

March 14, 1944.

A. G. CHRIST

2,344,457

COMPOSITE RIBBON

Filed June 27, 1942

Fig. 1.

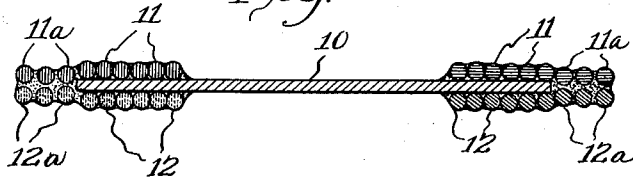


Fig. 2.

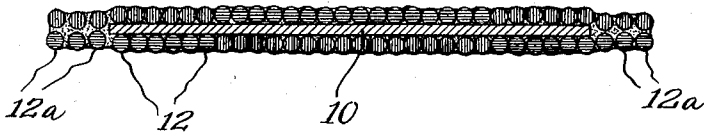


Fig. 3.

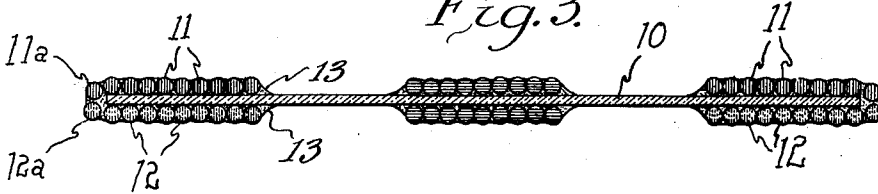
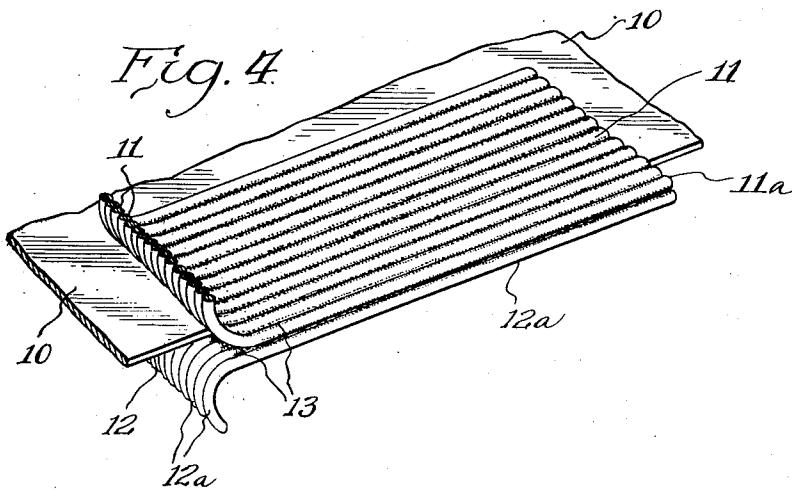


Fig. 4.



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UNITED STATES PATENT OFFICE

2,344,457

COMPOSITE RIBBON

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Application June 27, 1942, Serial No. 448,770

6 Claims. (Cl. 154—43)

My invention is directed to novel improvements in flexible composite tapes which are adaptable for numerous commercial uses and in the novel methods of making same.

In the manufacture of all presently known unwoven ribbons or tapes which consist principally of strands of threads, laid side by side, it has been impossible to make two-faced ribbons, that is where one surface is of one color and the other surface of another color. Further, presently made ribbons are of insufficient transverse and longitudinal strength for many commercial uses and in addition have the objectionable feature of utilizing relatively large quantities of yarn or thread.

Practice of my novel method of manufacture results in a novel structure and combination of structural features which overcome said objectionable features including transverse weakness and of single color usually possessed by the opposite faces.

It is an important object of my invention to provide reinforced flexible tapes in which a flexible band or ribbon of any pliable and severable material is interposed between two or more groups of threads which may be cemented together in longitudinal positions and wherein the latter are adhered to the reinforcing base tape or band, and it is a further object to provide a novel and improved composite flexible tape which is either two-faced in contrasting colors or of like colors and wherein both the transverse and tensile strengths of the tape or ribbon are substantially strengthened over presently known structures.

It is a further object to provide a novel composite flexible ribbon construction having a central base tape extending only along the central longitudinal portion of the composite tape and not along and not extending to the lateral edges of the composite ribbon, the lateral edge portions of the composite ribbon being composed only of parallel adhered-together threads, and in certain forms of which groups of substantially adjacent reinforcing and parallel threads or strands are affixed to spaced longitudinal portions of the base tape and including the end portions thereof, and wherein either one or more intermediate longitudinal portions of the base tape are either left exposed or bear a paint coat or decorative coating or face, and wherein such portions may selectively be of varied, decorative and contrasting colors as compared to the color of the threads or strands applied thereto.

Other and further important objects of my in-

vention will be apparent from the description and appended claims.

My invention, in one preferred form, is illustrated in the accompanying drawing, reference being made thereto in the following description.

On the drawing:

Fig. 1 is an enlarged transverse cross sectional view of my novel composite tape wherein groups of threads overlie and are secured to and beyond the lateral edges of an intermediate band.

Fig. 2 is an enlarged cross sectional view of my invention wherein the longitudinal threads are mounted completely across the opposite faces of the intermediate band.

Fig. 3 is an enlarged cross sectional view similar to Fig. 1 and illustrating a different spacing of the groups of threads upon the opposite faces of the intermediate band and certain thereof extending beyond the lateral edges thereof.

Fig. 4 is an enlarged fragmentary perspective view of a fragment of my said composite tape showing end portions of one of the secured groups of threads bent away from the intermediate band for illustration only.

Referring to the drawing, reference numeral 10 designates an intermediate flexible band or tape of fibrous, non-fibrous, fabric, cellulosic or gelatinous material, which is of any desired width to suit the requirement of the desired composite ribbon. Numeral 11 designates a plurality of threads or strands, preferably of cotton and of either uniform or varied colors, and part of which are secured upon one face of the base band 10 by suitable adhesive as hereinafter described. Threads or strands 11 may vary in number and spacing as well as color. In the example illustrated in Fig. 1, said threads 11 are arranged in two groups, each of said two groups being in side by side relation and secured partially upon the lateral edge areas of the base band 10. Each of said groups of threads in Figs. 1 and 3, and the continuous secured-together group thereof as illustrated in Fig. 2, have a plurality or group of the outermost threads, designated as 11-a, positioned in parallel adjacent position beyond opposite lateral edges of the base band 10.

A plurality of parallel threads, illustrated as the lower group or groups of any desired or varying color, are secured by suitable adhesive to the opposite flat face of base band 10 (shown in the drawing as the lower face). The outermost two threads of thread group 12 lie substantially along the opposite edges of the intermediate band 10. Groups of threads 12-a, illustrated in Figs. 1 and 2 as composed of three

adjacent threads each, are adhesively secured together and to said threads 12, which threads 12 are mounted on the face of the band 10. Numeral 13 designates a suitable adhesive which fills the grooves between the adjacent threads themselves and between the threads and the intermediate band so that the band and the respective groups form one unit or composite ribbon, which is strongly reinforced against transverse as well as longitudinal tearing by the adhered respective layers or groups of secured-together threads which not only surround the lateral edges, but also extend therebeyond.

The respective threads are originally on their conventional spools (not shown), which spools are mounted upon spindle racks (not shown) suitably placed, and the threads of each set or group are normally fed from spaced apart points on substantially opposite sides of the calendering rolls and are passed through and guided by suitable guide and spacing reeds or combs so that the threads of each group travel to the calendering rolls in substantially adjacent and parallel relation and preferably in a common plane. One such method is explained in my copended application Serial No. 385,237.

I desire it to be specifically understood that suitable adhesive may be applied in any satisfactory manner to the individual threads themselves during their travel.

One method by which the aforescribed composite ribbon of my construction can be made is by passing and simultaneously guiding the composite base band 10 and the respective threads applied thereto through a body of suitable adhesive material contained in a conveniently positioned receptacle so that a sufficient amount of adhesive adheres to the threads and to the respective surfaces of the base band 10 adjacent the threads to securely mount said threads in the described positions and relationship.

I also find it satisfactory to apply limited quantities of suitable adhesive composition to the individual threads before they are mounted upon the opposite faces of the calendering rolls. Such application of adhesive to the individual threads may be by likewise passing the same through an adhesive body, or adhesive applicator elements, i. e., rolls or the like. The band or tape 10 may itself be rolled in contact with adhesive applicators or adhesive carrying rollers before the threads are applied thereto in the hereindescribed manner.

In the above mentioned steps of applying adhesive or bonding composition, various forms of rubber cement or equivalent water-proof cement may be satisfactorily utilized and which, when applied to the surfaces of the band or tape, will eliminate curling which is incidental to use of the more common adhesive, particularly where the product is in a moist atmosphere.

A novel accomplishment of my aforescribed composite structure is that the intermediate base tape forms a relatively strong connecting medium between adjacent threads to thereby prevent longitudinal splitting during various uses.

The numerous ranges of variety of uses to which the flexible tape made according to my invention may be utilized is, because of commercial requirements, to a large extent dependent upon the decorative and color effects capable of being produced, and it is a novel accomplishment of my invention that a wide range of decorative color combinations may be produced

through the utilization and varied spacing of groups of threads, of contrasting and decorative colors applied to an intermediate tape of any desired color. Such intermediate layer or tape may be of different colors on its opposite surfaces or of different color combinations and decorative features.

The aforescribed construction provides a substantially flat composite ribbon or tape in which the lateral edge areas of the base tape are not only reinforced against normal transverse tearing by the completely surrounding bonded-together threads, but also the outermost lateral edge areas are composed of a plurality of substantially adjacent adhered together parallel threads which are relatively strong and effectively resist all normally encountered stress which might have a tendency to tear the tape in crosswise directions.

My said novel composite ribbon or tape so produced possesses the important factor of cheapness in production with relatively higher tensile and transverse strengths in that the edges are both of reinforced and of relatively great strength and the intermediate portion thereof is reinforced by the flexible band or tape 10.

It will be apparent that where one third or one half of the number of threads are utilized and suitably spaced apart over the entire surface of the base band 10, that a more than adequate strength is retained in the resulting product for most uses of which it is susceptible. Where the base tape is of foil or other luster-imparting material, this feature of beautiful decorative effects is most pronounced and makes the resulting tape commercially desirable for various uses for which it would not otherwise be considered.

A very important advantage and accomplishment of my invention as described is in the important saving in material and consequent economy and without actually reducing the many uses and accomplishments of the tape. As the base tape is of cheaper material than the threads, this also is an important factor in economical manufacture and use.

I am aware that various changes may be made in the embodiment of the invention herein specifically described without departing from or sacrificing any of the advantages of the invention or any features thereof, and nothing herein shall be construed as limitations upon the invention, its concept or structural embodiment as to the whole or any part thereof.

I claim:

1. In a composite flexible ribbon; a flexible relatively thin base band; a group of substantially adjacent parallel threads mounted longitudinally along one face of said base band so that a part of said adjacent threads lie beyond one or both lateral edges of said base band; a second group of parallel threads mounted longitudinally adjacent the other face of said base band so that some of the threads thereof lie beyond the lateral edges of said base band; and an adhesive material bonding some of the threads of both said groups upon the opposite faces of said base band and bonding together the threads of both said groups lying beyond the lateral edges of said base band.

2. In a composite flexible pliable ribbon, a base band of cellulosic flexible material having its edges reinforced with affixed longitudinal parallel threads of fibrous yarn material, a part of the threads of said yarn being disposed and ex-

tending outwardly beyond the lateral edges of said base band and enveloping said lateral base band edges to form pliable reinforcing edges.

3. In a composite reinforced ribbon, a base band of flexible material; groups of longitudinally extending substantially parallel bonded-together cotton threads; a part of each group of threads being adhered to the opposite faces of said base band; and the remainder of each group of threads being bonded in side-by-side relation and projecting beyond the opposite lateral edges of said base band respectively to form pliable reinforcing edges adjacent to and connected to said base.

4. In a composite flexible ribbon or tape, a base ribbon of cellulosic substantially transparent material; a plurality of transversely spaced groups of vari-colored fibrous threads mounted in parallel relation on both flat surfaces and said flexible base ribbon, the threads of each of said groups being adjacent each other and bonded to the adjacent threads, and some of said threads being disposed beyond the lateral edges of said base ribbon; and an adhesive coating securing said groups of threads to said base ribbon thereby creating transparent areas between said groups of threads.

5. In a composite flexible ribbon, a decoratively colored flexible band, a group of parallel colored

threads mounted upon and along the opposite lateral edges of one surface of said band; a second group of parallel colored threads mounted on and adjacent the lateral edges of the opposite flat surface of said band, the threads of both said groups beyond the lateral edges being adhered together; and adhesive securing said threads of said groups in their respective positions on and along the lateral edge areas of said band, said threads reinforcing said band against transverse tearing.

6. In a composite ribbon a base band of flexible material narrower than the composite ribbon; a plurality of groups of threads connected thereto, each of said groups of threads being composed of a plurality of substantially adjacent parallel threads and said groups being spaced apart to expose parts of the flat faces of said base band; part of the threads of those groups connected to the lateral edge areas of the base band being disposed beyond the adjacent lateral edges respectively of said base band to thereby encompass said base band lateral edges and to form reinforcing lateral edge areas of the composite ribbon; and an adhesive composition securing the threads of the same group together and securing said groups of threads to said base band.

ADOLPH G. CHRIST.