July 24, 1956 W. S. ADAMS ET AL 2,755,516

SPINNING COT

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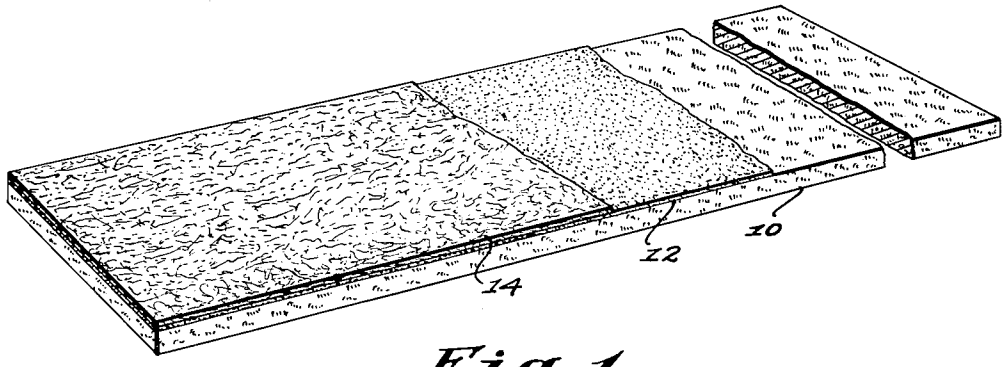


Fig. 1

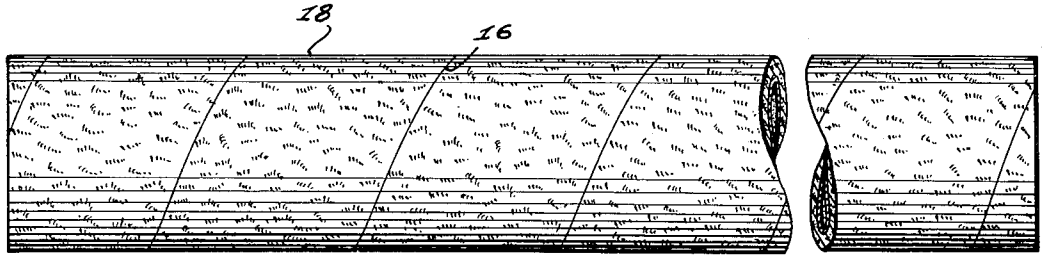
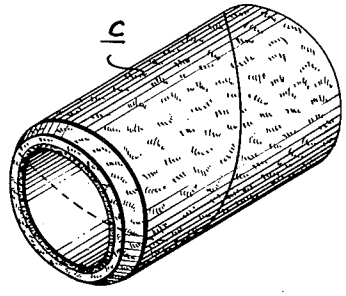


Fig. 2

Fig. 3



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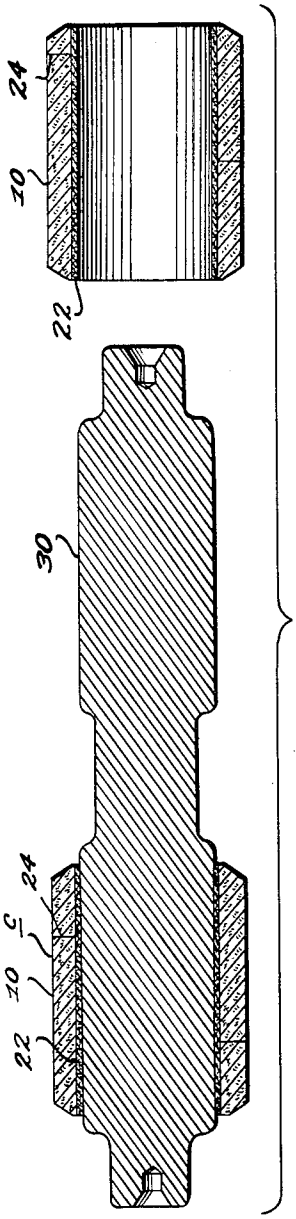


Fig. 4

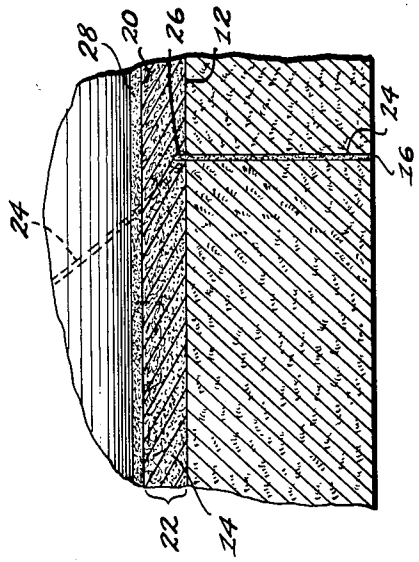


Fig. 6

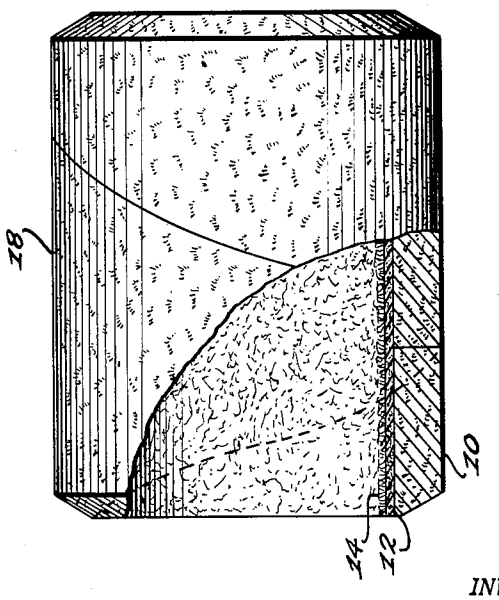


Fig. 5

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SPINNING COT

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5 Claims. (Cl. 19—143)

This invention relates to spinning cots, and more particularly to a spinning cot formed with a seamless, flexible liner which is uniquely arranged for strengthening the cot body and for facilitating both its manufacture and use.

As is well known, spinning cots comprise a tubular cot body adapted for mounting on a mandrel to form a top drawing roll such as is used on spinning frames and the like in textile manufacturing operations. These top drawing rolls cooperate with fluted metal bottom rolls in carrying out the spinning operation, and the cot bodies are formed of some relatively soft and pliable or resilient material, such as cork or leather or synthetic rubber-like materials. The present invention is particularly well adapted for use in forming cork spinning cots, and for that reason it is described and illustrated below principally in terms of its application for this purpose, although it is generally applicable for use in forming spinning cots of other materials as well.

Cork spinning cots are commonly formed with a spiral or helically wound tubular body structure, a seam adhesive being used to secure the spiral windings as they are formed, and the resulting tubular body being fitted with a preformed liner sleeve that may be adhesively secured in place to bind the cot body further against unwinding and to provide for mounting it on a mandrel. This usual method of manufacture, however, involves considerable difficulty in fitting the spiral wound cot bodies with the preformed liner sleeve. This difficulty is partly due to the fact that the spiral winding of the cot bodies is apt to result in slight unevenness of the interior surface at the seams, so that it is almost impossible to secure the liner uniformly in place and often the unevenness may be so great as to leave the liner unsecured at some points. Also, with a preformed liner, its size in relation to the cot body must be regulated carefully in order to obtain a satisfactory fit, and the ordinary variations usually encountered in manufacturing operations cause further difficulty either in securing the liner because it is too small, or in wrinkling of the linear because it is too large.

These difficulties heretofore characteristic of the manufacture of cork spinning cots are obviated entirely according to the present invention by providing the cot bodies with a seamless, flexible liner formed in situ. Briefly described, this liner is formed in accordance with the present invention by adhesively securing a flock coating on one side of a cork strip, then spirally or helically winding this flock coated cork strip with this flock coating disposed interiorly, and then applying an elastic fiber coating so as to form the cot liner. The elastic film coating applied in this way is absorbed by the flock coating so that an adequate liner coating can be applied, and the intial flock coating has the further advantage of providing an ultimate liner structure somewhat of the nature of unwoven cloth so that the spiral wound cot body is bound against unwinding in a particularly effective manner. Also, this liner structure being seamless and

flexible greatly facilitates the mounting of the cots on mandrels for use. These same advantages may be obtained in some cases where the spinning cots are formed from an extruded tubular body by using just the elastic film coating as disclosed herein to provide a seamless cot lining applied in situ.

These and other features of the present invention are described in further detail below in connection with the accompanying drawing, in which:

Fig. 1 is a perspective view of a cork strip, adapted for forming a rubber-lined spinning cot in accordance with the present invention;

Fig. 2 is a side elevation of a tube such as could be formed by spirally winding the cork strip shown in Fig. 1;

Fig. 3 is a perspective view of a cot ready for mounting on a spinning roll;

Fig. 4 is a longitudinal sectional view illustrating the manner in which a cot such as is shown in Fig. 3 is mounted on a supporting mandrel;

Fig. 5 is a sectional detail of a spirally wound tube such as that shown in Fig. 2; and

Fig. 6 is a sectional detail of a spinning cot formed according to the present invention.

In forming the improved rubber-lined spinning cot C (see Fig. 3) of the present invention, one side of a strip of cork 10, or other suitable material is coated as by spraying, or rolling, or by other suitable methods, with a layer of rubbery adhesive 12 which, on drying, leaves a tough elastic film. Flock 14 of relatively long fiber length, such as, for example, rayon, nylon or cotton flock of about 0.05 inch to about 0.09 inch in length and of about 5 denier, is then applied to the still-wet adhesive 12 so that the flock 14 is adhesively bonded to the cork base 10. The flock-coated strip 10 is then dried and for convenience may be wound into rolls until needed.

Strips of the flock-coated cork 10 of appropriate width and length are then coated on one edge with a seam adhesive as at 16 (see Fig. 6), preferably a water-resistant glue such as a gelatin or resinous adhesive, and the strip 10 is spirally wound on a mandrel to form a tubular body 18 having the flock-coated surface disposed interiorly (see Figs. 2 and 5). The inner flock coating 14 aids materially in this spiral winding operation by acting as a cushion between the cork strip 10 and the winding mandrel, not shown, and also by absorbing excess glue that is squeezed out of the seams, thereby preventing sticking of tubular body 18 to the winding mandrel, and facilitating its removal.

Tubular body 18 is then coated interiorly with a further layer 20 of an elastic film-forming material which may be the same material originally applied to the cork strip 10. The newly applied coating 20 bonds to the originally applied coating 12 and to the flock 14 to form a continuous elastic liner 22 having flock-fibers 14 imbedded therein and being somewhat in the nature of an elastic, unwoven cloth. The newly applied adhesive layer 20 also bridges the seams 24 as at 26 (see Fig. 6) and thereby results in a tube having a continuous adhesive lining formed in situ. This continuous elastic liner 22 is then dried and the tube is coated interiorly in the usual manner with a layer 28 of a water-softenable mounting adhesive for bonding the spinning cots C on a supporting mandrel as at 30 (see Fig. 4). After the mounting adhesive 28 has dried, the tube 18 may be cut into appropriate lengths to form the finished spinning cot C.

The elastic liner 22, being formed in situ, conforms to any irregularities on the interior surface of the tubular body 18 and thus insures complete bonding of the liner 22 to the cork layer 10. While the elastic liner 22 can

be formed without the flock **14**, its use is preferred because it permits the formation of a thicker liner **22** than would otherwise normally be formed, and it provides the further advantage of greatly increased strength at the seams in spiral wound cots.

The elastic adhesive used in forming the elastic liner **22** is preferably a rubber-base adhesive containing appropriate additives such as solvent, plasticizers, and curing agents. Illustrative but non-limiting examples are Hycar OR–25 adhesive, which is a butadiene acrylonitrile polymer having excellent oil-resistance properties, Neoprene, which is a chloroprene polymer, and thiokol, which is a polyethylene-disulfide. These and other rubbery compounds, both natural rubber and the so-called synthetic rubbers or elastomers, may be mixed with appropriate additives to form the rubbery adhesive.

A specific example of an adhesive suitable for forming the elastic liner **22** is:

	Per cent
15 centipoise methylcellulose	1.40
Water	7.40
Hycar OR–25 (51% solids)	86.00
C–16 dispersion or other appropriate curing agents	5.20
Total	100.00

The methylcellulose is completely dispersed in the water and the resulting dispersion is added to the rubber emulsion to thicken it. While it is not esssential, it is preferred to cure the rubber liner to give a greater strength to the liner and to increase its roll-gripping property.

The C–16 dispersion is a typical commercial curing mixture and comprises generally:

	Parts
Zinc oxide	3
Sulfur	1
"Age rite white"	1
"Butyl zimate"	1
"Dayvan No. 1" (wetting agent)	0.24
Casein	0.3
Sodium hydroxide	0.1
Water	5.36
	12.00

We claim:

1. The method of forming a cork spinning cot which comprises adhesively securing a flock coating on one side of a cork spinning cot blank, winding said blank to form a tubular body with said flock coating disposed interiorly, and then applying a seamless elastic film coating over said flock coating.

2. The method of forming a cork spinning cot which comprises adhesively securing a flock coating on one side of a cork strip with an elastic film-forming material, helically winding said cork strip to form a tubular body with said flock coating disposed interiorly, and then applying a second coating of said elastic film-forming material to the inner surface of said tubular body.

3. The method of forming a cork spinning cot which comprises adhesively securing a flock coating of relatively long fiber length to one surface of a cork strip with an elastic film-forming material, helically winding said cork strip to form a tubular cork body having said flock coating disposed interiorly, and then applying a second coating of said elastic film-forming material to the interior flocked surface of said tubular cork body to form in situ a seamless flexible liner.

4. The method of forming a cork spinning cot which comprises adhesively securing flock having a fiber length of about 0.050 to 0.09 inch to one side of a cork strip by means of an elastic film-forming adhesive, helically winding said cork strip to form a tubular cork body having said flocked surface disposed interiorly, and then applying a second coating of said elastic film-forming material over said flocked surface to form a seamless flexible liner binding the helically wound structure of said tubular cork body.

5. A spinning cot comprising a helically wound tubular cork body having an interior flock coating of fiber length between about 0.05 and 0.09 inch secured in place by an elastic film of rubbery adhesive, said elastic film interposed between the inner side of said body and the outer side of said flock coating, a second elastic film of rubbery adhesive applied, in situ, on the inner side of the flock coating and covering the entire inner surface of said coating to form a seamless continuous elastic liner, and a water-softenable mounting adhesive coating applied over the second elastic film, said second elastic film interposed between the inner side of said flock coating and the outer side of said mounting adhesive coating.

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