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ART OF TREATING LEATHER

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This invention relates to the art of treating leather and, more specifically, to a process involving the use of certain novel compositions in the treatment of leather.

The present application is a continuation in part of my copending application Ser. No. 312,681.

In manufacturing and treating leather materials of all kinds, it is the general practice to employ oils or oily compositions to facilitate the manufacturing processes and to impart certain desirable characteristics to the products themselves.

The oil has a multiplicity of functions in the manufacture and treatment of leather. One of its most important functions is that of lubrication, in that it enables the material being treated to withstand machine operations without injury and abrasion and to readily advance or otherwise move in the course of manufacture. Another function is to impart desired softness and pliability to the material and to retard or prevent the evolution of electrostatic forces while the manufacturing procedure is in progress. Still another function is to act as a protector for the leather fiber and the product made therefrom, in that the oil or finishing compositions containing the same will tend to obviate malodorousness, polymerization, gum formation, and other undesirable phenomena.

A great variety of oils is available for the purposes above outlined, but so far as I am aware none has proven wholly satisfactory. Some are too expensive for general use, others tend to oxidize readily while still others become sluggish and heavy in a very short time. As a consequence, there is an imperative need for an oil which while reasonable in price will satisfactorily perform all the functions and fulfill all the requirements expected of such oils.

The principal object of my invention is to provide an oil which is free of the objections inherent in oils of the prior art and which may be used successfully in the treatment of all kinds of leather.

Another object of the invention is to improve the art of manufacturing and treating leather by the provision of an effective lubricant, protector and softening and finishing agent.

In accordance with my invention, I accomplish these and other kindred objects by the application of an oil obtained from the seeds of grapefruit. Grapefruit seed oil contains a bitter principle of an alkaloidal nature, which cannot be completely removed from the oil and which renders this oil unsuitable for human consumption or animal feed. Owing to this characteristic, grapefruit seed oil, heretofore, has not found any practical commercial use.

I have discovered that grapefruit seed oil has all the characteristics desirable in a leather treating oil and that the bitter principle, which is present in this oil and renders the same unsuitable for most other purposes, appears to have the power of delaying oxidation and rancidity of the grapefruit seed oil itself as well as of other saponifiable oils of vegetable, animal or mineral origin to which the grapefruit seed oil may be admixed. Thus, by applying to the leather a composition of matter comprising grapefruit seed oil, the deleterious effects of oxidation and rancidity manifesting themselves in brittleness and malodorousness of the leather can be substantially reduced or even entirely eliminated.

For the purposes of the present invention, the grapefruit seed oil may be employed in unmodified form or in sulfonated or saponified form, and it may be used alone or in combination with other oils or substances or compounds as more fully hereinafter set forth.

Any suitable procedure may be employed to obtain the oil from the seeds. The desirable procedure is mechanical rather than chemical, in order to retain in the oil all of the bitter principle mentioned above. If chemical procedure were used to recover the oil from the seed the permanent retention of part of this bitter principle might be endangered. A desirable mechanical method of recovering the oil from the seeds comprises soaking the seeds in water to effect decomposition of the cortex by fermentation, drying the seeds thus pulped, employing an Anderson expeller to express the oil from the pulp, filtering the product, settling out the oil, decolorizing if necessary or desirable and subjecting the oil to whatever subsequent treatment may be suitable for the purpose or use to which the oil is to be put.

As above intimated, the grapefruit seed oil of my invention may be sulfonated or saponified and as both sulfonation and saponification of oils are procedures well known in the art I deem it superfluous to describe such procedures in detail. Suffice it to say that sulfonation may be effected by appropriately treating the oil with well known sulfonating agents, such as SO_3, oleum, sulfuric acid, chlorsulfonic acid and the like, and saponification may be effected by the use of any appropriate alkaline agent normally used in the art for this purpose.

Both the sulfonated and saponified grapefruit seed oils of my invention are water-dispersible or

soluble products in which all the valuable properties present in the raw oil are fully retained.

While, as stated above, the grapefruit seed oil may be used alone or together with other water-immiscible oils or substances as a textile treating agent, I find that such compositions may be made water dispersible and readily removable from fibres by mixing the compositions with appropriate emulsifiers or other dispersing agents. Emulsifiers adapted to the purpose are soaps or organic base salts of fatty acids, such as the fatty acids of grapefruit seed oil, sperm oil, olive oil, coconut oil and other animal and vegetable oils, and other dispersing agents which I may use are mineral oil sulfonates.

The foregoing compositions comprising raw and/or sulfonated grapefruit seed oil may have included therein other animal, vegetable or mineral oils, as well as soaps, esters, amides, ketones and other suitable fatty derivatives thereof. Synthetic fatty acid esters, such as the methyl, ethyl, propyl, isopropyl, butyl, isobutyl, etc., alcoholic esters of lauric, capric, caprylic, oleic, stearic, palmitic, myristic, recinoleic, etc. acids, may be blended with raw and/or sulfonated grapefruit seed oil compositions. In general, esters of both saturated or unsaturated fatty acids with monohydric alcohols having less than 10 carbon atoms may be used. Grapefruit seed oil may be further modified by subjecting the same to blowing according to known methods. A composition comprising blown grapefruit seed oil and a synthetic fatty acid ester of the aforementioned type is particularly valuable in treating leather.

Example I

Grain leather either in a wet or dry condition is brushed on the grain side with grapefruit seed oil. The oil is very readily absorbed by the skin and the grain of the leather is rendered pliable and acquires a well nourished feel. Furthermore, due to the unique character of grapefruit seed oil in inhibiting oxidation the grain of the leather remains clear.

Example II

Dyed or undyed leather is treated with grapefruit seed oil which has been rendered water-dispersible by blending with it a sulfonated oil such as grapefruit seed, olive, castor, corn, cod, sperm, neatsfoot, etc. The mixture of grapefruit seed oil and sulfonated oil may be applied to the leather either as a dispersion or emulsion in the drum, paddle vat, or brushed on by hand.

Example III

In the event that it is desirable to include a mineral oil, the following composition may be employed with success:

	Per cent
Mineral oil	50
Grapefruit seed oil	20
Sulfonated oil	30

Example IV

Grapefruit seed oil may be blended with 5-50% of a fatty acid ester such as methyl oleate, butyl stearate, ethyl ricinoleate, and the like, and applied as in Examples I and II.

Example V

In the oiling or fat-liquoring of leather and furs sulfonated grapefruit seed oil may be blended with raw grapefruit seed oil, sperm oil, olive oil or any other suitable oil.

Example VI

Blown grapefruit seed oil may be blended with glyceride oils, mineral oils, fatty acids, tallow, petrolatum, and the like to form products useful in the stuffing and currying of leather and furs. Alternatively, blown grapefruit seed oil may be treated with dispersing and emulsifying agents such as soap, sulfonated oils, sulfonated fatty alcohols, and the like, to give dispersions and emulsions that may be applied to leather and furs as described in Example II.

Example VII

Sulfonated grapefruit seed oil may be applied with other sulfonated oils commonly used in the oiling and fat-liquoring of leather and furs, such as sulfonated cod oil, sperm oil, neatsfoot oil and the like.

Example VIII

In the fat liquoring of leather, the following composition has produced excellent results:

	Per cent
Grapefruit seed oil	30
Sulfonated fish or other oil	60
Water	10

Irrespective of the particular uses for which the raw and/or sulfonated grapefruit seed oil compositions are to be put, the proportion of these and other constituents may be varied to suit conditions. The proportion of grapefruit seed oil or its chemical derivatives may be determined by the degree of oxidation permissible in the material under treatment and upon the degree of softness and other properties desired.

I claim:

1. In the treatment of leather, the step which comprises applying to leather a composition of matter comprising grapefruit seed oil.

2. In the treatment of leather the step which comprises applying to leather a composition of matter comprising sulfonated grapefruit seed oil.

3. In the treatment of leather, the step which comprises applying to leather an emulsifiable composition of matter comprising grapefruit seed oil.

4. In the treatment of leather, the step which comprises applying to leather a composition of matter comprising grapefruit seed oil and an ester of a higher fatty acid with a monohydric alcohol having less than 10 carbon atoms.

5. In the treatment of leather, the step which comprises applying to leather an emulsifiable composition of matter comprising grapefruit seed oil and an ester of a higher fatty acid with a monohydric alcohol having less than 10 carbon atoms.

6. In the treatment of leather, the step which comprises applying to leather a composition comprising grapefruit seed oil and a sulfonated material.

7. In the treatment of leather, the step which comprises applying to leather a composition comprising sulfonated grapefruit seed oil and a product selected from the group consisting of raw or sulfonated animal, vegetable and mineral oils.

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