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PROCESS OF MAKING LUBRICANTS.

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This invention relates to process of making compounds for lubricating the tools, dies, etc., used in the manufacture of pressed or drawn metal parts.

It has long been the desideratum of lubricant manufacturers and pressed metal workers to provide a lubricant that will tenaciously cling to the metal parts when subjected to high pressures and which will not be injuriously affected by the increase in temperature of the metal parts and tools during the pressing and drawing operations. It has been found that no oils or fats of fluid consistency, or even when solid, are of themselves efficient enough as lubricants to permit their use in this class of work, and when insoluble solids are added to the oils an unstable mixture results which cannot be evenly applied over the various surfaces, and which rapidly settles and streaks when in use. My invention has for its principal object to overcome these defects, and permit the use of oils and solid lubricating material in the manufacture of sheet metal parts.

I have found that by properly hydrating petroleum or fatty oils by dispersing water into the oil globules in such a manner as to greatly increase the viscosity of the oil a vehicle is provided which will remain stable for long periods of time and which will suspend insoluble granular lubricating material to the point of saturation without permitting the settling of the solid material.

Another object of my invention is the provision of a practical and efficient lubricating compound for use in pressing and drawing sheet metal from three ingredients, each of which is of itself unsuitable for such use, to-wit, oils of insufficient body to alone serve as a metal drawing lubricant, water and insoluble granular solid materials.

Other objects and advantages will be apparent from the following description of the compound and the method of preparing same.

In putting my invention into practice, I utilize an emulsifiable oil, preferably from fatty or petroleum bases, such as commercial degras or emulsifiable mineral oils, and if soluble oil is used treat it with a fatty acid, as, for example, commercial oleic acid, to the extent of approximately one-sixth volume of the emulsifiable oil. This renders any soluble oil insoluble in water but it increases the property of soaking up water like a sponge with either the soluble or insoluble oils. The oil is then hydrated by beating water in small quantities into the globules of the oil with constant agitation of the mixture, the addition of the water being continued until the oil has thickened to the desired viscosity. Preferably the resultant mixture contains substantially four times as much water as oil in volume. When the hydration is not carried too far, the mixture remains stable, and has a toughness and adhesiveness far beyond that of either ingredient. Moreover, the more water absorbed without rendering the mixture unstable the better does the lubricant absorb heat during the drawing and pressing operation.

Then suitable solid lubricating material, such as talc, lithopone, graphite, sulphur, mica or chalk, in pulverized form, is added to the hydrated oil, small quantities of the solid material being successively introduced while the mixture is being constantly stirred and agitated. Preferably, the solid lubricating material is added to the extent of substantially one-fourth of the volume of the hydrated oil. This amount does not saturate the hydrated oil, and the solid material remains in suspension throughout the entire body of compound while the mixture remains in a fluid condition.

It has been found that this mixture of ingredients in substantially the proportions named remains stable for long periods of time, and also does not evaporate or deliquesce upon exposure to the atmosphere.

In use, the lubricating compound is spread upon the metal, tools, dies, etc., in the usual manner and clings tightly to the metal during the drawing operations, even when high pressures are reached. The great quantity of moisture in the compound has the faculty of absorbing the frictional heat developed in drawing the metal, whereby the tools and dies remain at a temperature well below the danger point, permitting faster and more continuous production than by the use of any other lubricating medium known.

By the term "degras" is meant either the oil expressed from hides during chamoising operations, or that recovered from the scourings of wool. This material is also made synthetically by oxidizing fish oils. While degras from any source can be utilized, I

prefer degras obtained from chamoising operations. The term "soluble oil" is utilized herein as meaning an oil that when mixed with water will enter into the water with a resultant decrease in viscosity, while the term "emulsifiable oil" is utilized herein as meaning an oil that when mixed with water the water enters the oil with a resultant increase in viscosity.

Having described my invention, I claim—

1. The process of making lubricating compounds for drawing and pressing sheet metal which consists of treating an emulsifiable oil with a fatty acid to render it insoluble in water, then hydrating the oil by beating in successively introduced small quantities of water while the mixture is constantly agitated until the viscosity of the oil has been greatly increased, and then suspending pulverized insoluble solid lubricating material in the hydrated oil by stirring in successively introduced small quantities of the solid material while the mixture is being constantly agitated.

2. The process of making lubricating compounds for drawing and pressing sheet metal which consists of treating an emulsifiable oil with substantially one-sixth its volume of a fatty acid, then hydrating the oil by beating in substantially four times its volume of water in successively introduced small quantities while the mixture is being constantly agitated, and then suspending in the hydrated oil substantially one-fourth its volume of insoluble pulverized solid lubricating material by stirring in successively introduced small quantities of the solid material while the mixture is being constantly agitated.

In witness whereof I hereunto set my hand.

HARLEY A. MONTGOMERY.