UNITED STATES PATENT OFFICE.

ROBERT HUTCHISON, OF PRESTWICK, COUNTY OF AYR, SCOTLAND.

LUBRICANT.

SPECIFICATION forming part of Letters Patent No. 432,313, dated July 15, 1890.

Application filed December 31, 1889. Serial No. 335,539. (No specimens.) Patented in England January 23, 1886, No. 1,026; in France May 15, 1886, No. 176,168, and in Belgium May 17, 1886, No. 73,140.

To all whom it may concern:

Be it known that I, ROBERT HUTCHISON, a subject of the Queen of Great Britain and Ireland, residing at Prestwick, in the county of Ayr, Scotland, have invented a new and useful Improvement in Lubricants, (for which I have obtained British Letters Patent, dated January 23, 1886, No. 1,026; French patent, dated May 15, 1886, No. 176,168; Belgian patent, dated May 17, 1886, No. 73,140,) of which the following is a specification.

My invention has for its object to improve the manufacture of lubricants of kinds suitable for railway-axles and for other apparatus requiring lubricants of considerable consistency or body.

In carrying out my invention I combine slaked lime with oleic, margaric, or stearic acid, or any mixture of such acids, and also with mineral or hydrocarbon oil. The proportions of the ingredients may be varied; but by way of example I may state that when employing a pale or refined lubricating-oil of .905 specific gravity, manufactured from American petroleum or mineral oil, I obtain good results by mixing about fifty-two parts, by weight, of the said oil with fourteen and one-half parts, by weight, of oleic acid and one part of lime, (weighed before being slaked.) I boil the ingredients together by means of steam injected into them, or in any other convenient way, until the mass becomes homogeneous. After the boiling operation sufficient time is given to allow the grease which has been formed, but is still fluid, to separate from the excess of water due to the steam injected and to the slaked lime. The grease is then run off into coolers having a depth of about a foot, and in the coolers it is, by preference, kept gently stirred until it begins to set. After the grease has thoroughly set in the coolers it is advantageous to subject it to the action of a pug-mill or other suitable mixing apparatus, whereby it is rendered soft and pliable and in a condition facilitating its access to the surfaces to be lubricated by it.

The quantity of acid is in excess of what is required to chemically combine with the lime, and this excess of acid is important, as it is it which secures the combination of the lime compound with the mineral or hydrocarbon oil. The best results are obtained when the excess of acid is about equal to the acid which combines with the lime, and this proportion cannot be departed from to any great extent in either direction without rendering the resulting products inferior.

Lubricants have been formed of a combination of soda or potash soaps with sundry oils, including some mineral oil; but my invention, by which lime with oleic, margaric, or stearic acid, or a mixture thereof, is caused to combine with mineral oil by means of the excess of acid, especially provided for that purpose, makes a lubricant which is insoluble in water and has a melting-point as high as 180° Fahrenheit, even though the oils before combination were liquid at as low a temperature as 50° Fahrenheit.

I claim as my invention—

A grease-like lubricant composed of lime, combined with oleic, margaric, or stearic acid, or any suitable mixture of such acids and mineral or hydrocarbon oil, there being an excess of the acid sufficient to make the mineral or hydrocarbon oil combine with the lime compound, all substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT HUTCHISON.

Witnesses:

EDMUND HUNT,

DAVID FERGUSON.