Nov. 18, 1924. 1,515,970

C. A. SAWYER

OIL BURNER

Filed March 17, 1924

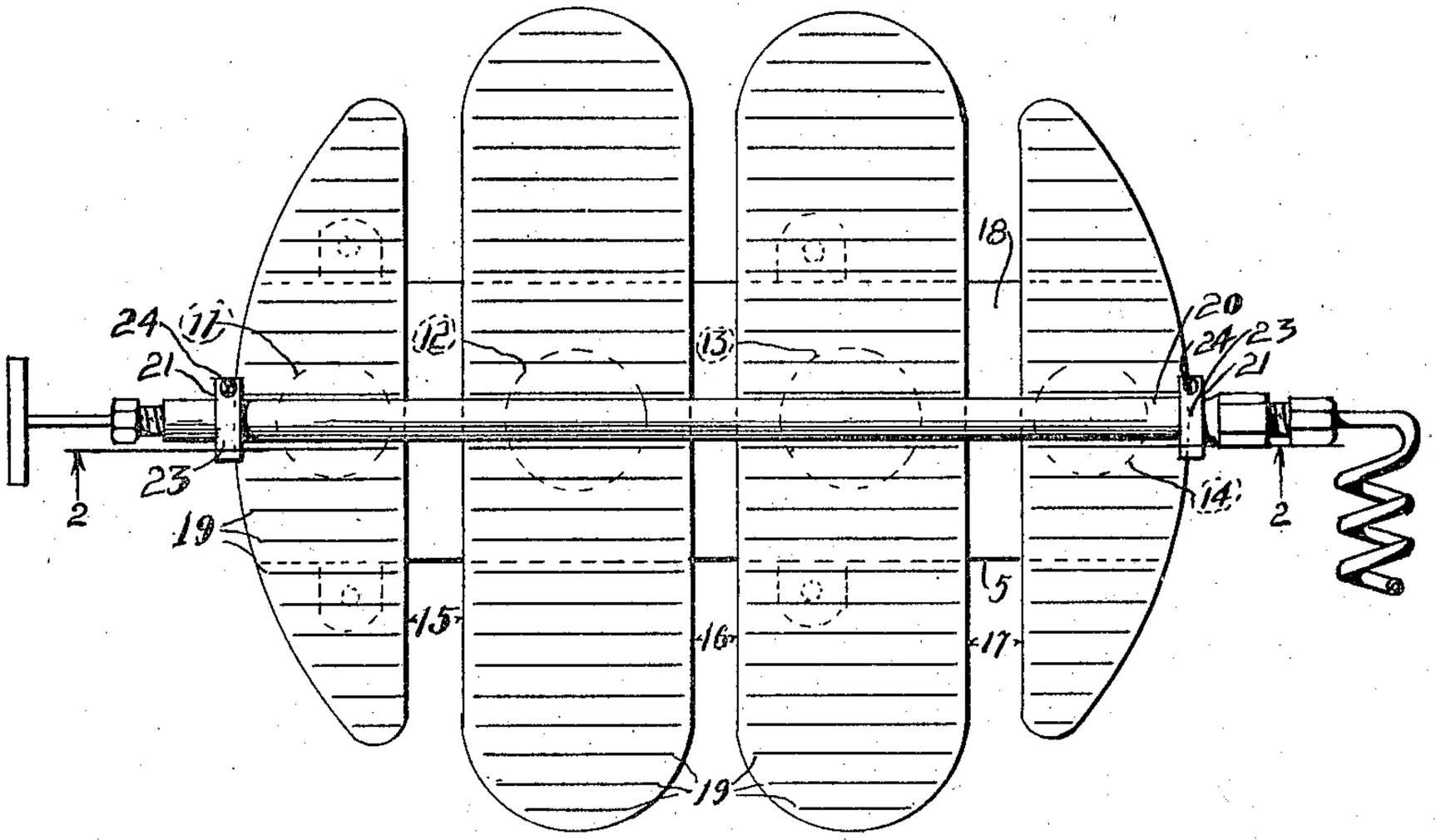

FIGURE 1

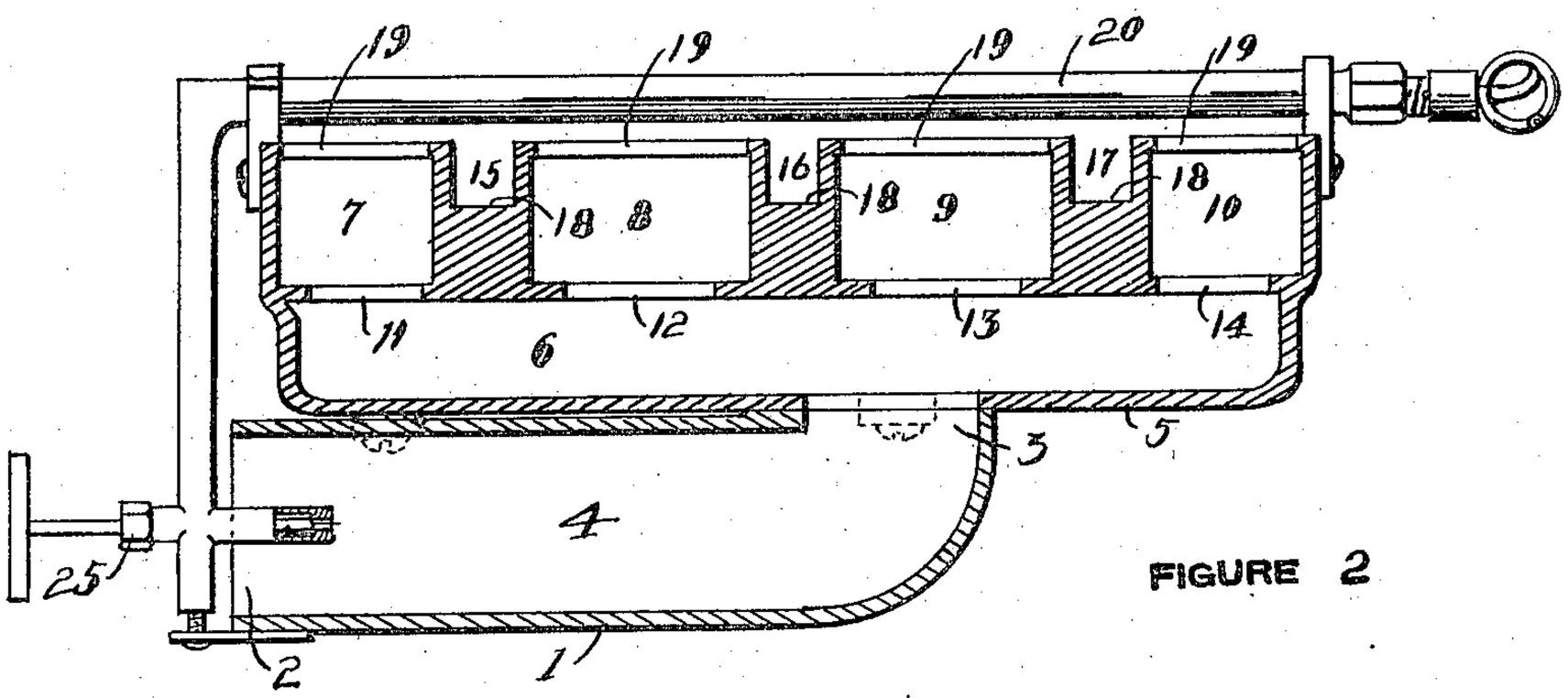

FIGURE 2

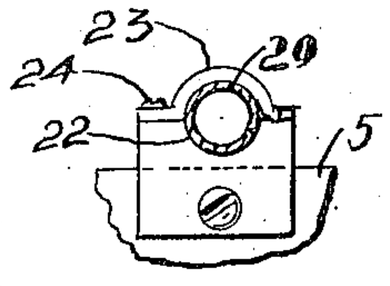

FIGURE 3

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UNITED STATES PATENT OFFICE.

CHARLES A. SAWYER, OF SAN JOSE, CALIFORNIA.

OIL BURNER.

Application filed March 17, 1924. Serial No. 699,752.

To all whom it may concern:

Be it known that I, CHARLES A. SAWYER, a citizen of the United States, and a resident of San Jose, in the county of Santa Clara and State of California, have invented certain new and useful Improvements in Oil Burners, of which the following is a specification.

It is one object of the invention to provide a burner wherein the fuel is thoroughly broken up and mixed with air by passing the mixture through a series of communicating chambers.

It is another object of my invention to provide a burner of the character indicated wherein the air supply to the burning fuel gases is so proportioned and distributed that complete and perfect combustion is secured.

It is still another object of the invention to provide a burner consisting of few parts, economical to manufacture, simple in form, and highly efficient in its practical application.

In the drawing:—

Figure 1 is a plan view of the device.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is a section on 3—3 of Figure 1.

Referring more particularly to the drawing, I show at 1 a tubular element having one end open as at 2 and the other end discharging upwardly as at 3, and forming a primary mixing chamber 4.

Mounted on element 1 is a casting 5 having a chamber 6 formed therein extending parallel with chamber 4 and communicating therewith through end 3.

At 7—8—9 and 10 are four chambers formed in casting 5 and communicating with chamber 6 through orifices 11—12—13 and 14 respectively, these chambers extending at right angles to chamber 6 and centered thereon. These chambers extend a distance on both sides of chamber 6 and are spaced a distance apart as indicated at 15—16 and 17 to permit the free passage of air therebetween.

The upper wall 18 of chamber 6 lying between the several chambers 7—8—9—10, is recessed a distance below the upper surfaces of said chambers whereby to permit air to flow thereover from both sides of the said chamber 6.

The upper walls of chambers 7—8—9—10 are pierced with slots as 19 to permit the escape of the fuel gas therefrom. Fuel oil is fed to the device from any suitable source of supply through a pipe 20 held in position on the casting 5 by brackets 21. Each bracket 21 is provided with a socket 22 in which pipe 20 rests, and an arm 23 adapted to fit over pipe 20 and secured in position by screw 24.

The feed pipe 20 extends down to a point opposite end 2 of chamber 4 and is fitted with a suitable valve 25.

In use the device is started by heating pipe 20 in any suitable manner not shown, the vaporized oil discharging into chamber 4 where it mixes with air drawn in through open end 2. This mixture discharges through end 3 into the second chamber 6 where it is still more thoroughly subdivided and mixed as it is distributed throughout the length of chamber 6 and discharged into the several chambers 7—8—9—10.

As the mixture enters these last chambers it is again thoroughly mixed as it is distributed throughout their length and at last discharged through slots 19.

From the foregoing it may be readily seen that before any of the gaseous mixture reaches the point where it is discharged for burning it is subjected to three distinct mixing operations. First a preliminary mixing in chamber 4. Second, a passage at relatively high velocity through a restricted opening 3 followed by reduced velocity and expansion in chamber 6. Third, a passage at relatively high velocity through orifices 11—12—13—14 and again reduced velocity and expansion in chambers 7—8—9—10.

When the mixture is discharged through slots 19 it burns freely with a perfectly blue flame and without smoke because in addition to its perfect mixture it is properly supplied with sufficient air for perfect combustion through the passages 15—16—17.

This free passage of air around each chamber also acts as a cooling agent, preventing any of the parts to become so heated as to buckle or warp with consequent injury to the burner.

It may be readily seen from the foregoing that I have provided a burner in which a high temperature flame is produced by the introduction of the right proportion of air, and which is economical by its small requirement of fuel. Furthermore, the burner is simple in construction, economical to manufacture, quickly installed, and makes

gas that is clean, odorless, and safe, and a flame that is even and steady.

It is to be understood, of course, that while I have herein shown and described one specific embodiment of the invention, changes in form, construction and method of operation may be made within the scope of the appended claim:—

I claim:—

An oil burner comprising in combination, a primary mixing chamber having an air inlet end and a gas discharge end, means for introducing fuel oil into said air inlet end, and a single casting mounted on said mixing chamber and consisting of a secondary chamber arranged upon said primary chamber in parallel relation thereto and communicating therewith at a point intermediate its ends, and a plurality of spaced burner head chambers arranged crosswise of said secondary chamber and communicating therewith, the upper wall of said secondary chamber being recessed a distance below the upper surface of said burner head chambers whereby to permit the free passage of air therethrough.

CHARLES A. SAWYER.