

No. 37,266. Refining Canadian and Similar Petroleum Oils. (*Appareil pour raffiner le pétrole Canadien et autres semblables.*)

The Solar Refining Company, Lima, assignees of Herman Frasch, Cleveland, both in Ohio, U.S.A., 1st September, 1891; 5 years.

Claim.—1st. The process of purifying Canadian and similar petroleum, which contain sulphur compounds whose presence gives to said oils the property of dissolving lead oxides by, (1), distilling the same, and (2), *subjecting the vapors*, after they are given off from the distilling liquid, to the action of the oxidizing oxides, so as to decompose the refractory sulphur compounds, substantially as described. 2nd. The process of purifying Canadian and similar petroleum, which contain sulphur compounds whose presence gives to the said oils the property of dissolving lead oxide, by (1) distilling the same and (2) *passing the vapors*, after they are given off, *through or over an oily or resinous liquid mixed with oxidizing oxides*, or holding the same in solution or suspension, substantially as described. 3rd. The process of purifying Canadian and similar petroleum, which contain sulphur compounds whose presence gives to said oils the property of dissolving lead oxide, by (1) distilling the same, and (2) *subjecting the vapors*, after they are given off, to the action of the oxidizing oxides, (3) *condensing the vapors* so acted upon, and (4) *washing the condensed liquid with sulphuric acid*, substantially as described. 4th. In the purification of Canadian and similar petroleum which contain sulphur compounds whose presence gives to said oil the property of dissolving lead oxide, the improvement consisting in, (1) *combining or mixing fatty or resinous acid with the oxidizing oxides*, (2) distilling the oil to be purified, and, (3) *subjecting the vapors to the action of such mixture or compounds*, substantially as described. 5th. In the purification of Canadian and similar petroleum, which contain sulphur compounds whose presence gives to said oils the property of dissolving lead oxide, the improvements consisting in, (1) distilling the oil to be purified, and (2) *subjecting the vapors thereof to the action of oxidizing oxide in solution*, or in solution and suspension in petroleum containing fatty or resinous acid, substantially as described. 6th. The process of purifying Canadian and similar petroleum, which contain sulphur whose presence gives to said oils the property of dissolving lead oxides by (1) distilling the same, and (2) *subjecting the vapors to the action of the metallic salts*, such as manganates, chromates, borates, sulphates and the like that are decomposed by hydrogen sulphide in acid solution, substantially as described. 7th. The process of purifying Canadian and similar petroleum which contain sulphur compounds whose presence gives to said oils the property of dissolving lead oxide by (1) distilling the same, and (2) *subjecting the vapors to the action of the metallic salts*, such as manganates, chromates, borates, sulphates and the like that are decomposed by hydrogen sulphide in acid solution, *mixed with or suspended in an oily or resinous liquid*, substantially as described. 8th. The combination, with an oil still, of a purifier, communicating with the vapor space of the still and provided with an exit pipe, and a pump or feeder which feeds the purifying material to the purifier, substantially as and for the purposes described. 9th. The combination, with an oil still, having a furnace, and a flue leading therefrom, of a purifier in the flue, and a pump or feeder which feeds the purifying material to the purifier, which purifier communicates with the vapor space of the still and has an exit pipe, substantially as and for the purposes described. 10th. The combination, with an oil still, of a purifier provided with baffle-plates, and a pump or feeder which feeds the purifying material to the purifier, which communicates with the vapor space of the still and is provided with an exit pipe, substantially as and for the purposes described. 11th. The combination of an oil still, of a purifier communicating with the vapor space thereof, and provided with an exit pipe, and a pump or feeder which receives the purifying material discharged from the purifier and returns it to the same, substantially as and for the purposes described. 12th. The combination, with an oil still, of a purifier communicating with the vapor space of the still, and provided with an exit pipe, a pump or feeder which supplies the purifying material to the purifier, and a supplementary distilling chamber which receives liquid condensed in the purifier, re-vaporizes it and returns the vapors to the purifier, substantially as and for the purposes described. 13th. The combination, with an oil still, of a purifier provided with baffle-plates, a pump or feeder which supplies the purifying material to the purifier, and a supplementary distilling chamber, which receives liquid condensed in the purifier, re-vaporizes it and returns the vapors to the purifier, the latter being in communication with the vapor space of said still, and being provided with an exit pipe, substantially as and for the purposes described. 14th. The combination, with an oil still, of a purifier provided with baffle-plates, a pump or feeder which receives the purifying material from the lower part of the purifier, elevates the same, and discharges it again into the vapors, the said purifier being in communication with the vapor space of the still and being provided with an exit pipe, substantially as and for the purposes described. 15th. The combination of an oil still, of a purifier provided with baffle-plates, and having moving parts which assist in carrying the purifying material through the purifier, and a pump or feeder which receives the purifying material after it has acted on the vapors, and discharges it again into the purifier, the latter being in communication with the vapor space of the still, and being provided with an exit pipe, substantially as and for the purposes described. 16th. The combination, with an oil still, of a purifier communicating therewith and provided with baffle-plates, a supplementary distilling chamber, which receives the purifying material from the lower part of the purifier as well as the liquid condensed in the purifier, and re-vaporizes the same, a pump or feeder which returns the purifying material into the purifier, and an exit pipe leading therefrom to a condenser, substantially as and for the purposes described.

No. 37,267. Art of Purifying Petroleum. (*Art de purifier le pétrole.*)

The Solar Refining Company, Lima, assignees of Herman Frasch, Cleveland, both in Ohio, U.S.A., 1st September, 1891; 5 years.

Claim.—1st. The process of purifying Lima and similar petroleum of the character described, consisting in (1) distilling the same with a metallic oxidizing oxide or oxides dissolved therein, (2) keeping up, during the process of distillation, a condition of *super-saturation of the oil with the oxides*, and (3) suspension of the latter by adding a quantity of oxides in excess of the amount theoretically necessary to bind the sulphur contained in the oil under treatment, and (4) by continuous agitation of the oil and oxides, substantially as described. 2nd. The process of purifying Lima oil and similar petroleum of the character described, by (1) mixing the petroleum with an oxidizing oxide or oxides in excess of the amount which the oil under treatment will hold in solution, and (2) distilling the same, while (3) keeping the oil and oxides in the still in a state of constant agitation during the process, substantially as described. 3rd. The process of purifying Lima oil and similar petroleum of the character described, by (1) distilling the same in a still containing (mixed with the oil in excess of the amount necessary to bind the sulphur contained therein) a soluble metallic oxide or oxides or composition containing such oxide or oxides, (2) preserving a condition of *super-saturation of the oil* and of constant agitation of the oil and oxides during the distillation, and (3) treating the resultant distillate with sulphuric acid, substantially as described. 4th. The process of purifying Lima oil and similar petroleum, consisting in (1) distilling the oil when mixed with a soluble metallic oxide or oxides or mixture containing the same, in excess of the amount necessary to bind the sulphur contained in the charge of oil under treatment, (2) removing from the still at the end of any distillation a portion only of the sedimentary residuum, and (3) adding thereto an amount of metallic oxide or oxides sufficient with the unreduced oxides remaining in the sedimentary residuum to form a new charge for the next distillation, substantially as described. 5th. In the purification of Lima oil and similar petroleum, by distilling the same with oxidizing metallic oxide, oxides, or compound, the improvement consisting in (1) keeping in the oil during the distillation thereof *more of the said purifying material than is theoretically necessary to bind the sulphur in the oil*, and also during such distillation, (2) stirring the oil at the lower part of the still, (3) scraping or sweeping the floor of the still, and (4), giving to the oil and suspended purifying material a definite upward impulse, so as to keep constantly at the upper part of the charge in distillation, oil saturated with and holding in suspension the purifying material, and to thus cause the rising vapors which are generated at the bottom of the still most thoroughly to come into contact with the purifying material in solution and suspension in passing through the said charges, substantially as described. 6th. In combination, with an oil still, the following devices collectively, namely *drags* resting loosely on the bottom of the still and provided with scraping surfaces in contact therewith, means for drawing the said drags over the bottom of the still, rotary stirrers movable about a vertical axis and arranged in the oil space of the still, and deflectors also arranged in said oil space, substantially as and for the purposes described. 7th. In combination, with an oil still, flat *drags* resting loosely flatwise on the bottom of the still, and provided with scraping surfaces in contact therewith, and means whereby said drags are drawn over the said bottom, substantially as and for the purposes described. 8th. In combination, with an oil still, *drags* resting loosely on the bottom of the still and comprising bars whose edges conform to and bear upon the bottom of the still, and means whereby said drags are drawn over the said bottom, substantially as and for the purposes described. 9th. In combination with an oil still, a rotary stirrer movable about a vertical axis, and arranged in the oil space of said still, *deflectors* also arranged in said oil space and fixed to the still in an inclined position, substantially as and for the purposes described. 10th. The combination, with an oil still, of the vertical shaft in said still, the horizontal arms connected with said shaft and arranged in the oil space near the bottom of the still, the *drags* composed of flat frames of connected bars whose edges rest upon the bottom of the still, and the flexible connections between the said drags and the said arms, substantially as described. 11th. The combination, with an oil still, of the *drags* resting loosely on the bottom of the still and provided with scraping surfaces in contact therewith, the vertical shaft in said still, the arms of said shaft the flexible connection between the said drags and said arms, and the deflectors fixed in an inclined position in the oil space of the still, all substantially as illustrated in the accompanying drawings and described with reference thereto for the purposes specified.

No. 37,268. Art of Purifying Petroleum.

(*Art de purifier le pétrole.*)

The Solar Refining Company, Lima, (assignees of Herman Frasch, Cleveland), both of Ohio, U.S.A., 1st September, 1891; 5 years.

Claim.—1st. The process of preparing inodorous, undistilled petroleum of the character described, consisting in treating the same in the liquid state with oxidizing agents, substantially as set forth. 2nd. In the art of purifying undistilled petroleum liquids of the character described, the improvement consisting in binding the sulphur compounds contained in the liquid, by dissolving therein an oxidating compound without subsequent precipitation, substantially as and for the purposes described. 3rd. In the art of purifying undistilled petroleum liquids of the character described, the improvement consisting in binding the sulphur compounds contained in the liquid by dissolving therein an oxidating compound without previous treatment of the liquid with sulphuric acid, substantially as and for the purposes described. 4th. In the art of purifying undistilled petroleum liquids of the character described, the improvement consisting in treating such liquid when in a heated state preferably at about 400° F. with an oxidating compound, agitating the mixture, and then allowing it to cool and settle, substantially as and for the purposes described. 5th. In the art of purifying undistilled petroleum liquids of the character described, the improvement consisting in treating such liquid in a heated closed vessel preferably at about the temperature of 400° F. with an oxidating compound, and then allowing the liquid to cool and settle, substantially as and for the purposes described. 6th. In the art of purifying the liquids of petroleum containing sulphur compounds, the improvement consisting in treating such liquid with an oxidating compound and an acid