

# UNITED STATES PATENT OFFICE

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## DRAWING LUBRICANT

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This invention relates to drawing lubricants and particularly to drawing lubricants containing animal fat as an ingredient.

The composition of the present invention is preferably prepared in the form of a concentrated aqueous emulsion which is capable of dilution with water to a considerable degree to provide a dilute emulsion suitable for use in drawing and die pressing.

The drawing compound comprises animal fat, mineral oil, and soaps preferably emulsified with a small amount of water.

The animal fat may be tallow, lard, or other animal fats or fatty oils and may constitute a substantial proportion of the concentrated composition or emulsion. For example, it may vary between 1 and 30% thereof. The quantity of animal fat is, however, preferably from 10 to 30% since this substance is greatly desired in such compositions and great difficulty has heretofore been experienced in producing drawing compounds containing sufficient amounts of such fats and retaining them in suspension in dilute emulsions and at high temperatures.

The mineral oil is preferably a distillate lubricant oil of relatively low viscosity. Straw oil is suitable.

The emulsifying agents which are preferably employed are fatty acid and rosin soaps, sulfonate soaps derived from mineral oil, and naphthenic soaps which may also be derived from mineral oil. In practice, satisfactory results are obtained with a mixture of rosin soap or sodium oleate and mahogany, green acid or naphthenic soap. The mahogany soaps are the preferentially oil soluble sulfonates of the alkali metals derived from mineral oils in the manner described in United States Letters Patent to Humphreys, No. 1,286,179, granted November 26, 1918, or in other suitable manner. The green acid soaps are the alkali metal salts of the preferentially water soluble sulfonic acids produced by the treatment of heavy hydrocarbon oils with fuming sulfuric acid and separated from the sludge layer, as described in Patent No. 1,474,933, granted November 20, 1923, to Humphreys et al., or in other suitable manner. The naphthenic

soaps may be derived from naphthenic acids obtained from mineral oil in the manner described in the Patent No. 1,681,657, granted August 21, 1928 on the application of Oscar E. Bransky, or in other suitable manner.

The compound or concentrated emulsion may suitably be constituted by animal fat 1 to 30%, sulfonate or naphthenic soap 8 to 40%, mineral oil 8 to 60%, rosin or fatty acid soap 5 to 20%, water 0 to 50%, and in some cases, alcohol up to about 15%. The alcohol is used for the purpose of aiding the initial dispersion, but its use is not essential.

As specific examples, the following compositions are given.

### Example I

	Per cent
Tallow-----	10
Mahogany soap-----	20
Mineral oil-----	57
Potassium rosin soap-----	8
Alcohol-----	5

The mixture is readily emulsified with water to yield a relatively stable emulsion.

### Example II

	Per cent
Animal fatty acid-----	14.3
Dry potassium hydroxide-----	2.3
Tallow-----	20.0
Mahogany soap-----	10.0
Straw oil-----	11.0
Water-----	42.4

The mixture is readily emulsified and the concentrated emulsion can be diluted to give a stable dilute emulsion. Satisfactory emulsions also result if the mahogany soap is replaced by green acid soap.

### Example III

	Per cent
Tallow-----	20.4
Mahogany soap-----	29.25
Straw oil-----	35.75
Sodium oleate-----	11.3
Water-----	3.3

These ingredients are mixed together and emulsified in any suitable manner, for example, by passing through a grease mill or a

centrifugal pump. The mahogany soap may be replaced by naphthenic soap with highly satisfactory results.

*Example IV*

	Per cent
Animal fatty acid-----	12.0
Dry potassium hydroxide-----	3.0
Tallow-----	20.0
10 Straw oil-----	23.5
Water-----	41.5

This mix forms a relatively stable emulsion.

Although the present invention has been described in connection with the details of certain specific examples, it is not intended that such details shall be regarded as limitations upon the scope of the invention except in so far as included in the accompanying claims.

I claim:

1. A composition adapted to be readily diluted with water to yield emulsions suitable for use as drawing lubricants and comprising animal fat, preferentially oil soluble sulfonate soaps derived from mineral oil, and mineral oil.

2. A composition adapted to be readily diluted with water to yield emulsions suitable for use as drawing lubricants and comprising tallow, preferentially oil soluble sulfonate soaps derived from mineral oil, and mineral oil.

3. A composition adapted to be readily diluted with water to yield emulsions suitable for use as drawing lubricants and comprising animal fat, preferentially oil soluble sulfonate soaps derived from mineral oil, mineral oil, and fatty acid soap.

4. A composition adapted to be readily diluted with water to yield emulsions suitable for use as drawing lubricants and comprising tallow, preferentially oil soluble sulfonate soaps derived from mineral oil, mineral oil, and fatty acid soap.

5. A concentrated emulsified composition comprising animal fat, sulfonated soaps derived from mineral oil, fatty acid soap, mineral oil and at least 3.3% of water.

6. A concentrated emulsified composition comprising tallow, sulfonated soap derived from mineral oil, fatty acid soap, mineral oil and at least 3.3% of water.

7. A composition adapted to be readily diluted with water to yield a relatively stable emulsion suitable for use as a drawing compound comprising animal fat, 1 to 30%, sulfonated soaps derived from mineral oil, 8 to 40%, mineral oil 8 to 60%, fatty acid soap 5 to 20%, and not more than 50% water.

8. An emulsified composition adapted to be readily diluted with water to yield an emulsion suitable for use as a drawing lubricant comprising tallow 20.4%, preferentially oil soluble sulfonate soap derived from mineral

oil 29.25%, straw oil 35.75%, sodium oleate 11.3%, and water 3.3%.

9. An emulsified composition suitable for use as a drawing lubricant comprising animal fat, mineral oil sulfonate soaps derived from mineral oil, fatty acid soap, and at least 3.3% of water.

10. An emulsified composition suitable for use as a drawing lubricant comprising tallow, mineral oil, fatty acid soap, soaps derived from mineral oil, and at least 3.3% of water.

11. An emulsified composition suitable for use as a drawing lubricant comprising animal fat, sulfonate soaps derived from mineral oil, mineral oil, and at least 3.3% of water.

12. An emulsified composition for use as a drawing lubricant comprising tallow, mineral oil, sulfonated soaps derived from mineral oil, and about 40% of water.

13. A concentrated, emulsified composition comprising animal fat, fatty acid soap, mineral oil, about 3.3% of water, and a soap selected from the group consisting of sulfonated soaps derived from mineral oil and naphthenic soap derived from mineral oil.

14. An emulsified composition suitable for use as a drawing lubricant comprising animal fat, fatty acid soap, mineral oil, about 3.3% of water, and a soap selected from the group consisting of mahogany soap, green acid soap and naphthenic soap.

15. An emulsified composition suitable for use as a drawing lubricant comprising tallow, mineral oil, about 3.3% of water, and a soap selected from the group consisting of mahogany soap, green acid soap and naphthenic soap.

In testimony whereof, I have hereunto set my hand and seal this 1st day of September, 1927.

ROBERT E. WILKIN.