Patented Feb. 5, 1935 1,990,359

UNITED STATES PATENT OFFICE

1,990,359

METHOD OF PURIFYING LUBRICATING OILS

Charles M. Ambler, Jr., Philadelphia, Pa., assignor to The Sharples Specialty Company, Philadelphia, Pa., a corporation of Delaware

No Drawing. Application January 19, 1933, Serial No. 652,567

4 Claims. (Cl. 196—16)

The present invention relates to the treatment of hydrocarbon materials such as used lubricating oils to effect the removal of impurities therefrom. The object of the invention has been to effect removal of impurities, such as carbon, from such material by an operation which adequately effects such removal, even in cases where the impurities are of such a nature or form as to present serious obstacles to the effectiveness of known methods of purification.

The invention involves, as its principal feature, the addition of a small amount of pentanol-amine to the hydrocarbon material under treatment. The particular proportion of amine used may vary from 0.1% to 1% in accordance with the particular material under treatment. The hydrocarbon is agitated, together with the pentanol-amine, for a brief period of time sufficient to effect an intimate dispersion of the pentanol-amine therethrough. The material is thereafter allowed to stand for a period of time sufficient to allow flocculation of free carbon and other impurities contained in the hydrocarbon. The impurities are thereafter removed from the hydrocarbon, this operation being preferably performed by centrifugal separation in a clarifier bowl.

The hydrocarbon material is preferably maintained at a temperature of from 150 to 200° F. during the mixing and centrifuging operations in order to reduce its viscosity and thus facilitate the intimate dispersion of the amine and the subsequent separation of impurities. Warm water may be added together with the amine or subsequent to the dispersion of the amine and prior to the centrifugal separating operation, in order to facilitate the separating operation, if necessary.

In a specific example of the practice of the invention a sample of used Diesel lubricating oil was treated. This particular sample contained finely divided carbon and other impurities in colloidal dispersion which was exceedingly difficult to break by any known method. Two liters of the oil were first heated to 180° F. and 10 c. c. of pentanol-amine were added, the mixture being agitated for approximately fifteen minutes and thereafter allowed to stand for fifteen minutes. The oil was finally centrifuged to produce a renovated oil substantially free of its original impurities and of the added amine.

I am aware that the use of tri-ethanol amine in this connection has been heretofore suggested. It should be noted however, that vastly improved results are obtained by the use of the present invention over those obtained from the corresponding use of tri-ethanol amine. In the particular example described above, it was found possible to obtain the same degree of clarification at a rate of centrifugal throughout sixty percent higher than that possible after a corresponding treatment with tri-ethanol amine, all other features of the treatments being similar in the two cases.

I claim:

1. The method of separating solid impurities from heavy hydrocarbon such as used lubricating oils which comprises dispersing a small proportion of a commercial pentanol-amine mixture in the hydrocarbon to be purified and thereafter separating the impurities from the hydrocarbon by subsidence.

2. The method of separating solid impurities from heavy hydrocarbon such as used lubricating oils which comprises dispersing a small proportion of a commercial pentanol-amine mixture in the hydrocarbon to be purified and thereafter separating the impurities from the hydrocarbon by centrifugal subsidence.

3. The method of separating solid impurities from heavy hydrocarbon such as used lubricating oils which comprises dispersing a small proportion of a commercial pentanol-amine mixture in the hydrocarbon to be purified and thereafter separating the impurities from the hydrocarbon by centrifugal subsidence, the dispersing and centrifuging operations being conducted at temperatures between 150° F. and 200° F.

4. The method of separating solid impurities from heavy hydrocarbon such as used lubricating oils which comprises dispersing one tenth of one per cent to one per cent of a commercial pentanol-amine mixture in the hydrocarbon to be purified and thereafter separating the impurities from the hydrocarbon by subsidence.

CHARLES M. AMBLER, JR.

CERTIFICATE OF CORRECTION.

Patent No. 1,990,359. February 5, 1935.

CHARLES M. AMBLER, JR.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, second column, line 12, for "throughout" read throughput; 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. 1935.

Leslie Frazer

(Seal)

Acting Commissioner of Patents.

CERTIFICATE OF CORRECTION.

Patent No. 1,990,359. February 5, 1935.

CHARLES M. AMBLER, JR.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, second column, line 12, for "throughout" read throughput; 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. 1935.

(Seal)

Leslie Frazer

Acting Commissioner of Patents.