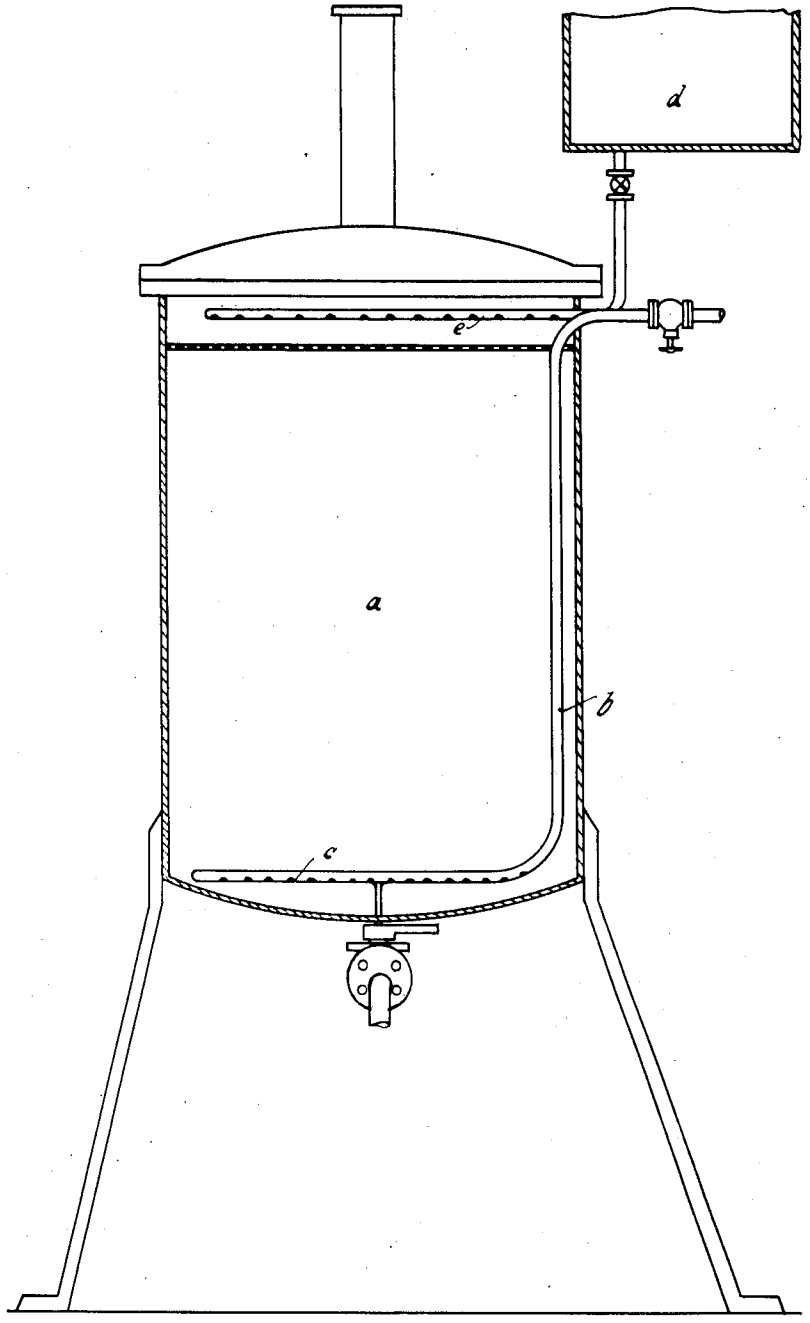
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PROCESS FOR PRODUCING LUBRICANTS CONTAINING WATER

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PROCESS FOR PRODUCING LUBRICANTS CONTAINING WATER.

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The present invention relates to an improved process for the production of lubricants containing water and, according to this process, emulsions of lubricating oils are produced, in a manner hereinafter to be described, from lubricating agents and aqueous liquids. It is already known to treat lubricating oil with steam in vessels, provided with apparatus for stirring and cooling, and to make stable the emulsified lubricating oil produced through condensation of the steam introduced—by adding protective colloids. It is also known that by emulsifying highly viscous oils, the emulsions produced will remain stable for some time without the addition of protective colloids. The spraying of lubricating oil in a finely divided state with steam into a condensing chamber is also known.

Contrary to the processes known hitherto, according to the process forming the subject-matter of the present invention, a stable emulsified lubricating oil of sufficient viscosity and with an aqueous liquid content is obtained by passing saturated or superheated steam or a gas or gases, under pressure into a body of lubricating oil and then adding to the lubricating oil thus finely divided or broken up by the steam or gas, a quantity of water sufficient to impart the desired water content to the final emulsion. The application of the steam or gas must be continued until a stable emulsion is produced. When emulsified lubricating oil is produced in such a way it is quite unnecessary to add protective colloids or other non-lubricating agents for protecting purposes, yet a very high water content can be obtained if desired.

In carrying out the aforesaid process, it it convenient to introduce steam for initial breaking up or finely dividing of the oil (preferably under a pressure of about 6–8 atmospheres) through a distributing pipe, into a vessel which is only partially filled with oil. It may be assumed that the amount of water deposited in the oil through condensation of the steam amounts to about 15% (according to the cooling conditions prevailing) and only after this initial introduction of steam is 35% of tap water then added, by jet distribution, from above, while still continuing to admit further steam.

After the requisite quantity of water has been introduced, the steam is still passed in for some time and then it is stopped. In this manner the emulsification may be effected within a short time, say five to ten minutes. The amount of water actually introduced into the oil through condensation of the steam not being very great, the water-content of the resulting emulsified lubricating oil corresponds fairly closely to the quantity of water introduced. By this method of applying the new process emulsified lubricating oils of high water content may be produced.

By way of example, it may be stated that a very satisfactory lubricant may be produced from 50% polymerized mineral oil or saponifiable oil and 50% condensate water and tap water, steam being introduced for emulsification purposes at a pressure of 1–2 atmospheres.

For the manufacture of lubricants containing water, active gases may generally be used such as oxygen, hydrogen, air, etc., but also inactive gases such as nitrogen. The gases or the oil batch are not required to be preheated for the process of manufacturing emulsified oils containing water, a working at indoor temperature and normal temperatures of fluid being sufficient. However, for producing emulsified solid fats by using Montan wax (about 3–6% relative to the final emulsion) for the purpose of increasing the viscosity, it is preferable to apply higher temperatures of about 100–120° C. which may be obtained either by heating the oily substance or the water.

An emulsion of oil produced by means of a gas (nitrogen, compressed air, etc.) may for example consist of 50% mineral oil (viscosity 15 at 50° C.), 50% tap water.

The gas is used unheated and serves only to disintegrate and emulsify both liquids.

For the manufacture of an emulsified grease by means of a gas 45% mineral oil (viscosity 10 at 50° C.), 5% Montan wax, and 50% tap water are for example used.

The whole mixture is heated by means of compressed air until a temperature of 150° C. is obtained and is kept in agitation in the described vessel for twenty minutes.

The new process may be advantageously used for producing emulsified solid greases also, even if their water-content is to be far greater than usual. The mineral oil is preheated with steam under pressure; then water in finely distributed state is slowly introduced

from above while still introducing steam. After mixing has been effected, the introduction of steam is continued until the stable emulsified lubricating oil with a high percentage of water has been produced.

The manufacture of emulsified solid greases in this way is not only new, but indeed constitutes a complete departure from ordinary methods of manufacturing emulsified solid greases, due to the hitherto unknown possibility of incorporating any desired quantity of water with the solid grease and obtaining a stable emulsion by the simple process of the present invention. It has been proved that the new emulsified solid greases of high-water content are quite as good for lubricating purposes as those of lower water content which have been used hitherto.

In the foregoing description, for the sake of simplicity, only the use of steam under pressure is referred to. It is, however, a further feature of the present invention that instead of using saturated steam under pressure, superheated steam may be employed. The greater the pressure and the higher the degree of superheat the quicker is the temperature of the constituents raised and the quicker is a stable emulsion produced.

The applicant has also found that these results can be achieved not only with steam but also with compressed air and other gases which may or may not be condensible to form a constituent of the emulsion and which may be used cold or heated. When steam is not used for breaking up the lubricant, the quantity of water requisite for the emulsification can of course only be obtained by introducing water into the disintegrated oil, that is to say, none of the water content of the resulting emulsion is water condensate. In this way, for instance, by using heated air only, first class solid greases may be produced.

The temperature and pressure of the disintegrating medium (whether steam or gas be employed for this purpose) may vary within wide limits but, by way of example, it may be mentioned that, for the treatment of lubricating oils of high boiling point and high flash point, temperatures of from 170–300° C. have been successfully employed with pressures as high as 10 atmospheres.

An apparatus for carrying out the improved process is illustrated in the drawing wherein the figure is a view in elevation, partly in section, of such apparatus. In this illustration the emulsification vessel is shown at *a*, the steam distributing pipe is shown at *b*, with the outlets or nozzles *c*; *d* is the water tank and *e* the distributing pipe for the water.

What I claim to be new is:

1. A process for producing lubricants containing water, consisting in passing a single fundamental element gaseous fluid under pressure into a body of lubricating oil, and then adding to the lubricating oil thus finely divided or broken up by the gaseous fluid, a quantity of water sufficient to impart the desired water content to the final emulsion, application of the gaseous fluid being continued until a most stable emulsion of the oil and aqueous liquid has been produced.

2. A process as set forth in claim 1, in which the gaseous fluid is admitted adjacent the lower level of the oil and below the surface thereof, while the water is added from above the surface of the oil.

3. The process of producing emulsified solid greases having a water-content considerably higher than in solid greases, consisting in passing a single fundamental element gaseous fluid under pressure into a body of grease, and then adding to the grease thus treated, water in finely distributed state from above the body of grease while still introducing the gaseous fluid, and continuing such steps until a stable emulsion of high water-content has been produced.

In testimony whereof I affix my signature.

MORITZ JOSEPH HEITMANN.