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PROCESS OF MAKING MERCURY SALVES AND OINTMENTS.

No. 871,495. Specification of Letters Patent. Patented Nov. 19, 1907.

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To all whom it may concern:

Be it known that I, FRANZ FUHRMANN, a citizen of the Empire of Germany, residing in Berlin, in the Kingdom of Prussia and Empire of Germany, have invented certain new and useful Improvements in Processes of Making Mercury Salves and Ointments, of which the following is a specification.

This invention relates to a process of making salves and ointments containing mercury in a state of finest subdivision.

It has been shown by repeated clinical tests that the therapeutic value of pharmaceutical preparations which contain metallic mercury (such as Ung. Hydrargyri cinereum, etc.) depends on the finest possible subdivision of the metal in the same. The process heretofore used for making these preparations was a purely mechanical one, inasmuch as the metallic mercury was slowly ground and mixed with the proper fat or oil, eventually by the use of special grinding machines, until the desired fine distribution of the metal in the menstruum or foundation is obtained. The carrying out of this operation required considerable time and labor.

The object of the present invention is to obtain a better result by purely chemical means. In principle, the process consists in adding the mercury to the ointment-base in the form of an organic compound and in splitting off the metallic mercury either by chemical means or by causing a self-decomposition of said mercury compounds within the mixture. For the purpose referred to, such mercury compounds are specially fit which decompose themselves within a short period of time, thereby producing metallic mercury. Among these compounds is a series of organic mercury compounds, such as mercurous formate, mercurous acetate, mercurous oxalate, etc., and particularly the mercurous formate is best adapted for that purpose. This compound forms, in its pure state, white leaflets which assume quickly, even at ordinary temperature, a grayish color and which are decomposed into mercury, carbon dioxid and formic acid, according to the following formula:

$$Hg_2H_2C_2O_4 = 2Hg + CO_2 + CH_2O_2.$$

When this process is allowed to take place in a fatty substance by mixing the mercurous formate with vaseline, lanolin or a similar substance, and permitting this mixture to stand for a few days, the mercury is gradually freed in the fatty substance and distributed in such a minute state as could never be obtained by mechanical means. As carbon dioxid is generated, the fatty mass assumes a foamy condition, and is changed simultaneously to a gray color by the finely-distributed mercury. The formic acid, which is contained in the mass, is converted into the non-injurious sodium formate by the addition of sodium carbonate.

This process can be considerably accelerated by heating the mass and completing the reaction in a short time, after which the salve thus obtained has to be again mixed until it is in a perfectly homogeneous condition. In this manner the production of the well-known gray mercury salve can be effected in a short time and without expensive machinery, while at the same time the product contains the mercury in the finest possible state of subdivision.

The following examples are intended to illustrate the processes as practically carried out:

Example I: (For salves). 5 kg. of freshly prepared and finely pulverized mercurous formate are mixed with 5 kg. of any salve suitable as a foundation, after which a solution of 250 gr. of dry sodium carbonate and 750 gr. water is mixed with the mass while stirring. It is preferable to use as a foundation such salves which easily mix themselves with water, such as lanolin, resorbin, etc. The whole mass is then heated in a suitable vessel in the water-bath while continuously stirring, until the foaming which is due to the development of carbon dioxid ceases, care being taken that the mixture does not become too liquid. The mixture is then quickly cooled and the salve again carefully mixed until it is in a perfectly homogeneous condition.

Example II: (For oils). Mercurous formate is mixed in the same proportions as in Example I., with finely powdered sodium carbonate and then slowly stirred into a small quantity of white vaseline and liquid paraffin to form a consistent salve. The mass is then heated in the water-bath until the development of carbon dioxid ceases, after which the mass is quickly cooled and mixed with the quantity of paraffin or similar oil necessary to a homogeneous emulsion. The decomposition of the mercury com-

pounds in order to split off metallic mercury, can also be effected by adding a reducing agent to the mixture.

Example III: 4.2 kg. of a fine-powdered mercuric oxid, obtained by precipitation, are mixed with 4 kg. of foundation ointment. The whole mass is then carefully heated, until it gets a viscous consistence. After this 1 kg. of pure formic acid is successively added while continuously stirring and heating the mixture until the development of carbon dioxid ceases and the mass assumes an even grayish color. After cooling the mass is again thoroughly stirred. An excess of formic acid should evidently be avoided. In place of formic acid other agents may be added, for instance: a weak ammoniacal solution of formaldehyde, or a solution of peroxid of hydrogen, or of hydrazin, or hydroxylamin, etc.

This process has the additional advantage that the presence of other metals is entirely excluded, for the reason that the mercurous compounds can be obtained in a perfectly pure state, while the metallic mercury heretofore used in the production of mercury salves often contains small quantities of other metals.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

The process herein described of producing salves and ointments containing metallic mercury in a state of finest subdivision, which consists in mixing an organic mercury compound with an ointment-base and a carbonate and then splitting off the metallic mercury by heating the mixture so as to distribute the liberated metallic mercury in a minute state throughout the ointment-base.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

FRANZ FUHRMANN.

Witnesses:
HENRY HASPER,
WOLDEMAR HAUPT