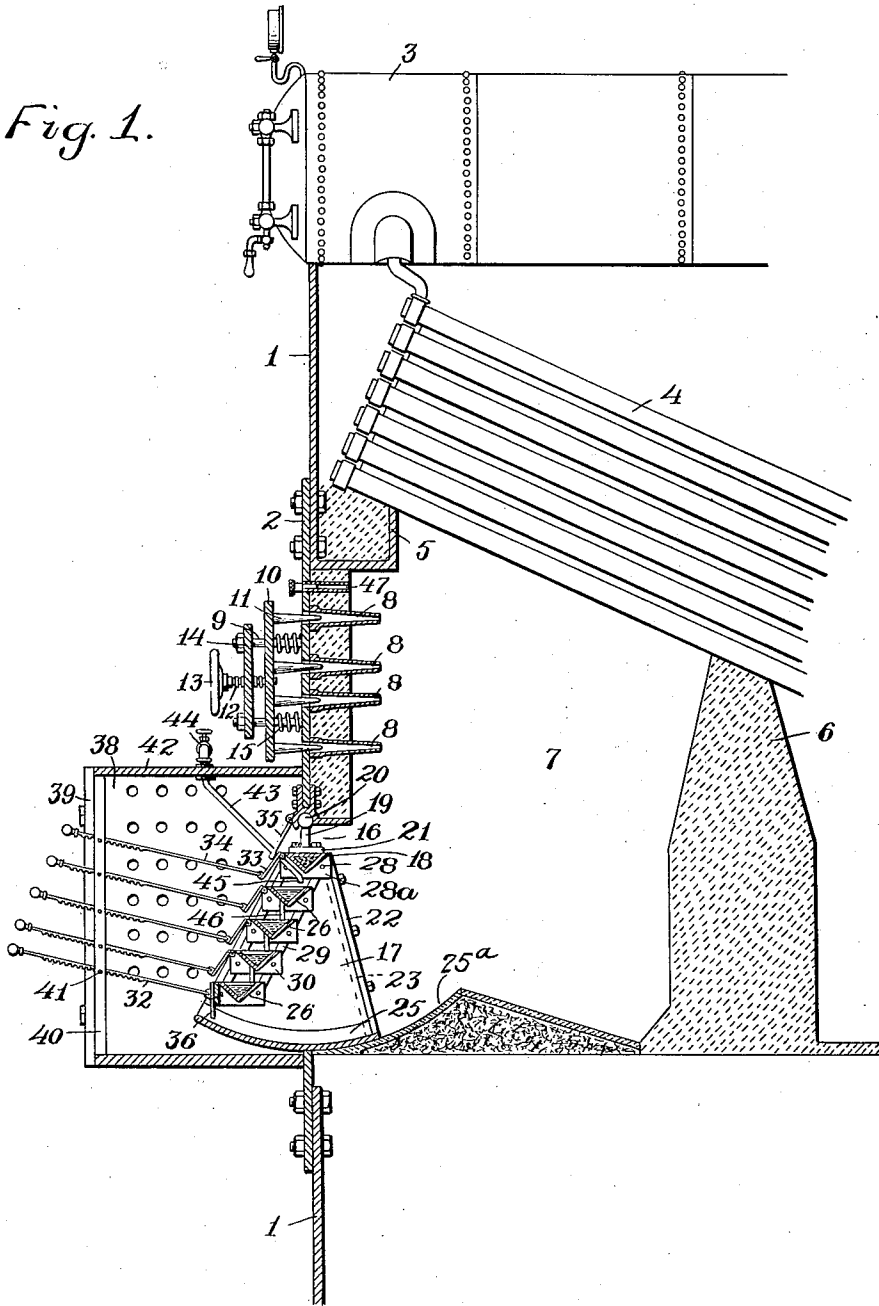
W. E. OAKLEY.
 APPARATUS FOR BURNING LIQUID FUEL.
 APPLICATION FILED APR. 9, 1908.

1,024,596.

Patented Apr. 30, 1912.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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 Leopold Komberbach

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 Attorney

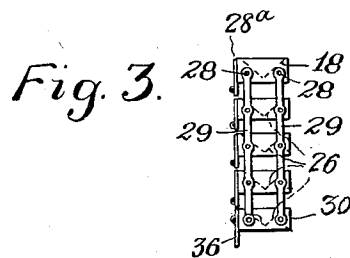
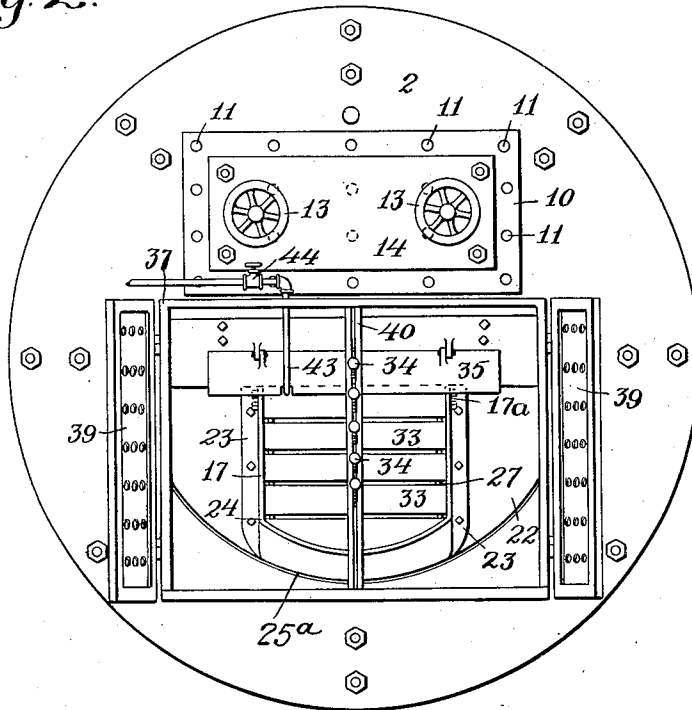
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2 SHEETS-SHEET 2.

Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR BURNING LIQUID FUEL.

1,024,596.

Specification of Letters Patent.

Patented Apr. 30, 1912.

Application filed April 9, 1908. Serial No. 426,008.

To all whom it may concern:

Be it known that I, WILLIAM E. OAKLEY, a citizen of the United States, residing at Millbury, in the county of Worcester and
5 Commonwealth of Massachusetts, have invented a new and useful Improvement in Apparatus for Burning Liquid Fuel, of which the following is a specification, accompanied by drawings, forming a part
10 of the same, in which—

Figure 1 is a central vertical sectional view. Fig. 2 is a front view, and Fig. 3 is a detached end view of the fuel pans in a vertical position.

15 Similar reference figures refer to similar parts in the different views.

My invention relates to an apparatus for burning liquid fuel, comprising means for obtaining gas from the liquid fuel, and a
20 combustion chamber in which the gas is burned, and it consists in the construction and arrangement of parts as hereinafter described and pointed out in the annexed claims.

25 I have shown my fuel burning apparatus arranged to furnish the heat for the production of steam in a particular type of boiler, and arranged for use in a steam ship, but it is equally applicable for furnishing
30 heat for other kinds of boilers, melting furnaces, or the like.

Referring to the accompanying drawings 1 denotes the front plate of the boiler which supports a plate 2 and a steam chest 3 receiving steam from a series of inclined water pipes 4, supported on a shoulder 5 and a pier 6. The pier 6 is constructed of fire brick or other refractory material and forms the rear wall of the combustion chamber 7. The plate 2 also is lined with refractory material and forms the front wall of the combustion chamber 7. This method, only a portion of which is shown, of presenting the water to the combustion chamber in inclined pipes 4 connected with the steam chest 3 is well known and forms no
45 part of my invention.

The front wall 2 is provided with a series of openings into the combustion chamber 7 in which are inserted tapering pipes
50 8. Posts 9 are attached to the plate 2 ex-

tending outward, upon which a movable plate 10, carrying tapering pins 11 is arranged to slide. The tapering pins 11 are arranged to enter the pipes 8 thereby forming needle valves. The plate 10 with the
55 pins 11 is moved inward by screws 12, provided with hand wheels 13, and with their ends in contact with the plate 10. The screws 12 are arranged to engage a stationary plate 14, attached to the ends of the posts 9. Rotation of the screw 12 will, therefore, force the movable plate 10 inward toward the combustion chamber 7, at the same time closing the pipes 8 by the insertion of the pins 11. Reverse movement of the plate 10 to open the valves is accomplished by springs 15, surrounding the posts 9 between the wall of the combustion chamber and the under side of the movable plate 10. In this way I provide for the introduction of air directly into the combustion chamber as required.

Immediately below the needle valves an opening 16 through the plate 2 into the
75 combustion chamber 7 is provided in which the fuel receptacles are supported. Vertical plates 17 transverse to the plate 2 are connected at their upper ends 17^a by a horizontal bar 18, supported from the
80 plate 2 by a rod 19 provided with a ball and socket joint 20 at its upper end, and with its lower end 21 attached to the horizontal bar 18 near its center. Wing plates 22 are attached to the vertical plates 17 by
85 flanges 23, and are arranged to close that portion of the opening 16 outside of the vertical plates 17. Attached to the lower ends 24 of the vertical plates 17 is a bowl shaped receptacle 25, held between the
90 plates 17, and which is arranged to receive the overflow of liquid fuel from the fuel pans 26, held in the opening 27 between the vertical plates 17. At the bottom of the opening 16 a bowl shaped surface 25^a is provided to contact with the outside of the bowl shaped receptacle 25, and guide it in
95 in any swinging movement which it may receive from the movement of the vessel. The ball and socket joint 20 is arranged to
100 permit swinging of the bowl 25, supported by the plates 17.

Pivotally supported at 28 from end pieces 28^a attached to the bar 18 are depending parallel rods 29, to which are pivotally attached the ends 30 of the trough like fuel pans 26, in this instance four in number, and arranged a sufficient distance apart to allow the passage of air over the surface of the liquid fuel contained in the pans 26 into the combustion chamber 7. Attached to the lowest fuel pan is a rod 32 by which a swinging movement on the pivots 28 may be given to the parallel rods 29 and the relative distance from each other of the fuel pans 26, held on the rods 29, changed. When the rods 29 are vertical, as shown in Fig. 3, the distance between the fuel pans is at its maximum, and movement of the rods 29 bringing them at an angle to the vertical, as shown in Fig. 1, diminishes the distance between the fuel pans 26. In this way I am enabled to regulate the amount of air passing over the fuel pans into the combustion chamber 7 by varying the distance between the fuel pans 26. I also provide dampers 33 hinged to the fuel pans operated by similar rods 34, which are arranged to close entirely the openings between the fuel pans if desired, thereby affording a second means of adjustment of the amount of air permitted to enter the combustion chamber 7 over the fuel pans 26. A hinged cover 35 is arranged to close the opening above the bar 18, and a flange 36, depending from the lowest fuel pan, is arranged to close the space between the bottom of said pan and the inside of the bowl 25.

I provide a vestibule 37 for the opening 16 having perforated sides 38 and perforated swinging doors 39. A central post 40 receives the doors 39 when closed, and I also provide upon the post 40 supports for the rod 32 and the rods 34, comprising pins 41 arranged to be engaged by notches upon the lower side of said rods. Upon the closing of the doors 39 air is admitted to the pans 26 through the perforations in the doors and sides. Supported by the top plate 42 of the vestibule 37 is a fuel supply pipe 43 provided with a stop cock 44, with its end 45 arranged to deliver liquid fuel to the topmost pan. From this pan the fuel is conducted by an overflow pipe 46 to the pan next below and in the same manner to the bottom pan. The bowl 25 receives any excess of oil from the pans 26.

The operation of my improved apparatus for burning liquid fuel is as follows:—Oil or other liquid fuel is fed to the pans 26 through the pipe 43 and overflow pipes 46. Ignition having been accomplished, the rods 29 are swung by the rod 32 to bring the fuel pans 26 the proper distance apart as required by the combustion in the chamber, and the amount of oxygen required to min-

gle with the oil. A finer adjustment is obtained, if necessary, by manipulation of the dampers 33. Inspection of the interior of the combustion chamber 7 is afforded by the peek hole 47, and the combustion in the chamber 7 may be regulated by the admission of more or less air directly through the tapering openings 8.

I claim,

1. An apparatus for burning liquid fuel, having a combustion chamber provided with an opening, fuel pans supported in a horizontal position in said opening, and means for varying the distance between said pans without disturbing the horizontal position of said pans.

2. In an apparatus of the class described, the combination with a combustion chamber provided with an opening, of fuel pans supported on parallel bars pivotally hung in said opening; means for swinging said bars, hinged dampers arranged to close the space between said pans, and means for swinging said dampers.

3. In an apparatus of the class described, the combination with a combustion chamber provided with an opening, of a rocking frame pivotally hung in said opening, fuel pans supported by said frame and a bowl shaped receptacle attached to the bottom of said frame.

4. In an apparatus of the class described, the combination with a combustion chamber provided with an opening, of a rocking frame pivotally hung in said opening, fuel pans supported by said frame and a bowl shaped receptacle attached to the bottom of said frame, with the bottom of said opening provided with a bowl shaped surface in contact with said bowl shaped receptacle.

5. An apparatus for burning liquid fuel, having a combustion chamber provided with an opening, fuel pans supported in a horizontal position in said opening, and means for simultaneously adjusting said pans to vary the distances between them without disturbing the horizontal position of said pans.

6. An apparatus for burning liquid fuel, having a combustion chamber provided with an opening, fuel pans held in a horizontal position in said opening, and means for swinging said fuel pans in order to vary the distance between them without disturbing their horizontal position.

7. An apparatus for burning liquid fuel, having a combustion chamber provided with an opening, fuel pans supported in said opening, means for simultaneously adjusting said pans to vary the distance between them, and separate means for admitting air to said combustion chamber.

8. An apparatus for burning liquid fuel, having a combustion chamber provided with

an opening, fuel pans supported in said opening, with a separate opening above each fuel pan, means for independently regulating the amount of air passing through each
5 opening, means for admitting air directly into said combustion chamber without passing by said fuel pans, and means for simultaneously adjusting said pans to vary the distance between them without disturbing the horizontal position of said pans.

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Witnesses:

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