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LUBRICATING OIL EMULSION.

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The well-known lubricating oil emulsions, which are rich in oil, contain in addition to lubricating oil and water special emulsifying substances, which are soluble in water, such as soap, ammoniacal solutions of seaweed jelly, lime water and potash solution. The addition of these emulsifying agents renders the lubricating oil emulsion more or less alkaline. The addition of soap, lime and potash causes an increase in the ash constituents in the same. The addition of seaweed jelly and the like increases the percentage of easily coking substances.

In all cases, in which lubricating oil emulsions, which are rich in oil, may be used in place of pure lubricating oils they fulfil their purpose the better the more stable they are. For this reason it has hitherto not been possible to avoid the use of emulsifying agents, which are soluble in water, for making lubricating oil emulsions that are as stable as possible. While it has been proposed to mix intimately about equal parts of lubricating oil and water without the use of an emulsifying agent and to use the mixture for the most varied lubricating purposes, such for instance as the lubrication of turbines, this proposal is of no use for general purposes, as such mixtures of lubricating oil and water readily separate again and it becomes impossible to lubricate the machine parts uniformly. For lubricating turbines lubricants containing water are entirely useless.

The subject of the present invention is a new lubricating oil emulsion, which contains no foreign additions, that is, consists only of oil and water, and is stable in a high degree. Lubricating oils, for instance mineral oils and tar oils suitable for lubricating purposes, including tar fat oil, crude tar oil, producer tar oil, are exposed before the emulsion is made to the action of electric discharges.

The electrical discharge treatment can be conducted at ordinary or raised temperature, but at considerably below the boiling point of the oil, and may be effected with an alternating or direct current. The electrical treatment may in many cases raise the temperature somewhat.

It has already been proposed to treat mineral oils, to which are added vegetable or animal oils, by subjecting them to the action of electric discharges, for the purpose of increasing the viscosity of the oils. It was not known, however, that such oils together with water, but without the addition of inorganic or organic emulsifying agents give, when treated in a certain, relatively simple manner, stable lubricating oil emulsions rich in oil, which are more suitable for cylinder lubrication, but also for all lubricating purposes, than the well-known lubricating oil emulsions. In contradistinction to the well-known emulsions, the new emulsifying agent is a constituent of the oil itself, which has a beneficial effect on the lubricating properties of the latter and is produced through the action of the electrical discharges.

Emulsions of oil and water without the addition of emulsifying agents, which are soluble in water, are already known. They contain an emulsifying agent, which is soluble in oil and consists of gelatinized dryiog oil, which is obtained by blowing, and are "water in oil" emulsions, which are used for painting, printing and impregnating purposes. In contradistinction to these emulsions, the present invention relates to lubricating oil emulsions made with the lubricating oils obtained by the action of electrical discharges.

The oil may be electrically treated in the following manner: Oil is introduced into a vessel in which are a plurality of rotatable electrodes separated by a dielectric. The vessel is filled with hydrogen at a subatmospheric pressure. The electrodes are subjected to a potential ranging between 4300 and 4600 volts at 500 cycles per second, and a current intensity of 19 to 23 amperes. This current varies with the pressure in the apparatus. The oil in the chamber is caused to trickle over the electrode surfaces by the rotation thereof. The oil is kept at a temperature of between 60 and 80 degrees. The electrical discharges arising from the individual electrode plates convert the rotating electrodes which are covered with oil into a flame roll of rose violet color. The oil falling onto and trickling over the electrodes is subjected to the electrical oscillations previously mentioned. The oil, after it has been subjected to this type of electrical treatment, is then treated as below.

The new lubricating oil emulsion can for instance be produced in the following manner:—

In a steam jet apparatus the oil is brought in contact with water vapour, the oil is atomized and the steam and oil mixture

escaping from the apparatus is deposited. The oil used for this purpose is preliminarily subjected to the action of electrical discharges, for the purpose of making it capable of being emulsified without the aid of emulsifying agents, which are soluble in oil. Instead of using the oil, the whole of which has been subjected to preliminary electric treatment, a mixture of such oil the preliminary treatment of which may have been carried somewhat further, with other oil, may be used.

Other apparatus and methods of treatment, by which an intimate mixture of oil and water is obtained, may be used for making the emulsion from the oil, which has been preliminarily treated by electrical discharges, and water.

What I claim is:—

An emulsion of a hydrocarbon oil and water, said hydrocarbon oil having been preliminarily treated by electrical discharges, which emulsion is free of substances other than such treated oil and water, and is stable.

In testimony whereof I affix my signature.

MORITZ JOSEPH HEITMANN.