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E. M. COE ET AL

2,235,981

METHOD OF MAKING RUBBER LAUNDRY BAGS

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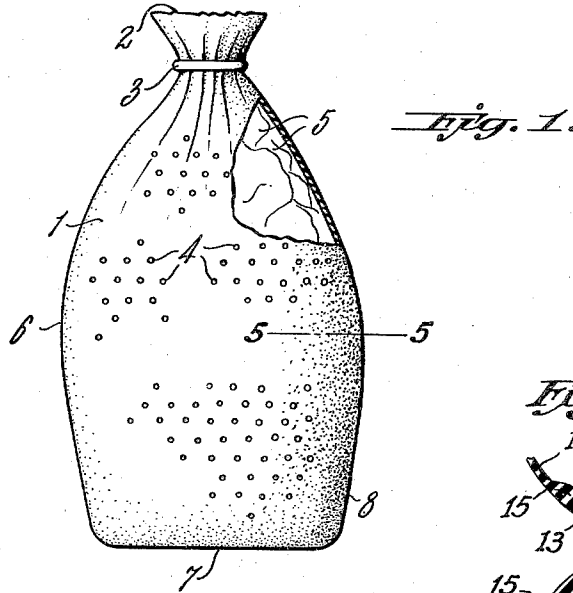


Fig. 1.

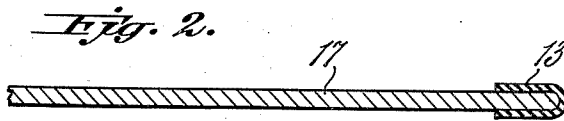


Fig. 2.

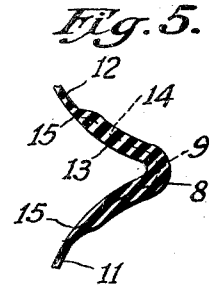


Fig. 5.

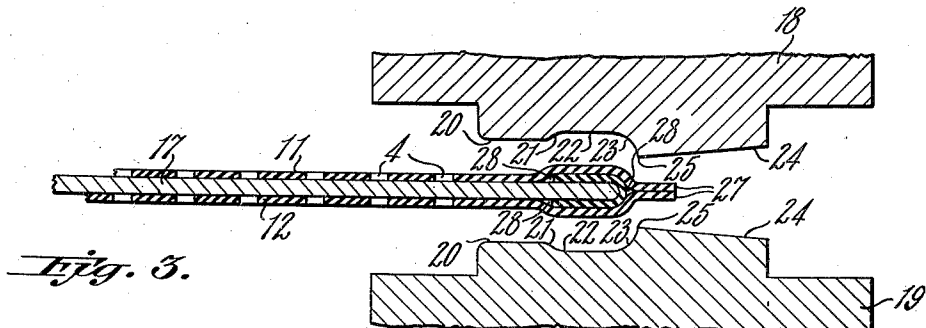


Fig. 3.

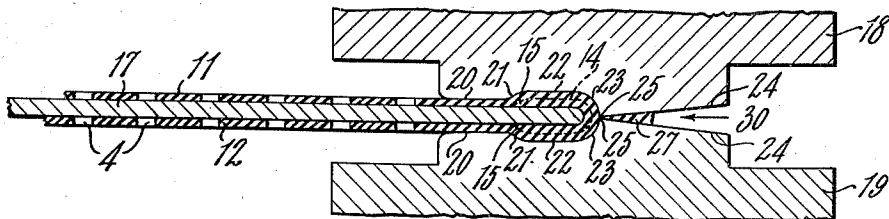


Fig. 4.

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METHOD OF MAKING RUBBER LAUNDRY BAGS

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2 Claims. (Cl. 18—56)

The present invention relates to methods of making rubber laundry bags, or rubber laundry nets, and more particularly to the manufacture of rubber containers having seams along their edges underlaid with a rubber strip vulcanized thereto to provide interior reinforcement.

Laundry bags or nets are employed as containers for articles to be laundered during the washing process. In this operation they are subjected to extremely active deteriorating forces. The caustic chemicals in the washing solution have a destructive effect upon the material of which the bags are constructed. Since rubber has a greater resistance than fabric to caustic chemical action, laundry bags have been constructed of vulcanized rubber, having perforations to permit permeation of the articles to be laundered by the washing solution.

Rubber laundry bags have been made of a sheet or sheets of rubber, their side walls being joined along their edges by a seam or seams. When not in use, they lie flat. When filled with laundry and ready for use, they bulge so that the seams are subjected to strains. They are then inserted in a rotator, placed in a washing tank, and revolved inside the tank. During this laundering process, the bags are bounced, bumped, twisted and scraped along the sides of the tank and against each other. These wearing factors, plus the deforming action of the articles inside the bags, have caused the seams of the laundry bags, prior to the present invention, to roughen, split and pull apart, both inside and out. The cleavage inside chews the clothes. The roughened edges outside catch against projections in other surfaces when moving past them. This causes even further breakage of the seams. Seams which would, under usual conditions, as in rubber container bags, hot water bottles, and the like, withstand ordinary pressure and handling, have been found inadequate when subjected to the extraordinarily violent deteriorating forces encountered by a laundry bag when in use.

The present invention provides an all-rubber laundry bag having a rubber strip molded and vulcanized to the under side of a seam to reinforce the seam. The strip is folded and molded to conform to the joint between the side walls of the bag. The edges of the strip are tapered so as to abut smoothly against the rubber side walls. The molded character of the reinforced portion of the bag at the seams produces a virtually unitary construction of the bag as a whole. Because of the additional thickness and the elimination of roughness at the seams, the rubber laundry bag

embodying the present invention will serve a longer time in active use than previous laundry bags, without repair or replacement.

The present laundry bag is simply and satisfactorily fabricated upon a form by the pressure action of upper and lower shaping dies at the seams, by the method described below in more detail, and later vulcanized.

The accompanying drawing illustrates a certain preferred embodiment of the invention and apparatus for practicing it, in which—

Fig. 1 is a plan view of a laundry bag filled and ready for use, with portions broken away;

Fig. 2 is a cross-sectional view showing the form on which the bag is to be built, and the reinforcing rubber strip folded around its edge;

Fig. 3 is a cross-sectional view showing the application of the side walls, and the shaping dies in their open position;

Fig. 4 is a cross-sectional view showing the forming dies in their closed position; and

Fig. 5 is an enlarged cross-section of the rubber container taken along line 5—5 of Fig. 1.

Referring to Fig. 1, 1 is a laundry bag embodying the present invention, drawn together near the top opening 2 by a cord 3, which is illustrative of suitable means for closing the bag. Perforations 4 permit the washing solution to penetrate the articles 5, such as clothes, to be laundered. The left edge or the bottom edge 7 of the bag may be folded or seamed, as desired. The enlarged insert shows details of the right edge 8, particularly the seam 9 which joins the rubber front and back walls 11 and 12, respectively. A strip 13 of rubber has been vulcanized along the surface indicated by dotted line 14, to strengthen and reinforce the seam 9. Dotted line 14 indicates the line along which the rubber strip 13 has been joined with the rubber side walls 11 and 12, in the vicinity of the seam 9, by vulcanization. By the process of formation, described below, the edges 15 of the strip 13 have been tapered so that they merge into the side walls of the bag.

The laundry bag according to the present invention may be made as illustrated in Figs. 2, 3, and 4. The rubber laundry bag is assembled on a form 17, its edges pressed between upper and lower shaping dies 18 and 19, respectively, and vulcanized. Form 17 is curved at its outer edge to receive the rubber strip 13 and to determine its inner shape. The dies 18 and 19 are provided with corresponding flat surfaces 20 re-entering along oblique surfaces 21 into parallel recessed flat surfaces 22. Concavely rounded surfaces 23

intersect the oblique flat surfaces 24 to form cutting edges 25.

Preliminary to constructing the bag, the rubber strip 13 is folded longitudinally along the edge of the form 17, as illustrated in Fig. 2. A sheet of rubber is folded at left side 6 over form 17 so that side walls 11 and 12 lie, respectively, above and below the form edged with the rubber strip, in such manner that their overlapping edges 27 extend beyond the margin of the rubber strip, as shown in Fig. 3. Interstices 28 remain between the flat edges of the strip 13 and the diagonal bend in the side walls at this point, and also at the outer side of the strip 13 between the joint of the side walls.

Fig. 4 shows the shaping dies 18 and 19 in their closed position. The operation of these dies is determined by the shape of their surfaces. Parallel surfaces 20 retain a flat portion of the side walls 11 and 12 and retard their flowing during the forming process. Diagonal surfaces 21 mold the joint at the edges 15 of the strip and taper off those edges to make the joint smooth, causing the rubber at edges 15 to flow into interstices 28. The recessed surfaces 22 and curved surfaces 23 insure complete contact and sufficient pressure between the side walls and the strip. The cutting edges 25 sever the excess rubber 27 from the seam, leaving a smooth exterior. The oblique planar surfaces 24 provide a channel 30 into which the excess rubber 27 flows as the dies are pressed together. The angle at which they are inclined, together with the friction set up by motion along these surfaces, retards the flow of rubber 27 into the channel, thus maintaining even pressure of the rubber at the seam.

When the shaping dies have molded and cut the edge to form the seam, the dies are removed. A cut seam is then produced at the bottom edge 7 in a similar manner. The dies may, however, be so shaped that the seams along more than one edge may be formed by the same operation. When the necessary seams have been made, the laundry bag is vulcanized in any suitable manner, as, for example, by the open-cure process.

The present laundry bag may have both side walls composed of a single sheet of rubber folded at one edge and seamed at the other two, or the side walls may be two separate sheets of rubber

joined and seamed along three edges, the top of the bag in any case being left open.

The rubber laundry bag made according to the present invention is a vulcanized unit, having seamed edges, sturdy, smooth and tough enough to withstand long and hard usage when circulated in a washing tub. The substantially integral incorporation of the rubber reinforcing strip with the seam provides a virtually unitary construction which will not pull apart.

While a certain present preferred embodiment of the invention has been shown and described, it is to be understood that the invention may be otherwise practiced within the spirit thereof and the scope of the appended claims.

Having thus described our invention what we claim and desire to protect by Letters Patent is:

1. The method of making a rubber laundry bag having reinforced cut-seamed edges which comprises folding a flat rubber strip lengthwise around the edge of a form, placing flat sheets of rubber above and below said form with the edges of said sheets extending slightly beyond said strip, and in one die-shaping operation uniting an entire surface of the strip to said sheets, tapering the edges of said strip to merge with the surfaces of said sheets in said operation, trimming the edges of the sheets in said operation, uniting the edges of said sheets in said operation, and thereafter vulcanizing the parts to form a continuous rubber body.

2. The method of making a rubber container having reinforced cut-seamed edges which comprises folding a flat rubber strip lengthwise around the edge of a form, placing flat sheets of rubber above and below said form with the edges of said sheets extending slightly beyond said strip, and in one die-shaping operation uniting an entire surface of the strip to said sheets, tapering the edges of said strip to merge with the surfaces of said sheets in said operation, trimming the edges of the sheets in said operation, uniting the edges of said sheets in said operation, and thereafter vulcanizing the parts to form a continuous rubber body.

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