

WM M. SLOANE .

109772 Apparatus for purifying and refining oil

PATENTED NOV 29 1870

FIG. 1.

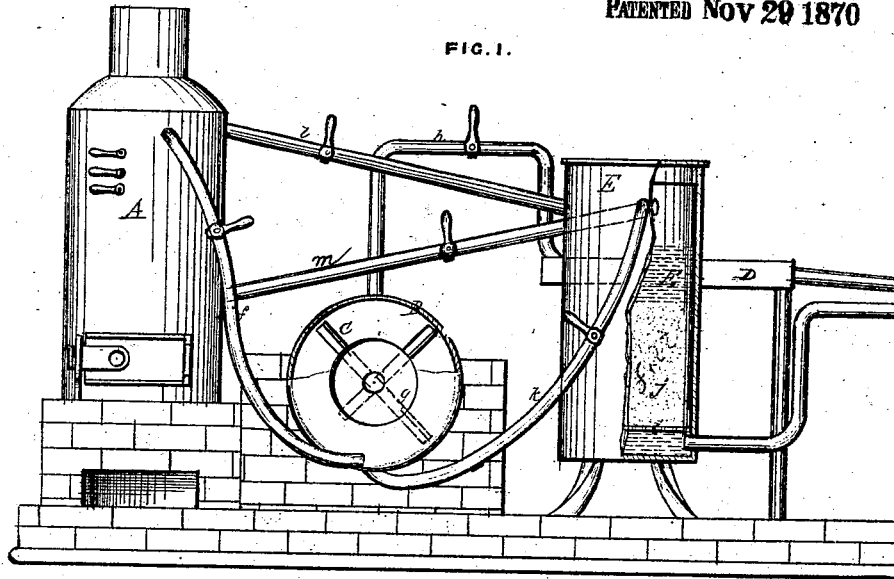
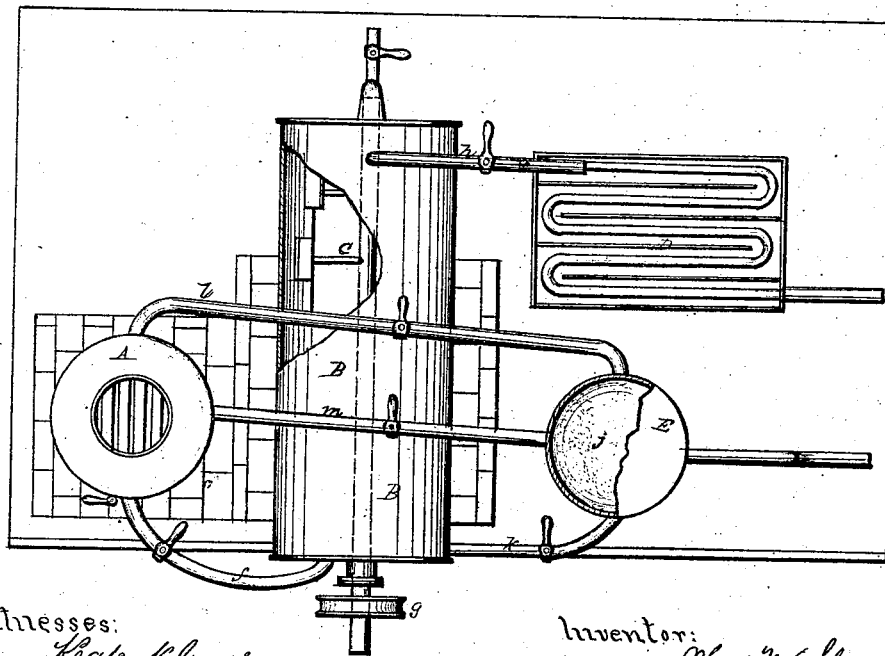


FIG. 2.



Witnesses:
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WILLIAM M. SLOANE, OF NEW YORK, N. Y.

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IMPROVEMENT IN PURIFYING AND REFINING OILS.

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

I, WILLIAM M. SLOANE, of the city, county, and State of New York, have invented an Improved Method and Apparatus for Purifying and Refining Oils, of which the following is a specification.

My method consists in distilling and filtering under steam-pressure with an apparatus adapted to that purpose.

As shown in the drawing—

Figure 1 is a side elevation of the apparatus which I employ, and

Figure 2, a plan view of the same, portions of the agitating-cylinder and of the filter being broken away to show the interior thereof.

The apparatus consists essentially of steam-boiler A of small capacity, a closed cylinder, B, for receiving the oil, provided with an agitator, C, a condenser, D, and a close filtering vessel, E, the oil cylinder and condenser and filter being connected with the steam-generator, and with one another by a system of pipes and cocks, as hereafter described.

The crude oil is placed in the close cylinder B, and with it milk of lime, of the consistency of cream in the proportion of one part, or thereabout, to ten parts of the oil.

The cylinder is then closed steam-tight and steam is admitted into the bottom of the oil-cylinder through the pipe *f* by opening the cock therein.

The agitating-shaft C is then made to revolve rapidly by power applied to the pulley *g*, and the steaming and agitation continued until the pressure in the oil-vessel indicates eighty to one hundred pounds. The agitation is then discontinued to allow the lime to deposit and the steam to condense, when they are drawn or blown off through a pipe in the bottom into a receiving-tank, when any of the heavier portions of the oil which may have escaped with it can be saved by due separation. Having closed the pipe through which these deposits are drawn off, I open the cock in the pipe *h*, leading to the condenser. I blow off the steam and vapor of oil through the condensing coil into a receiving-tank, where the water can be drawn off from the bottom, leaving the refined oil ready for the market.

I continue the blowing off of the vapor through the pipe *h*, increasing the pressure as the gravity of the oil increases, until what remains in the cylinder B is sufficiently heavy for lubricating purposes, when I shut the cock in pipe *h* and open that in the bottom of the cylinder, and blow off the remaining heavy oil into a suitable receiving-tank.

This heavy oil is entirely inodorous, and more valuable than the volatile portion, being applicable for lubricating, leather dressing, and for preparing wool, &c.

This method develops no tar or pitch, and but a small quantity of earthy matter, demonstrating that

the pitch produced by the ordinary method of refining, results from partially destructive distillation, a part of the oil being converted by heat into fixed gas and solid residuum.

Neither does my method produce as much benzole or other volatile fluid as the old method for the same reason.

In refining those kinds of oils in which filtration is necessary or desirable, I employ the closed filter E in combination with the cylinder and steam-boiler, using steam pressure to expedite the operation and render it more effective.

The filtering vessel E is provided with a perforated false bottom, *i*, upon which may be placed any suitable porous material *j*.

A pipe, *k*, connects the bottom of the oil-cylinder B with the upper part of the filtering-chamber, by which the contents of the former are blown by the steam pressure employed, into the latter. The cock in *k* is then closed, and steam from the boiler is admitted directly into the upper part of the filter by means of the pipe *l*, and acts both by maintaining the temperature of the oil at a point of great fluidity, and by direct pressure upon the surface of the oil, to produce its rapid passage through the filtering medium.

The pressure may be varied and regulated at will.

Any other deodorizing agent may be used instead of lime in the process of agitating under the action of steam.

The pipe *m* connects with the water portion of the boiler for the purpose of injecting water into the top of the filter to expel the oil held in the pores of the filtering material, and for cleansing the same, steam pressure being applied above the water by opening the cock *l*.

I claim as my invention—

1. The method of purifying oils by agitating with any deodorizing agent in a close vessel under the action and pressure of steam, substantially as set forth.

2. The combination of the closed filter with the agitating vessel and steam-boiler, for the purpose set forth.

3. The combination of the condenser D with the agitating vessel B and steam-generator, as and for the purposes set forth.

4. An oil-refining apparatus, consisting of the agitating-vessel B, condenser D, filter E, steam-boiler A, and pipes *f h k l*, combined and arranged substantially as and for the purposes set forth.

5. The method of refining and purifying oils by means of agitating, vaporizing, and filtering under the heat and pressure of steam, as set forth.

WM. M. SLOANE.

Witnesses:

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