

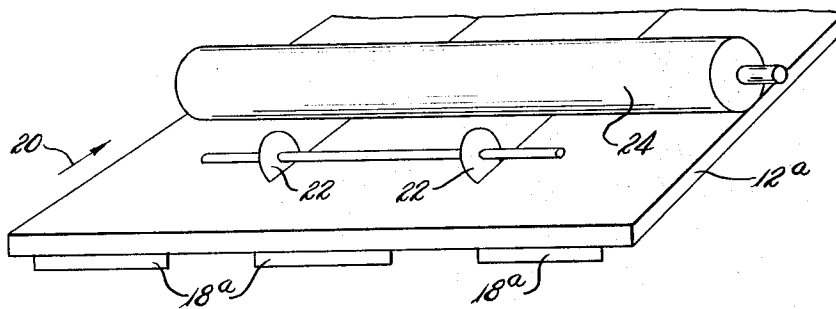
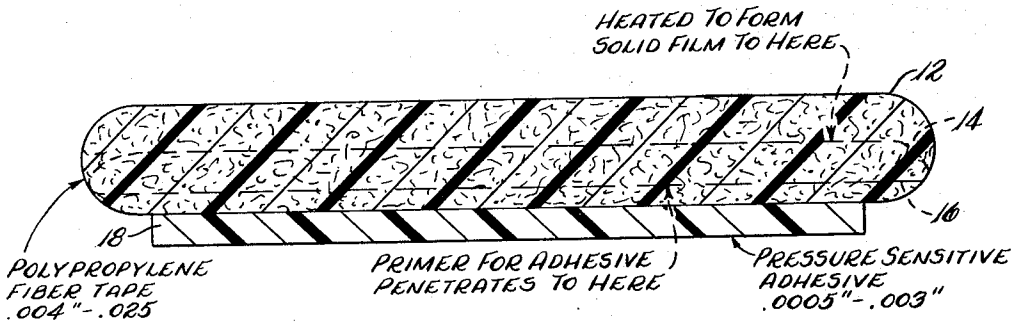
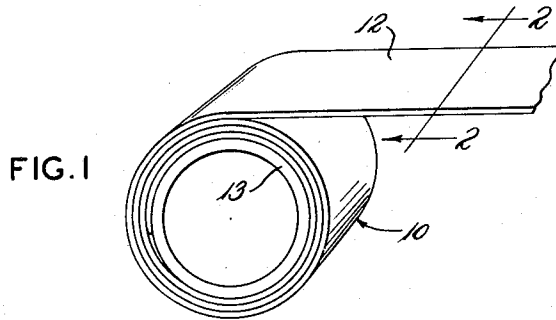
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B. D. MORGAN

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TEAR-RESISTANT POLYPROPYLENE FIBER STRAPPING TAPE

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INVENTOR
BURTON D. MORGAN
BY *Olakam & Olakam*
ATTYS.

1

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TEAR-RESISTANT POLYPROPYLENE FIBER STRAPPING TAPE

Burton D. Morgan, Hudson, Ohio, assignor to Morgan Adhesives Company, a corporation of Ohio
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ABSTRACT OF THE DISCLOSURE

A plastic fiber strapping tape having had its top or outer portion melted to form the upper surface of the tape into a film. The fibers at the edges of the tape gather and reinforce due to the melting action to render the edges of the strapping tape tear resistant.

This invention relates to strapping tape of plastic adapted to be secured in position by a pressure-sensitive adhesive, and usable to reinforce or hold together any package or carton within the load limits of the tape.

Heretofore metal tapes have monopolized the strapping tape business, but such tapes are relatively expensive, and require special machinery or tools for securing in position and often for removing. Efforts to replace the steel strapping tapes with cloth, paper, or plastic tapes have not met with much success because of tearing of the non-metallic tapes, and difficulty of application.

It is the general object of the present invention to avoid and overcome the foregoing and other difficulties of and objections to prior art practices by the provision of an improved non-metallic strapping tape characterized by a plastic fiber tape having the outer surface of the tape melted to form a solid film, with a coating of pressure sensitive adhesive narrower than the tap secured to the inner surface of the tape to leave exposed uncoated tape edges in which the fibers have gathered and reinforced themselves to become extremely tear resistant.

Another object of the invention is the provision of a strapping tape comprising polypropylene fibers having a thickness usually between about 0.004 and about 0.025 inch of a width from about 1/4 to about 3 inches wide, and the tape having a layer of pressure sensitive adhesive narrower than the tape secured to the undersurface of the tape.

Another object of the invention is the provision of a non-metallic tape of the character described and in which a primer is applied to the undersurface of the tape prior to the application of the pressure sensitive adhesive thereto.

Another object of the invention is to provide an improved method whereby the edges of a polypropylene fiber tape can be gathered and rendered tear resistant.

The foregoing objects of the invention, and other objects which will become apparent as the description proceeds, are achieved by the provision in combination in a strapping tape of a polypropylene fiber tape having a thickness between 0.004 and about 0.025 inch, the outer surface only of the tape being melted to form a solid film, a primer for a pressure sensitive adhesive on the inner surface of the tape, a coating of pressure sensitive adhesive over the primer on the inner surface of the tape, the coating being narrower than the tape to leave an exposed uncoated tape edge at each side of the coating, the fibers in the tape edge having gathered and reinforced themselves to become more tear resistant.

Stated in terms of method, the invention specifically contemplates the melting of the outer surface of the polypropylene fiber tape, this being done after the tape has been cut into the desired tape widths so that during the melting of the outer surface of the tape the edges of the

2

tape have the fibers therein gather and reinforce themselves to become more tear resistant.

For a better understanding of the invention reference should be had to the accompanying drawings, wherein:

FIGURE 1 is a perspective view illustrating a coil of strapping tape incorporating the principles of the invention;

FIGURE 2 is an enlarged fragmentary cross sectional view taken substantially on line 2-2 of FIGURE 1; and

FIGURE 3 is a perspective view, partially broken away, illustrating the manner of cutting a wide strip of material into narrow tapes followed by melting of the outer surface of the tapes.

Having reference to the drawings, the numeral 10 indicates generally a spherical coil of strapping tape 12 incorporating the principles of the invention, and wound on a cardboard core 13.

As better seen in FIGURE 2, the tape 12 is of matted polypropylene fibers. The tape is of a thickness between about 0.004 and about 0.025 inch, and has a width usually between 1/4 of an inch wide and 3 inches wide. The upper surface of the tape 12 is heated to cause melting of the matted fibers to form a solid film, for example to the depth of the dotted line 14, this action also causing a gathering and reinforcing together of the fibers at the tape edge to render the edges of the tape very tear resistant.

The underside of the tape 12 is coated with a primer, for example a water base nitrile rubber and solvent compound, this normally penetrating to the distance of the dotted line 16.

On the underside of the tape 12 and against the side which has been coated with the primer in the manner described, is secured a coating 18 of a pressure sensitive adhesive, this being of known type such as combination rubber and resin, and having a thickness between 0.0005 and about 0.003 inch. An important feature of the invention is that the edges of the coating 18 are terminated short of the sides of the tape 12, so as to leave the sides of the tape 12 extend beyond the edges of the coating 18. This has been found to notably enhance the tear resistance of the tape 12, particularly when the edges of the tape have had the fibers gathered and reinforced in the manner previously described.

Turning now to FIGURE 3 of the drawings, this illustrates one manner of manufacturing the tape of FIGURES 1 and 2. Specifically, a wide web 12a of the polypropylene fiber material is passed continuously in the direction of the arrow 20. As the web is passed in this direction it is provided with the coatings 18a in longitudinally extending areas, appropriately laterally spaced in the manner shown. The wide web 12a is then cut by continuous rotary cutters 22 between the adhesive coatings 18a into the respective tape widths, with the tapes being passed under or around a heating means, for example a roller 24, which effects the melting of the upper surface of each tape down to the line 14, as seen in FIGURE 2. In this manner the edges of each tape, as well as the outer surface of the tape is melted after the tape has been cut to the desired width which enhances the gathering and reinforcing of the fibers at each tape edge to render the tape edges more tear resistant.

At least some of the advantages of the invention are retained if the upper surface of the tape or web is melted to the depth 14 prior to slitting the web longitudinally into a plurality of tapes, although this is not preferred. Additionally, the coating or coatings of adhesive can be applied to the tapes after they are cut from the wide web, but is preferable to apply the adhesive coatings in a plurality of longitudinally extending areas to a wide web, rather than to apply the adhesive coatings to each individual narrow tape.

While a certain representative embodiment and details have been shown for the purpose of illustrating the invention, it will be apparent to those skilled in this art that various changes and modifications may be made therein without departing from the spirit or scope of the invention.

What is claimed is:

1. The combination in a strapping tape of a polypropylene fiber tape having a thickness between about 0.004 and about 0.025 inch, the upper portion of the tape having been melted to form the upper surface of the tape into a solid film, the fibers at the tape edges being gathered and reenforced to render the edges tear resistant, a primer for a pressure sensitive adhesive on the lower surface of the fiber tape, a coating of pressure sensitive adhesive over the primer on the lower surface of the fiber tape, the coating being narrower than the width of the fiber tape to leave the edges of the fiber tape to extend beyond the edges of the coating.

2. A combination as in claim 1 where the film comprises about one-half the thickness of the fiber tape.

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WILLIAM D. MARTIN, *Primary Examiner.*

W. D. HERRICK, *Assistant Examiner.*