May 13, 1930. M. C. DODGE 1,758,033

TAPE AND PROCESS OF MAKING SAME

Filed Aug. 1, 1927

Fig. 1

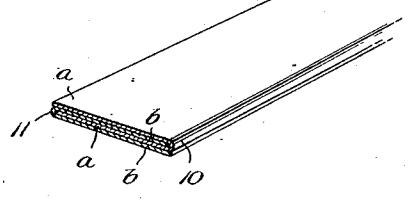


Fig. 2

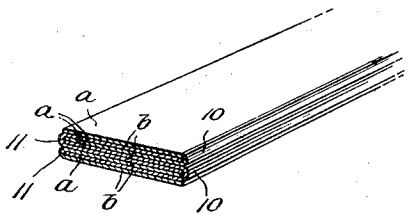


Fig. 3

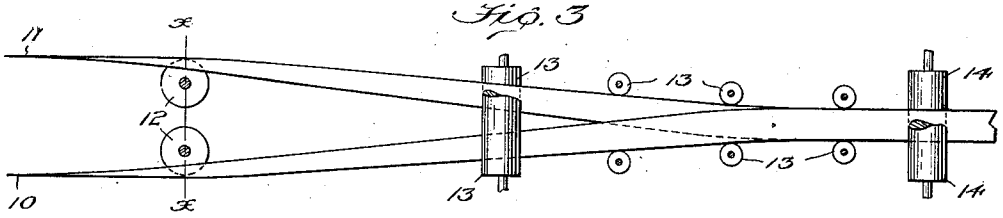


Fig. 4

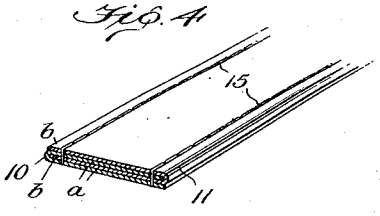


Fig. 5

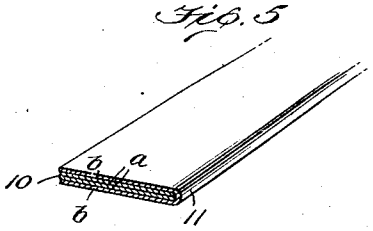


Fig. 6

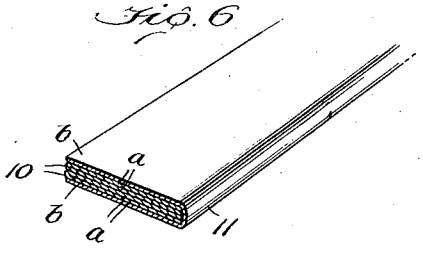
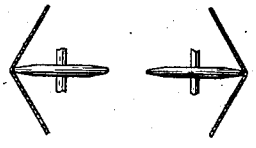


Fig. 3a



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UNITED STATES PATENT OFFICE

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TAPE AND PROCESS OF MAKING SAME

Application filed August 1, 1927. Serial No. 209,888.

This invention relates to improvements in tapes and in processes of making the same.

It has heretofore been attempted to produce commercial paper tapes, which would have considerably more tensile strength than an equal weight of paper in plain strip form, and which would permit their manipulation under circumstances where ordinary paper would be quickly torn so as to destroy it so far as its further usefulness was concerned. Such tapes have been highly desirable as they might be used with the same or better results for various purposes for which a cotton tape, cotton twine or paper twine has heretofore been utilized. Such prior attempts have met with considerable success but the cost of production in almost all instances has been a detriment. The present invention has for its primary object the production of a paper tape which may be produced by a comparatively inexpensive method or process.

More specifically, the invention seeks to produce a paper tape that is especially adapted for use as a marker or identification element for ropes. Such a use of the tape requires that it be capable of carrying printed information for identification purposes and that the tape be of a substantially firm structure while, at the same time it is so compact, of such flexible character, and so shaped that the body of the material of which it is composed does not interfere appreciably with the perfect laying of the threads and strands or other rope elements and coordination or arrangement and tension thereof, which is essential to the manufacture of a good grade of rope.

These contemplated objects are preferably accomplished by a continuous process in which a plurality of strips of paper of suitable quality are converted into a finished tape. In the production of the tape the individual strips or ribbons of paper are first creased longitudinally so as to form a plurality of thicknesses or what, for convenience, might be termed folds. The folds of one such creased ribbon are then interlocked or overlapped with the folds of a second ribbon. For instance, in a tape made up of two ribbons of paper each ribbon is creased longitudinally and one fold of one of said ribbons introduced between the two folds of the other ribbon. It will be appreciated, of course, that the invention is not limited to the use of only two ribbons, it being perfectly apparent that any number of such ribbons may be utilized and the folds of the several ribbons interlocked with each other in the same way as if only two were used. It is apparent, that the thickness of the finished tape may be readily varied, the thickness thereof depending primarily upon the number of ribbons used in making up the tape.

In the accompanying drawings,—

Figure 1 is a perspective view of a portion of a tape produced in accordance with the present invention, said tape being produced from two ribbons of paper;

Fig. 2 is a similar view showing a thicker tape made up from a greater number of ribbons;

Fig. 3 is a more or less diagrammatic layout illustrating the method of producing the tape illustrated in Fig. 1; and

Fig. 3ª is a sectional view on the line X—X of Fig. 3.

Fig. 4 illustrates a form of the tape provided with strengthening threads.

Figs. 5 and 6 illustrate still further modifications of tapes made according to the present invention.

In the production of the tape shown in Fig. 1, two ribbons of paper 10, 11, are run over suitable creasing devices, illustrated as rollers 12, in the present instance, so as to form a longitudinal crease in each of said ribbons. Preferably, the respective ribbons are creased longitudinally along the line centrally of their side edges, thereby forming each ribbon into two folds, all the folds being of equal breadth. As indicated, ribbon 10 is formed into two folds *a* and ribbon 11 into the two folds *b*.

After having received these creases the two ribbons are led through suitable guide means 13 which causes one fold of one ribbon to be introduced between the folds of the second ribbon, thereby forming a tape of four thicknesses, and of a width substantially equal to the width of said individual folds.

As shown in Figs. 1 and 3, a fold *b* of strip 11 is interlocked or laid between the folds *a* of ribbon 10. After the folded ribbons have been associated with one another in this manner they may, if desired, be passed between suitable means for pressing the several plies, thicknesses, or folds into intimate relation thereby rendering the finished tape more compact. Also, if desired, one or both of the ribbons might have the surface thereof treated with a suitable adhesive for retaining them in their interlocked relationship. Such adhesive, however, need not necessarily be employed or, in lieu thereof, the several folds might be permanently associated by the use of cotton thread stitching, as illustrated in Fig. 4.

As before stated, the thickness of the tape may be varied simply by varying the number of ribbons used. As illustrated in Fig. 2, a comparatively thicker tape is provided simply by increasing the number of ribbons. In this form of tape, which is shown as consisting of four ribbons, the creasing rolls would be duplicated and all four of the creased or folded ribbons led between the guiding means for bringing the several folds into the relationship shown in Fig. 2.

It will be appreciated that the present invention not only permits of the manufacture of the tape by means of comparatively simple and inexpensive machinery but another advantageous feature is the fact that the size of the tape, both as to breadth and thickness, may be accurately regulated at will. This is important, especially in connection with the use of the tape as a rope marker where it may be desirable to vary the breadth of the tape depending upon the size of the cordage in which it is to be used for identification purposes.

In the modified form of tape shown in Fig. 5, the two thicknesses *a* of one folded ribbon 10 are both placed in between the folds *b* of the ribbon 11 while in accordance with the embodiment shown in Fig. 6, the folds *a* of two or more ribbons 10 are all placed in between the folds *b* of ribbon 11. This latter form lends itself readily to the formation of tapes of greater thickness than in some of the previously described forms.

Furthermore, the present tape as a finished product, provides two comparatively smooth surfaces highly adapted for the reception of printed matter. For this reason, printed matter for identification purposes can be applied to the paper with equal facility either in its original ribbon form or after the tape has been completely finished. It will be noted that a tape made up in accordance with the present invention is provided with edges that will not easily ravel or become torn, due to the fact that the creased edges of the ribbons constitute the side edges of the finished tape.

On account of costs in the production of the various forms of tapes shown herein it is preferred that paper be used as the cost thereof is quite low compared with that of silk and other fabrics from which the ribbons could be made. However, so far as the peculiar formation of the finished tape is concerned, other materials such as silk could be utilized although, as before mentioned, the paper tape will possess the desired tensile strength. For this reason, the invention, in its broadest aspect, may be said to relate to folded sheet materials and the appended claims are not to be limited to the use of paper tapes except in those instances where paper is expressly included.

What I claim is:

1. A paper tape comprising a pair of continuous paper ribbons having longitudinal creases therein to form a multiplicity of leaves in each ribbon with at least one of the leaves of one ribbon laid between the leaves of the second ribbon and the creased edges of the two ribbons lying at the side edges of the finished tape.

2. A paper tape comprising a pair of continuous paper ribbons having longitudinal creases therein forming a series of leaves in each ribbon, with the leaves of one ribbon laid between leaves of the other ribbon, the creased edges of said ribbons lying at the side edges of the finished tape.

3. The method of producing paper tape consisting in folding two ribbons of paper along lines parallel to their side edges and then introducing the leaves of folded portions of one ribbon between those of the other ribbon with the creases of the two ribbons lying at opposite sides of the finished tape.

4. The method of producing paper tape consisting in folding each of two ribbons of paper along lines centrally of their side edges and then introducing at least one of the folded portions of one ribbon between those of the other with the creases of the two ribbons lying at opposite sides of the finished tape.

MILO C. DODGE.