Patented Nov. 3, 1931

1,830,559

UNITED STATES PATENT OFFICE

GEORGE ERNEST PELTON, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE GEORGE E. PELTON COMPANY, A CORPORATION OF DELAWARE

INK TRANSFER MEMBER AND METHOD OF MAKING THE SAME

No Drawing. Application filed April 16, 1930. Serial No. 444,884.

My invention relates to ink transfer members.

In the manufacture of ink transfer members such as described and claimed in my Patent 1,732,187, wherein the members are adapted to be coated on one surface and to be engaged, as by a typewriter key or the like, on the opposite surface, difficulty has heretofore been experienced in getting a perfect imprint. Various ways have heretofore been proposed to overcome this difficulty. One is by weaving the member of very fine material, as for example, of the finest silk thread. This, however, is very expensive. Beyond certain limits it also is impractical due to warp breakage. Moreover, irrespective of how fine the fabric may be, in all weaving slight imperfections such as broken or heavy threads are bound to occur. Another proposal has been to calendar the material by passing the same between rolls rotating at the same speed and operating with equal pressure on opposite sides of the material. Neverthless, the coating carrying surface of the transfer materials heretofore produced, when viewed through a microscope, has remained in the form of hills and valleys so that the coating when applied conformed to the same and produced an imperfect imprint.

Moreover, these ink transfer members heretofore produced have been such as to be too readily penetrated by the coating material. As a result, it has been necessary, in order to obtain the best results, to feed the members at a very high speed during the coating process and to limit the contact space very substantially.

My invention has among its objects to provide an improved ink transfer member. A further object of my invention is to provide such a transfer member in which, by reason of an improved surface, an absolutely even coating of coating material is obtainable, in such manner as to produce an improved and even imprint. A still further object of my invention is to provide a transfer member having such an improved surface and further one which is adapted to minimize the penetration of the coating material into the material of the member and consequently to enable coating at slower speed and over a wider contact space. A still further object of my invention is to provide such an improved ink transfer member which is adapted to be very cheaply and economically produced, and which, while having the advantages set forth, even when inked and formed of materials other than silk, has a very attractive sheen, making the same even more attractive than inked silk. A still further object of my invention is to provide an improved method of making an ink transfer member whereby the above results are obtained. These and other objects and advantages of my invention will hereinafter more fully appear.

In producing my improved transfer member, I provide an improved surface on the transfer member prior to the coating process. More particularly, I smooth, compact and polish the coating carrying surface of the same in such manner as wholly to eliminate the hill and valley effect of the previous transfer member surfaces referred to above, and produce a smooth glass-like surface. It will also be understood that after the transfer member has been thus treated, the same is then coated and dried, and subsequently inked, all in the general manner described and claimed in my patent referred to above.

A suitable mechanism for carrying out the process hereinafter disclosed is illustrated in the accompanying drawing wherein the figure illustrates a vertical sectional view of a pair of friction calendering rolls. In this mechanism, 1 discloses a standard in which the lower roll 2 and the upper roll 3 are journalled. The lower roll being driven by any suitable mechanism (not shown herein), may be either hollow or solid and is driven at a comparatively low speed. This roll is covered with a compacted fabric covering, as shown at 4, or the covering may be constructed of any material which will allow of a slight cushioning action. The upper roll is a solid highly polished steel roll and between these two rolls is passed the fabric 5, as shown. The upper roll, as is noted by the legend "high speed", travels at

a rate whose R. P. M.'s are considerably higher than the R. P. M.'s of the lower roll, 2 so as to compact and smooth out the fibres and thus fill any interstices which would be present in the woven fabric.

When the transfer member is thus provided with my improved surface, an absolutely even coating is capable of being applied thereto in such manner that an exceedingly clear imprint can be produced. Moreover, due to the compacting of the surface, the latter is made more impenetrable by the coating. Thus, for example, where heretofore it has been desirable to feed the member during coating at a speed of approximately 400 feet per minute, and have only a contact space of from one-eighth to three-sixteenths of an inch, it is now made possible to feed it at 120 feet per minute and have a contact space of one inch.

It will also be understood that ordinarily only one surface of the ink transfer member is operated upon as described, this being all that is necessary for ordinary usage, such as typewriter ribbons, et cetera. If, however, it is desired to produce a ribbon or a manifolding material adapted to give off ink from both surfaces, it will be evident that such a transfer member may be obtained by repeating the process on the opposite side of the material, as by successive operations on opposite sides of the same, the cellulose coating applied on one side being preferably dried before the other side is smoothed and coated.

I do not wish to be restricted in any manner to the mechanism here illustrated, as obviously my improved transfer member may have its improved surface produced by other mechanism. The friction calendering mechanism herein shown is only an example of one form of mechanism which may be used and discloses only one type of friction calendering mechanism. Other types of friction calendering mechanisms may be employed without departing from the spirit or scope of this invention.

In practice, I preferably also make the ink transfer member of a cotton fabric, as I find that with my improved surface it is possible at a materially lower cost to obtain results approximating those obtained with previous members made of the finest spun or long fiber silk. It will be understood, however, that I am able to use any sort of fibrous or fabric material upon which the coating required by my invention can be applied, such as wool, linen, artificial silk, either rag or wood pulp papers, or other papers, or mixtures of the fibers of any of the above, or of any other fibers desired.

As a result of my invention it is made possible not only to produce an improved and clearer imprint but to reduce the amount of penetration of the transfer member by the coating and to increase substantially the life of the transfer member as compared with previous members. Moreover, the member, even when formed of cotton or other fabric, has a very attractive sheen and appearance. Attention is also directed to the fact that due to this smooth polished surface all difficulty heretofore experienced with lint or the like when passing the material through the coating hopper is overcome as well as the marring of the material resulting therefrom. These and other advantages of my improvement will, however, be clearly apparent to those skilled in the art.

It will be understood that the above description of my invention is for purposes of illustration and that the invention may be modified and embodied in various other forms, all of which it is my intention to include within the scope of the appended claims.

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

1. An ink transfer member of woven fabric having a polished surface and compacted body, and impregnated with ink.

2. An ink transfer member of woven cotton fabric having a polished surface and compacted body and impregnated with ink.

3. An ink transfer member of woven fabric having a friction calendered surface and ink retarding means, and impregnated with ink.

4. An ink transfer member of cotton fabric having a friction calendered surface, ink retarding means thereon, and impregnated with ink.

5. An ink transfer member of woven fabric having a polished surface and compacted body, a coating of cellulose material pervious to ink on said surface, said fabric being impregnated with ink.

6. An ink transfer member of woven cotton fabric having a polished surface and compacted body, a coating of cellulose material pervious to ink on said surface, said fabric being impregnated with ink.

7. An ink transfer member of woven fabric having a polished surface and compacted body, a cellulose screen on said surface which is pervious to ink and retards the passage of ink therethrough, said fabric being impregnated with ink.

8. The method of making an ink transfer member, which includes compacting a woven fabric and polishing a surface thereof, and impregnating the fabric with ink.

9. The method of making an ink transfer member, which includes compacting a woven fabric and polishing a surface thereof, applying an ink retarding substance which is pervious to ink to said surface, and impregnating the fabric with ink.

10. The method of making an ink transfer member, which includes friction calendering a woven fabric, applying an ink retard-

ing and ink pervious cellulose substance to a face of said fabric, and impregnating the fabric with ink.

11. The method of making an ink transfer member, which includes friction calendering one surface of a woven fabric, applying an ink retarding and ink pervious material to said surface, and impregnating the fabric with ink.

12. The method of making an ink transfer member, which includes calendering both surfaces of a woven fabric, applying an ink retarding and ink pervious substance to one face of said fabric, and impregnating the fabric with ink.

In testimony whereof I affix my signature.

GEORGE ERNEST PELTON.

4

CERTIFICATE OF CORRECTION.

Patent No. 1,830,559. Granted November 3, 1931, to

GEORGE ERNEST PELTON.

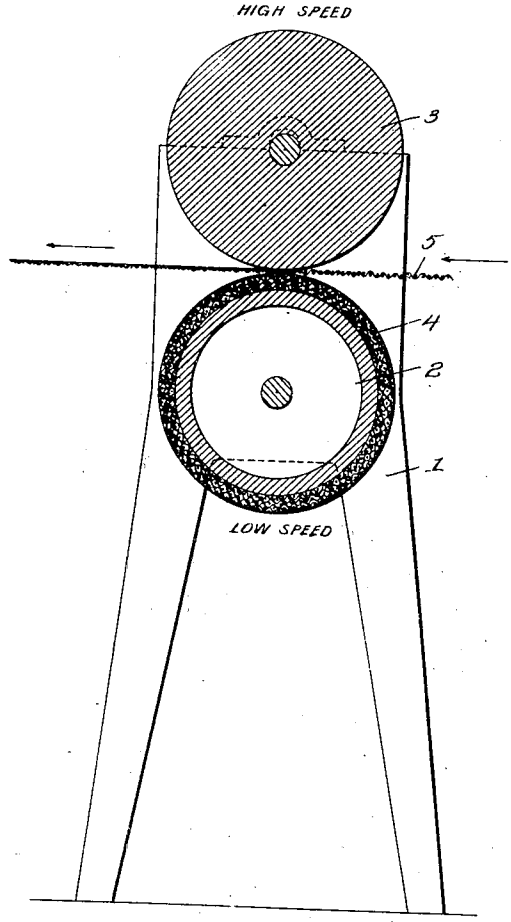
It is hereby certified that error appears in the above numbered patent requiring correction as follows: In the heading to the printed specification, line 5, strike out the words "No Drawing". The drawing shown below should appear as part of the patent.

Nov. 3, 1931. **1,830,559**

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Filed April 16, 1930



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By J. C. Hutchinson Jr
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and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 15th day of December, A. D. 1931.

(Seal)

M. J. Moore,
Acting Commissioner of Patents.