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FABRIC DUPLICATING SHEET AND METHOD OF MAKING IT.

APPLICATION FILED AUG. 24, 1918.

1,315,311. Patented Sept. 9, 1919.

FIG. 1.

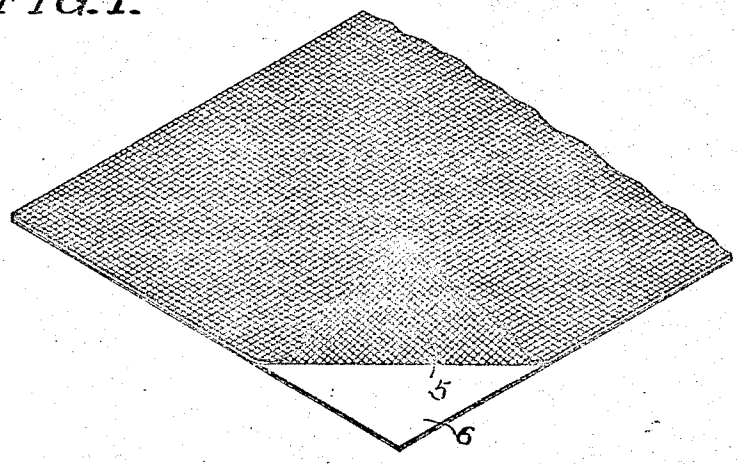
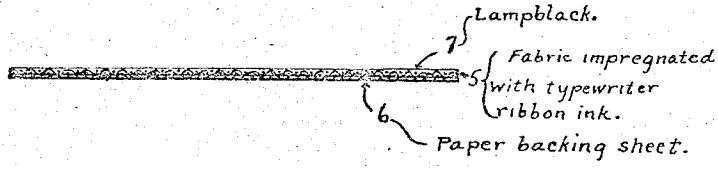


FIG. 2.



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UNITED STATES PATENT OFFICE.

EDMUND KIRKBRIDE, OF CAMDEN, NEW JERSEY, ASSIGNOR TO TYBON COMPANY, OF WILMINGTON, DELAWARE, A CORPORATION OF DELAWARE.

FABRIC DUPLICATING-SHEET AND METHOD OF MAKING IT.

1,315,311. Specification of Letters Patent. Patented Sept. 9, 1919.

Application filed August 24, 1918. Serial No. 251,255.

To all whom it may concern:

Be it known that I, EDMUND KIRKBRIDE, a citizen of the United States, residing at 104 N. Sixth street, Camden, in the county of Camden and State of New Jersey, have invented a certain new and useful Fabric Duplicating-Sheet and Method of Making It, of which the following is a specification.

My invention relates to a sheet for copying purposes to be used in the same manner as the present carbon paper but of greater durability and effectiveness and having greater penetration into the paper upon which the impression is made.

The main purpose of my invention is to render typewriter ribbon ink of any character available for copy sheet work.

A further purpose is to supply a safe backing for fabric copying sheet which shall not interfere with the ink-holding capacity of the base used.

A further purpose is to provide a safe front facing for the copying sheet to prevent smudging and to permit the use of a larger quantity of ink or an ink of more moist consistency than would otherwise be permissible.

A further purpose is to finish a textile fabric sheet in the same way as a carbon paper sheet by coating it and subjecting it to heat and pressure.

A further purpose is to combine the non-smudging finish capacity of so called "carbon paper" with the ink transfer advantages and permanence of ink record obtainable by the use of typewriter ribbon ink and the wearing qualities of the typewriter ribbon.

Further purposes will appear in the specification and in the claims thereof.

I have preferred to illustrate one form only of my invention but without limiting myself to the construction or arrangement shown, selecting a form for illustration which has proved to be practical, efficient and, in a broad sense inexpensive and which at the same time well illustrates the principles of my invention.

Figure 1, shows in perspective a textile fabric sheet with a paper backing, the relative proportions being exaggerated for convenience of illustration.

Fig. 2, shows a section of the sheet shown in Fig. 1.

Cross reference is made to applicant's co-pending application for fabric sheet for duplicating, Serial No. 262,766, filed November 16, 1918, with which the subject matter of this application is related.

Various attempts have been made to make an ink copying sheet but to the best of my knowledge all have failed. Perhaps the patents whose structures have come nearest to success of these have been Wortman Patent No. 376,764, Hay Patent No. 728,461 and West Patent No. 910,887. All of these failed basically, because they attempted to place and use the ink in a base which was not well suited to either purpose and which, in use, wore out before the advantages of the ink were realized.

Hay further failed because the capillary character of the paper upon which he depended to soak up the ink and then distribute it during use causes the collodion to be taken up quickly when applied and to permeate substantially the entire sheet making it hard and impervious throughout.

In West the non-smudging surface was a "fat" surface, which itself filled up the capillary passages of the paper and which, rather than the ink, was absorbed by the paper.

Neither Wortman's manifold ink nor West printers' copying ink was well suited for the purpose described.

In the drawing, I show conventionally a textile fabric 5 and a backing sheet of paper 6 which latter is exaggerated in thickness for purpose of illustration. The textile fabric is preferably of the same finely woven linen webbing that is used for typewriter ribbon and the backing may be of any material or put on under any such special circumstances as will prevent it from interfering with the distribution of the ink. Any type of sheet material can be used for this backing purpose or a rubber coating or other suitable coating can be applied before the ink is received by the fabric where it is of such a nature as not to sink in.

Where there is any danger of the coating or covering forming the backing permeating the fabric unduly, it is desirable that the textile fabric shall be inked first so that the capillary tubes of the fabric will be filled with the ink prior to the application of the backing material, insuring that no threads are occupied by the latter which should be and otherwise would be occupied by the ink.

With a relatively dry typewriter ink in a textile fabric base and a suitable backing to give one non-copying or "safe" surface the sheet is operative and will give good results. It may therefore be regarded as complete. I find however, that both for purposes of making the sheet more attractive for sale and of enabling me to use a larger quantity of ink upon the sheet or a more fluid ink, improving its life and quality for transfer purposes, it is desirable to add a surface or "finish" 7 to the fabric which gives a better appearance and also relatively dries the outer ink surface.

Though there are many materials which may be used for this purpose without themselves interfering with the proper transfer of ink to the paper sheet, I find that the most desirable one is the so called carbon (lampblack) used in the so called carbon paper. It may be sifted on very lightly and "ironed" by heat and pressure giving a very desirable luster. Such a very thin coating of lampblack or other preferably non mineral material substantially without oil dries the surface and yet permits the ink to strike through upon the paper sheet.

By the time this thin carbon layer is transferred along with the ink to the paper the remaining ink content has been weakened or its surface dried sufficiently to be free from objection of smudging.

With my textile fabric sheet the same character of impression is given to the paper sheet upon which the copy is being made as to the so called ribbon copy with which the typewriter ribbon directly engages.

It will be evident that my invention provides a textile fabric ink support which holds the ink to great advantage and will last as long as the ink itself will continue to transfer; that the sheet will make a permanent copy whose ink is impregnated within the paper as the initial "ribbon copy" ink is; that the sheet is free from smudging without objectionable "filling" of the paper fiber; and that the finish may be made the equal of that of carbon paper. Also the use of my fabric sheets avoids the necessity of a large number of carbon sheets constantly on hand and gives greater uniformity of results on successive copies from the same sheet than can be secured by "carbon" sheets unless the latter are to be discarded after slight use.

For convenience of expression I have referred to the ink as typewriter ribbon ink, intending to indicate thereby the general character of ink used, *i. e.*, the general type of ingredients suitable and the substantial non-drying character of the composition used for such purposes, though it will be appreciated that typewriter ribbon ink contain varying proportions of body and oil, according to the character of ribbon to be produced.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. The method of making a typewriter copying sheet which consists in impregnating a base with typewriter ribbon ink of relatively excessive quantity or moisture content and reducing the smudging tendency of the sheet by providing a surface of drying material thereon.

2. The method of making a typewriter copying sheet which consists in impregnating a fabric base with typewriter ribbon ink, supplying a coating upon the surface of the ink adapted to be polished by heat and pressure and applying heat and pressure to the coating thereof.

3. The method of finishing a copying sheet impregnated with typewriter ribbon ink which consists in coating it with a material residing largely on the surface and which permits free ink permeation of the fiber and pressing the material into contact with the ink.

4. A textile fabric copying sheet adapted to be used for making a duplicate, having typewriter ribbon ink therein and having upon an impression-giving side a dry surface to prevent smudging.

5. A copying sheet adapted to be used for making a duplicate and comprising a textile fabric base impregnated with typewriter ribbon ink and having one safe surface and the other dry to prevent smudging.

6. A copying sheet adapted to be used for making a duplicate of the ribbon copy and comprising a textile fabric base impregnated with typewriter ribbon ink in combination with a finishing coating upon one surface thereof adapted to lie primarily upon the fiber surface and permit ink flow through it into the paper.

7. A typewriter copying sheet comprising a textile fabric base, impragnated with typewriter ribbon ink and an added material thereon having a polished surface.

8. A textile fabric copying sheet impregnated with typewriter ribbon ink and having an added material on an impression-giving side thereof forming a drying surface and permitting increase of the fluidity or quantity of ink.

9. A copying sheet comprising a textile fabric base impregnated with typewriter ribbon ink in combination with a carbon covering therefor.

EDMUND KIRKBRIDE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."