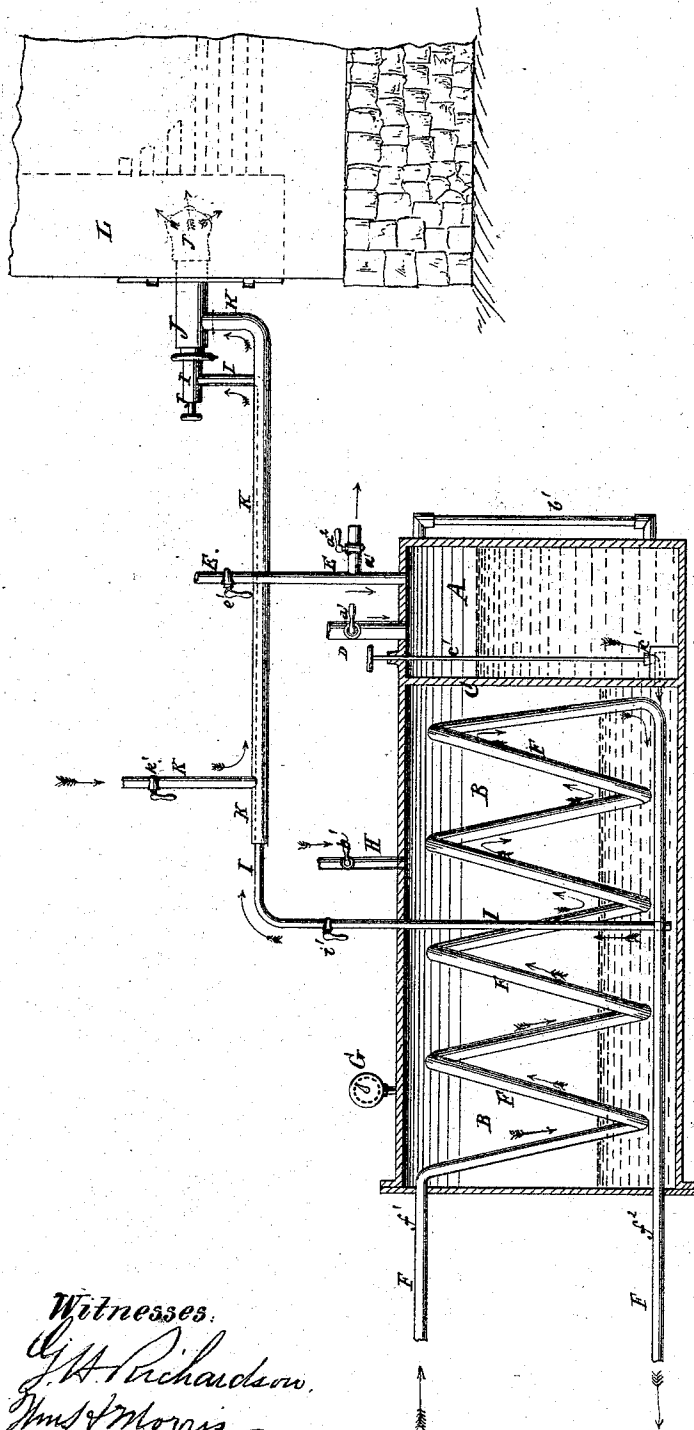


C. E. ROBINSON.

Apparatus for Feeding Hydrocarbons to Furnaces.

No. 158,315.

Patented Dec. 29, 1874.



Witnesses.
J. H. Richardson.
J. M. Morris

Inventor.
Chas E Robinson

UNITED STATES PATENT OFFICE.

CHARLES E. ROBINSON, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND
GEORGE M. CHURCH, OF SAME PLACE.

IMPROVEMENT IN APPARATUS FOR FEEDING HYDROCARBONS TO FURNACES.

Specification forming part of Letters Patent No. **158,315**, dated December 29, 1874; application filed
December 12, 1874.

To all whom it may concern:

Be it known that I, CHARLES E. ROBINSON, of the city of Brooklyn, in the county of Kings and State of New York, have invented an Improved Oil-Burning Apparatus, of which the following is a specification:

My invention relates to apparatus for burning petroleum or other hydrocarbon oils as fuel for generating steam in a boiler, or for other purposes; and it consists in the combination of the various parts of the apparatus by which the supply-tank is charged with oil from the reservoir, the oil heated by steam in the supply-tank, and thence forced by steam-pressure to an atomizer, where, mixed with steam, it enters the furnace of the boiler, as will be hereinafter described with reference to the accompanying drawing, which represents a longitudinal section of the said apparatus.

A is the oil-reservoir, and B is the oil-supply tank. These I prefer to make in one and the same vessel, separated only by a partition, C. D is the oil-supply pipe, with cock *d'* for the reservoir A. E is a steam-pipe, with cock *e'* for introducing steam for forcing the oil from the reservoir A into the supply-tank B against the steam-pressure in the latter, as will be further described. *a*¹, with cock *a*², is a branch pipe to E for the exhaust of steam from the reservoir A. *b'* is a glass gage for observing the level of the oil in the reservoir A. *c'* is a valve at the bottom of the reservoir, and operated from the outside, to let the oil flow into the supply-tank B. F is a steam-coil placed in the supply-tank B, with inlet at *f'* and outlet at *f''*, for heating the oil to better induce its atomization. G is a pressure-gage on the supply-tank B. H is a steam-pipe, with cock *h'*, to the said tank for forcing out the oil by steam-pressure. I, with the cock *i'*, is the oil-discharge pipe from the supply-tank to the atomizer J. K, with

the cock *k'*, is a steam-pipe surrounding the oil-pipe I, during a portion of its passage to the atomizer J, in order to reheat the oil. In the atomizer J the steam-pipe K again surrounds the oil-pipe even to the nozzle of the atomizer, where the oil and steam commingle before issuing from the atomizer into the fireplace of a boiler, L, partly shown in the drawing.

To fill the reservoir with oil, through pipe D, shut first the cock *e'* of the steam pipe E and open the cock *a*² of the branch pipe *a*¹ to allow the steam in the reservoir to escape. The cocks *d'* and *a*¹ being closed, and the cocks *e'* and *h'* being opened to furnish an equal steam-pressure in both tanks, it is only necessary, for charging the supply-tank B, to open the valve *c'*, when the oil will flow into the latter tank until the oil-surface in both stands at the same level, the height of which is observed in the glass gage *b'*. The oil heated by the steam-coil F is forced, by the pressure of the steam from the pipe H, through the pipe I into the atomizer J, where, issuing with the velocity due to the pressure, it meets a steam-jet from the surrounding pipe K, and thus, effectually atomized and thoroughly mixed with the steam, is burned as fuel in the furnace of the boiler L.

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

The combination of the reservoir A, provided with the pipes D E *a*¹, valve *c'*, and gage *b'*, and the supply-tank B, heated by the steam-coil F, and provided with the pipes H I, with the steam-pipe K and atomizer J, substantially as and for the purpose specified.

CHAS. E. ROBINSON.

Witnesses:

GEO. M. CHURCH,
G. H. RICHARDSON.