

United States Patent Office.

IMPROVEMENT IN TREATING HYDROCARBON OILS.

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Letters Patent No. 59,751, dated November 20, 1866.

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, H. K. TAYLOR and D. M. GRAHAM, of Cleveland, in the county of Cuyahoga, and State of Ohio, have invented certain new and useful improvements in the method of treating oil, &c., and we do hereby declare that the following is a full and complete description of the same:

The nature of our improvement relates to a process for raising the fire test and improving the color and quality of the oil. To attain this result the following process is pursued:

The pipe through which the air used in the agitation of the distillate passes is connected with a suitable vessel or air-tight chamber, in which are generated gases. This pipe is arranged in relation to the said vessel in such a manner that gas, as fast as evolved, is carried directly into the oil with the air passing through the pipe, and diffused through it.

We introduce into the vessel above-mentioned the materials for the production of the gas. We are now using hydrochloric acid gas produced by the action of sulphuric acid on chloride of sodium, or common salt.

The material passed into the distillate is specified in our patent, issued May 22, 1866, and the treatment is conducted in the manner therein described, viz: chloride of sodium or common salt and sulphuric acid.

When the color of the oil is aimed at independently of the fire test the introduction of chloride of sodium into the distillate may be omitted.

We commence drawing the precipitated acid and sediment within five minutes after each agitation has ceased, and continue at short intervals as long as any impurities will run from the cock at the bottom of the agitator.

After the last agitation with acid, and the removal of all impurities that will run off, great care is necessary in washing the distillate. This should be done without agitation in order to avoid throwing the yellow coloring matter in the bottom of the agitator back into the oil.

An ordinary sprinkling nozzle is used for the purpose of spreading the water on the surface of the oil.

We likewise pass water through a perforated pipe around the bottom of the agitator at the top of the slope.

In order to secure the best results the washing should be continued until the yellow coloring matter is entirely removed.

After the removal of the coloring matter the oil may be agitated for a short time with a large quantity of water for the purpose of removing a portion of the acid.

The agitation should not be continued, however, until the distillate becomes milky.

After the treatment with the alkali the same care should be used in washing as before. The rinsing should be continued as long as the water will run milky from the agitator; after which the oil is agitated from five to ten minutes, water running into it at the same time.

The evidence of a careful treatment is the entire absence of sediment in the bottom of the bleacher after the oil is settled.

For generating the gas used in this process we take one lb sulphuric acid and one half lb salt per barrel of oil.

When the distillate is of very light gravity it is necessary to use hot water or hot water and steam at the last washing.

The temperature of the oil after treatment is finished should never exceed 110° Fahr.; ordinarily 100° is sufficient.

A lot of oil of fifty bbls., the distillate of which commenced with a gravity of 64° B., the average gravity of which was 46½° B., gave after treating the color of standard white, and the igniting point 112° F.

A lot of fifty bbls., distillate commencing 66° B., the average gravity 48° B., color prime white, igniting point 105° F.

A lot of fifty bbls., the stills charged with forty-four bbls. of crude oil and fourteen bbls. of paraffine, the distillate commencing at 66° B., gave the color of standard white, and igniting point 122°

It is believed the tendency of the ordinary method of agitation by air is to increase the explosibility of oil by the development of azotized compounds in the oil, while the use of a current of chlorine or hydrochloric acid gas in combination with the air, in consequence of its greater affinity, takes the place of nitrogen in the oil.

It is found that this azotized gas is produced in the last stage of distillation.

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

First. The disposing affinity of sulphuric acid, causing a chemical combination of the gases used with the oil either in connection with our process, patented May 22, 1866, or in connection with other processes.

Second. The disposing affinity of sulphuric acid in the treatment of hydrocarbons, that its use in connection with other substances, solid, gaseous, or fluid, by means of which the energy combination of these substances or parts of them with the hydrocarbons is very much increased.

Third. Treating oil by means of air and acid gases substantially as set forth and described for the purposes specified.

HUDSON K. TAYLOR,
DAN. M. GRAHAM.

Witnesses :

W. H. BURRIDGE,
FRANK ALDEN.