

UNITED STATES PATENT OFFICE.

EDWARD GOODRICH ACHESON, OF NIAGARA FALLS, NEW YORK.

LUBRICANT.

966,636.

Specification of Letters Patent.

Patented Aug. 9, 1910.

No Drawing.

Application filed January 29, 1909. Serial No. 475,009.

To all whom it may concern:

Be it known that I, EDWARD GOODRICH ACHESON, a citizen of the United States, residing at Niagara Falls, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Lubricants, of which the following is a specification.

In my copending application, Ser. No. 399,486, filed October 28, 1907, I have described and claimed a process of preparing non-aqueous mixtures, and a product thereof, said process consisting essentially in deflocculating an amorphous body, such for example as graphite, in presence of water, and then replacing the water by a non-aqueous medium, as oil. The water may be replaced by oil by a more or less prolonged working of the water-paste with oil as described in my application above referred to; or the water-paste may be mixed with a medium miscible with both water and oil and the water thereafter separated by drying or otherwise, as described in my copending application, Ser. No. 377,561, filed June 6, 1907.

The present invention relates to lubricants consisting essentially of deflocculated graphite and oils of a lighter grade than those which possess practical lubricating value.

I have discovered that oils which are deficient in lubricating qualities or even entirely lacking in said qualities, as for example petroleum or kerosene, the lighter mineral oils, or fuel oils, such oils being herein referred to as light hydrocarbon oils, may by admixture of suitable proportions of deflocculated graphite be transformed into lubricants of very high quality. Such lubricants are not only superior to the best grades of lubricating oils but actually superior to the best grades of lubricating oils containing suspended deflocculated graphite. For the preparation of this lubricant I may make use of either of the methods above referred to.

Comparative tests of certain lubricating and substantially non-lubricating oils, the former with and without the deflocculated graphite, yielded the following results:

(1) A test with a high grade of lubricating oil fed at the rate of eight drops per

minute to a bearing sustaining 150 pounds pressure per square inch at 445 revolutions per minute showed a coefficient of friction, after constant conditions had been attained, of approximately .017. The oil film broke almost at once upon interrupting the oil supply.

(2) The same oil fed at the rate of six drops per minute broke immediately.

(3) The same oil with .35% of deflocculated graphite in suspension, fed at the rate of eight drops per minute, showed a coefficient of friction of .015. After the interruption of the oil supply the bearing continued to run with low friction for approximately two hours.

(4) The same oil with .35% of deflocculated graphite in suspension was fed at the rate of four drops per minute, the conditions being otherwise identical. The coefficient of friction was .0155, and remained low for fifty minutes after interruption of the oil supply.

(5) A fuel oil of gravity 35° B., containing deflocculated graphite in suspension was fed at the rate of eight drops per minute under otherwise similar conditions, exhibiting a coefficient of friction of .010, the coefficient of friction remaining low (under .02) for forty minutes after interruption of the supply.

(6) Kerosene containing deflocculated graphite fed at the rate of eight drops per minute under conditions otherwise identical with the above showed a coefficient of friction after constant conditions had been reached of .008, the film breaking immediately upon interruption of the supply.

The foregoing results show that for the same load, carried on a journal, the consumption of oil using deflocculated graphite may be reduced at least one-half, with a very considerable saving in power owing to reduced friction. It appears further that the body or viscosity of lubricating oils, to which they owe their value for lubricating purposes, may be to a certain degree detrimental when the oils are mixed with deflocculated graphite, and that a lower coefficient of friction may be secured by using suspensions of deflocculated graphite in

hydrocarbon oils which are lighter than the lubricating grades. This discovery renders available for lubricating purposes those oils which have heretofore been of value only
5 or chiefly for fuel purposes.

The expression "light hydrocarbon oil" as used in the claim is intended to designate such products as fuel oils, kerosene, etc., which do not, for practical purposes, possess
10 lubricating qualities.

I claim:

A lubricant consisting essentially of deflocculated graphite and a light hydrocarbon oil.

In testimony whereof, I affix my signature in presence of two witnesses.

EDWARD GOODRICH ACHESON.

Witnesses:

ORRIN E. DUNLAP,
EBEN C. SPEIDEN.