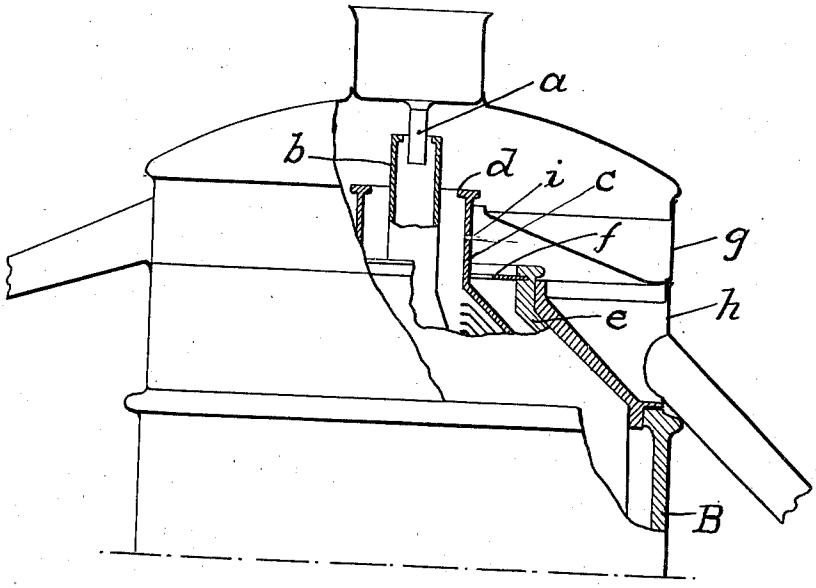
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2,147,723

PROCESS FOR PURIFYING OILS

Filed Aug. 7, 1937



WITNESS:

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UNITED STATES PATENT OFFICE

2,147,723

PROCESS FOR PURIFYING OILS

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Application August 7, 1937, Serial No. 157,987

1 Claim. (Cl. 233—28)

My invention is an improved process for purifying mineral oils and is more particularly applicable to the purification of crude oil, or oil that has not been subjected to any refining treatment. The process is more specifically intended for and adapted to the removal, from crude petroleum oils, of sediment and of impurities consisting mainly of water, salt, traces of wax and emulsion so as to make such oils suitable for use in Diesel engines.

I have found it possible to, without previous treatment, centrifugally separate from crude oils a large proportion of the specified impurities and to continuously discharge them into the usual surrounding stationary receiving vessel or "cover", the heavy sediment being held in the bowl until it is opened. The discharged impurities, however, will not flow out of the cover but accumulate therein as a viscous mass.

I have found that if a small stream, or preferably spray, of oil, and particularly of the oil separated in the process, is allowed to discharge, preferably on its way to the light constituent outlet of the bowl, into the same cover with the impurities, the latter will readily flow out of the cover.

In the accompanying drawing, which illustrates a centrifugal separating machine adapted to practice the process: *a* is a feed tube, through which the crude oil is conveyed into the central receiving chamber *b*, and thence into the separating space, of a centrifugal bowl B. Within the bowl and extending up through and above the neck thereof is a so-called top disc *c* having a top outlet *d* for the lighter separated constituent. The neck *e* of the bowl carries at its top a ring *f* over which heavier separated constituent is discharged. The ring is made exchangeable to provide for variations in the size of the outlet for the heavier constituent. *g* and *h* are covers to receive the discharged lighter and heavier constituents, respectively, and *i* is a small bleeder hole in that part of the neck of the top disc *c*, above the ring *f*, which extends through the cover *h*.

In operation, oil, containing impurities such as sand, water, salt, emulsion and waxy materials not in solution, is fed through the tube *a* into the central receiving chamber *b*, and thence flows into the separating chamber of the bowl, where the constituents of different specific gravities are separated. The lighter oil flows to the center and up within the top disc *c* and out at *d* into the cover *g*, whence it flows to any desired storage receptacle. The heavy gritty solids, such as sand, move to the extreme outer part of the bowl, where they are retained until the bowl is opened. Constituents, mainly but not entirely of intermediate specific gravities, that are readily flowable, which comprise largely the other impurities specified, move upward between the top disc *c* and the bowl top *e* and escape through the ring *f* into the cover *h*. A very small portion of the lighter separated constituent escapes through the bleeder hole *i* into the cover *h*. When the impurities are discharged over the ring *f*, they fly through the space within the cover *h* in fine particles which, under ordinary conditions, coalesce on or after striking the covers into a homogeneous viscous mass that will not flow. In my process, each of these particles, before it has a chance to coalesce, is wet with a small quantity of oil. The particles are kept separate by the oil films and form a semi-fluid mass that readily flows out of the covers.

What I claim and desire to protect by Letters Patent is:

The process of removing and conveying away from oil centrifugally separable heavier impurities which are continuously flowable from the centrifugal bowl but which tend to form after discharge a non-flowable mass, which comprises rapidly rotating the centrifugal bowl and thus subjecting the oil to centrifugal force and thereby separating it into a lighter oil constituent and a heavier constituent comprising said impurities, flowing the separated constituents through the bowl in separate streams and continuously discharging them separately, continuously separating from the lighter oil constituent, in the course of its flow through the bowl away from the locus of centrifugal separation and before it is discharged from the bowl, a small fraction thereof and continuously discharging such separated fraction into a locus which surrounds the bowl and through which said separated heavier constituent is propelled after discharge from the bowl, thereby surrounding the particles of the impurities with a thin film of oil before they have opportunity to coalesce, and so prevent them from coalescing and rendering them readily flowable, after said discharge, away from said last mentioned locus.

GEORGE J. STREZYNSKI.