

No. 716,049.

Patented Dec. 16, 1902.

W. S. JENKINS.

OIL BURNER.

(Application filed Mar. 31, 1902.)

(No Model.)

2 Sheets—Sheet 1.

Fig 1

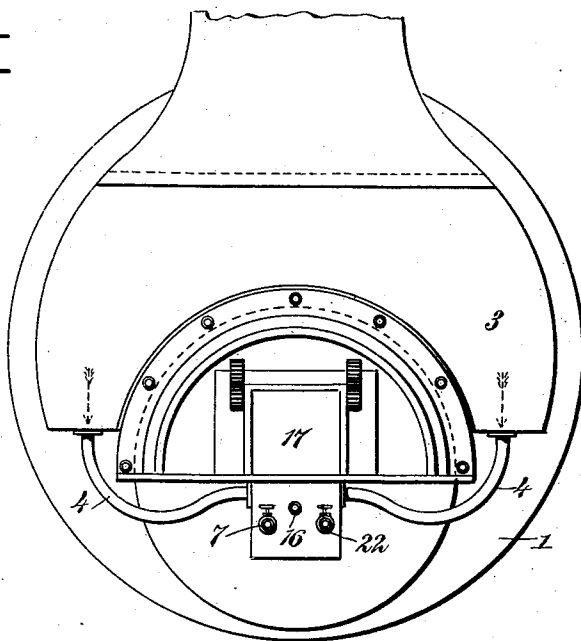
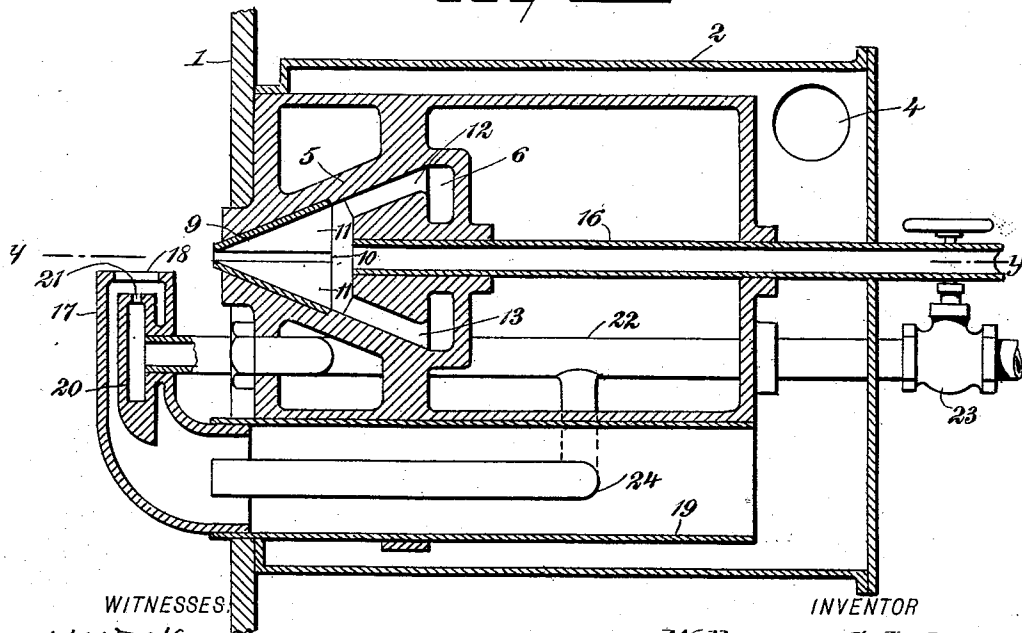


Fig 2



WITNESSES

H. Walker
C. R. Ferguson

INVENTOR

Wellington S. Jenkins

BY *Munn & Co*

ATTORNEYS.

No. 716,049.

Patented Dec. 16, 1902.

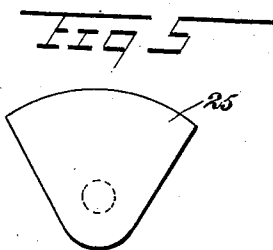
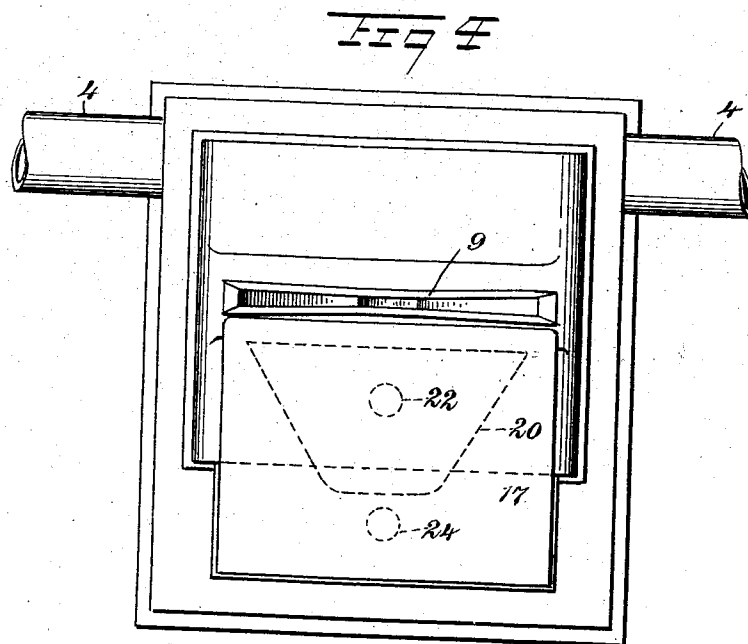
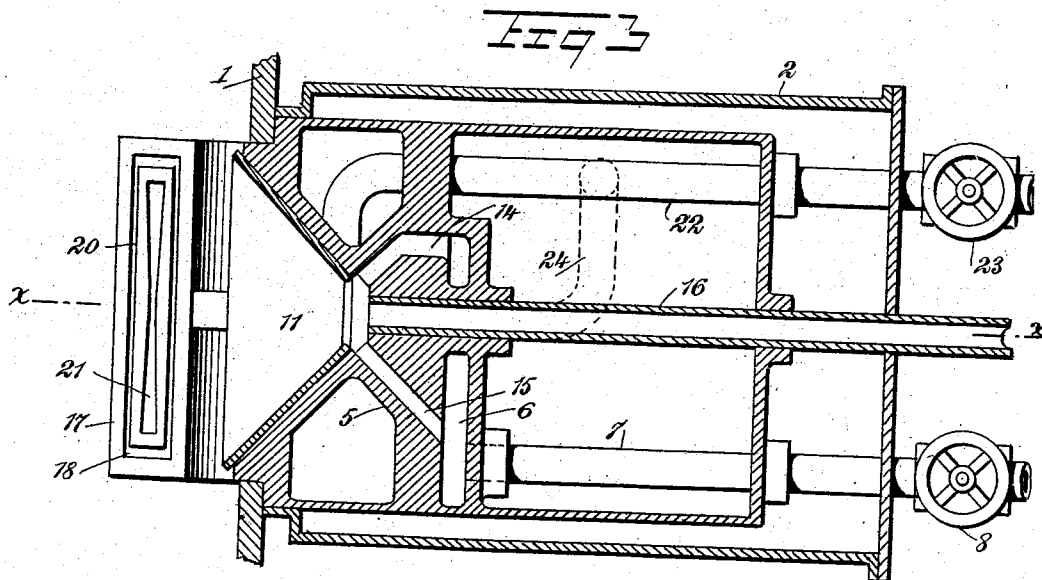
W. S. JENKINS.

OIL BURNER.

(Application filed Mar. 31, 1902.)

(No Model.)

2 Sheets—Sheet 2.



WITNESSES:

H. Walker
C. R. Ferguson

INVENTOR

Wellington S. Jenkins

BY *Munn & Co.*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WELLINGTON STEPHEN JENKINS, OF CLEBURNE, TEXAS.

OIL-BURNER.

SPECIFICATION forming part of Letters Patent No. 716,049, dated December 16, 1902.

Application filed March 31, 1902. Serial No. 100,765. (No model.)

To all whom it may concern:

Be it known that I, WELLINGTON STEPHEN JENKINS, a citizen of the United States, and a resident of Cleburne, in the county of Johnson and State of Texas, have invented a new and Improved Oil-Burner, of which the following is a full, clear, and exact description.

This invention relates to improvements in oil-burners, particularly for use in connection with steam-boilers; and the object is to provide an oil-burner of simple construction by means of which a very high degree of heat may be produced with a comparatively small amount of hydrocarbon oil and in which very little steam is required for vaporizing the oil.

I will describe an oil-burner embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of an oil-burner embodying my invention. Fig. 2 is a section thereof on the line *xx* of Fig. 3. Fig. 3 is a section on the line *yy* of Fig. 2. Fig. 4 is an inner end view of the burner, and Fig. 5 shows a modified form of flame-spreader.

Referring to the drawings, 1 designates the front plate of a boiler, and connected to the outer side of the front plate is an air-casing 2, which receives heated air from the smoke-box 3 through the pipes 4. Arranged within the casing is a vaporizer comprising a conical shell 5, in the rear portion of which is a steam-chamber 6, receiving steam through a pipe 7, which is provided with a valve 8 for controlling the amount of steam passing there-through. In the forward portion of the shell 5 is a nozzle 9, which leads through the front wall 1 of the boiler and into the fire-box. This nozzle 9 is provided with horizontally-disposed ports 10 and vertically-disposed ports 11, the said several ports connecting one with the other at the longitudinal center of the nozzle and converging to the front or outlet of the nozzle. Communication is provided between the steam-chamber 6 and the nozzle by means of upper and lower ports 12 13 and side horizontally-disposed ports 14 15. These several ports are convergent and serve to direct steam directly to the center of the out-

let. This causes a thorough mixing of the steam and oil, the said oil being admitted through a pipe 16, which is in line with the center of the nozzle 9 and is in connection with any suitable source of supply in which the oil may be placed under pressure.

Arranged within the fire-box and having its upper end substantially in line with the center of the nozzle 9 is the burner-spreader 17, having an outlet 18 at its upper end, which may be of any desired length, depending upon the work to be performed. This spreader 17 communicates at its lower end with a pipe 19, leading into the casing 2 and open at its inner end to receive hot air passed from the casing through the pipes 4, and arranged within the spreader 17 is a jet-tube 20, having a long narrow outlet 21 slightly below the outlet 18. This outlet 21 is clearly shown in Fig. 3 as narrower at its center than at its ends—that is, the opposite walls are divergent from the center outward. By this means the steam is somewhat compressed at the center and spread out or released at the sides, which causes a complete spreading of the flame across the burner. Communicating with the chamber of the jet-tube 20 is a steam-injecting pipe 22, provided with a suitable valve for controlling the inlet of steam, and from this pipe 22 a branch pipe 24 leads into the flame-spreader 17, as clearly illustrated in Fig. 2.

In the operation oil is admitted through the pipe 16, while steam is admitted to the chamber 6 through the pipe 7. At the same time steam is admitted through the pipe 22 and into the chamber of the tube 20. The mixed steam and oil discharging from the nozzle 9 will meet the discharge of steam from the outlet 21 and also will meet with hot air forced, by means of the jet-tube 24, through the outlet 18 of the spreader. At this point there will be a thorough vaporizing of the oil, and I have found in practice that a perfectly white light is produced, giving a very high temperature of heat. It may be further stated that the jets of steam passing from the chamber 6 will act so rapidly on the oil to force it out of the nozzle that the deposit of carbon will be prevented, which will make it necessary to remove the burner for cleaning only at long intervals of time.

The flame-spreader may be placed at any convenient point in the fire-box—say, for instance, underneath the head ends of the boiler-tubes—and with the use of the device a bridge-wall is not required, although said bridge-wall may not be an objection.

In Fig. 5 I have shown the upper end of the injector-nozzle 25 as longitudinally curved. This provides for a somewhat-greater length of opening or outlet than is possible with the nozzle having a straight upper edge—that is, with the shell of the nozzle of the same width.

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

1. An oil-burner comprising a conical shell having an opening through the front plate of a boiler, the said shell being provided with a steam-chamber, a steam-pipe leading into said chamber and an oil-pipe leading into the shell, a nozzle at the outlet end of the shell, convergent ports leading from the steam-chamber and discharging into the nozzle, a flame-spreader inward of the nozzle, and a steam-injector discharging therein, substantially as specified.

2. An oil-burner comprising a conical shell having an opening through the front plate of a boiler, the said shell being provided with a steam-chamber, an oil-pipe leading into the shell, a discharge-nozzle in the shell and having vertically-disposed ports and horizontally-disposed ports converging toward the outlet end and meeting at the center, ports leading from the steam-chamber to said nozzle, an outlet-pipe leading into the shell, a steam-pipe leading into the said chamber, a flame-spreader inward of the outlet end of the shell, and a steam-injector arranged in the spreader, substantially as specified.

3. An oil-burner comprising a casing secured to the outer side of the front plate of a boiler, pipe connections between the smoke-box of the boiler and said casing, a conical shell arranged in the casing and having a steam-chamber, a steam-pipe leading into said

chamber, a discharge-nozzle at the inner end of the shell and having port communication with the steam-chamber, an oil-pipe leading into the shell, a flame-spreader arranged inward of the outlet end of the shell and having communication at its lower end with the casing, a steam-jet nozzle arranged in the spreader, a steam-pipe connecting therewith, and a branch steam-pipe leading from the last-named steam-pipe into the lower portion of the spreader, substantially as specified.

4. In an oil-burner, an atomizer comprising a conical shell having a steam-chamber, a discharge-nozzle in the shell having vertically-disposed ports and horizontally-disposed ports, meeting at the center and converging toward the outward end, means for discharging oil into the atomizer, means for discharging steam into the steam-chamber, the ports providing communication between the steam-chamber and the nozzle, a flame-spreader arranged inward of the outlet end of the shell, and a steam-pipe leading into the spreader.

5. In an oil-burner, an oil and steam spraying device, a flame-spreader comprising a casing having a long opening or outlet, an injector-nozzle having a discharge-opening, the opposite walls of which are divergent from the center toward the ends, a steam-pipe leading into said nozzle, and a steam-pipe leading into the spreader-casing, substantially as specified.

6. In an oil-burner, a conical discharge-nozzle having crossed ports meeting at the center and converging toward the outlet end, a flame-spreader arranged inward of the said outlet end, and a steam-pipe leading into the spreader.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WELLINGTON STEPHEN JENKINS.

Witnesses:

GEO. W. WILKS,
ALEX. S. GREEN.