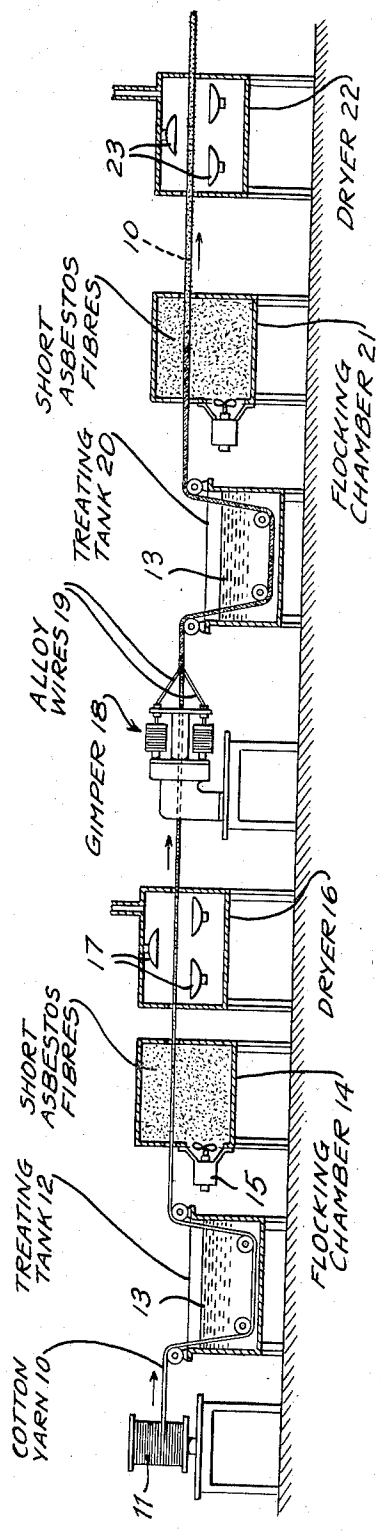
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ASBESTOS YARN AND METHOD OF PRODUCING FRICTION LINING THEREFROM

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ASBESTOS YARN AND METHOD OF PRODUCING FRICTION LINING THEREFROM

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6 Claims. (Cl. 154—81)

This invention relates to a method for producting asbestos yarn and more particularly to a method for producing asbestos yarn for use in the manufacture of friction materials such as clutch or brake linings or the like.

This application is a continuation-in-part of application Serial No. 538,433, filed October 4, 1955, and now abandoned, for Method of Producing Asbestos Yarn.

An object of the invention is to provide a method for producing such yarn which eliminates the steps of carding, spinning, plying and the like.

Another object is to provide a system of the above type which is adapted to the use of short asbestos fibers.

Another object is to provide a novel and improved method for making asbestos yarn having characteristics suited for use in the construction of brake and clutch linings and the like.

Various other objects and advantages will be apparent as the nature of the invention is more fully disclosed.

In accordance with the present invention the asbestos yarn is produced by passing a core yarn or the like through a bath of rubber resin composition which is tacky in nature and which is capable of adhering to the surface of the yarn. The yarn carrying the tacky coating is then passed through a chamber containing a mass of short asbestos fibers suspended in air wherein a coating of such fibers is picked up by the tacky surface of the yarn. The coating is then partially dried after which the yarn may be wrapped with a fine wire. The process is then repeated to apply a further coating of a tacky rubber-like composition and asbestos fibers to build up the yarn to the desired thickness. The yarn may then be heated to a temperature to dry the resin-rubber composition.

The yarn produced as above may be fabricated into a narrow web, treated with a synthetic rubber-resin composition, molded and cured to form clutch or brake linings in accordance with the usual practice.

The invention will be better understood by referring to the following description, taken in connection with the accompanying drawing in which the single figure is a diagrammatic representation of an apparatus for carrying out the present process.

Referring to the drawing more in detail a core yarn **10**, which may for example comprise a 12–3 cotton yarn. The cotton yarn of the core may be replaced by a spun yarn of filaments of Dacron, Orlon, rayon or glass, or a fine metal wire composed of copper, zinc or brass, or other alloy, or of other material to which the adhesive will adhere and which is inert thereto, is fed from a spool **11** through a treating tank **12** containing a treating solution **13** such as a synthetic resin-rubber composition which is capable of adhering to the surface of the yarn to produce a tacky coating.

An example of such a composition is as follows:

Composition:	Parts
(GRS) Styrene—butadiene copolymer	5.25
Sulfur	2.60
Carbon black	2.60
Barytes	12.50
Iron oxide	1.25
Mica	1.25
Phenol-formaldehyde resin	11.75
Rubber solvent	62.80
	100.00

While still tacky the yarn is fed into a flocking chamber **14** containing short asbestos fibers suspended in air. The fibers may be held suspended in air for example by a fan **15** which is mounted in one wall thereof and is adapted to maintain a circulation of air in the chamber.

The yarn **10** then passes into a heating chamber **16** containing heating units **17**, wherein the liquid vehicle is removed leaving a tacky coating of the rubber-resin composition on the surface of the yarn.

From the heating chamber **16** the yarn **10** is fed through a gimper **18** in which a plurality of wires **19** composed of copper, zinc, brass or other alloy are wound around the surface of the yarn covering the layer of asbestos fibers which have been adhered thereto. The yarn with the wire covering is then passed through a second treating tank **20** containing a solution of a tacky material, preferably the same material as in tank **12**, thence through a second flocking chamber **21** containing air borne asbestos fibers to deposit a further layer of fibers over the surface of the yarn, thence through a heating zone **22** containing heating units **23** for drying the coating and leaving a thick layer of short asbestos fibers on the yarn core.

The coated yarn may then be passed into an oven not shown for curing the resin-rubber composition.

For making friction linings the coated yarn, with the coating dried but not cured may be woven or braided into a narrow tape which is then impregnated with further quantities of the synthetic rubber-resin composition spirally wound into a disk form and molded under suitable heat and pressure to cure the rubber-resin composition and form the clutch or brake lining, or the like, in accordance with standard practice.

The yarn may also be impregnated with the resin-rubber composition and pressure molded directly into the form of the lining without the intermediate step of fabricating the tape.

It will be noted that the above process permits the use of asbestos of short fiber lengths which are substantially more economical than the longer fiber lengths, which are required for making yarn by the usual carding and spinning operations.

The wire wrapping can be omitted if not required in the final product.

What is claimed is:

1. The method of making asbestos yarn from short asbestos fibers consisting essentially of the steps of applying a coating of a tacky rubber-resin composition to a yarn core, passing the core with the coating still tacky through a zone containing short asbestos fibers floating in air by continuous positive agitation to deposit on said coating a layer of said fibers, drying the coating at a low temperature, applying an additional coating of said rubber-resin composition, passing the yarn while said

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last coating is still tacky through a second zone containing asbestos fibers suspended in air by continuous positive agitation to cause said yarn to pick up a further coating of said fibers, and drying the rubber-resin composition to bond the fibers to the yarn.

2. The method of making asbestos yarn from short asbestos fibers consisting essentially of the steps of applying a coating of a tacky rubber-resin composition to a yarn core, passing the core with the coating still tacky through a zone containing short asbestos fibers floating in air by continuous positive agitation to deposit on said coating a layer of said fibers, drying the coating at a low temperature, applying an additional coating of said rubber-resin composition, passing the yarn while said last coating is still tacky through a second zone containing asbestos fibers suspended in air by continuous positive agitation to cause said yarn to pick up a further coating of said fibers, and drying the rubber-resin composition to bond the fibers to the yarn and subsequently curing the rubber-resin composition at a high temperature.

3. The method of making asbestos yarn from short asbestos fibers consisting essentially of the steps of applying a coating of a tacky rubber-resin composition to a yarn core, passing the core with the coating still tacky through a zone containing short asbestos fibers floating in air by continuous positive agitation to deposit on said coating a layer of said fibers, drying the coating at a low temperature, winding a thin metal wire around the coated yarn, applying an additional coating of said rubber-resin composition, passing the yarn while said last coating is still tacky through a second zone containing asbestos fibers suspended in air by continuous positive agitation to cause said yarn to pick up a further coating of said fibers, drying the rubber-resin composition to bond the fibers to the yarn, and subsequently curing the rubber-resin composition at high temperature.

4. The method of making a friction lining from asbestos yarn made from short asbestos fibers consisting essentially of the steps of passing a yarn core through a treating zone containing a liquid resin-rubber composition to cause the yarn to pick up a surface coating of said composition, passing the coated yarn with the coating still tacky through a zone containing short asbestos fibers suspended in an air current under conditions to cause said fibers to become embedded in said coating, drying the vehicle of said coating to bind the fibers to said core, passing the coated yarn through another treating zone containing a liquid rubber-resin composition to pick up a further coating of said composition, passing the yarn with said coating still tacky through a second zone containing short asbestos fibers suspended in an air current under conditions to cause the fibers to be picked up by said last coating, drying the the yarn to remove the vehicle and cause said last fibers to be bonded to said yarn, impregnating the coated yarn with said rubber-resin composition, and pressure molding the same to form a friction lining and heat curing the rubber-resin composition.

5. The method of making a friction lining from asbestos yarn made from short asbestos fibers consisting essentially of the steps of passing a yarn core through a treating zone containing a liquid resin-rubber composition to cause the yarn to pick up a surface coating of said composition, passing the coated yarn with the coating still tacky through a zone containing short asbestos fibers suspended in an air current under conditions to cause said fibers to become embedded in said coating, drying the vehicle of said coating to bind the fibers to said core, passing the coated yarn through another treating zone containing a liquid rubber-resin composition to pick up a further coating of said composition, passing the yarn with said coating still tacky through a second zone containing short asbestos fibers suspended in an air current under conditions to cause the fibers to be picked up by said last coating, drying the yarn to remove the vehicle and cause said last fibers to be bonded to said yarn, fabricating said coated yarn into a tape, impregnating said tape with said rubber-resin composition, and pressure molding the same to form a friction lining and heat curing the rubber-resin composition.

6. An asbestos yarn consisting essentially of a yarn core, a first layer of short asbestos fibers bonded to said core by a resin-rubber composition, a wrapping of short metal wire around said first layer and a second layer of short asbestos fibers bonded to said first layer by a resin-rubber composition.

No references cited.

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