

UNITED STATES PATENT OFFICE.

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PROCESS OF MANUFACTURING NEW ORGANIC FATTY-ACID COMPOUNDS.

988,032.

Specification of Letters Patent.

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No Drawing.

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To all whom it may concern:

Be it known that we, HEINRICH RÖSSNER, Ph. D., and WILLIAM COTTON, citizens of the Empire of Germany and the Kingdom of Great Britain and Ireland, respectively, residing at Höchst-on-the-Main, Germany, have invented certain new and useful Improvements in Processes of Manufacturing New Organic Fatty-Acid Compounds, of which the following is a specification.

According to this invention, by treating unsaturated fatty acids of high molecular weight with aldehydes or ketones, that is to say with neutral compounds containing the carbonyl-group, which renders them capable of combining with phenylhydrazin and hydroxylamin, new chemical compounds are formed which are soluble in alkalis and very stable in the cold. The reaction is carried out with the addition of condensing agents. These new compounds have the surprising, and in practice extremely important, property of reacting when hot like the free fatty acids. This property has led to a valuable new process in alizarin printing. Certain alizarin dyestuffs, such as alizarin-red, alizarin-pink and alizarin-orange could hitherto only be printed on goods which had previously been prepared with Turkey-red oil or the like. As this oil preparation is expensive and causes extra labor to the printer, it has already frequently been attempted to simplify the process in various ways. Among others the addition of Turkey-red oil to the printing colors has been proposed; this has, however, proved to be impracticable, as in this case the color lake is formed already in the printing color and thus prints are obtained which are not fast. On adding free fatty acids, the formation of the lake in the printing color can be avoided, but the effects obtained are not equal in brightness to the prints on goods which have been previously oiled.

On adding the above-mentioned new compounds of the fatty acids to the printing color, color lakes are not formed in the printing colors and the latter keep for any length of time. When the printed goods are steamed, the fatty compound enters the color lake.

Besides simplifying the method of working, the new process offers another advantage in that the non-printed parts do not

turn yellow, as is the case with previously oiled goods when kept for some time.

The new compounds may be added directly to the printing color, or they can be formed in the printing colors themselves. Among the aldehydes, formaldehyde is particularly suitable; acetaldehyde, benzaldehyde and others are also suitable. Of the ketones, acetone is especially suitable. In the place of the free fatty acids, the respective fats may also be employed; these are partly transformed during the process into the free acids.

The following examples illustrate the invention, but are not intended to limit it in any way.

Examples of the manufacture of the compounds.

1. 1 kilo of ricinoleic acid is stirred with 200 grams of acetone, then 200 grams of concentrated sulfuric acid are gradually run into the mixture while cooling. The mixture is afterward stirred for some hours. The reaction-product is washed by stirring it in a solution of Glauber salt of about 10 per cent. strength, made thinner by heating to 90°; the oil is removed and freed from acid and excess of acetone by washing. The oily reaction product is allowed to settle well and the separated water removed. The quantities of the acetone and acid may be varied.

2. 5 kilos of oleic acid are gradually mixed first with 750 grams of formaldehyde of 40% strength and then with 1,000 grams of concentrated sulfuric acid and then treated in the manner as set forth in Example I. The quantities of the formaldehyde and acid may be varied.

3. 10 kilos of ricinoleic acid and 2 kilos of formaldehyde of 40% strength are mixed, the mixture saturated with hydrochloric acid and well stirred for some time. The free acid is then washed out and the oily product of the reaction drawn off. In the place of sulfuric acid or hydrochloric acid there may be used in this example about 2 kilos of chlorid of zinc.

4. 1 kilo of castor oil is gradually mixed with 250 grams of formaldehyde of 40 per cent. strength at 20° C. and stirred for some time, then 200 grams of concentrated sulfuric acid are added as condensing agent at

15-20° C. and the mixture is allowed to stand over night. The product of the reaction is washed with a solution of Glauber salt for removing an excess of acid and aldehyde, when it separates as a mass like butter. In order to be able to wash this mass better, it is heated together with the solution of Glauber salt to 90°, whereby it is made thinly liquid. The quantities of the formaldehyde and acid may be varied. In the place of formaldehyde solution the corresponding quantity of solid formaldehyde may be used.

The reaction-products obtained according to the above four examples are light-colored oily substances which are thick liquids when cold and thin liquids when hot. They are lighter than water and have a slight aromatic smell. They cannot be distilled without being decomposed. They dissolve in dilute alkalis and can be separated from the solutions by means of acids. As they are not quite insoluble in water, the separation must be effected in presence of Glauber salt, common salt, ammonium sulfate or the like. They are soluble in most of the organic solvents. The said products are suitable for use in alizarin printing.

Having now particularly described our invention what we claim is:

1. The process of manufacturing new organic fatty compounds, which consists in treating unsaturated fatty-acid bodies of high molecular weight, in presence of a condensing agent, with compounds containing the carbonyl-group CO, which renders them capable of combining with phenylhydrazin and hydroxylamin.

2. The process of manufacturing new organic fatty compounds, which consists in treating unsaturated fatty acids of high molecular weight, in presence of a condensing agent, with a body containing the carbonyl-group CO, which renders them capable of combining with phenylhydrazin and hydroxylamin.

3. The process of manufacturing new organic fatty compounds, which consists in

treating ricinoleic acid, in presence of a condensing agent, with compounds containing the carbonyl-group CO, which renders them capable of combining with phenylhydrazin and hydroxylamin.

4. The process of manufacturing new organic fatty compounds, which consists in treating unsaturated fatty acids of high molecular weight, in presence of a mineral acid, with compounds containing the carbonyl-group CO, which renders them capable of combining with phenylhydrazin and hydroxylamin.

5. The process of manufacturing new organic fatty compounds, which consists in treating unsaturated fatty acids of high molecular weight, in presence of a condensing agent, with formaldehyde.

6. As new articles of manufacture, the compounds of an unsaturated fatty acid of high molecular weight with compounds containing the carbonyl-group CO, which renders them capable of combining with phenylhydrazin and hydroxylamin, said compounds being light-colored oily substances which are thick liquids when cold and thin liquids when hot, lighter than water, having a slight aromatic smell, dissolving in dilute alkalis and in most of the organic solvents, and being suitable for use in alizarin printing.

7. As a new article of manufacture, the compound of ricinoleic acid with formaldehyde, being a light-colored oily substance which is a thick liquid when cold and a thin liquid when hot, lighter than water, having a slight aromatic smell, dissolving in dilute alkalis and in most of the organic solvents, and being suitable for use in alizarin printing.

In testimony whereof, we affix our signatures in presence of two witnesses.

HEINRICH RÖSSNER.
WILLIAM COTTON.

Witnesses:

JEAN GRUND,
CARL GRUND.