

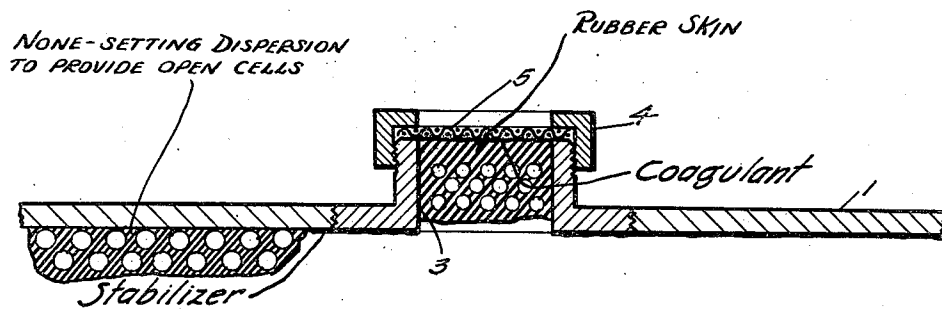
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METHOD OF PRODUCING SPONGELIKE ARTICLES

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METHOD OF PRODUCING SPONGELIKE ARTICLES

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6 Claims. (Cl. 18—58)

This invention relates to methods and apparatus for producing sponge-like articles from dispersions of rubber or similar material, and especially aqueous dispersions. Some of the procedural steps disclosed in the present application are described and claimed in my United States Patent No. 2,206,757, granted July 2, 1940.

The chief objects of the present invention are to provide a sponge-like article of rubber or like material having, on at least a part of its surface, no external skin, or substantially none, and to do so conveniently and economically. A further object is to obtain the results just indicated and at the same time avoid incomplete filling of the mold and also to avoid overflowing of the mold or vessel in which the sponge-rubber composition expands to form the article.

I attain the above-stated chief objects by preliminarily treating or lubricating the molding surface, or a determinate part of the same, with a stabilizing agent. An advantage of such treatment of the molding surface is that it causes the dispersion next to the said surface to remain in an uncoagulated condition after the rest of the dispersion has coagulated or set, with the result that when the article is removed from the mold the dispersion of which it is composed will have gelled with the exception of the outer layer, in which the cell walls, still being in an uncoagulated condition, will break down upon removal of the article from the mold, leaving, instead of a skin, a surface layer of open cells.

I attain the above-stated further object by providing an opening in the mold or vessel for the escape of gas, so that the sponge material can "fill out" in the mold, but the opening preferably is partially closed by a porous material adapted to have a localized coagulating effect upon the foam that contacts it so that escape of foam from the mold or vessel is prevented.

The single figure of the accompanying drawing is a fragmentary vertical section of the upper portion of an upper mold member embodying and adapted for the practice of my invention in its preferred form.

Referring to the drawing, the mold section 1 is formed with a screw-threaded aperture in which is mounted a complementally threaded neck member 3 which has screwed thereon an annular clamping member 4 which clamps against the upper edge face of the neck member 3 a piece of canvas or the like 5, this arrangement being such that air or gas can escape through the canvas 5 as the frothing material rises in the vessel, but when the rising froth reaches the

canvas its contact therewith will cause it to lose moisture and perhaps locally coagulate, and, in any event, the escape of the froth from the mold is prevented.

To avoid the formation of skin on the article either a part or all of the molding surface, other than that of the canvas 5, may be preliminarily treated with the stabilizing agent, according to whether it is desired that substantially all or only a lesser part of the surface of the article be without skin, and the canvas 5 can be preliminarily treated with a coagulating agent if desired, to provide more definite prevention of escape of the dispersion from the mold.

The present invention is not limited to any particular way of frothing the dispersion, which may be done by any procedure involving liberation or generation or expansion of gas within the dispersion, but I prefer to froth the dispersion as contemplated in my U. S. Patent No. 2,140,062, in which an aqueous dispersion of rubber or the like is caused to froth by subjecting it to a reduction of pressure, preferably to a sub-atmospheric pressure.

In the appended claims the expression "a material having the pertinent characteristics of rubber" is to be understood as meaning a material having all of the following characteristics: that it can be in the form of a dispersion; that the dispersion can be caused to foam; that the foam produced can be irreversibly set in its expanded form; and that when set it will have an elasticity and resilience similar to that of vulcanized natural rubber.

I claim:

1. The method of producing a sponge-like article from a frothed dispersion of a material having the pertinent characteristics of rubber which comprises treating at least a part of the molding surface of a mold with a stabilizer, molding the frothed dispersion against the surface so treated, and causing the frothed dispersion to become set in its inner region while the stabilizer locally prevents it from becoming set.

2. The method of producing a sponge-like article from a frothed dispersion of a material having the pertinent characteristics of rubber which comprises treating at least a part of the molding surface of a mold with a stabilizer, causing the frothed dispersion to expand in the mold while venting the mold through a porous member, and causing the frothed dispersion to become set in its inner region while the stabilizer locally prevents it from becoming set.

3. The method of producing a sponge-like arti-

cle from a frothed dispersion of a material having the pertinent characteristics of rubber which comprises treating a part of the molding surface of a mold with a stabilizer and another part of it with a coagulant, molding the frothed dispersion against the said surface, and causing the frothed dispersion to become set in its inner region while the stabilizer locally prevents it from becoming set.

4. The method of producing a sponge-like article from a frothed aqueous dispersion of a material having the pertinent characteristics of rubber which comprises treating at least a part of the molding surface of a mold with a stabilizer, molding the frothed dispersion against the surface so treated, and causing the frothed dispersion to become set in its inner region while the stabilizer locally prevents it from becoming set.

5. The method of producing a sponge-like article from a frothed aqueous dispersion of a mate-

10 rial having the pertinent characteristics of rubber which comprises treating at least a part of the molding surface of a mold with a stabilizer, causing the frothed dispersion to expand in the mold while venting the mold through a porous member, and causing the frothed dispersion to become set in its inner region while the stabilizer locally prevents it from becoming set.

6. The method of producing a sponge-like article from a frothed aqueous dispersion of a material having the pertinent characteristics of rubber which comprises treating a part of the molding surface of a mold with a stabilizer and another part of it with a coagulant, molding the frothed dispersion against the said surface, and causing the frothed dispersion to become set in its inner region while the stabilizer locally prevents it from becoming set.

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