UNITED STATES PATENT OFFICE

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RUBBER SKIN DOLL

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4 Claims. (Cl. 46—156)

1. This invention relates to a doll or similar article and a method of making same and is particularly concerned with a doll having surface portions simulating the feel of human skin and a preferred method of making same.

The objects of this invention include providing an article having a construction whereby portions of the surface simulate the feel of skin, and providing a simple method for making such an article; and particularly providing a doll of pleasing appearance and durable construction in which at least the body and limb portions have surfaces simulating the feel of human skin. Other objects will be apparent from the description which follows.

Dolls and similar articles are conventionally made of life-like appearance from the standpoint of both shape and coloring. Such dolls are normally made from many materials including flexible material such as vulcanized rubber or inelastic material such as paper-mâché, which may be molded into a life-like figure of the desired color. It is desirable, however, to make the article in a manner whereby the article feels life-like, the illusion being created by providing a surface simulating the feel of skin.

I have discovered that a construction comprising an inner portion normally having the shape of the doll and a thin flexible outer portion overlying and conforming to the contour of the inner portion but separate from and free to move relative to the inner portion will provide a doll having a surface texture or feel which is extremely life-like.

The doll or similar article embodying this invention preferably comprises a hollow inner shell of a vulcanized rubber, the shell being stuffed with a suitable filler material, and an outer layer of a vulcanized rubber positioned over the inner shell and lying continuous thereto over substantially the extent of the inner shell but adhered to the inner shell in but a few widely spaced local zones.

The method of making a doll constituting a preferred embodiment of this invention is best illustrated by reference to the drawings.

Of the drawings:
Fig. 1 is a view in elevation of a suitably shaped form immersed in a coagulant solution as the first step in making a doll by the preferred method, the coagulant-containing tank being shown in section;
Fig. 2 is a view in elevation of the coagulant-coated form immersed in rubber latex whereby an inner rubber shell is deposited, the shell and the latex tank being shown in section;
Fig. 3 is a view in elevation of the inner shell on the form after the shell is dried and dusted with seacompote;
Fig. 4 is a view in elevation and partly in section of the treated inner shell being coated with coagulant;
Fig. 5 is a view in elevation of the immersion of the inner shell, mounted on the form, in rubber latex whereby a thin nonadhering outer skin of rubber is deposited over the tack-free inner shell, the outer skin and the latex tank being shown in section;
Fig. 6 is a fragmentary perspective view of the body portion of the doll after vulcanization;
Fig. 7 is a section taken on line 7—7 of Fig. 6;
Fig. 8 is a fragmentary perspective view of a finished doll embodying this invention, part thereof being broken away and in section for clarity of illustration; and
Fig. 9 is a fragmentary view in section of an alternative construction embodying this invention.

In the preferred method of making a doll embodying this invention, a form 10 is provided having the shape of the body and legs of the doll. The form may be of any suitable impervious material such as glass, aluminum, thermostet resin or similar material, but preferably comprises either porcelain or stainless steel. Form 10 is first coated with coagulant for latex preferably by dipping the form in a solution of coagulant in a suitable solvent as shown in Fig. 1. Form 10 is removed from the coagulant bath and the adherent coagulant film is preferably dried, either partially or completely, before proceeding further.

The coagulant composition employed in practicing this invention may include any of the well known coagulants for latex, as for example water-soluble acids or polyvalent metal salts dissolved in a suitable solvent. A saturated solution of calcium nitrate in acetone is particularly suitable.

The coagulant-coated form is then dipped into an aqueous dispersion of a vulcanizable rubbery material as shown in Fig. 2. The form 10 is immersed in the latex for a time sufficient to deposit an inner shell 11 of vulcanizable coagulant preferably 0.325—0.340 thick uniformly over form 10.

The particular latex employed is largely a matter of choice. For example, the lattices which may be used include natural rubber lattices or any
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3 suitable vulcanizable synthetic rubber lattices including lattices of such materials as chloroprene or isoprene polymers; copolymers of butadiene and similar materials with styrene or acrylonitrile or similar copolymerizable monomers; and other rubbery materials. It is only necessary that the material be deposited in a uniform impervious layer conforming closely to the shape of the form and preferably forming a resilient or desirably an elastic couslumger layer. The latex may, of course, also include the commonly employed vulcanizing agents and accelerators thereof, reinforcing materials, color pigments, etc., in accordance with known latex compounding technique.

Form 10 with its deposited inner shell 11 is removed from the latex and dried either in air or in an oven. The surface of shell 11 is then treated to bring the surface into a non-tacky condition except in a few local zones such as the arm sockets 12, 12 and the neck portion 13 (Fig. 2). The surface treatment preferably comprises dusting the surface with a powdery non-tacky water-insoluble covering material such as soapstone, talc, mica or similar material which is relatively inert, or alternatively treating the surface with chlorine to bring it into a tack-free condition. During the surface treatment the arm sockets 12 and the neck portion 13 may be covered by protective patches 14, 14 which are thereafter removed. Similar protection may be provided for other local zones if desired.

The treated shell 11 on form 10 is then coated with coagulant as previously described and as shown in Fig. 4. The coated article is dipped into the latex bath again as shown in Fig. 5 and maintained in the bath until a relatively thin outer layer 15 of the order of 0.015"-0.025" thickness is deposited uniformly over the inner shell 11. The form 10 and its deposited coagulum layers 11 and 15 are removed from the latex and the coagulum is washed and dried. The thickness of the outer layer may be varied somewhat depending upon the material of which it is formed but is preferably substantially of the thickness described.

The dried inner and outer layers 11 and 15 are then vulcanized on the usual form in the usual manner. If desired, the neck portion 13 may be rolled back to form a head 16 before vulcanization. During vulcanization, outer layer 15 fuses to inner shell 11 only in those local zones of shell 11 which were untreated, as for example, the arm sockets 12, 12. Over the remainder of the extent of inner shell 11, the outer layer 15 remains non-adherent and free to move relative to inner shell 11. The vulcanization causes outer layer 15 to permanently retain its close fitting condition over shell 11.

The Vulcanized article is then stripped from the form 10 and is stuffed with a suitable filler material 17 such as textile fibers, rags, or similar yielding materials. Arms 18, 18 made in a single piece and provided a yoke attached to the body by any suitable means. A head 19 is provided and is attached to the body portion by any of the well known means of attachment. In the preferred embodiment, head 19 is preferably of paper-mâché or similar inflexible material such as plastic, clay, etc., and is provided with an annular groove 20 which engages rolled head 16 of the neck portion 12. If desired, the head may be made of a vulcanized rubber as set forth hereinabove or may comprise a single shell of vulcanized rubber.

In an alternative construction as shown in Fig. 9, inner shell 21 is of sufficient thickness to maintain its shape without the use of filler material and a relatively thin outer layer 22 is deposited thereon as described above after shell 21 has been surface treated.

The body and limb portions of the doll may be made as a single unitary article or may be made separately and assembled later as desired. The method is also applicable to the manufacture of articles other than dolls of human shape. Animal dolls may be made in a similar manner and if desired, simulated fur may be secured to the outer skin in any of the usual well known ways.

Articles embodying this invention are preferably formed by deposition of latex as set forth in detail. The inner and outer layers may, however, be made separately and the outer layer then positioned over the inner layer in contiguous relation. The inner layer may be molded and then used as a deposition form for the outer layer or other similar methods of obtaining a laminated structure may be used.

Any film-forming resilient material may be used in practising this invention so that in addition to the vulcanizable rubbers already enumerated such materials as plasticized polyvinyl chloride, polyvinylidene chloride or similar materials may also be used.

An article made in accordance with this invention has surface portions simulating the feel of human skin. A doll embodying this invention is durable and of pleasing appearance. The doll or similar article is readily made by a few simple steps.

The invention has been described in considerable detail with reference to a preferred embodiment and the method for making same but it will be understood that variations and modifications may be effected within the spirit and scope of the invention as defined in the appended claims.

I claim:

1. A doll member the surface of which simulates the feel of human skin, said member comprising a resilient inner portion normally having the shape of said member, a layer of lubricant at substantially the entire outer face of said inner portion, and a thin flexible outer portion comprising impervious rubber-like material overlying substantially the entire outer face of said inner portion contiguous thereto and movable with respect to said inner portion, said outer portion being secured to said inner portion only at isolated local zones.

2. A doll, the surface of which simulates the feel of human skin, said doll comprising a head member and a resilient body member, said body member comprising a resilient inner portion normally having the shape of said member, a layer of lubricant at substantially the entire outer face of said inner portion, and an outer portion substantially completely overlying and contiguous to said inner portion and movable with respect to said inner portion over substantially the extent thereof, said outer portion comprising a thin flexible element comprising impervious rubber-like material and being adhered to said inner portion only in widely spaced local zones.

3. A doll member, the surface of which simulates the feel of human skin, said member comprising a thin resilient hollow portion normally having the shape of said member, filler material filling said inner portion, a layer of lubricant at substantially the entire outer face of said inner portion, and an outer portion posi-
tioned over substantially the entire extent of and contiguous to said inner portion and movable with respect thereto over substantially the extent thereof, said outer portion comprising a relatively thin flexible member comprising a continuous layer of vulcanized rubber, said outer portion being secured to said inner portion only in widely spaced local zones.

4. A doll having surface areas thereof simulating the feel of human skin, said doll comprising joined resilient body and limb portions and a relatively inflexible head attached to said body portion, each said body and limb portion comprising a thin-walled hollow inner shell of a vulcanized rubber normally having the shape of said portion, a layer of lubricant at substantially the entire outer face of said shell, a yielding filler material filling the interior of said hollow inner shell, and a relatively thin outer layer of a vulcanized rubber substantially completely overlying said inner shell and movable with respect thereto over substantially the extent thereof, said outer layer being adhered to said inner shell only in widely spaced local zones.

DONALD J. MILLER.

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