

UNITED STATES PATENT OFFICE.

JACOB REESE, OF PITTSBURG, ASSIGNOR OF ONE-THIRD HIS RIGHT TO
MICHAEL GRAVER, OF ALLEGHENY CITY, PENNSYLVANIA.

IMPROVEMENT IN TREATING REFINED PETROLEUM OILS.

Specification forming part of Letters Patent No. **150,614**, dated May 5, 1874; application filed
April 10, 1873.

To all whom it may concern:

Be it known that I, JACOB REESE, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Treating Refined Petroleum Oils; and I do hereby declare the following to be a full, clear, and exact description thereof.

It is a well-known fact that ordinary crude petroleum gives off, under certain conditions, a considerable amount of fixed gas, as well as oleaginous vapors, which, on account of their explosive character when mixed with atmospheric air, render them highly dangerous. It has also been found that such oils, even after careful distillation and refining, still contain, in some form or other, dangerous ingredients of the character above referred to. Some facts connected with the use and explosion of distilled and refined petroleum oils seem to indicate that even then they contain a greater or less amount of fixed gas, as well as of lighter oleaginous ingredients, both of which are given off readily at a low temperature. The object of my invention is to relieve such distilled and refined petroleum oil of such dangerous ingredients, and also to recharge or saturate such oil with a non-explosive gas, whereby the fire-test and burning-point may readily be raised to such degree as to render the oils perfectly safe for use as an illuminating agent; and this I accomplish, first, by subjecting such distilled and refined oil to the action of a vacuum or partial vacuum, without the employment of artificial heat, and also, if desired, recharging the distilled oil after having been subjected to the vacuum treatment by means of suitable apparatus with a non-explosive gas or vapor.

To enable others skilled in the art to make use of my invention, I will proceed to describe the same.

I take the ordinary distilled and refined illuminating-oil of commerce whose fire-test it is desired to raise, place it in any close receiver—preferably a comparatively shallow one—and, by means of an air-pump or other suitable known means of producing a vacuum or a partial vacuum, exhaust a portion or all of the air therefrom. This is done without

the application of artificial heat to the receiver, as it is my object not to redistill the oil, which would have a tendency to generate more light vapors to take the place of those carried off by the removal of the atmospheric pressure. This vacuum treatment I have found, by trial, to result in drawing off from distilled oil a considerable amount of fixed gas, as well as of light oleaginous vapors, which gas and vapors I also draw off from the receiver as perfectly as practicable. I have found by this means that the fire-test of such refined oils may, in a few minutes, be raised from 10° to 20° Fahrenheit. Such oils may then be drawn off into barrels or other suitable packages, when they are ready for sale or use, and the absence of the gases and vapors of which they have thus been relieved renders them safe for use for illuminating purposes, and avoids danger of explosion. But if it be desired, under the atomic theory of matter, to fill the interstices between the atoms of oil with a non-explosive gas or vapor, in order that the oil may not reabsorb or generate an explosive gas to fill such interstices, the oil, while still inclosed in the receiver and under a vacuum, is recharged or saturated with any suitable non-explosive gas or vapor, by means of a pipe leading, preferably, into the bottom of the receiver, from any suitable gas holder or retort in which such non-explosive gas or vapor may be stored or generated. The construction of such appliances need not be described at length, as, separately considered, they are such as are already known to mechanics and chemists.

It is usual with refiners to manufacture refined oil which will stand some fixed fire-test—say, 110° Fahrenheit, which is the standard required in most cases; but as there is a demand in some localities for refined oil of a higher fire-test, and as it is becoming a subject of legislation, with every probability that the local standard in some States will be raised to 120° Fahrenheit, more or less, it is important, in order to be enabled to comply with the law, as well as to secure, if possible, absolute safety, that some means be made known to the public by which the fire-test of such

oils can be raised, even after distillation and refining; and the invention above described is directed chiefly to that end, and also, by re-saturating the oil with a non-explosive gas, I prevent the reabsorption or generation in the oil of dangerous gases.

I am aware that a vacuum or a partial vacuum has been combined with heat in the distillation of hydrocarbons and has been used to deodorize unrefined lubricating-oils; and hence, in my present improvement, I claim it only so far as it constitutes, in the manner described, a useful element in the treatment of illuminating-oils which have undergone both the distilling and refining operations.

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

1. Subjecting the distilled and refined illuminating petroleum-oil of commerce to the action of a vacuum, or partial vacuum, when not subjected to the action of artificial heat, substantially as and for the purposes above set forth.

2. Recharging or resaturating the oil, after being subjected to the action of a vacuum, or partial vacuum, with any suitable non-explosive gas or vapor, substantially as above set forth.

In testimony whereof I, the said JACOB REESE, have hereunto set my hand.

JACOB REESE.

Witnesses:

A. S. NICHOLSON,

G. H. CHRISTY.