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2,793,153

IMPRESSION TRANSMITTING ANNULAR BAND AND METHOD OF MAKING SAME

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FIG. 1.

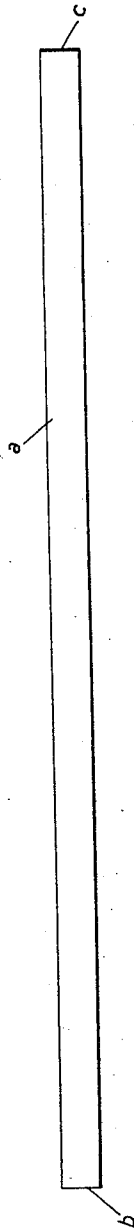
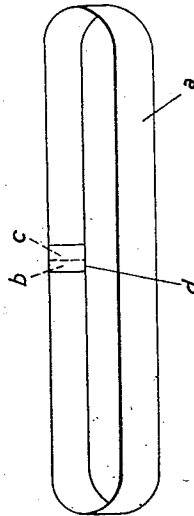


FIG. 2.



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IMPRESSION TRANSMITTING ANNULAR BAND AND METHOD OF MAKING SAME

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2 Claims. (Cl. 154—116)

This invention relates to a method of making annular bands of any desired size and width, especially annular bands for receiving impressions of writing, designs and the like, and consists in butting together the ends of a strip of the required length having woven or cut edges and placing over the abutting ends a thin piece of fabric prepared with a thermo-plastic material and fixing the piece of fabric to the ends of the strip by the application of heat.

For many purposes, bands of annular form, so-called tubular bands, are required, for example, in type-writing machines, time-control clocks, registering machines and similar apparatus. Since the tubular bands for the different apparatus must be of different peripheral lengths and of different widths, they must be separately woven and cut for each size. Since the necessary adjustment of the loom for this purpose takes a considerable time, comparatively long lengths, which usually far exceed the requirements at any time, must be woven if the loom is to operate economically, and consequently these tubular bands are very expensive.

Attempts have been made to produce annular bands similar to tubular woven bands by cutting a strip of fabric to suitable width and sewing the strip together to form a tube. The properties of these sewn annular bands are similar to those of the endless woven tubular bands, and the only difference is that, at the place where the strip is over-lapped and sewn together, the thickness is double that of the single band. This has the disadvantage that, when such bands are passed through the apparatus, they do not work smoothly, and further which is a much greater disadvantage, the impression or writing is not clear at the place of double thickness, when the bands are used for taking impressions of letters, signs, designs or the like. Attempts have been made to obviate or limit this zone of unclear impression by arranging, instead of the generally usual double cross-seam, a single cross-seam or a single or double cross-seam which is of curved or angular shape instead of being straight. None of these, however, avoids a smudged impression at the place where the seams occur and further single seams tear apart easily.

Attempts have also been made to replace the seams by adhesive joints. This was done by sticking together the two over-lapped ends of the bands with an adhesive. To ensure that the band would hold together, it was impregnated at the joint with the adhesive. The joint was therefore even thicker than two super-imposed layers of band and was also hard and stiff and lost its capacity for absorbing ink. Owing to the greater thickness and small pliability of the joint, the impression was even more unclear than at the joint of the sewn band.

It is impracticable to sew or stick together by known methods the ends of strips having woven edges together to form annular bands, because these strips normally already consist of thicker material, and therefore give still more unclear impressions at the joint owing to the greater thickness, than the endless bands made from ma-

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terial which has been cut into strips by sewing or sticking together the ends of the strips. However, for many purposes the use of bands having woven edges is absolutely necessary. Thus, the edges of strips which have been woven, sewn or stuck together to form endless bands must be fixed by a fixing medium similar to an adhesive, in order to avoid fraying of the threads which run round the band. The edges treated in this way break or tear if the pull on them is too great or if the band is not properly guided in the apparatus in which it is used. This leads to fraying of the bands and gives rise to trouble in the apparatus. This trouble does not occur when bands with woven edges are used.

It has now been found that the above described disadvantages can be obviated in a simple manner, according to the method of the invention, if the ends of a strip of material are butted together to form an annular band and the abutting edges are joined together by a thin strip of material treated with a thermo-plastic substance and placed over the edges. The sticking of the prepared strip of material to the band can be effected in a simple manner by pressing it with a hot metal iron of the size of the prepared strip, whereby the thermo-plastic adhesive is caused to soften or melt, and the prepared strip sticks fast to the under surface of the abutting ends of the band.

This method of connection has the advantage that the thermo-plastic adhesive used to form the joint does not penetrate, or penetrates only to a slight extent into the annular band produced, so that the original absorbing power of the fabric at the joint is scarcely reduced. The impression therefore is not impaired because the structure of the original fabric with its original absorbing power for the ink is to a large extent maintained.

The thin material used to make the joint, preferably a silk fabric, increases the thickness at the joint considerably less than when the two ends are superimposed and sewn or stuck together, so that the impression at the joint is clearer than on the stuck or sewn bands hitherto used. Above all, it has the advantage that strips with woven edges can be used to make these annular bands.

The joining of the two ends can be carried out both on uncoloured or un-inked bands as well as also on coloured or inked bands with equal success. The flexibility of the joint differs so little from that at the remaining parts of the band, that the joint has in addition to the above-mentioned advantages, the further advantage, as compared with the hitherto known methods of jointing, that they can be passed around thin shafts without any difficulty, even if the width of the band is relatively great as compared with its length.

By means of the invention, it is possible to manufacture an annular band the properties of which are substantially equal to those of an endless woven band; the structure of the band is, however, considerably more uniform and the band is considerably cheaper to manufacture than the endless woven bands. It is unnecessary, also, to keep a large and costly store of endless woven tubular bands since any desired number of annular bands of any desired dimensions, as well as single bands, can be easily and cheaply manufactured.

An endless band in accordance with the invention is illustrated, by way of example, in the accompanying drawing, in which:

Figure 1 shows a strip from which the band is made, and

Figure 2 shows a perspective view of the strip joined together to form an endless band.

Referring to the drawing, the band *a* shown in Figure 1, is placed with its ends *b* and *c* butting against one another, to form an annular band as shown in Figure 2.

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The ends *b*, *c* are joined together by a thin strip of fabric *d* which is stuck to the ends.

I claim:

1. A ribbon for typewriters, controlling machines and the like, said ribbon consisting of an endless band of impression transmitting fabric having abutting ends, a thin strip of impression transmitting fabric extending over said abutting ends upon one side of the band, and a layer of thermoplastic material carried by said thin strip of fabric and engaging the outer surfaces of said abutting ends to form a joint, whereby impressions may be transmitted through said abutting ends and said thin strip.

2. A process of manufacturing endless bands of any desired length and width, said process comprising the steps of butting together the ends of an impression transmitting band cut to the desired length and width, whereby a ring is formed, placing over said abutting ends on one side of said band a thin textile strip of impression trans-

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mitting fabric treated with thermoplastic material, and then heat treating said strip and said ends to firmly connect said strip with said ends.

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