Oct. 20, 1936. F. ZONINO ET AL 2,057,701

SEPARATOR FOR WINDING DEFORMABLE MATERIALS UPON REELS

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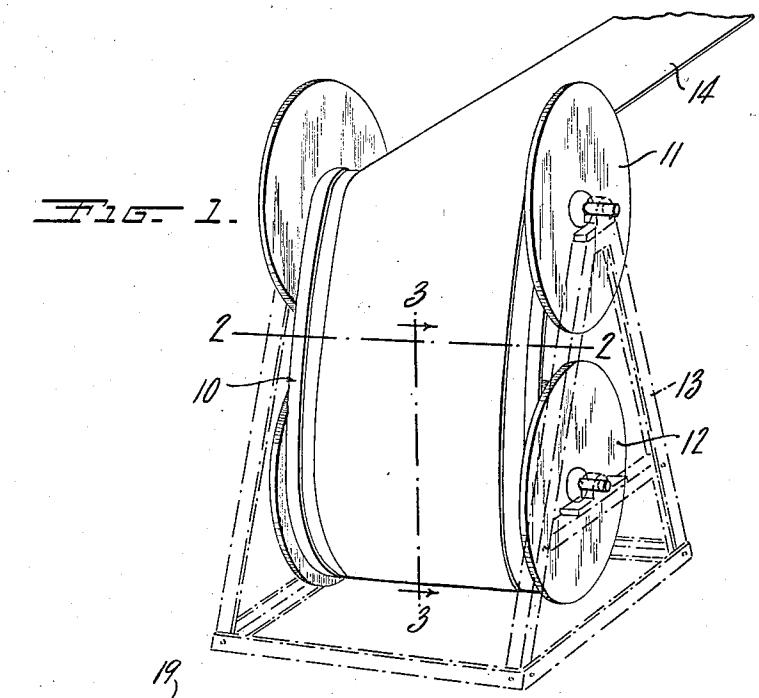


Fig. 1.

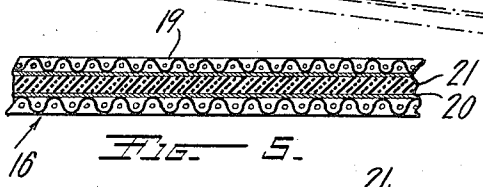


Fig. 5.

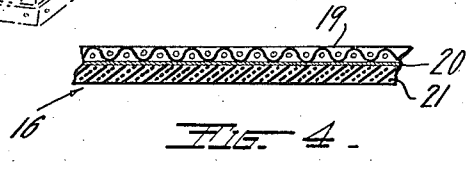


Fig. 4.

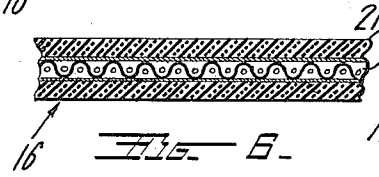


Fig. 6.

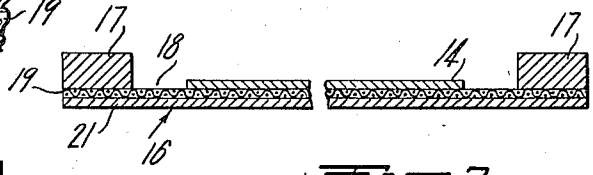


Fig. 2.

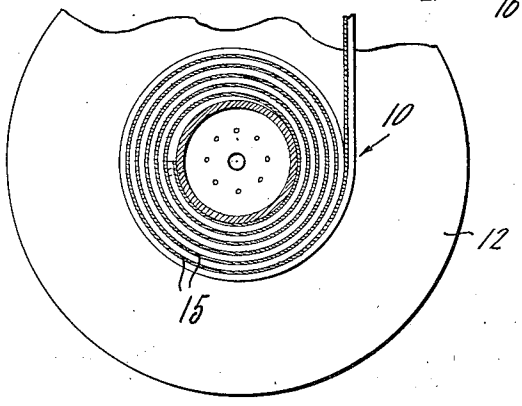


Fig. 3.

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2,057,701

SEPARATOR FOR WINDING DEFORMABLE MATERIALS UPON REELS

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6 Claims. (Cl. 154—43)

This invention relates to separators for winding deformable material upon a reel and more particularly to such separators which are provided with a self-supporting web which is water-repellent and will not be deformed by the absorption of moisture.

In the manufacture of sheet rubber material, the hot, plastic and tacky rubber stock is calendered into a thin sheet and then commonly wound upon reels with an interposed cloth liner so the sheet will occupy less floor space during cooling and shrinking and can be conveniently handled and stored. In more recent practice as the sheet comes off the calender rolls water is run over its surface to more quickly cool and shrink the rubber. After being treated with the water the rubber is wet and is still sufficiently soft and tacky that its surfaces will adhere to one another and be deformed when the surfaces are pressed together. In order to separate the layers of rubber and to prevent pressure from being applied to the sheet after being wound on a reel, the sheet, instead of being wound on a cloth liner, is wound on a flexible strip or separator as the sheet and separator are being wound on the reel. The separator comprises a web to which are secured two edge strips forming a groove therebetween within which the rubber sheet is adapted to lie and is protected thereby.

Heretofore the webs of the separators have been made of thin flexible material which when wound on a reel was supported between the edge strips by relatively thick cross-supports extending between the edge strips. In other cases the webs of the separators have been made of water absorbent material. Such separators have the disadvantage that the cross-supports for the web increase the diameter of the package wound on the reel and that the water absorbent webs absorb moisture from the wet rubber which causes the web to swell and buckle and thereby injure the web and the rubber wound thereon.

An object of this invention is to construct an improved separator for reeling deformable and/or tacky material on a reel, the separator being so constructed that it occupies a relatively small space on the reel and is not deformed by the absorption of moisture.

The above and other objects and novel features of this invention will be better understood from the following description and accompanying drawing, in which:—

Fig. 1 is a perspective view of a separator embodying this invention on which is being wound a sheet of material as the separator is being unwound from the upper reel and is being wound upon the lower reel;

Figs. 2 and 3 are enlarged cross-sectional views on lines 2—2 and 3—3, respectively, in Fig. 1, for clearness the rubber sheet not being shown on the reel in Fig. 3; and

Figs. 4, 5, and 6 are enlarged cross-sectional views of a portion of the separator web, each figure disclosing a different modification of the web.

The embodiment of this invention as illustrated in the drawing comprises a separator 10 which may be wound from one reel 11 on to another reel 12, the reels being suitably supported in a frame 13 and being provided with suitable apparatus for turning the reels as a sheet of calendered rubber 14 or like soft tacky material is wound between the coils 15 of the separator 10 as shown in Figs. 1 and 3. The separator is shown in cross-section in Fig. 2. It comprises a web 16 having edge strips 17 secured along each of the longitudinal edges of the web 16. This construction provides a groove 18 between the edge strips 17. The groove 18 receives the sheet material 14 to be protected when wound on the reel 12.

The principal feature of this invention is in the construction of the web 16 of the separator which gives it the properties of being relatively thin and self-supporting along its width suspended between the edge strips, and also of being capable of resisting deformation as a result of moisture or water carried to it by material such as wet rubber wound thereon.

Different modifications of the construction of the web 16 are shown in detail in Figs. 4, 5, and 6. The modification shown in Fig. 4 comprises a layer of fabric 19 to which is applied a coat of rubber cement 20, and then a layer of rubber, compounded to form hard rubber, is applied to the cement to form after vulcanization a relatively thin layer of hard rubber 21 on the underside of the web. The edge strips 17 are then secured to the web 16. These strips are preferably made of water-repellent material such as a rubber compound heavily loaded with fiber.

The term "fabric" as used herein applies to fibrous materials such as duck or other fabrics which are used in the rubber industry to provide a surface to which tacky rubber will not easily adhere and which will add strength to the web 16 of the separator. This type of fabric is relatively supple and is not stiff enough when coiled on the reel to carry the weight of the rubber sheet 14 supported thereby between the edge

strips 17 without sagging inwardly on the next inner coil of the sheet rubber 14. Therefore in order to protect the sheet rubber 14 carried by the web 16 and to provide a substantially straight cylindrical surface for the rubber sheet to rest on, the layer of hard rubber 21 is secured to the fabric 19, the rubber cement 20 being used to provide a good and more flexible connection between the hard rubber layer 21 and the fabric 19. Any other suitable adhesive may be used to unite the fabric and hard rubber sheet.

The term "hard rubber" as used herein applies to vulcanized rubber containing sufficient combined sulphur to give it the properties approaching those of hard rubber or vulcanite to provide the fabric with the necessary rigidity. The layer 21 of hard rubber is made sufficiently thick to make the web 16 stiff enough not to sag between the edge strip 17 and yet not so thick that it will crack when wound on the reels 11 and 12. This combination of materials provides a web 16 that is relatively thin and yet self-supporting between the edge strips 17 and the hard rubber layer 21 being water-repellent it does not swell and cause the separator to buckle and thereby become damaged and injure the sheet rubber 14 carried thereby.

The modification of the web 16 shown in Fig. 5 is provided with a fabric coating 19 on both sides of the web. This type of web may be made in a manner similar to that shown in Fig. 4, except that a part of the hard rubber compound is applied to the rubber cement coat 20 on each of the fabric sheets, and the sheets are then superposed with their hard rubber compound layers in contact to provide the required thickness of the compound with the outer layers of fabric 19 on each side of the compound. Then the compound is vulcanized to form the hard rubber layer 21.

Fig. 6 discloses a modification of the separator web 16 in which the hard rubber layer 21 is applied to both sides of the fabric 19, which may be done in a manner similar to that described in reference to Fig. 4.

While several modifications of this invention are described herein it will be understood that changes in the details may be made without departing from the scope of the invention as defined in the appended claims.

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

1. In a separator having a web and edge strips secured thereto, said web comprising a layer of fabric having a thin layer of stiff but bendable substantially moisture repellent material secured thereto.

2. In a separator having a web and edge strips secured thereto, said web comprising a layer of fabric having a thin layer of vulcanized rubber secured thereto and containing sufficient combined sulphur to give the rubber properties approaching those of hard rubber.

3. In a separator having a web and edge strips secured thereto, said web comprising a layer of fabric having a thin layer of vulcanite secured thereto.

4. In a separator having a web and edge strips secured thereto, said web comprising a layer of fabric and a relatively thin layer of vulcanized rubber containing sufficient combined sulphur to give the rubber the properties approaching those of hard rubber, said layer of hard rubber being secured to said fabric by a binder of rubber cement to which the layer of hard rubber is vulcanized.

5. In a separator having a web and edge strips secured thereto, said web comprising a thin layer of vulcanized rubber secured to and sandwiched between two outer layers of fabric, and containing sufficient combined sulphur to give the rubber properties approaching those of hard rubber.

6. In a separator having a web and edge strips secured thereto, said web comprising a layer of fabric secured to and sandwiched between two outer layers of vulcanized rubber having a combined sulphur content at least approaching that of hard rubber.

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