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RIBBON FOR TYPEWRITERS AND OTHER MACHINES

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Fig. 1.

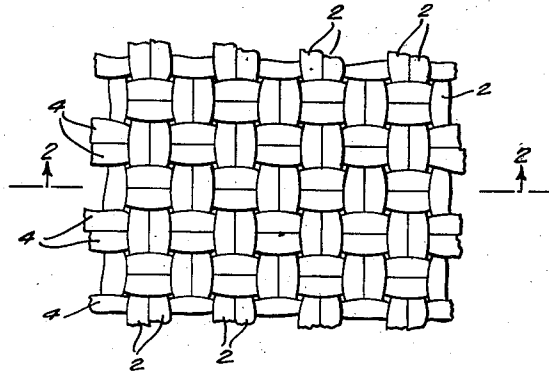


Fig. 2.

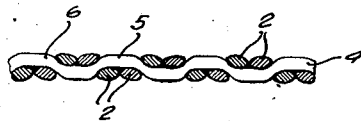


Fig. 3.

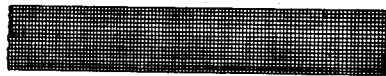
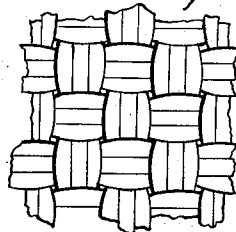


Fig. 4.



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RIBBON FOR TYPEWRITERS AND OTHER MACHINES

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4 Claims. (Cl. 197—172)

This invention relates to ribbons for typewriters and similar machines where printing is done through an inked fabric and its object is to produce a ribbon which shall combine a number of desirable characteristics heretofore not found in any one type of ribbon.

Inked ribbons are used with various types of machines in which the ribbon is subjected to quite different conditions. For instance, in billing machines the type strikes a comparatively hard blow while in typewriters of the so-called "noiseless" variety, the blow is relatively light. An inked ribbon, therefore, which would be best suited for a "noiseless" typewriter would not have the desirable characteristics making it equally suitable for a billing machine or any machine in which the percussive action was relatively heavy.

For use in a machine where pressure alone is applied to the type or one in which the percussive action is relatively light, a very thin ribbon gives a clear impression and such ribbons are well suited to this type of machine. The ink capacity of such a ribbon as at present manufactured is, however, rather limited. On the other hand, due to its thinness such a ribbon would not wear well if used with a machine in which the percussive action were relatively heavy. Heretofore, insofar as I am aware, it has been the custom to use a heavy ribbon for machines of the latter variety. Such heavy ribbons, however, have poor writing qualities although the ink capacity is greater than that of a thin ribbon.

Another desirable characteristic in a ribbon which shall be of general utility is its capacity of being reversed. Therefore, the weave should be the same on both sides. In many typewriters the type do not strike the ribbon centrally but strike it nearer one edge and it is sometimes customary to turn the ribbon over so that it can be used nearer the other edge. In some types of machines the process of turning the ribbon over may result in the other side of the ribbon being presented to the type. A reversible ribbon is also more convenient from the standpoint of the arrangement of the spools. Where a ribbon is to be used with a particular side facing the platen some special means are usually provided to compel the assembly of the ribbon and spools so that the desired side, and that side only, faces as intended.

A further desirable characteristic in a ribbon is ink-carrying capacity which shall be as large as possible, consistent with not too great weight of fabric.

Another desirable characteristic in an ink-transfer ribbon is that it should be woven in such a manner that it shall have long life, or in other words, that the blow of the type should not disintegrate its fibres after a comparatively short use.

All of the desirable features above enumerated are combined to a high degree in the ribbon of the present invention.

These various advantageous features will be better understood from the following detailed description and claims when taken in connection with the accompanying drawing in which:

Figure 1 is a plan view on an enlarged scale of a portion of the fabric composing my ribbon;

Figure 2 is a section on line 2—2, Figure 1;

Figure 3 is a portion of the ribbon, and

Figure 4 is a view similar to Figure 1 showing a modified construction.

Broadly speaking, my invention consists of an inked ribbon, the fabric of which is so woven that a plurality of threads running in one direction pass alternately over and under a like plurality of cross-threads and in the preferred embodiment of my invention I have shown two threads running in one direction passing alternately over and under two similar cross-threads.

Referring to the drawing, the ribbon is indicated generally by the reference character 1 and may be made of any suitable fibre. The manner of weaving, however, is distinctive and is clearly illustrated in Figures 1 and 2 which are considerably enlarged in order to clearly show this characteristic. As shown in the latter figures, two threads, indicated at 2, pass alternately under and over two threads, indicated at 4, running cross-wise of the threads 2.

Ribbons at present in use are made of fabric woven in a manner known as a plain weave where one thread passes alternately over and under a cross-thread.

In a fabric so woven the ink capacity is relatively small due in part to the fact that the close interlacing of the threads results in a compression of the fibres at the juncture of each thread with a cross-thread. Furthermore, the threads are closely packed and there are more bends to each unit of area. The life of such a ribbon is relatively less than the life of the ribbon of my present invention due to the tendency of the fibres to be cut at the point where one thread passes over or under a cross-thread.

In the ribbon of my present invention there is not the same tightness of weave and there are less bends or kinks in any unit area. It results

from this that there is a greater opportunity for the fibres of the thread to fluff out slightly before they pass under or over the cross-threads. This is clearly seen from Figure 2, where the diameter of the thread at the point 5 is somewhat greater than the diameter at the point 6. This arrangement of the threads tends to increase the ink-carrying capacity to a considerable extent and allows more ink to be carried between the threads as well as allowing the fibres of the thread itself to absorb more ink. A ribbon woven as described above is also more flexible and permits more ready bending of the ribbon about a type as the type strike it, therefore giving greater manifold-
ing abilities.

It will be noted that a ribbon woven in accordance with my invention is alike on both sides. Hence such a ribbon has the desirable characteristics of reversibility.

In the preferred form of my invention I have shown two threads running in one direction passing alternately over and under two similar cross-threads. Good results may be obtained by having a group of three threads running in one direction passing alternately over and under a group of three cross-threads, especially when very thin yarn is used. It is not desirable, however, that there be too many threads of one kind skipping too many threads of another kind, otherwise the ribbon is too loosely woven and there would be a tendency for the type to force apart the individual threads or an edge of a type may miss an individual thread entirely and thereby cause poor writing.

There is another disadvantage in having too large a number of threads in a group. This disadvantage is due to the fact that the over-looseness of weave tends to give too great a cushioning effect and injures the clearness of the type impression. In the preferred form, where two threads of the usual size are used in a group, the maximum desirable conditions are obtained.

In actual tests I have found that the ink-carrying capacity of a ribbon made according to my invention as compared to a ribbon of plain weave of substantially the same weight is in the proportion of approximately 38 to 28.

Not only is a greater quantity of ink initially absorbed by the ribbon of my invention but the ink is given off more gradually and more uniformly than in other ribbons with which I am familiar. Notwithstanding, however, the additional ink-carrying capacity of my improved ribbon, it does not produce an unsatisfactorily heavy "write" at the outset, whereas ordinary ribbon, thick enough to carry a like quantity of ink, will write so badly at the outset as to be impractical.

What I claim is:

1. An inked ribbon of a woven fabric, the body of which is of uniform weave and in which a plurality of adjacent and contacting threads not exceeding three running in one direction pass alternately over and under a like number of adjacent contacting cross-threads.

2. An inked ribbon consisting of a woven fabric having an equal number of adjacent and contacting warp and filling threads on each side thereof, the threads of the warp passing in groups of two over and under a like group of filling threads.

3. An inked ribbon consisting of a woven fabric in which two adjacent contacting threads running in one direction pass alternately over and under two adjacent contacting cross-threads.

4. An inked ribbon consisting of a woven fabric having an equal number of adjacent and contacting warp and filling threads on each side thereof, the threads of the warp passing in groups of three over and under a like group of filling threads.

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