

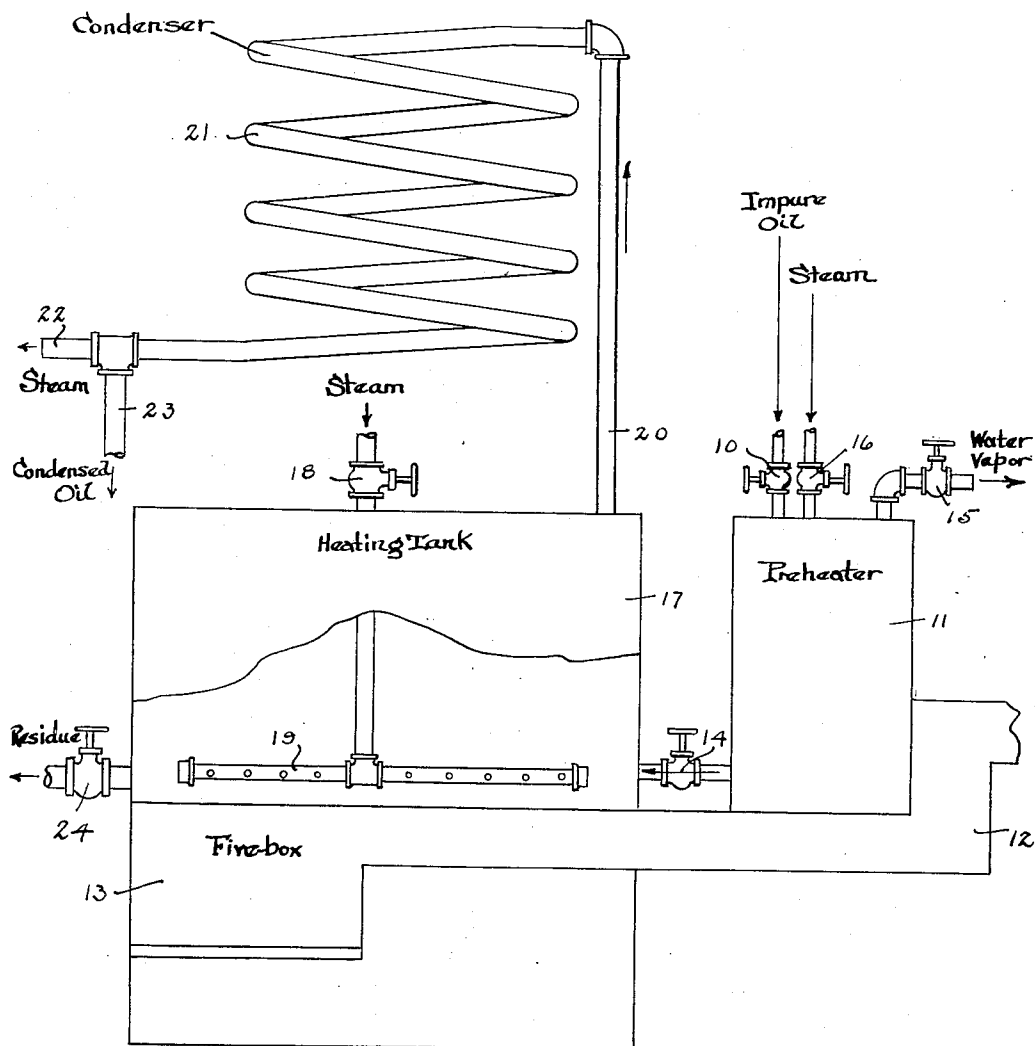
April 16, 1929.

T. W. POTTER ET AL

1,709,230

METHOD OF RENOVATING JOURNAL BOX OIL

Filed May 9, 1928



INVENTORS,
Thomas Willoughby Potter,
Leo Carl McNameara,
Charles Neukom Lammers,
and John Robert McLavy.
By Minturn & Minturn,
Attorneys.

UNITED STATES PATENT OFFICE.

THOMAS WILLOUGHBY POTTER AND LEO CARL McNAMARA, OF INDIANAPOLIS, AND CHARLES NEUKOM LAMMERS AND JOHN ROBERT McLAVY, OF DANVILLE, INDIANA, ASSIGNORS TO JOURNAL-BOX SERVICING CORPORATION, OF INDIANAPOLIS, INDIANA, A CORPORATION OF INDIANA.

METHOD OF RENOVATING JOURNAL-BOX OIL.

Application filed May 9, 1928. Serial No. 276,252.

This invention relates to a method of separating finely divided animal and vegetable fibers, such as the lint of wool, cotton, and linen waste, from lubricating oils. The invention is particularly intended to be employed as a means of renovating oil coming from used journal-box waste.

In the railroad industry, the journal-boxes of the locomotives and cars are periodically packed with waste soaked in oil as a means of lubricating the bearings. While formerly the old waste removed from the journal-boxes was thrown away on account of the congelation of the oil and the imbedding therein of gritty, abrasive particles of dirt and metal, means have been developed for cleaning the used waste and restoring it to a condition better suited for the purpose than was the condition of fresh waste newly soaked in oil. Such means employ a bath of heated oil in which the waste is separated and washed out.

The oil employed in this bath quickly becomes loaded with the lint floated out of the waste and with the finely divided particles of dirt which do not readily precipitate. Not only this happens, but the hardened residue of the oils in the old waste is loosened up and separated from the waste to mix with the oil. The problem has been to maintain the oil bath in a condition such that the waste leaving the bath was entirely free of all abrasive matter and was impregnated with oil of the correct properties as to ash content, viscosity, flash point, etc., as to be entirely suitable and acceptable for the lubrication purposes intended.

The presence of the lint complicated the problem and no successful means of restoring the oil to its original condition were to be had until the discovery of the invention which is herein described in reference to the accompanying drawing, in which the single figure is a schematic diagram of one form of an apparatus adapted to carry out the process.

The oil to be renovated is brought through the pipe and valve 10 and into the tank 11 which is located to be in communication with the stack 12 leading from the fire-box 13 whereby the oil in the tank may be heated. The outlet valve 14 remains closed and the oil is allowed to be brought up to a temperature in the neighborhood of 250 degrees F. so that

any water may be driven off from the oil in the form of steam which is allowed to escape from the tank 11 through the valve 15.

Following this preliminary heating stage, the oil intake valve 10 is closed, the escape valve 15 is closed, the outlet valve 14 is opened and steam under pressure is admitted through the valve 16 into the tank 11 to force the heated oil through the valve 14 into a second and larger tank 17, after which the valve 14 is closed, and the tank 11 operated as before.

The tank 17 is immediately over the fire-box 13 and the temperature of the oil is increased by the heat from the fire-box until it begins to vaporize. Steam is conducted through the valve 18 down to a distributor pipe 19 near the bottom of the tank 17 where it escapes into the oil from a plurality of orifices in the pipe for the purpose of agitating the oil and the preventing of the formation of a coke deposit on the bottom of the tank 17.

The temperature within the tank 17, while sufficient to vaporize the oil, is not high enough to cause cracking of the oil, any cracking of the oil being purposely avoided.

The vaporized oil together with the steam escapes from the tank 17 through the pipe 20 into the condenser 21 where the vapors are cooled down to a temperature of approximately 300 degrees F., which is high enough to maintain the steam as such, but low enough to condense the oil vapors to liquid oil. The steam is permitted to escape from the end of the pipe 22, while the oil drops down the pipe 23 to be conducted to any suitable storage point.

In the bottom of the tank 17, a heavy residue collects, samples of which may be obtained from time to time by drawing off through the valve 24. When the sample reaches a state of tar-like consistency, the residue is drawn off. This residue contains the heretofore inseparable lint, the abrasive dirt particles, and the heavier portions of the congealed oil originally in the waste being cleaned. The oil coming from the condenser has had none of its lighter ends removed during the process, but does have a very low ash content indicative of the removal of the undesirable foreign matter.

While we have here described our invention in the one form now best known to us,

it is obvious that variations in the apparatus and sequence of steps in the process may be made without departing from the spirit of the invention, and we therefore do not desire to be limited to the precise steps and structure as shown and described, nor any more than may be required by the following claims.

We claim:

1. The method of separating lint and foreign matter from used journal-box oil comprising heating a discrete body of said oil and controlling the pressure in a closed tank until said oil is substantially vaporized without cracking to leave said lint and particles in said tank, withdrawing the vaporized oil from the tank, and condensing the said vaporized oil.

2. The method of separating lint and foreign matter from used journal-box oil comprising placing a quantity of said oil in a tank closed to the atmosphere and which discharges into a condenser, heating said oil in the tank until substantially vaporized below cracking temperatures to leave said lint and dirt particles in a viscous mass in the tank, introducing steam into the tank, condensing said vaporized oil in said condenser, and discharging the condensed oil from the condenser at a temperature above 212 degrees Fahrenheit.

3. The method of separating lint and foreign matter from used journal-box oil comprising heating a body of said oil in a tank open to the atmosphere to evaporate water from the oil, transferring the said body of oil to a heating tank closed to the atmosphere and having a discharge therefrom into a condenser, heating the said transferred body of oil and controlling the pressure within the tank to secure substantially complete vaporization without causing cracking of the oil to cause said lint and foreign matter to be deposited at the bottom of said heating tank, drawing the vaporized oil from the heating tank through said condenser, and discharging condensed oil therefrom.

4. The method of separating lint and foreign matter from used journal-box oil comprising placing a body of the oil in a tank closed to the atmosphere and communicating with a condenser, applying heat to and controlling the pressure on said body of oil sufficient to substantially vaporize said body of oil without cracking to cause said lint and

foreign matter to be left at the bottom of the tank, agitating said body of oil during the application of said heat to prevent coking at the point of application, withdrawing the vaporized oil from the tank and passing it through the condenser.

5. The method of separating lint and foreign matter from used journal-box oil comprising placing a body of the oil in a tank closed to the atmosphere and communicating with a condenser, applying heat to said body of oil sufficient to substantially vaporize said body of oil below cracking temperatures to cause said lint and foreign matter to be left at the bottom of the tank, agitating said body of oil during the application of said heat to prevent coking at the point of application by introducing steam into the body of the oil, withdrawing the vaporized oil from the tank and passing it through the condenser, and discharging liquid oil therefrom at a temperature above 212 degrees Fahrenheit.

6. The method of separating lint and foreign matter from used journal-box oil comprising preheating a quantity of said oil to vaporize water therein, transferring the oil to a tank closed to the atmosphere and in communication with a condenser, applying heat and controlling the pressure in said closed tank to heat the oil therein to substantially complete vaporization without cracking to leave said lint and foreign matter on the bottom of said closed tank, and allowing the vaporized oil to condense in said condenser.

7. The method of separating lint and foreign matter from used journal-box oil comprising placing a body of said oil in a closed tank in communication with a condenser, applying a fire under said tank to heat said body of oil to substantially complete vaporization below cracking temperatures, discharging steam into said body of oil near the bottom of said tank while said oil is being heated, holding the temperature of the condenser such that substantially all of said vaporized oil is recovered as liquid oil without condensation of the steam, and permitting the steam to escape from the condenser.

In testimony whereof we affix our signatures.

THOMAS WILLOUGHBY POTTER.
LEO CARL McNAMARA.
CHARLES NEUKOM LAMMERS.
JOHN ROBERT McLAVY.

3.

CERTIFICATE OF CORRECTION.

Patent No. 1,709,230.

Granted April 16, 1929, to

THOMAS WILLOUGHBY POTTER ET AL.

It is hereby certified that error appears in the above numbered patent requiring correction as follows: In the grant and in the heading to the printed specification, the residence of the third and fourth mentioned inventors is erroneously given as "Danville, Indiana", whereas said residence should have been given as "Danville, Illinois"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 2nd day of July, A. D. 1929.

(Seal)

M. J. Moore,
Acting Commissioner of Patents.

CERTIFICATE OF CORRECTION.

Patent No. 1,709,230.

Granted April 16, 1929, to

THOMAS WILLOUGHBY POTTER ET AL.

It is hereby certified that error appears in the above numbered patent requiring correction as follows: In the grant and in the heading to the printed specification, the residence of the third and fourth mentioned inventors is erroneously given as "Danville, Indiana", whereas said residence should have been given as "Danville, Illinois"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 2nd day of July, A. D. 1929.

M. J. Moore,
Acting Commissioner of Patents.

(Seal)