

# UNITED STATES PATENT OFFICE.

MITFORD C. MASSIE, OF WASHINGTON, DISTRICT OF COLUMBIA, ADMINISTRATOR OF FRITZ ACH, DECEASED, ASSIGNOR TO C. F. BOEHRINGER & SOEHNE, OF MANNHEIM-WALDHOF, GERMANY, A FIRM.

## ART OF MAKING XANTHIN.

SPECIFICATION forming part of Letters Patent No. 767,354, dated August 9, 1904.

Original application filed January 6, 1903, Serial No. 138,063. Divided and this application filed January 14, 1904. Serial No. 189,047. (No specimens.)

*To all whom it may concern:*

Be it known that FRITZ ACH, deceased, late a citizen of Germany, and a resident of Mannheim, Germany, did invent new and useful Improvements in the Art of Making Xanthins; and I, MITFORD C. MASSIE, a citizen of the United States, and a resident of Washington, in the District of Columbia, the duly-constituted administrator of the estate of said FRITZ ACH, deceased, do hereby declare the following to be a full, clear, and exact description of the said invention of said decedent, such as will enable others skilled in the art to which it appertains to make and use the same, the said invention being described but not claimed in application Serial No. 138,063, filed January 6, 1903, of which this is a divisional application.

This invention relates to the art of preparing xanthin, the object of the same being to add new starting materials to those already available for this purpose, and in particular such starting materials as will lead directly or indirectly to economy in the production of this member of the purin series.

The inventor found that thioxanthin may be converted into xanthin proper by adopting proper methods of oxidation. By the reactions which he devised for this purpose the sulfur atom is eliminated either as  $\text{SO}_2$  or  $\text{H}_2\text{SO}_4$ , according to the selection of the oxidizing agent.

In the aforesaid application Serial No. 138,063, filed January 6, 1903, there is broadly claimed the method of reacting on thioxanthin with a desulfurizing or, more specifically, an oxidizing reagent. Still more specifically, the claims of this said application are directed to such reaction upon thioxanthin when in an acid-bath. The present invention is distinguished specifically from the invention covered in said application in that it involves the action of such a reagent upon thioxanthin when in a neutral bath.

The present invention also consists in acting upon thioxanthin with peroxid of manganese and, moreover, in such further fea-

tures and methods as will be explained in the specification and pointed out in the claims.

In order to illustrate this invention, an example embodying what is considered the preferred form of practicing the same will now be given.

*Oxidation of thioxanthin to xanthin in neutral solution.*—Five parts of thioxanthin, together with four hundred parts of water and thirteen parts of finely-pulverized peroxid of manganese, ( $\text{MnO}_2$ ), are boiled with the acid of the reflux cooler. After boiling for about twelve hours the whole is made slightly alkaline while hot and then filtered. The filtrate is then acidulated with acetic acid, which causes the xanthin, mixed somewhat with thioxanthin, to be thrown down. The precipitate being separated from the mother-liquor the thioxanthin is removed therefrom by boiling with dilute hydrochloric acid, which dissolves only the xanthin. From this solution the xanthin is obtained by the method described under Example No. 1.

From the above it will be noted that the reagents at starting may be either in solution or in suspension. This fact is expressed in the generic claims by the employment of the term "bath," which covers both.

The process of reacting upon a bath or, more specifically, a solution of a thioxanthin with a desulfurizing reagent, such as an oxidizing reagent, is not herein broadly claimed, since this is covered in the aforesaid application Serial No. 138,063; but

What is claimed, and desired to be secured by Letters Patent of the United States, is—

1. The process of preparing xanthin, which consists in acting on a neutral bath containing thioxanthin with an oxidizing reagent.
2. The process which consists in acting on thioxanthin with peroxid of manganese.
3. The process which consists in acting upon a neutral solution of thioxanthin with peroxid of manganese.
4. The process which consists in adding to an aqueous solution of thioxanthin peroxid of

manganese and boiling for a sustained period of time.

5 The process which consists in adding to an aqueous solution of thioxanthin peroxid of manganese and boiling for a sustained period of time, then rendering the hot solution weakly alkaline.

10 6. The process which consists in adding to an aqueous solution of thioxanthin peroxid of manganese and boiling for a sustained period of time, then rendering the hot solution

weakly alkaline, and, finally, acidifying the filtrate with acid, such as acetic acid.

In testimony whereof I affix my signature in the presence of two witnesses.

MITFORD C. MASSIE,  
*Administrator of the estate of Fritz Ach, deceased.*

Witnesses:

L. T. GREIST,

ANTON GLOETZNER, Jr.