No. 700,181. Patented May 20, 1902.

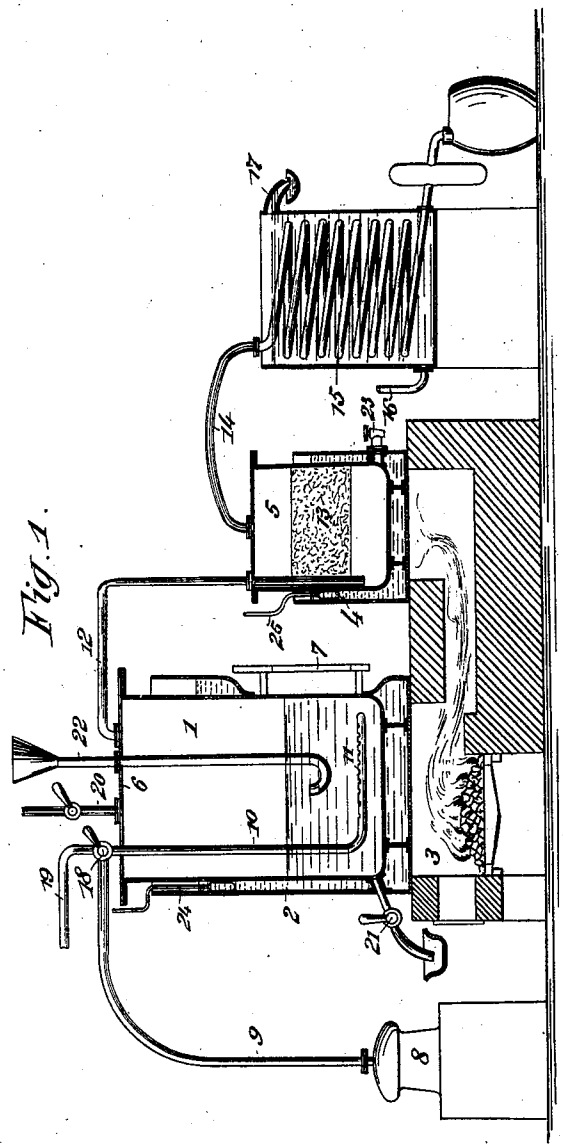
E. DOUILLET.

PROCESS OF REFINING OILS.

(Application filed June 14, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



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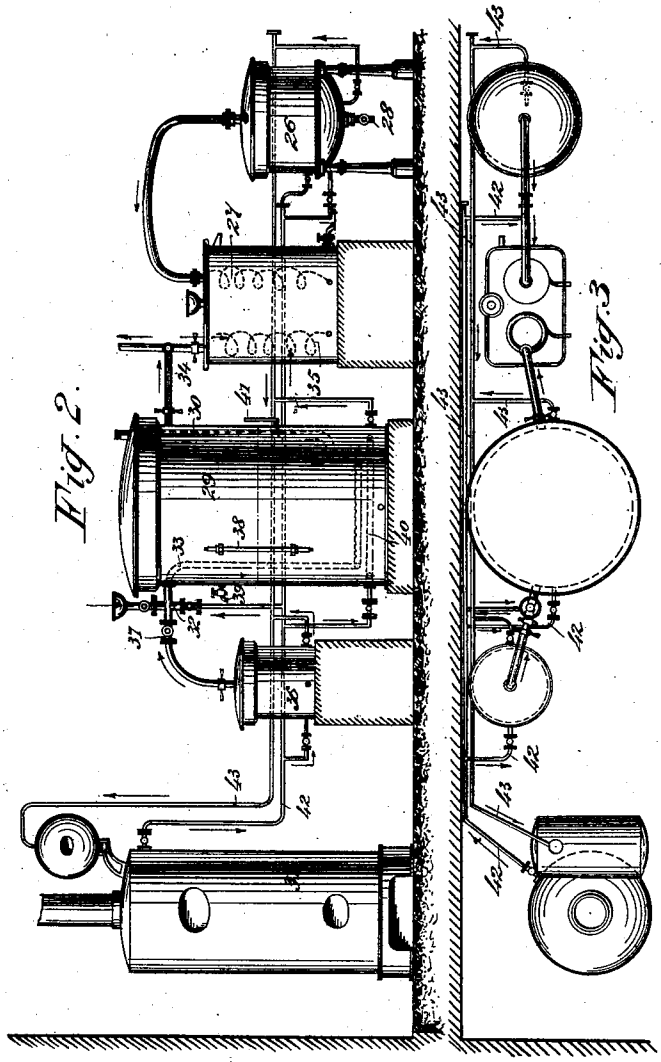


Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

EDOUARD DOUILLET, OF LA GARENNE-COLOMBES, FRANCE.

PROCESS OF REFINING OILS.

SPECIFICATION forming part of Letters Patent No. 700,181, dated May 20, 1902.

Application filed June 14, 1901. Serial No. 64,585. (No specimens.)

To all whom it may concern:

Be it known that I, EDOUARD DOUILLET, a citizen of the French Republic, and a resident of La Garenne-Colombes, Seine, France, have invented certain new and useful Improvements in Processes of Oil-Refining, of which the following is a specification.

Oils sold in commerce are often very impure. They contain organic bodies which give them a normal color and a disagreeable taste. Certain oils can be refined in the usual manner, but others cannot be so treated. These are oils having been used in the fish-preserving trade, which take a brownish color and retain a most disagreeable fishy taste and smell. Certain natural oils also which have been applied to divers usages resist the ordinary treatment of purification.

The process forming the object of the present invention realizes the complete purification of oils and similar substances.

The principle consists in the combination of three well-known agents—alcohol, steam, and animal-charcoal with or without admixture of carbonate of magnesia—which are applied in succession in a suitable temperature.

If alcoholic vapors are caused to pass through a tank of oil to be refined, this vapor is charged with odoriferous particles. However, this operation is not sufficient to remove the color and rancidity from the oil. If after the passage of the alcohol a jet of superheated steam is caused to pass through the oil, this steam carries with it the remaining impurities and notably deoxidizes the oil, which owes its rancidity to a partial oxygenation. To facilitate this operation, a current of hydrogen may be caused to pass through the oil, and this current, owing to the high temperature at which the operation takes place, acts very energetically.

Besides the before-mentioned agents benzin or sulfid of carbon may be used. In this case the fatty portions of the matter submitted to the operation are extracted by means of the benzin or sulfid of carbon. Then superheated steam is passed through the oil under treatment. This steam, as before stated, separates the impurities and deoxidizes the oil. Lastly, alcoholic vapor at a high temperature is passed through the oil and becomes charged with the impure and odoriferous particles.

In order to clearly describe my improved process, I have shown a preferred form of apparatus which has been made the subject of a separate application, Serial No. 74,762.

The accompanying drawings, given by way of example, show an installation for refining by means of alcohol, steam, and animal-charcoal, as well as an installation in which benzin or sulfid of carbon are used conjointly with the said agents.

Figure 1 is an elevation of the first-named installation. Fig. 2 represents in elevation the second kind of installation. Fig. 3 is a plan view of the latter.

The apparatus in which the refining takes place consists of a tank placed in another tank 2, containing chlorid of calcium or any other solution capable of a temperature of about 150°. This tank 2 is heated at the bottom by means of a furnace 3, serving also to heat a similar bath 4, surrounding the vessel 5, the use of which will be hereinafter described. The tank 1 is hermetically closed by means of a cover 6, the level of the oil being shown by the tube 7. The alcoholic vapor is produced by the alembic 8 and passes through the tube 9 into the descending tube 10, which passes through the cover 8 and ends near the bottom in a circular tube 11, provided with a plurality of holes through which the alcoholic vapor escapes, passing through the mass of oil. This vapor escapes through the tube 12 and is conducted into the bottom part of the receptacle 5, serving to filter the alcohol by means of the potash contained in the basket 13 and is maintained at a high temperature by a solution similar to that in the tank 1. The filtered alcohol escapes through the tube 14 to enter the serpentine 15, wherein the alcohol is condensed and is collected in a suitable receptacle, while the cooling-water arrives through the pipe 16 and overflows through the pipe 17. After the alcohol has been allowed to act during a sufficient time steam is then brought to bear upon the mass. For this purpose the tube 10 is furnished with a three-way cock 18, and steam is then introduced by means of the pipe 19, the cock being turned so as to shut off the

communication with the alcohol alembic. The steam escapes through the pipe 20, furnished with a cock closed during the action by alcohol. After the action by steam the refined oil is drawn off by the cock 21, and a fresh quantity is introduced through the funnel-tube 22, which is bent at its lower end, so as to prevent any admission of air. The refined oil is then filtered through the animal-charcoal and carbonate of magnesia. A cock 23 allows the solution of potash formed by the water conveyed into the vessel 5 by the alcohol to be drawn off. Thermometers 24 25 are placed in the baths of chlorid of calcium in order to maintain the temperature below boiling-point.

In the form of execution shown in Figs. 2 and 3, 26 is an alembic heated by steam and containing benzin or sulfid of carbon in which the fatty matters to be treated have been previously dissolved. After distilling, the object of which is to recuperate the benzin or sulfid of carbon condensed in the cooling-serpentine 27, the substances forced by a pump into the purifier 29 are run out through the cock 28, the said substances entering by the tube 30, bent at its end to prevent air from entering therein. This end is immersed in the bath. Steam is then used, being supplied from a generator 31 and entering through 32 to leave through the horizontal portion of the perforated tube 33. This steam passes through the mass under treatment. It may be allowed to escape through 34 or be recuperated in the cooling-serpentine 35. After the steam has performed its work the alcoholic vapor is brought into operation. This alcoholic vapor is produced by the alembic 36, heated by steam furnished by the generator 31, and passes through the contents of the purifier 29. It enters by 31 and acts in the same way as the steam, which enters by the tube 33 and is condensed in the serpentine 35, returning from thence to the alembic 36. When the condensations of water or alcohol have increased the volume of the substance treated, as shown by the indicator-level 38, fitted to the purifier 29, they are drawn off through the cock 39, placed above the level of the substance to be treated. In order to maintain a high temperature in the substance under treatment, a serpentine 40 is placed at the base of the filter 29. This serpentine is heated by steam supplied by the generator. Should this heat be insufficient, the purifier 29 is immersed in a bath of chlorid of calcium or any other suitable solution giving a temperature of about 50°. A thermometer placed at 41 indicates the temperature of the substances under treatment. The steam-piping conveying the steam from the generator to the apparatus is shown by 42 and the return-pipes for condensed steam by 43.

The above-described process is applied to the purifying of oils, grains, tallow, glycerin, vaseline, wax, and other fatty substances having been used in industrial operations; also, preserving-oils and lubricating substances having passed through working parts of machines, glycerin which has been used in refrigerating processes, and the like substances. This process can also be applied to the extraction of the perfume of flowers.

Having fully described my invention, what I desire to secure by Letters Patent is—

1. A process for refining oils and the like, which consists in passing a current of alcoholic vapors through the oil, then in passing a current of steam through the oil, and finally in filtering the oil so treated, substantially as described.

2. The process for refining oils and the like, which consists in dissolving the oil in benzin, passing successive currents of alcoholic vapors and a current of steam and in filtering the oil after said treatments, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two witnesses.

EDOUARD DOUILLET.

Witnesses:

EDWARD P. MACLEAN,

ADOLPHE STURM.