

C. FRANKLIN & I. F. RANDOLPH.

OIL BURNER.

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915,844.

Patented Mar. 23, 1909.

Fig. 1.

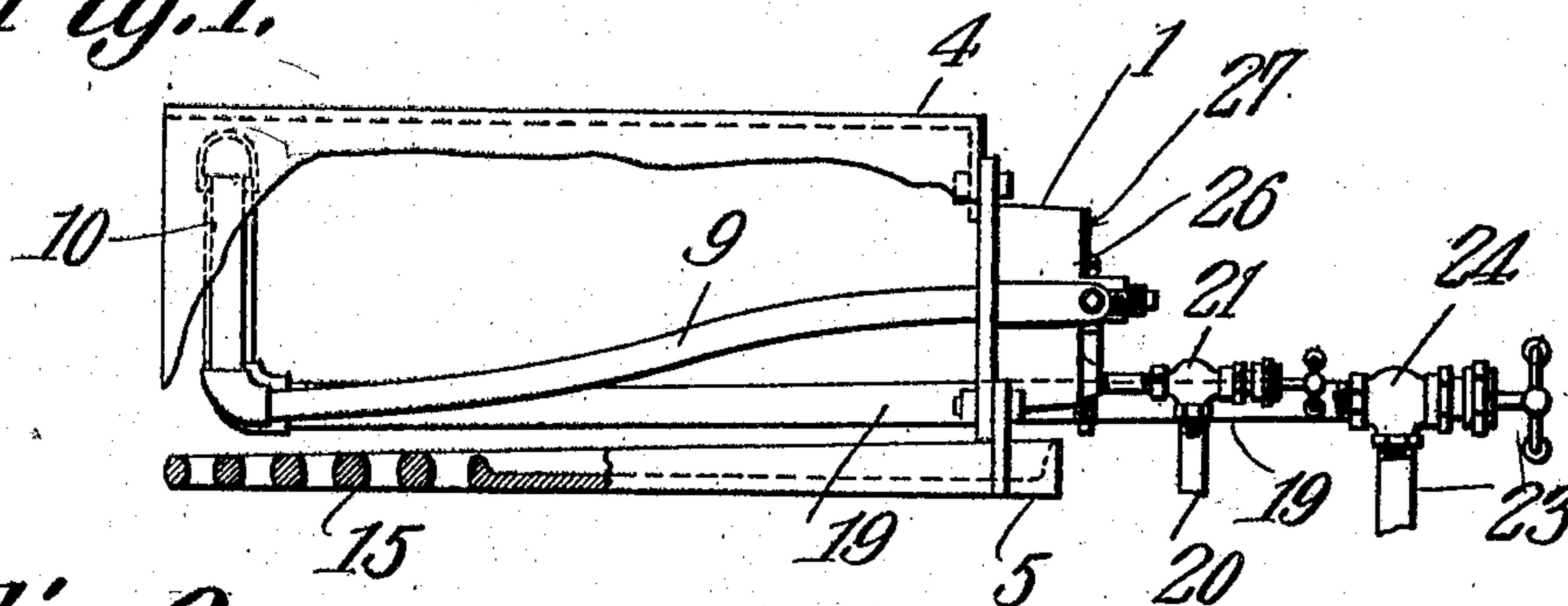


Fig. 2.

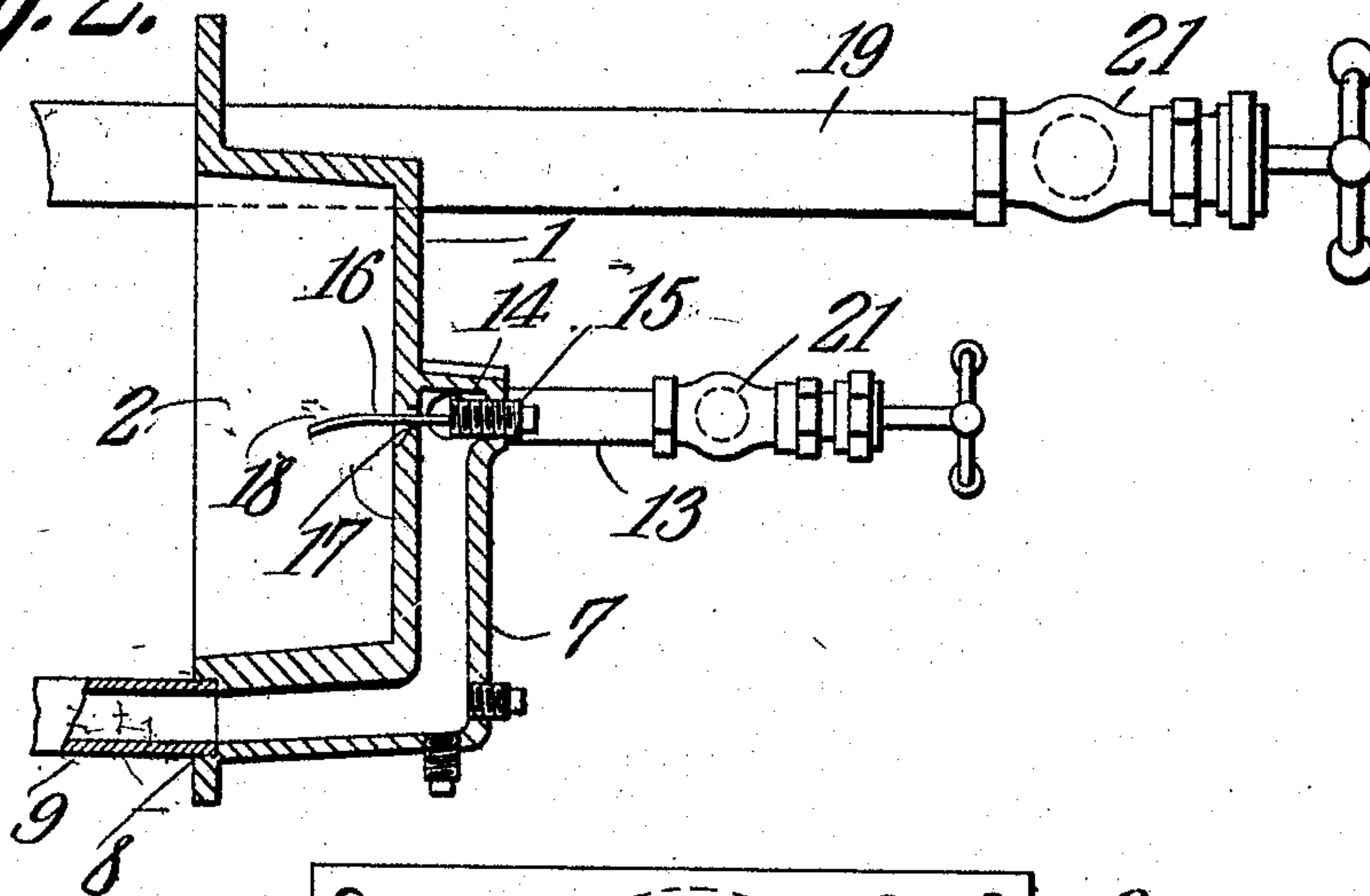
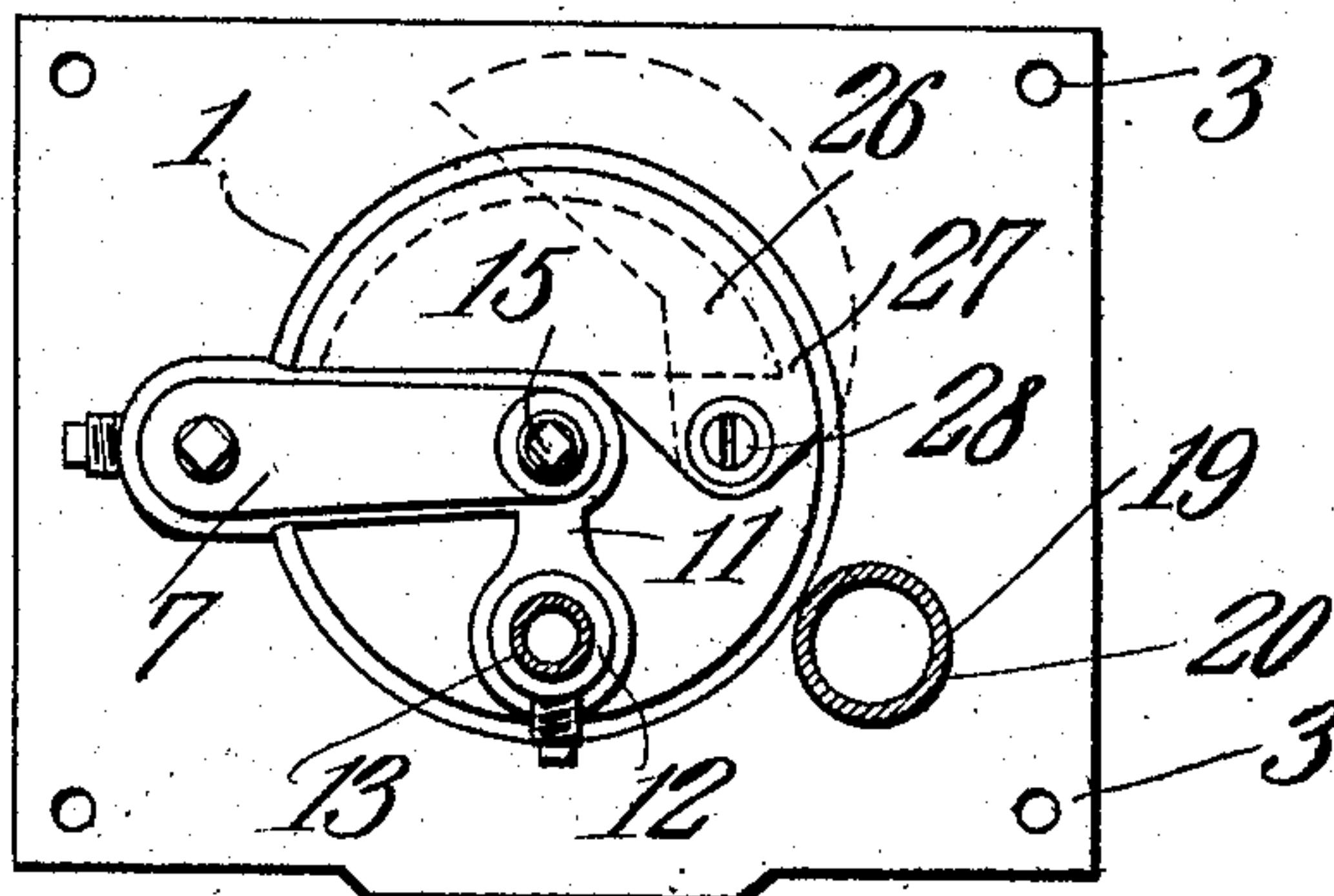


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES FRANKLIN AND ITHAMAR F. RANDOLPH, OF IOLA, KANSAS.

OIL-BURNER.

No. 915,844.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed April 17, 1908. Serial No. 427,690.

all whom it may concern:

Be it known that we, CHARLES FRANKLIN and ITHAMAR F. RANDOLPH, citizens of the United States, residing at Iola, in the county of Allen, State of Kansas, have invented a new and useful Oil-Burner, of which the following is a specification.

This invention relates to hydrocarbon burners for use in connection with cooking stoves, heaters, furnaces, etc.

The object of the invention is to provide simple and efficient means whereby oil and steam under pressure can be thoroughly commingled and discharged in the form of a jet into the fire box or other compartment where it is to be consumed.

A further object is to provide a burner of this character in which steam is used as one of the parts of the fuel, said steam being generated by the products of combustion produced at the burner.

Another object is to provide a burner designed to be placed outside of the fire box and so positioned as to inject a jet of combustible gas into the fire box where combustion occurs, the burner being thus maintained practically cool at all times.

A further object is to provide simple and efficient means for controlling the discharge of combustible fluid from the burner head, said means also serving to direct a jet of combustible gas in various directions within the fire box.

With these and other objects in view the invention consists of certain novel features of construction and combinations of parts which will be hereinafter more fully described and pointed out in the claims.

In the accompanying drawings is shown the preferred form of the invention.

In said drawings: Figure 1 is a view partly in side elevation and partly in section of a burner embodying the present improvements. Fig. 2 is a horizontal section through the burner head. Fig. 3 is a front elevation thereof, the oil and water pipes being shown in section.

Referring to the figures by characters of reference, 4 designates a portion of the casing of a furnace or other structure in which combustion is to occur and bolted or otherwise secured over an opening in the front end of said casing is a head consisting of a plate 3 having a central substantially cylindrical outstanding dome or projection 1 forming a recess 2 in rear thereof. Cast or otherwise

formed within this dome is a steam passage 7 extending horizontally and communicating at its inlet end with a pipe 9 which is screwed or otherwise fastened within the plate 3 as indicated at 8. This pipe 9 is extended any desired distance within the casing 4 and terminates in a tubular arch 10 designed to receive water from a longitudinally extending pipe 19 connected with a supply pipe 23, there being a suitable valve 24 for controlling the passage of water from the supply pipe to the pipe 19. Passage 7 terminates at the center of the dome 1 and directly above a vertical oil passage 11 which is cast or otherwise formed within the dome 1 and receives oil through a pipe 13 from a supply pipe 20, there being a suitable valve 21 for controlling the passage of oil from the supply pipe 20 to the pipe 13.

The passages 7 and 11 form a mixing chamber 14 at their meeting ends, said mixing chamber being disposed directly upon the central portion of the dome 1 and having a flared outlet port 17 opening therefrom and into the center of the recess 2. A screw plug 15 is mounted within the outer wall of the mixing chamber 14 and with its longitudinal axis extending through the center of the port 17 and projecting from the inner end of this screw plug is a regulating needle 16 extending directly through the center of the port 17 and having its free end arranged within recess 2 and preferably slightly curved as shown at 18. A segmental opening 26 is formed in the upper portion of the end of the dome and is normally closed by means of a plate 27 mounted on a suitable pivot 28, this plate being disposed to be swung so as to partly or entirely expose the opening 26 and thus regulate the supply of air to the interior of the dome.

Supported below the pipes 9 and 19 and the arch 10 is a tray 5 designed to be attached to the plate 3 in any preferred manner and thus held in fixed relation to the pipes. A grate 15 is arranged adjacent one end of this tray.

In using the device herein described fuel is placed in the tray 5 and ignited so as to heat the pipes 9 and 19 and the arch 10. After these pipes have been sufficiently heated water is admitted to the pipe 19 by opening valve 24 and in passing through said pipe and the arch 10 and pipe 9 it will be converted into steam. The valve 21 is also opened and oil is free to pass into the passage

7 and will flow upwardly into the mixing chamber 14 in a line at right angles to the direction in which the steam enters said compartment through the passage 7. The two fluids, steam and oil, will thus come together along intersecting paths within the mixing chamber and the oil be finely divided by the steam and the two fluids thoroughly mixed. They will then escape in the form of a jet through the port 17 and this jet can be controlled by adjusting the plug 15 from or toward the port. The gas or vapor in escaping through the port will tend to hug the needle 16 and inasmuch as the terminal of this needle is slightly bent as indicated at 18 the jet can be discharged anywhere on a fixed circle within the recess 2 and casing 4 simply by turning the plug 15 so as to change the direction in which the needle points. The jet will of course be expelled into and beyond the recess 2 and the ignition thereof will occur within the casing at a point removed from the port 17. By opening the closure or plate 27 a desired quantity of air can be admitted to the recess 2 so as to afford complete combustion and eliminate the roaring sound usually produced by the combustion of fuel of this nature. As combustion occurs at a point removed from the port 17 the dome 1 is maintained practically cool at all times and there is no danger of any hydrocarbon deposits baking or congealing within the burner as a result of the heat and thus interfering with the proper flow of the combustible fluid through and from the burner head. It will be seen of course that after steam has once been generated and the combustible mixture discharged from port 17 and ignited the heat produced by combustion will be sufficient to continue the generation of steam within the pipes 19 and 9 and the arch 10 without the use of further fuel within the tray 5. The grate 15 is used to permit the escape of ashes, etc., produced during the starting of the burner.

What is claimed is:

1. A burner comprising a dome having a central mixing chamber therein, there being oil and steam conducting passages entering said chamber at right angles to each other, a water conducting pipe opening into the steam passage and extending beyond one face of the dome, said pipe constituting a vaporizer, there being an outlet port extending from the mixing chamber and through the dome for directing a combustible mixture

from said chamber and in the direction of the vaporizing pipe, threaded means for controlling the discharge of fuel through the port, and means carried thereby for controlling the direction of movement of the fuel upon leaving the port.

2. A burner comprising a dome, said dome having a mixing chamber, there being an outlet port extending from the mixing chamber and through the dome, means for controlling the discharge of fuel through the port, and means carried by the controlling means for controlling the direction of movement of the jet of fuel upon leaving the port.

3. A burner comprising a dome having a mixing chamber therein, said chamber having inlets and an outlet, the outlet opening into the dome, means for controlling the discharge of fuel through the outlet, and a curved needle carried thereby for controlling the direction of movement of the fuel upon leaving the outlet.

4. A burner comprising a dome having a mixing chamber, there being oil and steam conducting passages entering said chamber, a water conducting pipe opening into the steam passage and extending beyond one face of the dome, said pipe constituting a vaporizer, there being an outlet port extending from the mixing chamber and through the dome for directing a combustible mixture from said chamber and in the direction of the vaporizing pipe, means for controlling the discharge of fuel through the port, and means carried thereby for controlling the direction of movement of the fuel upon leaving the port.

5. A burner comprising a structure having a mixing chamber therein, there being inlet ports and an outlet port opening into and from said chamber respectively, a screw plug for controlling the passage of fuel through the outlet port, and a curved needle outstanding from the plug and extending through the outlet port, said needle being revoluble with the plug for controlling the direction of the fuel upon leaving said port.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

CHARLES FRANKLIN.
ITHAMAR F. RANDOLPH.

Witnesses:

C. P. SCHELL,
W. I. McCALL.