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PROCESS OF MANUFACTURING GELATIN CAPSULES

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I have filed applications in Austria on May 22, 1930, and in Germany on May 20, 1931.

This invention relates to a new and improved process of manufacturing gelatin capsules, and has for its object to impart such a degree of elasticity to these capsules that when the same are employed, for example, for sealing purposes they can be stretched so as to fit tightly, without any preliminary treatment, over the articles to be sealed.

The hitherto known gelatin capsules require to be soaked in water before being used. They are then fitted loosely over the objects to be sealed, e. g. the necks of bottles, and left to dry during a period of from six to twelve hours, during which time they gradually shrink into a tight fit.

With the capsules manufactured in accordance with the method provided by the present invention the described soaking and drying processes before and after application can be dispensed with, and the sealed articles are ready for packing and transport immediately after the application of the capsules.

The method provided by the invention consists essentially in adding a mixture of about 0.015 to 0.02 parts of petroleum and about 0.03 to 0.04 parts of benzoin-resin to a basic composition consisting of about 400 parts of gelatin and 100 parts of glycerine. The invention further includes a special hardening agent for use in connection with the capsules made according to the above formula.

The manufacturing process can be carried out, for example, in following manner. The gelatin, after having been softened in distilled water and freed of superfluous water is heated in an oil or water bath until it is liquefied. For every kilogramme of gelatin ¼ litre of glycerine and a mixture of benzoin-resin dissolved in alcohol and a small quantity of petroleum, in the proportions given, are then added. After thorough and prolonged stirring the intimate mixture of the ingredients thus obtained is allowed to stand undisturbed for about 12 hours, the skin forming on the surface being removed after partial cooling. If the mass is required to be tinted, the desired colouring matter is added thereto in solution.

The capsules are made from this composition in the usual manner by dipping forms into the liquefied hot composition, and allowing the adhering layer to cool off. The capsules are then hardened by being dipped into a bath of the hardening agent provided by the present invention.

This bath is obtained by the addition of glycerine to the formaldehyde which is commonly employed for the hardening of gelatin. The purpose of the addition of glycerine is to prevent as far as possible the extraction of the glycerine which entered into the composition of the capsules. Favourable results are obtained with a hardening agent consisting of glycerine, 3–5% formaldehyde, and alcohol, in the proportions of about 1:2:3.

In a few minutes after this hardening the capsules can be trimmed, withdrawn from the forms, and dried. They are then fit for transport, and require no preliminary treatment of any kind before being used. Their elasticity is such that they can be uniformly distended and fitted over the neck of a bottle in the manner of a rubber cap, and when so used they instantly form a tight fit. Experience has shown that they can only be removed in practise by destruction, since their elasticity is only effective on uniform distention, and not on stretching at a point or points only.

It is advisable not to pack the capsules in too dry a state, but so that the moisture contained in the composition is retained. When this is no longer the case, it is sufficient to moisten the dried-out capsules in steam. The extensibility of the capsules is reduced at temperatures below 15° C., a fact which must be borne in mind in work-rooms and -shops.

I claim:

1. The process of manufacturing gelatinous capsules consisting in forming capsules from a composition consisting of a basic mixture of about 400 parts of gelatin and 100 parts of glycerine to which is added a mixture of about 0.015 to 0.02 parts of petroleum and about 0.03 to 0.04 parts of benzoin-resin and in hardening the capsules with 3–5%

formaldehyde to which are added glycerine and alcohol.

2. The process of manufacturing gelatinous capsules consisting in forming capsules from a composition consisting of a basic mixture of about 400 parts of gelatin and 100 parts of glycerine to which is added a mixture of about 0.015 to 0.02 parts of petroleum and about 0.03 to 0.04 parts of benzoin-resin and in hardening the capsules with a mixture of glycerine, 3–5% formaldehyde and alcohol in the proportions of 1:2:3 respectively.

3. As a new article of manufacture, a hard gelatinous capsule for bottle tops having a sufficient degree of elasticity when in a dry state to stretch over a bottle top and cork and grip the bottle neck tightly.

In testimony whereof, I affix my signature.

MICHAEL STEIN.