

United States Patent Office.

SAMUEL VAN SYCKEL, OF TITUSVILLE, PENNSYLVANIA.

Letters Patent No. 110,516, dated December 27, 1870.

IMPROVEMENT IN STILLS FOR PETROLEUM AND OTHER OILS.

The Schedule referred to in these Letters Patent and making part of the same.

I, SAMUEL VAN SYCKEL, of Titusville, in the county of Crawford and State of Pennsylvania, have invented certain new and useful Improvements in Stills for Refining Oil, of which the following is a specification.

Nature and Objects of the Invention.

My invention relates to stills for refining oil, and consists in certain combinations and arrangements of parts with an oil-still, the object of which is to greatly facilitate the refining of the oil, as will be fully set forth hereafter.

The drawing accompanying this specification shows a still and furnace, with a portion of the side of the former broken away to show the arrangement of the interior.

General Description.

The still B and furnace A are constructed in the ordinary manner, and the dome C, preferably of triangular form, is connected with the still, as shown in the drawing.

At or near the center of the still, and from the interior of the dome, I suspend a series of pipes, *d d*, from the pipe D, connected with the steam-boiler, somewhat resembling a gas-chandelier. The ends or surfaces of these pipes *d* are perforated, so that jets of steam may be thrown through them into the vapor above the surface of the oil.

The dome C is for the purpose of conducting the lighter vapors to the pipes connecting with the worm, as they, rising first, will fill the dome and keep the heavier ones from the conducting-pipes *e* until the steam-jets act upon them.

In producing burning-oils from the crude oil, as "Canada," "West Virginia," and others, in which the percentage of oil suitable for burning is low, great heat is required in the furnace, and the chief difficulty is to obtain a light-colored oil at the high temperature it is necessary to keep the still. If, for instance, a still be filled with crude oil up to the level of the line *x y*, and the fire started, the first oil produced will be light-colored, but, as the heat increases, the oil-vapor will become heavier and discolored.

If at this point jets of steam are introduced through the pipes *d d* into the heated vapor, the temperature of the latter will be instantly reduced by the lower temperature of the steam, the heavier vapor will fall and give place to the lighter, and the oil run from the still will be of the desired color.

The temperature of the still can be regulated by the quantity of steam admitted, and the great advantage derived from its use, in addition to its improving the quality of the oil, is that the contents of the still can be run off in much less time than in the common way of attempting to regulate the temperature of the still by the fires; a very difficult method of producing a light-colored oil.

The steam readily passes off with the vapor into the worm, and is condensed.

The quantity of steam to be injected into the vapor above the oil can be readily determined from the color of the oil running from the still, more steam being required as the oil commences to become discolored.

By regulating the temperature of the still by the use of steam in this manner, it can be worked with less heat from the furnace, and consequently the cost for new stills, or repairs to old ones, will be greatly reduced.

The oil produced by this process will stand a much better fire-test, as the higher the temperature at which the oil is distilled, the more gas there will be in the oil, and the steam, acting to reduce the temperature of the vapor, will keep down the gaseous products.

In the usual mode of distilling, the stills are run down to five or six per cent. of their contents, when the fires are extinguished, and the stills left to cool.

In this residue of tar and other heavier products from the crude oil, there will be a portion of oil remaining, which it is ordinarily impossible to distil without increasing the heat and injuring the stills; but by introducing steam I am enabled to remove a considerable portion of this oil from the refuse, without the aid of further heat from the furnace.

I claim as my invention—

1. The combination, with the still B, of the steam-chandelier D, for introducing steam into the vapor of an oil-still, substantially in the manner and for the purposes described and specified.

2. The combination, with the still B, of the dome C and the steam-chandelier D, all constructed substantially in the manner herein described and specified.

SAMUEL VAN SYCKEL.

Witnesses:

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