United States Patent

[11] **3,628,321**

[72] Inventor **Imre Meir Schwartz**
566 Broadway, Paterson, N.J. 07514

[21] Appl. No. **878,343**
[22] Filed **Nov. 20, 1969**
[45] Patented **Dec. 21, 1971**

[54] **ASBESTOS PROCESSING APPARATUS**
3 Claims, 1 Drawing Fig.

[52] **U.S. Cl.** **57/35, 117/126**
[51] **Int. Cl.** **D02g 3/20,** D02g 3/36, D07b 7/14
[50] **Field of Search** 57/5, 28, 34, 35, 66, 75, 119, 162; 28/75; 117/126; 118/234

[56] **References Cited**

UNITED STATES PATENTS

1,372,844	3/1921	Tarrant	57/119
2,125,633	8/1938	Harrison	57/164
2,154,675	4/1939	Foster	57/164
2,280,415	4/1942	Larmuth	118/234 X
2,303,353	12/1942	Gross	118/234 X
2,318,560	5/1943	Ripper	117/126
2,448,743	9/1948	Solliday et al.	57/35
3,429,116	2/1969	Pitts	57/75 X

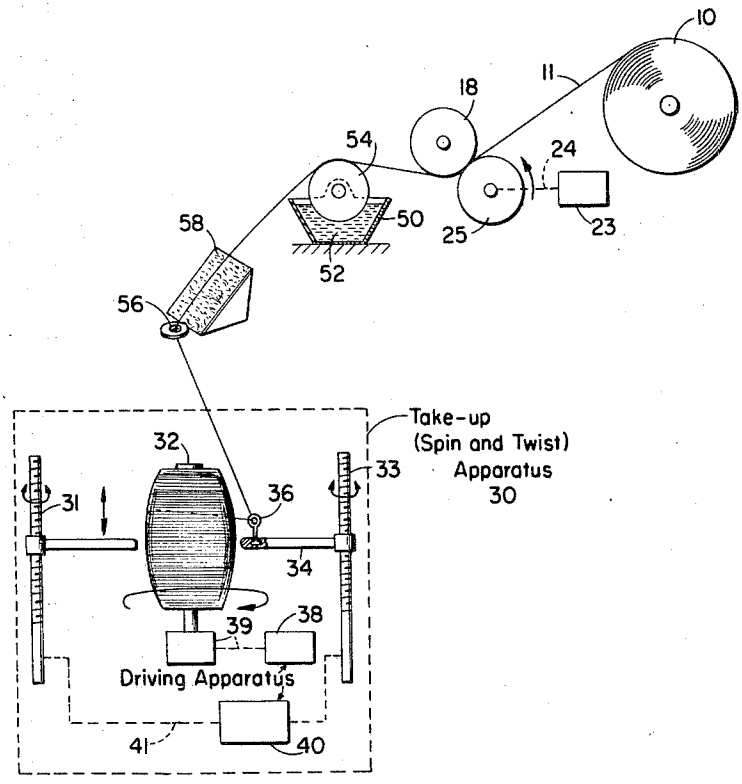
FOREIGN PATENTS

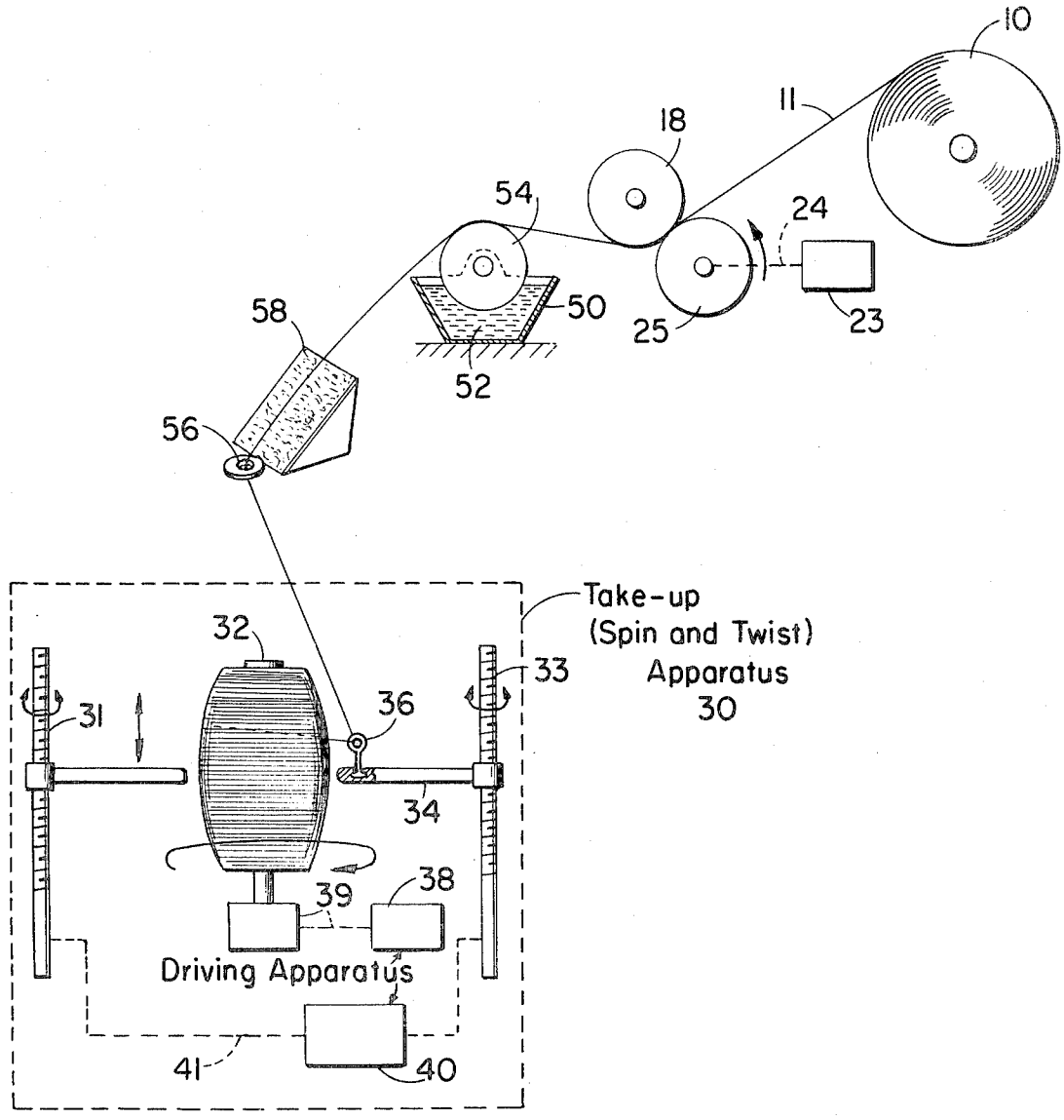
293,461	2/1932	Italy	57/162

Primary Examiner—Donald E. Watkins
Attorney—Stephen B. Judlowe, Esq.

ABSTRACT: Asbestos or like roving (or tape, sliver, or other raw material strand form) is supplied by a metering drive roll to a coating or impregnating station for application of a solution or emulsion. The coated asbestos roving is twisted, and loose and fringe fibers thereof integrally formed into, and secured within the evolving asbestos yarn when the wet material is drawn over a wiping pad.

Collection apparatus is employed to twist the material by spinning. The coating, twisting and spinning operations, useful per se, also obviate environmental contamination during the spinning process.





INVENTOR.
Imre Meir Schwartz

BY

Davis, Hoxie, Faithfull & Hapgood
ATTORNEYS

ASBESTOS PROCESSING APPARATUS

This invention relates to yarn preparation and, more specifically, to improved apparatus for applying an impregnating or coating emulsion or solution to asbestos or the like during a spinning and twisting operation.

Asbestos (and other) roving (and other raw stock forms such as tape, sliver and the like) has relatively little tensile strength. Accordingly, to fabricate useful asbestos yarn, the roving must be spun and twisted. One great problem resulting from this operation is contamination of the spinning environment with small hairlike fibers of the roving which are expelled into the air as the material undergoes rapid centrifugal (spinning) motion. Accordingly, there has been a high incidence of lung disease among personnel at spinning plants, and expensive air-filtering and -conditioning apparatus has been employed to, at best, partially ameliorate this situation.

For many applications, the asbestos or other material is to be coated or impregnated with an emulsion or solution for any variety of purposes. The roving has typically been pulled through a bath or like applicator, and passed through an oven to dry. However, any liquid phase-coating material remaining after the drying step fouls the drive rollers in prior art arrangements, thereby preventing proper and uniform metering of the roving. Also, there is a high incidence of rupture in the weak roving, caused during the coating and drying operation and also by the nonuniform pulling force developed by a fouled drive roll.

It is an object of the present invention to provide an improved apparatus for coating and twisting an operand material.

More specifically, an object of the present invention is the provision of improved apparatus for coating and forming asbestos or like yarn of relatively weak roving, wherein a uniform and durable yarn is produced without developing environmental contamination.

The above and other objects of the present invention are realized in a specific, illustrative apparatus for processing asbestos roving. The roving is withdrawn from a roll thereof at a desired rate by a metering drive roll, and passes to an idling applicator roller, partially submerged in an appropriate coating or impregnating fluid, where a liquid phase material is applied thereto.

The coated or impregnated material passes over a wiper pad, and is collected, spun and twisted by a rotating takeup spool and cooperating orbiting flyer eyelet. The spinning greatly aids drying of the coating; the loose fiber ends are secured within the yarn as the coated and twisted material slides over the wiper pad; environmental contamination is greatly reduced since the coated and twisted material has no free or loose fibers to be expelled during spinning; and the "upstream" drive roller is not fouled, and thus does not rupture the roving.

The above and other objects, features and advantages of the present invention are realized in a specific, illustrative embodiment thereof which is described hereinbelow in conjunction with the accompanying drawing.

Referring now to the drawing, there is schematically shown a yarn-processing arrangement embodying the principles of the present invention. The arrangement includes a roll **10** of asbestos, or similar roving **11** (or other raw material form as above stated) which is a weak raw material composed of relatively short and loosely interlocked fibers with an organic carrier (rayon or cotton). The material **11** is drawn from the roll **10** at a desired metered rate by a drive roller **25**, operating in cooperation with a contiguous idling roller **18**, the drove roller **25** being driven by any known driving mechanism **23** and coupling **24**. The coupling **24** may comprise, for example, a shaft which is coupled by a belt, chain, web or the like to a main apparatus drive shaft.

The metered roving **11** next proceeds to an idling roller **54** which is partially submerged in a fluid **52** contained in a bath trough **50**. It has been found desirable to coat or impregnate formed asbestos yarn for a variety of applications, e.g., with latex, acrylics, resins, polytetrafluoroethylene, graphite, dyes, and the like. The roving **11** passing over the applicator roller **54** turns the roller such that it is coated (and/or impregnated) with the bath solution or emulsion **52**.

The coated or impregnated material **11** slides over a wiping pad **58** (where it is also twisted as described below), and passes through an eyelet **56** to any known takeup apparatus **30** for collecting, and spinning and twisting the material **11**. For example, the apparatus **30** may employ a takeup spool **32** rapidly rotated by driving apparatus **38** through a coupling **39**. The material **11** passes through a freely orbiting flyer eyelet **36** mounted on plate **34** which vertically reciprocates along the height of the spool **32**. This reciprocating motion may be effected via reversible screwdrive elements **31** and **33** driven by drive apparatus **40** through any suitable coupling **41**. Direction reversal can be accomplished in any known manner, as by employing spaced electrical switches to alternately reverse the drive direction.

The rotating takeup spool **32** and orbiting flyer **36** rapidly spin and twist the material **11**, with the twisting being performed from the collection station at least as far as an appreciable part (or all) of the wiper pad **58**. Thus, all loose, fringe fibers, still wet from applicator roll **54**, are integrally formed into, and retained by the asbestos yarn as the wet material **11** undergoes twisting as it slides over the pad **58**, which can be formed of felt or other materials.

The formed yarn **11** between eyelets **56** and **36** is rapidly spun by the driven takeup apparatus **32–36**, and thus the coating **52** thereon is rapidly dried. Because the material **11** has been twisted and coated, and the fringe fibers set into place, the end yarn product is uniform and, most importantly, there are no loose or free fibers to be expelled by centrifugal force during spinning. Thus, the plant environment is not contaminated. Further, the wet material **11** does not pass over drive roll **25** which is thus not contaminated. Roll **25** therefore remains clean and withdraws roving **11** at a uniform and regular rate from the roll **10**. There are no sticky, or other irregular surface deposits formed on the drive roll **25** to jerk and thus break the weak raw roving **11**.

Thus, the arrangement depicted in the drawing has been shown by the above to coat and spin and twist raw asbestos roving into useful yarn in a reliable and improved manner.

It is to be understood that the above arrangement is only illustrative of the application of the principles of the present invention. Numerous modifications and adaptations thereof will be readily apparent to those skilled in the art without departing from the spirit and scope of the present invention.

I claim:

1. In combination in apparatus for fabricating asbestos yarn which is coated with a desired initially liquid state additive, comprising means for supplying asbestos raw strand material, drive roll means for withdrawing material from said source at a desired metered rate, applicator means for depositing said additive on said raw material, mounting means for mounting said applicator means remote from said drive roll means with respect to said asbestos supplying means, takeup means for collecting, and spinning, and twisting said asbestos strand material after said material has engaged said applicator means, and wiper means for frictionally engaging said asbestos raw material, said wiper being disposed intermediate said applicator means and said takeup means, said takeup means twisting said asbestos for at least an appreciable part of said wiper means.

2. A combination as in claim 1 wherein said takeup means includes a rotating takeup spool, and flyer means for orbiting about said spool.

3. A combination as in claim 2 wherein said applicator means comprises bath means containing said liquid state additive, and roller means partially submerged in said additive.

* * * * *

Asbestos processing apparatus (US Patent 3,628,321, 1971)
ACL Doc 21812 · Page 3 of 3
Published by AsbestosClaims.Law
asbestosclaims.law/library/21812/3