Jan. 26, 1937. A. N. SPANEL 2,068,997

RUBBER ARTICLE SUCH AS BABY PANTS

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Fig. 1

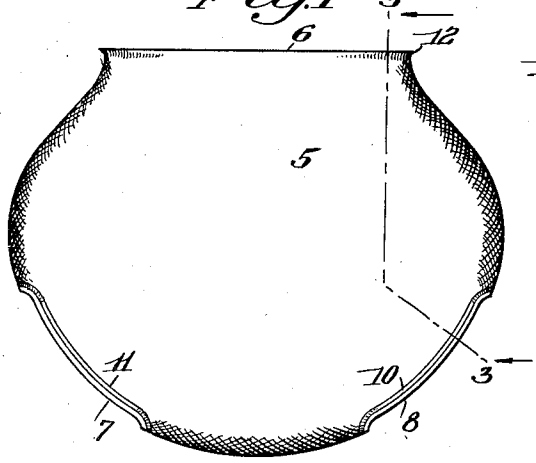


Fig. 2

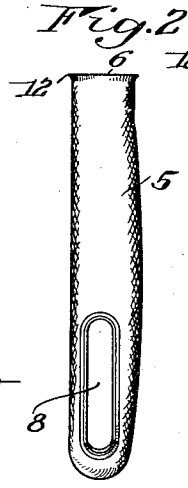


Fig. 3

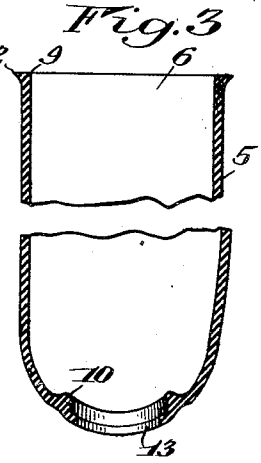


Fig. 4

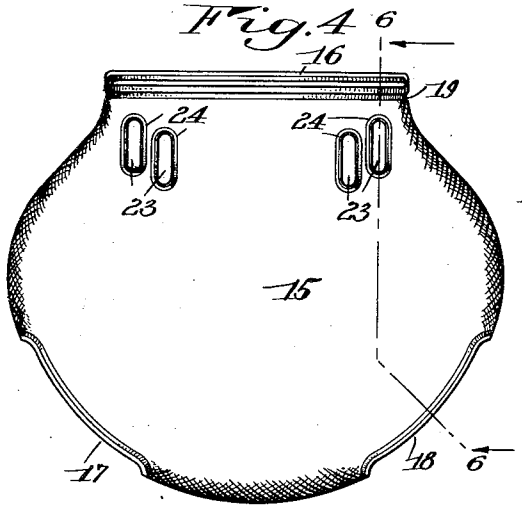


Fig. 5

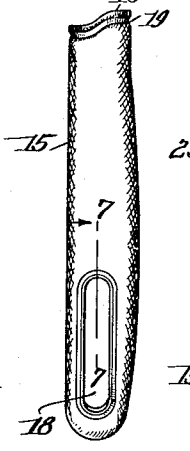


Fig. 6

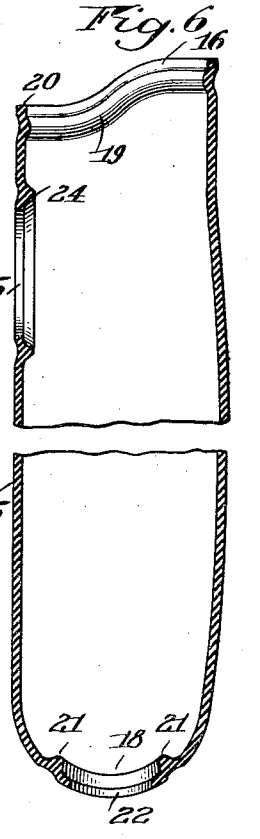
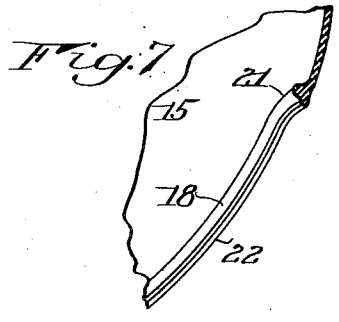


Fig. 7



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Fig. 8

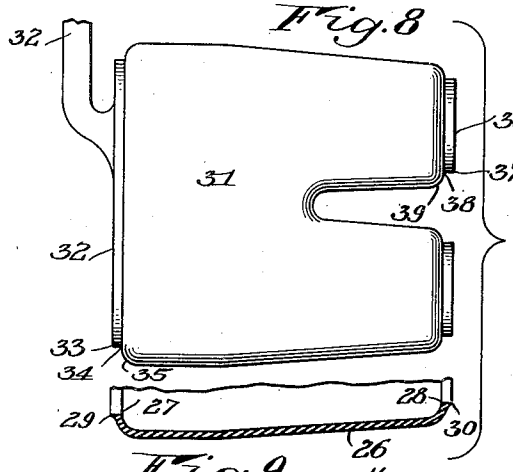


Fig. 11

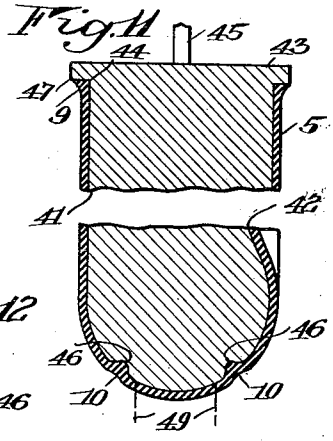


Fig. 12

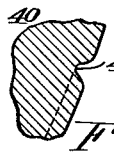


Fig. 9

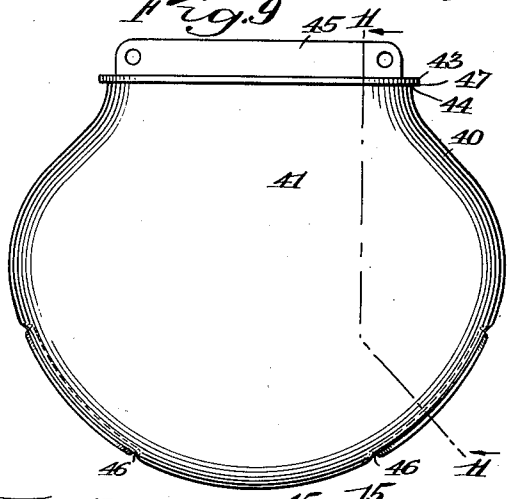


Fig. 10

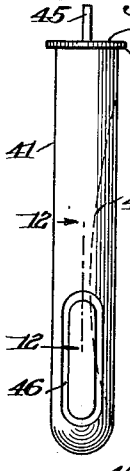


Fig. 15

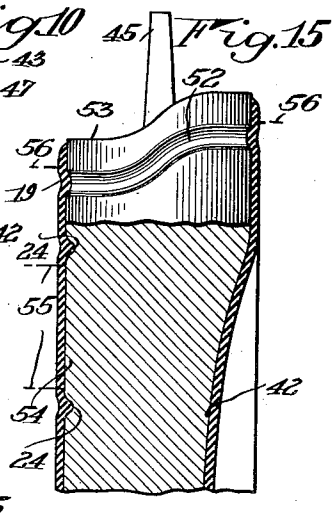


Fig. 13

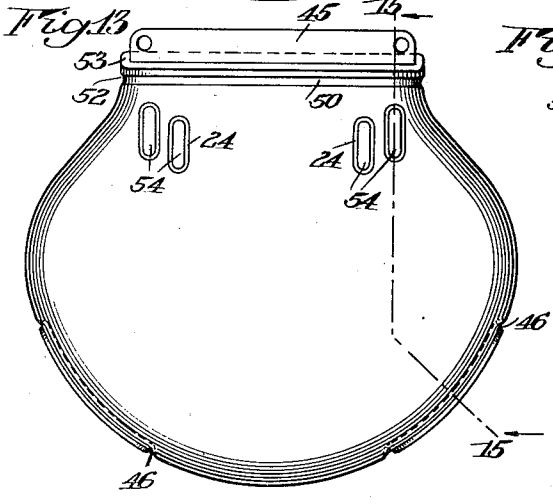
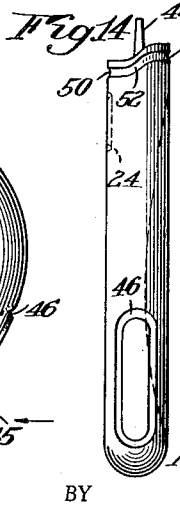
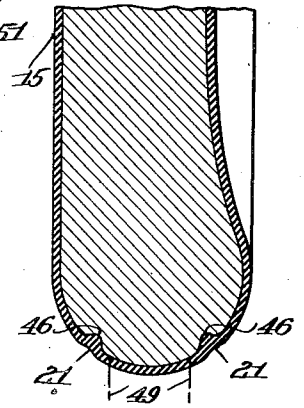


Fig. 14





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UNITED STATES PATENT OFFICE

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RUBBER ARTICLE SUCH AS BABY PANTS

Abraham N. Spanel, Rochester, N. Y.

Application December 11, 1935, Serial No. 53,925

2 Claims. (Cl. 128—288)

This invention relates to thin rubber articles such as baby pants and the like.

This application is a continuation in part of applicant's copending application, Serial No. 738,669, filed Aug. 6, 1934.

The main feature of the present invention relates to the provision of a rubber article such as a pair of baby pants in which the margin of each opening therein is suitably reinforced by an integral accumulation or ridge of rubber on the inner surface of the article and adjacent to a cut edge thereof.

Another feature of the invention relates to a reinforced waist opening with a cut edge, in a rubber garment wherein certain portions of the margin of the garment at this opening are offset with respect to other portions of said margin to facilitate the application of the garment to the wearer.

A further feature of the invention relates to the arrangement of the leg openings in a pair of baby pants made of rubber in which said openings are cut out from the body of the pants so that the margins of these openings tightly but comfortably conform to the legs of the infant without the need of an excessive amount of rubber.

These and other features of the invention will appear from the detailed description and claims when taken with the drawings in which Fig. 1 is a front elevation and Fig. 2 is a side elevation of one style of pants according to the present invention, while Fig. 3 is a cross sectional view of the same taken substantially on the line 3—3 of Fig. 1; Fig. 4 is a front elevation and Fig. 5 is a side elevation of a modified type of baby pants, while Fig. 6 is a cross sectional view thereof taken substantially on the line 6—6 of Fig. 4, and Fig. 7 is a fragmentary sectional view of this modified type of pants taken substantially on the line 7—7 of Fig. 5; Fig. 8 is a front elevation of a form suitable for making baby pants according to the present invention, a fragment of the pants made on this form being slightly displaced from the form to illustrate more clearly the type of reinforced margins at the openings on the inside surface of the pants; Fig. 9 is a front elevation and Fig. 10 is a side elevation of a form on which the pants of Figs. 1, 2, and 3 can be made; Fig. 11 is a fragmentary cross-sectional view thereof taken substantially on the line 11—11 of Fig. 9; and Fig. 12 is a fragmentary detail view in cross section taken substantially on the line 12—12 of Fig. 10; Fig. 13 is a front elevation and Fig. 14 is a side elevation of a form on which the pants of Figs. 4 to 7 inclusive can be made and Fig. 15 is a cross sectional view of this form taken substantially on the line 15—15 of Fig. 13.

Referring especially to Figs. 1, 2, and 3, the numeral 5 generally designates a pair of rubber pants having a waist opening 6 and leg openings 7 and 8. The margins of each of these openings is reinforced by ribs 9, 10, and 11 of rubber located on the inside surface of the pants while they are being worn. The ribs 10 and 11 are preferably thickened corrugations in the rubber, that is the thickness of the corrugation is greater than the thickness of the adjacent layer of rubber. The reinforcing ridge 9 terminates in a torn or feather edge 12 while the ridges 10 and 11 terminate in cut edges 13 best shown in Fig. 3. It will be noted that the openings 7 and 8 are reentrant with respect to the general outline of the pants thereby avoiding an excess or superfluous amount of rubber about the legs of the infant while the pants are being worn.

The modified rubber pants shown in Figs. 4 to 7 inclusive, generally designated 15, are likewise provided with a waist opening 16 and reentrant leg openings 17 and 18. The waist opening 16 is reinforced by a thickened corrugation or what is substantially a convexo-concave rib 19 (Fig. 6), on the inner surface of the pants as worn, the edge 20 of the material at this opening being preferably a cut edge. It will be noted especially in Figs. 5 and 6 that the rear edge of the garment at the waist opening projects beyond the front edge thereof to facilitate the application of the pants to the wearer. The margins of the leg openings 17 and 18 are likewise reinforced by a thickened corrugation or convexo-concave ridge 21 adjacent a cut edge 22. The front of the body of the article is provided with a plurality of ventilating openings 23 herein illustrated as symmetrically spaced pairs of openings, although the number and arrangement of these openings can be widely varied for example, as located on the sides of the pants. The margin of each ventilating opening is also provided with a thickened corrugation or convexo-concave rib 24 (Fig. 6) adjacent a cut edge 25 defining the opening.

The baby pants above described are not provided with legs, but the invention includes baby pants provided with legs of the character indicated in Fig. 8. In this type of baby pants, the margins of the waist opening and the leg openings therein are respectively provided with thickened ridges 27 and 28 which terminate in torn

edges 29 and 30, said ridges being all located on the same surface of the pants.

In making the pants 26, a form 31 of the general shape of these pants is dipped by means of a support 32 into a bath of liquid rubber or an aqueous dispersion of rubber or the like. The form 31 has a raised panel 32 with an abrupt edge 33 to define the waist opening in the pants, the panel being joined to the body of the form at a junction 34 to define a recess. It will be noted that the body of the form merges with this junction by a curved surface 35. Similarly, each leg of the form is provided with an end panel 36 having an abrupt edge 37, the panel being joined to the leg portion proper through a junction 38. The leg portion of the form merges with this junction by a curved surface 39. This form is dipped one or more times into the liquid rubber. During the dipping of the form the liquid rubber is deposited as a uniform layer over the surface of the form proper but accumulates at the junction 34 and 38 to provide the thickened reinforcing ridges 27 and 28 while the the abrupt edges 33 and 37 of the panels, the liquid rubber flows away leaving a line of weakness in the deposited rubber layer. When the rubber layer has been dried and/or cured, the excess rubber on the faces of the panels is torn away at the lines of weakness developed in the layer at the abrupt edges 33 and 37. Thereafter the pants are removed from the form.

The type of pants shown in Figs. 1, 2, and 3, can be conveniently made on the form illustrated in Figs. 9, 10, 11, and 12. This form which has the general shape of the finished pants, is provided with a substantially flat front surface 41 and with a concave rear surface 42 whereby a certain amount of fullness is provided at the rear portion of the finished pants. The sides and bottom of the form are generally rounded to avoid any abrupt edges while the top part of the form terminates in a substantially straight edge defined by a projecting flat plate 43 which joins the upper surface of the form at the junction 44. The plate 43 which has an abrupt edge 47, may be provided with any suitable support 45 whereby the form proper may be manipulated during the dipping and drying operations. The edge of the lower portion of the form is provided with spaced flattened elliptical grooves 46 cut into the edge of the form to define leg openings in the resulting pants. The grooves are preferably devoid of sharp edges.

In making rubber pants on this form, the form including the plate 43 is dipped by completely submerging the same into a bath of liquid rubber such as an aqueous dispersion of rubber. The dipping operation may be repeated several times until a layer of rubber of the desired thickness is deposited on the form. It will be understood that during the dipping operations the rubber will accumulate by surface tension in the recess adjacent the junction 44 while at the abrupt edge 47 of the plate 43 the liquid rubber will tend to flow away, thereby resulting in a line of weakness in the deposited rubber layer. As a result of this line of weakness, the excess portion of the layer on the plate 43 can be torn away as far as the abrupt edge 47 when the rubber is dried. It will also be understood that during the dipping operations, the liquid rubber will accumulate in the recesses 46 to develop ridges 10 having a convexo-concave cross-section as best illustrated in Fig. 11. These ridges define leg openings and after the rubber layer has been suitably dried and/or cured, the portion of the rubber within each ridge is cut away as far as the dotted lines 49.

The rubber pants shown in Figs. 4, 5, 6, and 7 can best be made on the form illustrated in Figs. 13, 14, and 15. This last-mentioned form is similar to the form disclosed in Figs. 9 to 12 inclusive, but differs therefrom in that the waist portion of the form is provided with a different arrangement for defining a reinforced waist opening and the front surface of the form is provided with pairs of flattened elliptical recesses cut into the face of the form to define ventilating openings 23 (see Fig. 4). The portions of this form which are identical with the portions of the form illustrated in Figs. 9 to 12 inclusive are identified by the same reference characters and need not be further described. The front surface of the upper portion of the form which defines the waist opening in the resulting pants is provided with a horizontal groove 50 in one plane and the rear surface thereof is provided with a horizontal groove 51 in a higher plane while these two grooves at the edges of the form are joined by slanting grooves 52 which may be defined by an ogee curve. As herein illustrated the top of the form has an irregular surface 53, although this surface may be a slanting plane surface, without departing from the spirit of the present invention. The front face of the form is provided with spaced pairs of flattened elliptical grooves 54, the arrangement and spacing of these grooves being determined by the desired arrangement of the ventilating openings 23 (Fig. 4) in the resulting product.

In making pants on this form, the pants are deposited by associating the form with a bath of liquid rubber such as an aqueous dispersion of rubber one or more times until a layer of the desired thickness is deposited on the form. The rubber will accumulate as reinforcements in the grooves 46 defining the leg openings and in the grooves 54 defining the ventilating openings as well as in the groove defining the waist opening at the upper part of the form. It will be noted from Fig. 15 that these reinforcements defining these several openings, are thickened corrugations in the rubber layer or in other words, ridges of general convexo-concave cross section. After this layer has been suitably dried and/or cured, a portion of the layer within each ridge 21 (Fig. 15) is cut away as far as the dotted lines 39 to form the leg openings. The portion of the layer within each ridge 24 is cut away as far as the dotted lines 55 to provide the ventilating openings 23, while the excess portion of the layer above the dotted line 56 is cut away to provide the waist opening in the article.

The remaining operations of preparing the article for market need not be set forth herein since they are well-known in the art.

Since the pants herein disclosed are made by dipping the forms such as shown in Figs. 8 to 15 inclusive into an aqueous dispersion of rubber and thereafter drying and vulcanizing the deposited rubber, it will be appreciated that these pants will have the same general shape as the general contours of the form on which they are deposited, in other words, they will have a shape herein referred to as "definitely fixed" or "permanently set" in character.

The present disclosure is given merely by way of example and is not to be taken in a limiting

sense for there may be many variations and modifications within the scope of the appended claims without departing from the spirit of the present invention.

What I claim is:

1. Relatively thin seamless deposited rubber pants having a waist opening and leg openings therein, said pants having a definite normal shape "permanently set" in character, the margins of said pants adjacent said openings being reinforced by ridges of rubber integral with said pants, all of said ridges being located on the same surface of said pants.

2. Thin seamless deposited rubber pants having a waist opening and leg openings therein, said pants having a definite normal shape "permanently set" in character, the margins of said pants adjacent said leg openings being reinforced by ridges of rubber integral with said pants, all of said ridges being located on the same surface of said pants.

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