

UNITED STATES PATENT OFFICE.

HIRAM J. DREHER, OF BLOOMINGDALE, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE DREHER MANUFACTURING COMPANY, OF NEW YORK.

LUBRICATING COMPOUND.

SPECIFICATION forming part of Letters Patent No. 366,386, dated July 12, 1887.

Application filed April 1, 1886. Serial No. 197,459. (No specimens.) Patented in England July 8, 1886, No. 8,933, and in France July 9, 1886, No. 177,306.

To all whom it may concern:

Be it known that I, HIRAM J. DREHER, a citizen of the United States, and a resident of Bloomingdale, in the county of Passaic and State of New Jersey, have discovered or invented a certain new and useful Improvement in Lubricating Compositions, (for which a patent has been obtained in Great Britain, July 8, 1886, No. 8,933, and one in France, July 9, 1886, No. 177,306,) of which the following is such a full, clear, concise, and exact description as will enable others skilled in the art to which my invention appertains to make and use the same.

In the manufacture of lubricating compositions various ingredients have heretofore been employed; but in most such compositions one or more of the ingredients have contained alkali sufficient to cause saponification either immediately or when the lubricant became heated by the friction of the bearing-surfaces and the pressure and motion adequate to cause intimate mixture, and it was supposed that beneficial results arose by reason of such saponification. Experience, however, proves that a saponaceous compound is not the best lubricant, because the hardening which is incident to saponification impedes the further feeding, while in a short time the film formed upon the bearing-surfaces ceases to be uniform and oily. It is necessary, in order to retain the oleaginous—the bland and unctuous—condition of the film, to keep up the “life” thereof, that the feed should be continuous. Where this is not the case the compound or lubricating agent soon becomes exhausted, and frictional heat is rapidly developed by one portion of the film becoming less oily and bland than another, while when saponification begins it destroys the nature of the lubricant and that evenly separative quality thereof which, in a true lubricant, properly amounts to insulation. It is clear, then, that every lubricating composition containing fat or a fatty acid should be as free from alkali as possible if the greatest benefits are to be derived from it. Just in proportion as the component parts of the lubricant are freed from the presence of alkali will its beneficial effects

be enhanced. But not only is the presence of an alkali detrimental to a lubricant. The presence in a lubricant of acid, especially of sulphuric acid left in unrefined petroleum, and which impairs the unctuous qualities of fats and tends to corrode and roughen the very surfaces intended to be lubricated, is particularly pernicious.

The object of my invention is to overcome the objections which by experience are found to exist in compounds heretofore used for the purpose of lubrication; and to this end the invention consists in a composition of certain ingredients possessing the properties requisite to the accomplishment of the result which I seek to attain, avoiding saponification of the mixture and corrosion of the surfaces to which it is applied.

It may be noted that hydrocarbon substances, whether liquid or solid, seem to have the best lubricating properties, provided foreign matter be not present to counteract their effects; and if such hydrocarbons be mixed with an unctuous substance—such as plumbago carbon, which under no circumstances can present the oxygen necessary for corrosion—there will be all the conditions requisite to secure the most beneficial results, assuming, of course, that the carbon substance be likewise freed from foreign matter.

In practice I prepare my improved lubricating composition of refined paraffine-wax, refined tallow, refined petroleum-oil, and refined plumbago, thus combining the paraffine and petroleum, which are both hydrocarbons, together with tallow—an unctuous carbonaceous substance much in the nature of a hydrocarbon—with the plumbago or carbon substance; and in order that no foreign matter may interfere with the utilization of the peculiar properties due to this composition, I test the different ingredients, and, if they are not sufficiently free from alkali and acid, I further refine them until the tests show absolute freedom therefrom. After thus purifying the ingredients, and after bringing the paraffine and tallow to proper condition by heating and melting, I commingle and thoroughly mix these together, after which I add the petro-

leum and next the plumbago. But before per-
mitting the plumbago to enter into the com-
position I also see that this is also free from
any sulphur acid, from grit, and from other
5 foreign matter, and, after having had the
plumbago very finely powdered, I mix it with
the other ingredients. The mixture is then
thoroughly stirred, when it is ready for use.
The preferable proportion of ingredients is
10 about as follows: paraffine-wax, sixty pounds;
tallow, one hundred pounds; petroleum-oil,
two hundred and ten pounds; plumbago, one
and one-half pound. The plumbago is held
in suspension in the other ingredients.
15 From actual tests of this lubricant upon the
journals of railroad-cars I have found that it
will last for a very long time and prevent the
boxes from becoming hot, where a sapona-
ceous compound would have lost its effective-
20 ness without anything like the same amount
of actual use. I attribute this greater effi-
ciency and durability to the fact that the film
is kept uniform by the bland and even prop-
erties of the composition, which insure its
25 uniform and constant supply in feeding, and
owing to the fact that it is not undergoing the

chemical changes of saponification. But how-
ever this may be, I have ascertained that the
lubricating properties of the above-described
composition are more decided and beneficial 30
than any heretofore made with which I have
been enabled to make a comparison.

The composition is non-oxidizable, and
hence non-corrosive, and does not cake or
harden. Though firm when introduced, it be- 35
comes evenly soft and is automatically uniform
in supply from its box to its place of use.

Having thus fully described my invention,
what I claim as new, and desire to secure by
Letters Patent, is— 40

A lubricating composition composed of re-
fined paraffine-wax, refined tallow, refined pe-
troleum-oil, and refined plumbago, in about
the proportions specified, substantially as and
for the purpose set forth. 45

Signed by me this 29th day of March, A. D.
1886.

H. J. DREHER.

Witnesses:

GEO. T. PINCKNEY,
HAROLD SERRELL.