

## UNITED STATES PATENT OFFICE.

ALEXANDER SCHMITZ, OF HEERDT, NEAR DÜSSELDORF, GERMANY.

## PROCESS OF MANUFACTURING FATTY COMPOUNDS FOR USE AS TURKEY-RED OILS.

No. 861,397.

Specification of Letters Patent.

Patented July 30, 1907.

Application filed April 10, 1907. Serial No. 367,303.

*To all whom it may concern:*

Be it known that I, ALEXANDER SCHMITZ, doctor of philosophy, of Heerdt, a subject of the King of Prussia, and whose post-office address is Heerdt, near Düsseldorf, Prussia, German Empire, have invented a new and useful Process of Manufacturing Fatty Compounds for Use as Turkey-Red Oils; and I do hereby declare that the following is a full, clear, and exact description of my invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to the manufacture of fatty compounds for use as Turkey red oils, and it has for its object to so improve said manufacture that staining of the yarns and fabrics is perfectly avoided.

As is well known to those familiar with the art of Turkey red dyeing the Turkey red oils manufactured by means of the known processes are defective in that they form insoluble lime-soaps upon being mixed with calcareous water, and that the unavoidable adherence of the very fine particles of such soaps to the yarn or fabric to be treated gives the latter a stained appearance.

In order to obtain fatty compounds which are not capable of causing insoluble lime-soaps to be separated out, my present invention is as follows:

I take fatty oxyacid compounds obtained from fatty substances having the character of castor oil, that is to say castor oil itself; similar fatty oils and fats of the vegetal and animal kingdom or mixtures of castor oil, or similar fatty oils and fats with other fatty oils, fats or fatty acids, such as oleic acid, olein, ricinoleic acid and the like. These fatty oxyacid compounds are produced in the usual manner which is as follows: Castor oil or its desired substituent is sulfonated by means of sulfuric acid in the manner usual in the manufacture of Turkey red oil; the sulfonation being completed, the product of the reaction is freed from adherent sulfuric acid by washing with water or an alkaline water, then separated from the under lye and continuously boiled either alone or with water in an open vessel until the sulfonic acid compound formed in the sulfonating step is split up and the sulfuric acid completely disengaged from the oil. By this means the oil is rendered completely insoluble in water and, as is known, is transformed into the corresponding fatty oxy-acid compound.

The fatty oxy-acid compound being washed thoroughly free from sulfuric acid and dehydrated is mixed in the mixing vat with castor oil or other similarly-acting fatty oils or fats and heated to 40–100° C. The mixture is allowed to cool to room temperature, when it is sulfonated with sulfuric acid as usual in the manufacture of Turkey red oil; the sulfonation being

accomplished the product of the reaction is washed clean from adhering sulfuric acid with water or an alkaline water, allowed to stand for some time in order to obtain complete separation, drawn off from the under lye and finally mixed with alkali so as to produce an acid or a neutral or a basic oil soluble in water according to requirements. If desired the oil drawn off from the under-lye may be transformed into soap by boiling it with an alkali.

The process is not limited to any strict mixing proportions between the fatty oxy-acid compounds and oil or fat, as such proportions may vary within wide limits (25-75 per cent. of fatty oxy-acid compound to 75-25 per. cent of oil or fat).

By the described process compounds are obtained which outwardly resemble ordinary Turkey-red oils or soaps, but which present considerable differences as regards chemical composition and reactions. They differ from the ordinary Turkey red oils and soaps essentially by their behavior with regard to calcareous water. While with ordinary Turkey red oils and soaps such water in the presence of heat or even at ordinary temperatures gives rise to the formation of an insoluble lime soap the particles of which collect on the surface of the water and occasion the known prejudicial effects in fabrics and yarns owing to the formation of spots, the novel compounds obtained by the herein-described process do not separate out any lime soap when mixed with calcareous water even after a long standing for the reason, it is believed, that any acid lime soap which may be formed remains dissolved in the fatty solution in excess. This reaction is so nice and characteristic of these novel fatty compounds that it may be employed as a reliable test to distinguish them from the ordinary Turkey red oils and soaps. The novel fatty compounds are of especial value for the textile industry generally, particularly in the case of strongly calcareous water, for the purpose of avoiding the prejudicial lime-soap spots. Their introduction supplies a want long and seriously felt in many industries as their use enables a troublesome defect to be overcome.

I wish it to be understood that the term fatty substances of the character of castor oil as used in this specification and its annexed claims is intended to comprise as well castor oil itself as its known substituents and mixtures of castor oil or its substituents with other fatty oils, fats or fatty acids.

What I claim as my invention is:

1. The process of manufacturing fatty compounds for use as Turkey red oil which essentially consists in mixing fatty substances of the character of castor oil with fatty oxyacid compounds obtained from such substances, heating the mixture, allowing to cool, sulfonating, washing and finally mixing with alkali, substantially as and for the purpose stated.

2. The process of manufacturing fatty compounds for use as Turkey red oil which essentially consists in mixing fatty substances of the character of castor oil with fatty oxyacid compounds obtained from such substances, heating the mixture to from 40° to 100° centigrade, allowing to cool, sulfonating, washing and finally mixing with alkali, substantially as and for the purpose stated.

3. The process of manufacturing fatty compounds for use as Turkey red oil which essentially consists in mixing fatty substances of the character of castor oil with the fatty oxyacid compounds obtained from castor oil, heating the mixture to from 40° to 100° centigrade allowing to cool, sulfonating, washing and finally mixing with alkali, substantially as and for the purpose stated.

4. The process of manufacturing fatty compounds for use as Turkey red oil which essentially consists in mixing castor oil with the fatty oxyacid compound obtained from castor oil, heating the mixture to from 40° to 100° centigrade allowing to cool, sulfonating, washing and finally mixing with alkali substantially as and for the purpose stated.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ALEXANDER SCHMITZ.

Witnesses:

M. ENGELS,

ALFRED POHLMAYER.