

(No Model.)

L. H. COLE & J. BOWER.  
HYDROCARBON BURNER.

No. 526,560.

Patented Sept. 25, 1894.

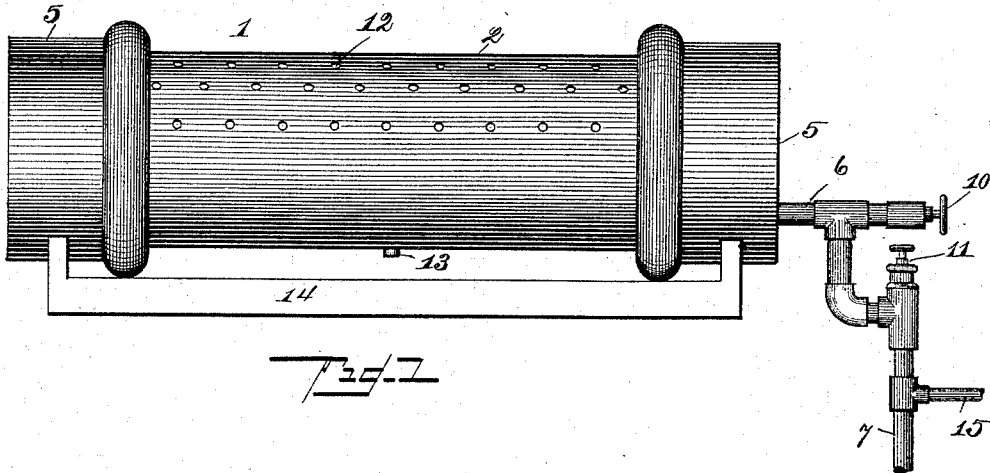


Fig. 1

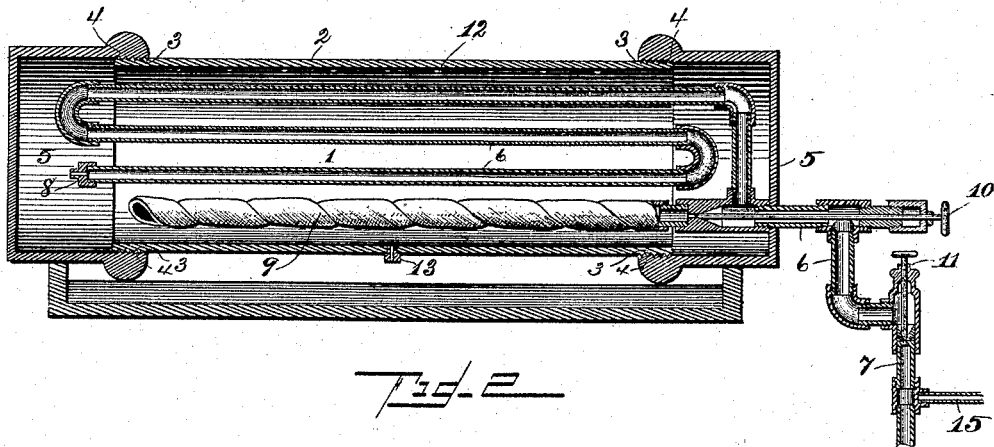


Fig. 2

Witnesses

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# UNITED STATES PATENT OFFICE.

LEWIS H. COLE AND JESSE BOWER, OF LANSING, MICHIGAN.

## HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 526,560, dated September 25, 1894.

Application filed December 19, 1893. Serial No. 494,044. (No model.)

*To all whom it may concern:*

Be it known that we, LEWIS H. COLE and JESSE BOWER, of Lansing, county of Ingham, State of Michigan, have invented certain new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification, reference being had to the accompanying drawings.

The object of our invention is to produce an improved hydro-carbon burner by which, the oil being more thoroughly consumed, a bright, clear flame, without smoke or soot, is developed.

In the accompanying drawings: Figure 1 is a side elevation of my burner complete. Fig. 2 is a central longitudinal section of the same.

Referring to the figures on the drawings: 1 indicates a shell which is preferably made of a cylindrical middle part 2 having screw threaded ends 3 adapted to screw into the reinforced, internally screw threaded ends 4 of caps 5.

6 indicates heating pipes communicating with the supply pipe 7 at one end and terminating at the other end in a discharge tip 8. The pipe 6 is preferably composed of a plurality of branches or turns located within the shell.

9 indicates an absorbent non-combustible primer made, for example, of asbestos tubing.

10 indicates a primer needle valve adapted to control the supply of oil to the primer.

11 indicates a suitable valve, preferably a needle valve, for controlling the supply of oil from the pipe 7 to the pipe 6.

12 indicates flame holes in the upper part of the shell and 13 a drip vent in the bottom of the shell located over a pan 14, which also serves as a support for the shell, which is preferably made of cast metal.

In operation, the valves 10 and 11 being open, oil is admitted to the primer until it becomes saturated and it then drops through the opening 13 into the pan 14 where it may be ignited. The shell becoming heated, the oil within it and the saturated primer is ignited which in turn heats the pipes 6, air being admitted through the apertures 12 to support combustion. When the pipes 6 have been sufficiently heated to convert oil therein to gas, the valve 10 is closed and the oil is forced

through the coil of hot pipe, finally issuing from the discharge opening 8 in a gaseous or vaporized state, and passing through the apertures 12 it is ignited, producing a bright clear flame without smoke or soot, those impurities having been completely consumed within the shell. The shell being kept at a high temperature there is a constant vaporization of the oil within the pipes to supply the flame.

For special purposes, a pipe 15 communicating with the supply pipe 7 and with a source of steam, not illustrated, may be employed to commingle steam with the oil and to produce a more intense flame.

What we claim is—

1. The combination with a shell, pipes and absorbent non-combustible primer therein, of an oil supply pipe communicating with said pipe and primer said shell being provided with apertures designed to admit air to support the combustion within the shell, and to thereafter constitute flame apertures, substantially as and for the purpose specified.

2. The combination with a cylinder and cap screwed on the end thereof to form a shell, of an oil supply pipe and absorbent non-combustible primer therein, and an oil supply pipe communicating therewith, said shell being provided with apertures designed to admit air to support the combustion within the shell, and to thereafter constitute flame apertures substantially in the manner and for the purpose specified.

3. The combination with a shell provided with apertures, designed to admit air to support the combustion within the shell, and to thereafter constitute flame apertures of a coil of pipe therein having a terminal discharge aperture, a cylindrical, non-combustible absorbent primer therebelow, and likewise in the shell, and an oil supply pipe communicating with the coil and primer, substantially as specified.

4. The combination with a shell provided with apertures designed to admit air to support the combustion within the shell and to thereafter constitute flame apertures, of a coil of pipe therein having a terminal discharge aperture, a cylindrical non-combustible absorbent primer therebelow, also within the shell, a supply pipe common to both, a

valve within the supply pipe, and a separate valve controlling the flow of the primer, substantially as specified.

- 5 5. The combination with a closed shell provided with apertures designed to admit air to support the combustion within the shell and to thereafter constitute flame apertures and a drop vent, of a coil of pipe having a terminal discharge aperture, and a cylindrical non-combustible absorbent primer 10 within the shell, a pan below the shell, a valve-controlled supply pipe common to the coil and primer, and a separate valve controlling the flow to the primer, substantially as specified.
- 15 6. The combination with the shell, consisting of a cylindrical middle part provided with apertures designed to admit air to support the combustion within the shell and to

thereafter constitute flame apertures, terminal caps, and a drip vent, of a coil pipe having a terminal discharge aperture, and an imperforate, cylindrical, non-combustible, absorbent primer within the shell, a pan therebelow, an oil supply pipe passing through one cap and communicating with the coil and 25 primer, a primer controlling valve, a valve in the supply pipe and a steam pipe communicating with the supply pipe below the last named valve, substantially as specified.

In testimony of all which we have hereunto subscribed our names 30

LEWIS H. COLE.  
JESSE BOWER.

Witnesses:

NELLIE A. STONE,  
W. B. GARDNER.