

UNITED STATES PATENT OFFICE.

WILLIAM H. SPENCER, OF BROOKLYN, NEW YORK, ASSIGNOR TO R. M. BELL,
OF SAME PLACE.

DRY-COPYING PROCESS.

SPECIFICATION forming part of Letters Patent No. 234,927, dated November 30, 1880.

Application filed June 28, 1880. (No specimens.)

To all whom it may concern:

Be it known that I, WILLIAM H. SPENCER, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in the Process and Means for Dry-Copying, of which the following is a specification.

My invention relates to the art whereby a number of copies may be taken by transfer from a single original writing, drawing, or delineation; and it consists in the prepared paper which I denominate "polygraphic copying-paper," and the method of preparing the same hereinafter described and claimed.

In practicing my invention I proceed as follows: I take a sheet of hard-sized, well-finished, or calendered paper, of about the thickness of ordinary legal cap or its equivalent, and thoroughly gum one side of it with gum-arabic solution of the consistency ordinarily used for cementing. When this gum becomes dry I spread upon it a coating of an adhesive, flexible, elastic composition, that is capable of receiving and holding in its surface, by transfer to it from paper or its equivalent, writings, tracings, or delineations in aniline ink or its equivalent, and of giving up again, by transfer to dry paper pressed upon it, said writings, tracings, or delineations, so as to produce therefrom a number of copies. The following is such a compound, which I denominate the "copying compound:?" To one part of gelatine (preferably extra quality French gelatine) add eight parts of glycerine and two parts of water; then add two drams of saccharine sirup (preferably that which is known as "golden" sirup) and a small quantity of carbolic acid as an antiseptic. First add the water to the gelatine and let them stand until the gelatine has taken up what water it will—say some six or eight hours—and then apply a moderate heat, certainly below the boiling-point of water. When the gelatine is thoroughly melted, add the glycerine and other ingredients, and stir the mass until the ingredients are thoroughly incorporated together. The composition is then ready for use.

As soon as the surface formed by the copying compound (spread upon the gummed paper or its equivalent) is somewhat hardened, as it will be by exposure to the atmosphere for about five or ten minutes, I take a sheet of

thin strong paper or its equivalent, and, laying it on the said surface, firmly press it down upon it, and so allow it to remain for some time—say ten or twelve hours. Under these conditions the compound becomes so adherent to the thin sheet of paper that when the two sheets are gently pulled apart the compound will separate from the gummed surface of the thick paper upon which it was spread and be transferred to the thin paper, thus bringing uppermost on that paper the surface of the copying compound to be used in copying that has been formed in contact with the gum-arabic surface on the thick paper, the said compound carrying with it a large portion of said gum, which becomes intimately united therewith, giving to the copying-surface a more adhesive quality, making it a better absorbent of the aniline ink, and imparting to it a finer texture, whereby the fine strokes of the writing are more perfectly reproduced in copying.

While, as I have stated, the copying compound will be ready for transfer from the gum-arabic surface to the thin paper and for use in the course of ten or twelve hours after it is spread upon the gum-arabic and the thin paper has been laid and pressed upon it, still it may be kept in perfect condition between the sheets for any reasonable length of time, in a state of readiness for use when desired. A number of these sheets thus prepared may be put together in a pad for convenience of transportation, sale, and use.

To copy upon the paper thus prepared the two sheets having the compound between should be gently pulled apart, the compound adhering, as before described, to the thin paper, exposing the surface that has been formed by contact with the gum-arabic. Upon this a dry sheet of paper, preferably ordinary printing-paper, should be pressed to remove the little amount of oily substance which will be found thereupon, resulting from the gummed paper preventing the evaporation of the glycerine. This surface is then slightly adhesive.

Write the article intended to be copied with a strong aniline ink, and let it dry without blotting. A good ink for the purpose may be made as follows: Take thirty grains of the best aniline-crystal, three grains of gum-arabic, thirty minims of alcohol, and four tea-

spoonfuls of boiling water, the alcohol being first added to the aniline and allowed to stand a few hours, the other ingredients then being added and thoroughly incorporated.

5 Place the writing with the ink side down on the prepared copying-paper and press it down gently, so that all parts of the writing touch the surface of the compound, taking care to exclude the air from under the paper. Let it
10 lie from one to two minutes, and then gently remove it, and the writing will be found perfectly transferred to the compound on the copying-paper. Proceed at once to take off what copies may be desired by placing the paper (or
15 other equivalent) on which the copies are to be made upon the inked surface, smooth it down gently, and as soon as every part of the writing touches the paper a perfect copy will be produced.

20 When copies are taken on cloth the cloth should be free from starch. Use the cloth in the same manner as paper, only allowing it to remain on the face of the compound a few seconds, in order that the ink may penetrate the
25 cloth. The operation should be repeated with all convenient rapidity until the ink is exhausted.

The compound, when spread upon the gummed surface of the thick paper, should be
30 sufficiently heated to insure complete incorporation of the ingredients.

By first spreading the copying compound upon the gummed surface of one sheet of paper and then transferring it to another I attain
35 a twofold object: First, I obtain a perfectly-molded plain surface, upon which the copying is effected, and, second, as the compound gradually hardens, the glycerine in it settles, forming two surfaces, differing somewhat in
40 their nature, and by the transfer described the most adhesive surface is brought in contact with the thin paper, and the reverse surface formed by contact with the gum-arabic comes uppermost, with which the aniline ink will
45 better unite for copying purposes.

The gum-arabic surface serves the purpose of facilitating the transfer of the copying compound from the first to the second sheet of paper, and also contributes to preserve the
50 copying compound for any length of time in a suitable condition for use by preventing the escape of the oily ingredients upon which the

multiple copying capacity of the compound so much depends.

Another object is accomplished by the transfer described. When this compound is simply spread upon the naked paper or the smooth surface of any equivalent material, it is very liable to blister or peel up in the operation of taking off copies from its surface. By
60 spreading it first upon a suitable surface and then transferring it to thin strong paper, as I have described, this blistering or peeling is obviated.

In place of the thick paper any other suitable equivalent substance having a plane smooth surface may be employed on which to spread the gum-arabic.

I am aware that transfer-copying has been practiced upon tablets made of gelatine variously compounded with other ingredients. I
70 do not therefore claim, broadly, such copying.

What I do claim, and desire to secure by Letters Patent, is—

1. The method described of fabricating prepared paper for transfer-copying, consisting in coating the surface of paper or its equivalent with gum-arabic, then, when the gum is dry, or partially dry, spreading upon it a layer of the copying compound described, and then
75 applying and pressing upon the surface of the latter a sheet of thin strong paper or its equivalent, whereby they adhere together, so that when the sheets are separated the compound adheres to the thin paper or its equivalent, exposing the surface of the compound that is
80 formed in contact with the gum, as and for the purpose specified.

2. The prepared copying-paper described, consisting of a sheet of paper, or its equivalent, to the surface of which there adheres a stratum of the copying compound described, with the outer surface of which is connected a stratum of gum-arabic or its equivalent, substantially as described.
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3. The copying compound described, consisting of gelatine, glycerine, water, golden sirup, and carbolic acid, in about the proportions specified.
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WILLIAM H. SPENCER.

Witnesses:

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FREDK. GIBLIN.