

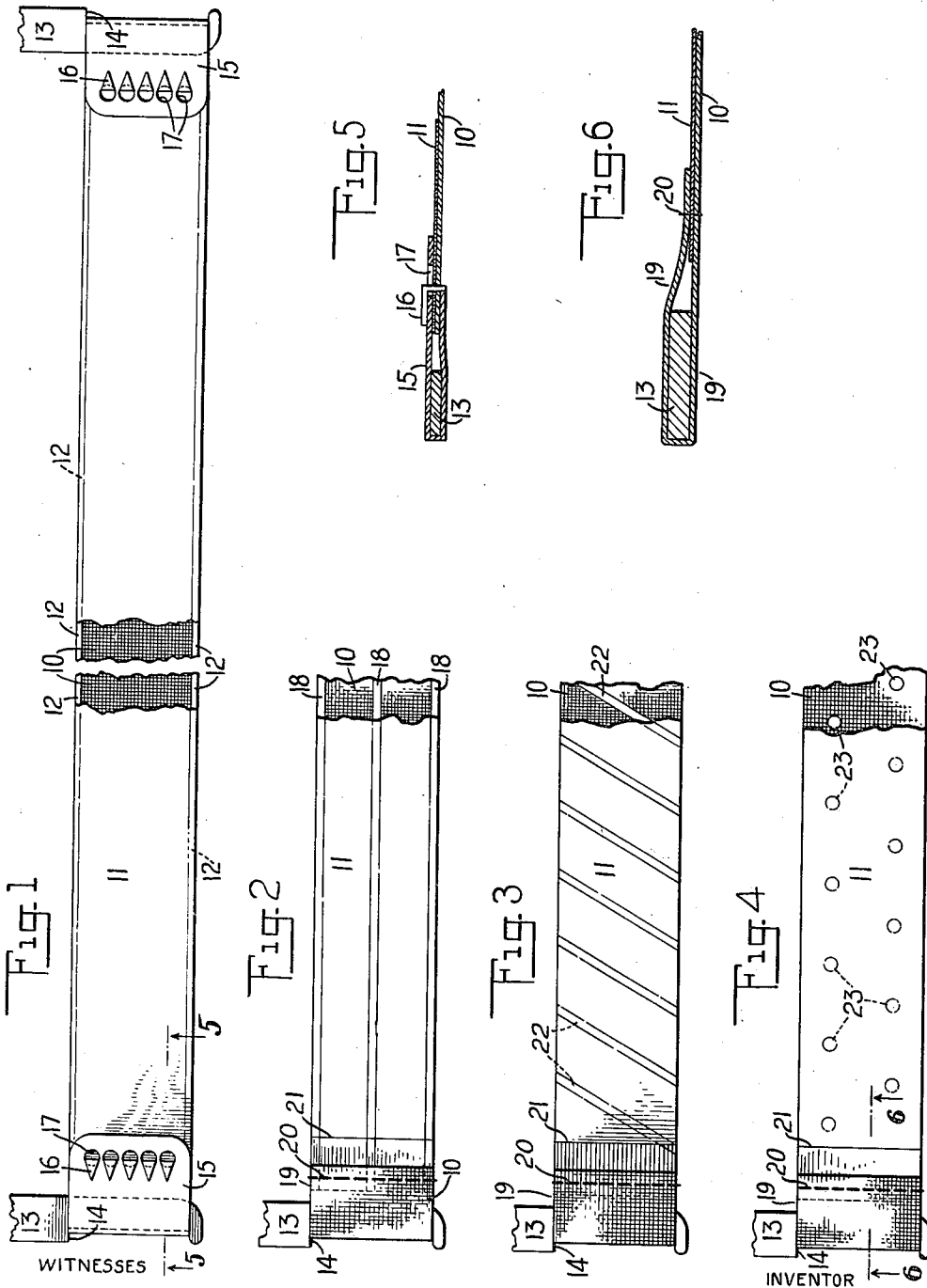
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MANIFOLD INKING RIBBON

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MANIFOLD INKING RIBBON

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My invention relates to manifold inking ribbons for typewriting and like machines, such ribbon being interleaved between two work sheets to produce a manifold copy on the underlying sheet without producing an offset or imprint from such ribbon on the outermost sheet that receives its imprint from the ordinary inking ribbon of the typewriting or like machine.

The main object of my invention is to provide an improved manifold ribbon which is simple in construction, is comparatively inexpensive to manufacture, is highly efficient in use and may be used effectively to give clearer copies for a longer period than other manifold ribbons.

To the above and other ends which will hereinafter appear my invention consists in a manifold ribbon of the character hereinafter described and particularly pointed out in the appended claims.

Heretofore it has been customary in making manifold ribbons to coat the inking ribbon on one side with a non-permeable compound to prevent the ink from seeping through to the front face of the ribbon.

It also has been customary to cause an impermeable shielding strip to adhere to the front face of the inking ribbon throughout the entire extent of the shielding strip.

The result in both the above mentioned instances is to materially reduce the effectiveness of and to produce an unsatisfactory ribbon. It results in causing a "spread" or blurred imprint in a manifold copy; not giving a clear, sharply defined outline of each character written. Such ribbons also fail on repeated impacts of the types to give up the required quantities of ink for the production of good manifold copies, thus very materially reducing the life of the ribbon and rendering it useless for the production of clear manifold copies after it has been used only a few times.

The first mentioned of these disadvantages probably is due to the fact that the impermeable coating, or the adhesive by which the shielding strip is caused to adhere to the inked ribbon, hardens and prevents a clear definition of the outline of each character written; carrying a greater extent of ribbon at each impact against the paper than is necessary and causing a "spread" or imperfectly defined or blurred imprint. The second of the above mentioned disadvantages probably is due to the fact that the impermeable coating, or the adhesive by which the shielding strip is caused to adhere to the inked ribbon, reduces or partly destroys the capillary qualities of the inking ribbon and prevents the ink from readily

flowing or passing from one portion thereof to another so that the ink from an unstruck part of the ribbon cannot readily pass to and replace the ink removed therefrom at adjacent points which receive the impacts of the types. Moreover, it has been found that such manifold ribbons very soon dry out and become worthless even when not in use, probably by reason of the reduced ink carrying capacity of the inking ribbon due to the coating of ink repellent compound or the adhesive by which the shielding strip is caused to adhere throughout its extent to the ribbon.

I discovered that by causing the soft, pliable shielding strip of cellophane to adhere to the ribbon at intervals only, instead of over the entire surface of the shielding strip, all of the above mentioned difficulties are overcome, and a manifold ribbon is produced that is far superior in every respect to that having the shielding strip adhering throughout the entire extent thereof to the ribbon, or in which the ribbon is coated with an impermeable compound. The new ribbon of my invention gives far clearer or better defined imprints than the old during a far greater period of use; more than doubling the life of the ribbon, and the ribbon does not dry out so rapidly during non-use.

In the accompanying drawing I have shown several different forms of construction embodying my invention.

In the drawing—

Fig. 1 is an enlarged, detail, front face view of one form of duplicating ribbon embodying my invention; the view showing a portion of the shielding strip broken away to expose the inking ribbon, the duplicating ribbon as a whole being shown supported on arms of a frame carried by the carriage of a typewriting or like machine.

Figs. 2, 3 and 4 are similar views of modified forms of duplicating ribbons, each view showing but one half of the ribbon.

Fig. 5 is an enlarged, detail, sectional view of my preferred form of ribbon taken on the line 5—5 of Fig. 1 and looking in the direction of the arrows at said line.

Fig. 6 is an enlarged, detail, sectional view of a modified form of ribbon taken on the line 6—6 of Fig. 4 and looking in the direction of the arrows at said line.

The textile ink carrying ribbon, which may be of the usual or any suitable character, is designated in each instance by the reference numeral 10, whereas the separate shielding strip is indicated in each instance by the reference numeral 11. For the shielding strip I prefer

to use "cellophane" or some such equivalent impermeable, smooth surfaced, soft moisture and ink repelling substance devoid of any grain. In practice I have found that "cellophane" of slightly more than .001 of an inch in thickness or about one fifth the thickness of the inking ribbon, answers the purpose very well. When such a strip is attached to the ribbon only at intervals, and is not caused to adhere thereto throughout its entire extent, it aids materially in the production of clear cut, sharply defined, manifold imprints that are free from the "spread" or blur and imperfections produced with manifold ribbons in which a different character of shielding strip, and one which adheres to the ribbon throughout the entire extent thereof, is employed. In fact it has been found in practice that when the same character of shielding strip and the same character of ribbon is employed in both instances, but in one instance the shielding strip is caused to adhere throughout the entire extent thereof to the ribbon, whereas in the other instance the shielding strip is caused to adhere to the ribbon only at intervals as shown in the drawing, far superior results are obtained by the last mentioned ribbon; clearer and sharply defined imprints and a freedom from "spread" being attained, and the life of the ribbon being more than doubled.

In the manifold ribbon shown in Figs. 1 and 5 the extreme edges only of the shielding strip 11 are attached to the inking ribbon 10 by lines of adhesive material indicated at 12, leaving the entire intermediate portion of the shielding strip free from attachment to the ribbon. I regard this form of construction the most preferable since the types never impact against those portions of the ribbon where the parts 10 and 11 are united by the adhesive material and the edges of the parts 10 and 11 are firmly united and may be readily interleaved between the work sheets without affording an opportunity for the edges of the work sheets, or either of them, to pass between the shielding strip 11 and the inking ribbon 10.

Any suitable means may be provided at the ends of the manifold ribbon for detachably connecting it to the supporting means therefor. Said supporting means are represented in the present instance by arms 13 which are notched at 14 to receive the connecting devices or means at the ends of the ribbon and form part of a supporting frame detachably connected to the carriage of a typewriting or like machine.

In the construction illustrated in Figs. 1 and 5 the attaching means at the ends of the ribbon are in the nature of metal clips 15 each bent on itself into substantially U shaped formation and providing a looped portion at the outer end in which one of the arms 13 is received. One of the arms of each clip 15 is provided with a series of tines 16 adapted to be received through openings 17 in the other arm of the clip and to be bent or folded over into an engaging and clamping position, as shown in Figs. 1 and 5, after the tines have passed through the ribbon 10 and shielding strip 11 received between the two arms of the clip and clamped between them.

In the construction shown in Figs. 2 and 6 the shielding strip 11 is caused to adhere to the inking ribbon 10 by three parallel stripes of adhesive material 18, two of such stripes being provided at the edges of the ribbon as in the construction shown in Fig. 1, and the single inter-

mediate stripe being disposed lengthwise at the center of the ribbon.

In this construction I have shown the inking ribbon bent into the form of a loop at its outer ends as indicated at 19 to receive the supporting arms 13. The textile fabric of the ribbon at each looped end thereof overlaps the shielding strip 11 and a line of stitches, indicated at 20, unites the two layers of ribbon and the intermediate shielding strip. I prefer in this form of construction after opening the loops at the ends of the ribbon, to dip them in a fluid, say, to the depth indicated by the line 21. This fluid compound or solution in which the ends of the ribbon may be dipped is preferably a paint like substance of collodion or lacquer or some such suitable material that forms a coating on the outer looped ends of the ribbon which is impermeable when dry and constitutes a protection that prevents the operator's fingers from being smeared by the ink of the ribbon in placing it on and removing it from the supporting arms. Any suitable substance may be employed for this purpose. One of the advantages of this form of loop over the metal clip is that there is less liability of injury to the work sheets and type faces from the use thereof.

The construction shown in Fig. 3 is similar to that represented in Fig. 2 except that the stripes of adhesive by which the shielding strip 11 is secured to the ink ribbon 10 is in the form of narrow diagonal stripes 22 that extend from edge to edge of the ribbon.

The construction shown in Fig. 4 is similar to that shown in Figs. 2 and 3 except that the adhesive material 23 by which the shielding strip 11 is attached to the inking ribbon 10 is arranged in spots situated at widely separated intervals only throughout the length and width of the ribbon.

It will be understood that while the use of "cellophane" as a shielding strip in connection with an inking ribbon of textile fabric results in the two strips having different qualities from the point of view of their capability of stretching, the connection at intervals between the inking ribbon and shielding strip nevertheless unites them and maintains them sufficiently united for the purposes for which the manifold ribbons are used without appreciably detracting from the qualities and effectiveness of the inking ribbon to produce clearly defined manifold copies and without detracting from the substantially full capacity of the ink containing and capillary qualities of the inking ribbon.

It will be understood, moreover, that the freedom of the "cellophane", or an equivalent material, from all grain provides against any possibility of the transmission of any grain through the ribbon on the impact of the type in the production of the manifold copies. It has been found in practice that even a thin "laid" paper used as a shielding medium may transmit its "grain" through the ribbon and reduce the clearness of the manifold imprints and show the "grain" of the paper on the manifold copies. It will be understood, therefore, that in the use of material such as "cellophane" there is a complete freedom from any such grain or the transmission thereof to the manifold imprints.

Of course, by attaching the shielding strip to the inking ribbon in the manner described, the two are sufficiently united to make them in ef-

fect one part that may be readily introduced between the work sheets with which they co-act.

What I claim as new and desire to secure by Letters Patent is:

5 1. A manifolding ribbon comprising an inking ribbon, and a shielding strip attached thereto only at intervals throughout the extent of the shielding strip, said inking ribbon being folded on itself at the ends thereof and attached to the
10 body portion of the inking ribbon and over the intervening shielding strip thus forming loops by which the manifold ribbon may be detachably connected to its supporting means.

15 2. A manifolding ribbon comprising an inking ribbon, a shielding strip attached thereto only at intervals throughout the extent of the shielding strip, said inking ribbon being folded on itself at the ends thereof and attached to the body portion of the inking ribbon and over the inter-
20 vening shielding strip thus forming loops by which the manifold ribbon may be detachably connected to its supporting means, said looped ends of the ribbon being coated with a moisture and ink repelling substance so as to protect the
25 hands of the operator from being smeared with ink in attaching the manifold ribbon to or removing it from its support.

30 3. A two ply manifolding ribbon for typewriting and like machines for use in interleaved relation between two work sheets to produce a manifold copy on the underlying work sheet without producing an off-set or imprint from such ribbon on the outermost work sheet that receives
35 its imprint from the ordinary inking ribbon of the typewriting or like machine, said manifolding ribbon comprising an inking ribbon, and a shielding strip to prevent back printing on the overlying work sheet, said shielding strip being attached to the inking ribbon with an adhesive
40 only along the edges of said shielding strip.

4. A two ply manifolding ribbon for typewriting and like machines for use in interleaved relation between two work sheets to produce a manifold copy on the underlying work sheet with-

out producing an off-set or imprint from such ribbon on the outermost work sheet that receives its imprint from the ordinary inking ribbon of the typewriting or like machine, said manifold-
5 ing ribbon comprising an inking ribbon, and a shielding strip to prevent back printing on the overlying work sheet, said shielding strip being attached to the inking ribbon with narrow diagonal stripes of adhesive material that extend from edge to edge of the shielding strip. 10

5. A two ply manifolding ribbon for typewriting and like machines for use in interleaved relation between two work sheets to produce a manifold copy on the underlying work sheet without producing an off-set or imprint from such
15 ribbon on the outermost work sheet that receives its imprint from the ordinary inking ribbon of the typewriting or like machine, said manifolding ribbon comprising an inking ribbon, and a shielding strip of cellophane to prevent back print-
20 ing on the overlying work sheet, said shielding strip being attached to the inking ribbon with the aid of an adhesive material that extends along the edges only of the inking ribbon and shielding strip and unites them only at such points. 25

6. A two ply manifolding ribbon for typewriting and like machines for use in interleaved relation between two work sheets to produce a manifold copy on the underlying work sheet without producing an off-set or imprint from such
30 ribbon on the outermost work sheet that receives its imprint from the ordinary inking ribbon of the typewriting or like machine, said manifolding ribbon comprising an inking ribbon, and a shielding strip to prevent back printing on the
35 overlying work sheet, said shielding strip being attached to the inking ribbon by an adhesive only at intervals throughout the extent of the shielding strip, said shielding strip being made of relatively thin cellophane approximately one fifth the
40 thickness of the inking ribbon, and being smooth and free from grain and repelling moisture and ink.

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