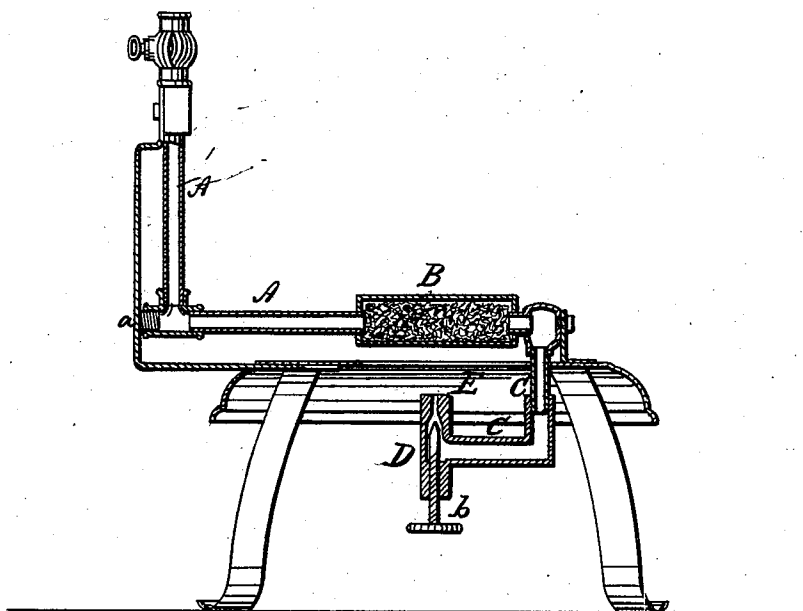


No. 44,144.

PATENTED SEPT. 6, 1864.

J. WATERMAN.
PACKING FOR HYDROCARBON BURNERS.



Witnesses;
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UNITED STATES PATENT OFFICE.

JOSIAH WATERMAN, OF NEW YORK, N. Y.

IMPROVED PACKING FOR HYDRO CARBON-BURNERS.

Specification forming part of Letters Patent No. 44,144, dated September 6, 1864.

To all whom it may concern:

Be it known that I, JOSIAH WATERMAN, of the city, county, and State of New York, have invented a new and useful Improvement in Burners for Heavy Hydrocarbons; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, and showing a vertical central section through a burner to which my invention is applied.

Many of the known burners for hydrocarbons answer a good purpose when the lighter and more fluid portions alone are used, but are defective when using the heavier but cheaper portions, and it is the object of my invention to use most advantageously the heavier and cheaper hydrocarbons—such, for example, as crude naphtha or petroleum; and my invention consists in passing the crude petroleum, naphtha, or other heavy hydrocarbon through a body of emery or other refractory material packed within a close chamber, and in the closed pipes leading to and from the same when this packing is kept at a high degree of heat, a degree sufficient to cause the hydrocarbon flowing through the pipes and chamber to be rapidly volatilized.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawing, I have shown a burner similar to that patented to R. R. Lewis on the 21st of June, 1864, though any burner that will permit its pipes to connect with a close chamber will prove operative. The pipe A is connected at its upper end to the fountain containing petroleum unrefined, and at its opposite end is connected, by a gas tight joint, with the circular chamber B, which may be of dimensions suitable to the quantity of heat desired, for it is obvious that to cook for a large family will require a larger burner than one designed for the use of a small number of persons. The pipe A may have a suitable cock or cocks to control the flow of petroleum or shut it off entirely, and a proper screw-plug, *a*, to permit the pipes to be opened when they require to be cleansed. The pipe C is connected with the chamber B opposite to the pipe A, and terminates centrally in one or more fine tubes beneath the chamber B, and carries a temper screw, *b*, to regulate the openings in the tubes or close them entirely, all substantially as seen in the above-named patent. Now, I pack loosely

within the pipes A and C and in the chamber B coarse emery, or some highly refractory granular substance, that will sustain a high degree of heat without fusing or undergoing any material change in the form of the particles constituting the mass of the packing. The packing is thus always kept in such a condition that the heaviest portions of petroleum or naphtha will, when sufficiently heated, pass from the fountain and permeate the packing in the tube A and chamber B, where it will be rapidly volatilized, and may be burned in a jet or jets beneath the chamber B, which will thus acquire an intensity of heat due to the rapidity of the flow of the fluid, or, in other words, the quantity of combustion, and may be economically applied to any heating purposes desired. This chamber may be composed of a cup of refractory metal having a screw-cap of the same, with a ring between the edges of the cap and the flange of the cup, made of some metal that will expand more rapidly under heat than the metal of the cup and cap that compose the chamber, and this will tend to pack the joint of the chamber and render the escape of vapor therefrom impossible.

It is obvious that jets may spring through perforations in the top of the chamber B, or the body may be kept, if preferred, at a high red heat from the jet of flame applied centrally beneath it.

It is also obvious that to begin the use of my improved burner it will be necessary to use an independent heating material applied to the chamber until the heat from the chamber shall be sufficient to volatilize a quantity of vapor sufficient to sustain a flame at the jet B, when, of course, the independent heater may be removed, and the action of the flame from the jet will be under the control of the attendant.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

The combination with the pipes and closed chamber B of a hydrocarbon-burner of a packing of coarse emery, or its equivalent, substantially in the manner and for the purpose set forth.

In testimony whereof I have hereunto subscribed my name.

JOSIAH WATERMAN.

Witnesses:

S. A. BRUCE,
R. R. LEWIS.