

UNITED STATES PATENT OFFICE

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TREATMENT OF IMPROVED MATERIALS
CONTAINING COLLAGENWilfred Graham Dewsbury and Arnold Davies,
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rial No. 741,334. In Great Britain September
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2 Claims. (Cl. 134—56)

This invention relates to the manufacture of improved materials containing collagen. Reference is made to the related subject matter disclosed and claimed in our copending application
5 Serial No. 750,590, filed October 29, 1934, for improvement in Paints, lithographic varnishes, printing inks, and the like and process of making same, now United States Patent No. 2,014,760, of September 17, 1935, and copending application
10 Serial No. 4,718, filed February 2, 1935, for Compositions containing collagen products and applications thereon.

In accordance with the present invention, when ordinary glue or gelatine of commerce, whether
15 of animal or marine origin is heated in such non-aqueous organic liquids as mineral, or animal, or vegetable oils having a boiling point of not lower than 130° C. for a sufficient period of time at a temperature of approximately 130° C., a mass of
20 tangled fibres separates from the glue or gelatine leaving a phase of the glue or gelatine to be dispersed in the organic liquid. The fibres can be freely removed.

With the knowledge at present available we assume that in the above process a two-phase unit is produced. In all probability there is a hydrophobic phase of the glue which is dispersed in the vehicle.

In particular when a lubricating oil is treated
30 by the above process with the dispersion of an adequate proportion of glue or gelatine the lubricating capacity of the oil is definitely improved. In recent years the term "oiliness" has come into use in defining the characteristics of lubricating
35 oil to represent characteristics of lubricating liquids which result in the lowering of the friction between surfaces moving relatively to one another and which cannot be accounted for on the basis of viscosity. Various methods of measuring this
40 physical difference of lubrication are used one of which is the application of the "Deeley" testing machine. The results of tests on an original lubricating oil and the oil after treatment by the present process gave values respectively for the
45 "oiliness" of 9.06 and 11.1 showing the improvement which had taken place.

It is generally found in industrial processes of grinding that there is always a tendency for the powder to unite or cake up below 200 mesh. By
50 the dispersion of five per cent of glue into an oil vehicle which has been prepared by the present process however it is possible to obtain deflocculation of the particles during attrition and subsequently. This applies to the sub-division and

suspension of mineral bodies such as graphite and pigments such as zinc oxide, lithopone and white lead and also amorphous substances such as lamp black and carbon blacks obtained from petroleum hydrocarbons. As oils suitable for
5 this purpose various polymerized oils and petroleum hydrocarbons may be mentioned. A graphited lubricating oil produced in this manner exhibits improved properties both as regards lubrication and stability. It is of course to be
10 understood that the percentage of glue or gelatine dispersed varies with various materials.

It has hitherto been found difficult to incorporate satisfactorily metallic powders such as finely divided bronze and aluminium in the usual
15 varnishes which are the common base for suspending pigments for the production of inks to be used in lithographic and letter press printing. Such varnishes are mainly comprised of polymerized linseed oil. According to a further fea-
20 ture of the present invention a dispersion of what we believe to be the hydrophobic phase of glue in the oil base gives a product having an improved wetting out effect on the metallic powders thus enabling them to be incorporated adequately
25 with the said base. Without giving any definite limit as to the amount of glue required for this purpose it may be stated that a dispersion of five per cent weight/volume of glue in such oils or
30 varnishes appears to be adequate.

The importance of securing a high dielectric strength in such materials as are commonly used in the electrical industry is well known. For instance it is of the utmost importance that trans-
35 former oils should maintain a high standard of dielectric efficiency.

A normal specification of a transformer oil requires a breakdown voltage using a 4 mm. gap with continuous steady increase of voltage to
40 breakdown of below 35 kilovolts. It has been found that a dispersion of 2½% of glue in a transformer oil of such a specification increases the figure for the di-electric strength to above 45 kilovolts.

In various arts the number of drops in a measured quantity of liquid is important. It has been found by the well known Donnan pipette method of measurement that it is possible to increase the
50 number of drops in such liquids as liquid paraffin and Diesel oil by a dispersion of glue according to the present process.

As an example using a Donnan pipette immersed in a 600 cc. beaker containing water 8 cms. below hydrostatic level at a temperature of 20° C.

under constant orifice and constant head the following readings were obtained:

	Drops
Liquid paraffin B. P. untreated.....	40
5 Liquid paraffin B. P. treated by the present process and containing 2½% glue.....	62
Diesel oil of commerce, untreated.....	82
Diesel oil treated by the present process and containing 5% glue.....	90
10 Blackstone type engine oil untreated.....	40
Blackstone type engine oil treated by the present process and containing 2½% glue.....	48
Since the interfacial tension is inversely proportional to the drop number an increase in the latter indicates a decrease in the said tension.	
15 The collagen oil dispersion obtained by the above process may be advantageously passed through a colloid mill, preferably a colloid mill known as the Hurrell mill, in accordance with	
20 British specification No. 214,308/24.	

What I claim is:

1. Process for the manufacture of improved materials containing collagen derived material comprising heating to a temperature of about 130° C. a hydrocarbon oil having a boiling point of not lower than 130° C. with a substance selected from the group consisting of glue and gelatin until a fibrous product is formed from said collagen containing material, and separating the oil from the fibrous product.

2. A liquid product corresponding with that resulting from the process of claim 1 and comprising a hydrocarbon oil having a boiling point of not lower than 130° C. and the portion soluble in oil at 130° C. of a material of the group consisting of glue and gelatin from which material the fibrous, oil insoluble portion has been removed.

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