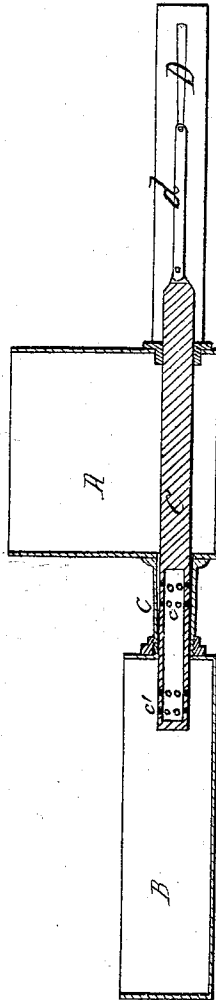


F. A. HULL.

Devices for Burning Petroleum.

No. 135,476.

Patented Feb. 4, 1873.



Witnesses  
Alex. Mahon  
H. H. Doubleday

Frederick A. Hull  
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by A. M. Smith  
Associate

# UNITED STATES PATENT OFFICE.

FREDERICK A. HULL, OF BELOIT, WISCONSIN.

## IMPROVEMENT IN DEVICES FOR BURNING PETROLEUM.

Specification forming part of Letters Patent No. 135,476, dated February 4, 1873.

*To all whom it may concern:*

Be it known that I, FREDERICK A. HULL, of Beloit, in the county of Rock and State of Wisconsin, have invented a new and useful Improvement in Devices for Burning Petroleum, &c.; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

It is found desirable in burning petroleum that it should be fed into the furnace or fire-box in small quantities, at regular intervals, and by means of an automatically-operating device. It is also essential that the feeding devices should be so constructed that but the smallest portion of them should be exposed to the action of the heat, and that the fire cannot communicate to the tank or reservoir containing the oil.

With a view to meet the above requirements I have made this invention, which consists in combining, with a feed tank or reservoir to contain the oil and a fire-box or combustion-chamber, a reciprocating hollow cylinder, provided at each end with a series of perforations, by means of which the reciprocating cylinder may be filled with oil from the tank at one end of the stroke, and may be emptied of its contents into the combustion-chamber at the other end of its stroke, as will be explained.

In the drawing, A represents the tank, of any ordinary or approved construction. B is the combustion-chamber or fire-box, which may also be made in any usual or desired manner. These two parts are united by a connecting-tube, C, in which is fitted a hollow cylinder, C', to which a direct reciprocation is imparted by means of the crank D and pitman d, or some other equivalent device. The cylinder C' is provided with a number of small perforations, *c c'*, arranged, by preference, in circumferential lines, in order that the holes on the upper side may afford free vent while the liquid is escaping from those on the lower side.

It will be readily seen that as the cylinder

is drawn into the tank the oil will enter perforations *c* until the shell is filled, and that when it (the cylinder) is thrust into the combustion-chamber the liquid will be discharged through perforations *c'*.

I am aware that a piston with a series of separate cells, bored transversely through it, has been employed for feeding boilers; but this construction is not practicable for feeding petroleum to a furnace, because the entire length of the piston must be thrust into said furnace, and is too much exposed to the heat, whereas I only thrust mine in far enough to present the line of perforations, which permits the entire contents of the cylinder to escape. This enables me to employ a cam for operating it in such manner that it (the cylinder) shall be thrust just far enough into the furnace to open the perforation *c'*, and then to pause in its motions until the oil shall have been discharged.

My construction also enables me to employ any length of hollow cylinder which may be necessary to insure a perfect protection against fire communicating from the furnace to the tank, it being impossible for the fire to pass through my cylinder, as I can make my perforations so small that flame cannot enter through them because the oil will flow through a small aperture formed in the thin shell of a cylinder when it could not be discharged from a cell of the same diameter bored in a solid piston, because it would be held by capillary attraction.

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

In combination with the tank A and furnace or combustion-chamber B, the hollow cylinder C', provided with perforations *c c'* and made to reciprocate in the connecting-tube C, substantially as and for the purpose set forth.

This specification signed and witnessed this 16th day of July, 1872.

FREDERICK A. HULL.

Witnesses:

ALBERT FOWLER,  
G. W. FORD.