

UNITED STATES PATENT OFFICE.

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PRINTING OR STAMPING INK.

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To all whom it may concern:

Be it known that I, CHARLES M. HIGGINS, a citizen of the United States, residing in Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Printing or Stamping Inks, of which the following is a specification.

My invention applies more especially to inks for type-writing, ticket-printing, cash-registering, or other small printing-machines, as well as to hand-stamps of rubber or metal where a non-drying ink is needed which will last indefinitely on the pad, roller, ribbon, or other inking device without hardening or drying thereon and always give a uniform impression whether in constant or occasional use.

Briefly stated, my invention consists in an ink composed of oleic acid combined with methyl violet or other coloring-matter, as hereinafter set forth.

It is well known that most of the inks in present use for the purposes named are composed of glycerine holding aniline colors in solution. Glycerine, however, although one of the best-known solvents for the aniline colors and a non-drier, is yet open to the very serious objection that it is perfectly soluble in water and very susceptible to atmospheric moisture, so that the ink when on the printing device is affected by the relative dryness or moisture of the air, which is a constant element of irregularity in the inking and printing action, causing the ink to print too freely, as if too much inked, on a moist day, and to print too feebly, as if insufficiently inked, on a very dry day, which becomes quite objectionable in type-writing and similar machines. Another serious objection is that as both the vehicle and the pigment of the ink are intensely soluble in water the ink does not dry or set quickly on the paper, and will smudge or blur very easily in contact with any moisture or with the fingers of the manipulator. These objections have recently created a strong demand for an ink which will entirely dispense with the glycerine vehicle or any vehicle soluble in water or affected by atmospheric moisture and which will yet hold the coloring-matter in absolute solution. For this purpose it is therefore apparent that only a vehicle of a true oily nature should be used, as oils are not affected

by moisture, and this oil should hold the coloring-matter in actual solution and in large quantity. Furthermore, this coloring-matter should be a water-color, or soluble in water, so that the ink when printed will admit of a good press-copy, and as the aniline colors are the most intense and brilliant known the ideal ink should be a non-drying oily vehicle holding an aniline or water color in actual solution. Now it has been found extremely difficult to obtain an oily vehicle which would dissolve an aniline or water color in any quantity fit for the purpose of such an ink. Most all the ordinary or well-known animal, vegetable, and mineral oils will not dissolve any of the aniline or soluble water-colors, except to a very trifling extent, like a mere stain. For example, olive, lard, paraffine, sperm, linseed, cotton-seed, and a whole series of related oils have practically no solvent effect, hot or cold. Castor-oil is a little better; but it is practically useless to form a solution of any useful strength for the purpose. I have discovered, however, that oleic acid, the basis of several of the animal and vegetable oils, forms an extraordinary solvent for some of the aniline colors, and particularly for the methyl violet, which is one of the strongest and most used of these colors. Oleic acid forms, I find, a perfectly non-drying oily vehicle, very limpid, smooth, and unctuous, and perfectly adapted for the ideal vehicle. It will dissolve from twenty to thirty per cent. of its own weight of methyl violet, forming a fluid oily ink of great intensity of color, with which the inking roller, ribbon, pad, or other inking device may be perfectly and uniformly saturated, and which will give off the ink readily to the types or stamps and produce a clear and uniform impression on the paper. This ink has a very even-distributing quality, and never dries on the inking device, and is entirely unaffected by the varying moisture in the air. It hence lasts indefinitely on the roller after once inking, and prints very smoothly and uniformly, whether constantly or occasionally used, which has been the great desideratum heretofore sought for. Furthermore, when printed on the paper the impression practically dries or sets at once, and will bear immediate contact without blurring, which is a most important advantage in type-writing and in stamping. As, how-

ever, the coloring-matter is entirely soluble in water, a perfect press-copy of the impression may be obtained with the copying-press in the usual manner. This copy will show less tendency to blur or run, as is the case with glycerine inks, which is an advantage. This same ink may be used for rubber stamping, the felt or other inking-pad being saturated therewith, for which purpose it will be found much better and cheaper than the glycerine inks and will have no injurious action on the stamps, provided the stamp is not allowed to remain in constant contact with the inked pad.

In making my improved ink I use either crude or purified oleic acid, and stir the color into the same either in powder, lump, or granular form and leave the same to dissolve, stirring occasionally until the solution is perfected. The oleic acid may sometimes be heated to nearly the boiling-point of water in a water or steam jacketed kettle, and the coloring-matter may then be introduced and dissolved in the hot oil, which will make the solution a little better and more rapidly; but the solution can be made nearly as well in the cold.

I generally use one ounce avordupois of the coloring-matter to four fluid ounces of the oleic acid, all of which will be dissolved; but of course a greater or less quantity of the color can be used, according to the strength of the ink desired. The saturating limit of the solution is near to the specific proportion which I have mentioned, and in cases where a stronger solution is required some alcohol may be added to the oleic acid, which will increase the quantity of color which can be held in solution; or in some cases a strong or a saturated solution of the color can be made in alcohol, which can then be mixed in any desired proportion with the saturated solution made in the oleic acid, which will make an ink of greater color-strength than can be made with the oleic acid alone. The alcohol will of course evaporate from the inking device, leaving the ink of heavier body; but the oleic acid will keep it perfectly liquid and prevent drying. In some cases one of the essential oils, preferably of the spices—such as cloves, cinnamon, or allspice—can be mixed with the

oleic acid in certain proportions, which will increase the solubilities of some of the colors in the vehicle and also prevent rancidity in the oleic acid.

The oleic acid has greater solvent power on methyl violet than any color I have yet found; but it will dissolve other colors in varying degrees, especially if from one-quarter to one-half its bulk of oil of cloves or cinnamon be mixed therewith. Thus to produce a green ink two parts of oleic acid and one part of oil of cloves are mixed together and heated, and the green crystals can then be dissolved in the hot oils to the desired density; or the green crystals can first be dissolved in the oil of cloves, cold or hot, and the oleic acid afterward added gradually, and the whole intimately stirred together, which will form a liquid oily green ink of great intensity. Soluble Prussian blue may be first moistened with a little sulphuric acid, and can then be mixed with and dissolved in the oleic acid, preferably cold, forming a permanent blue ink. Ultramarine blue will also form a very smooth or intimate mixture with the oleic acid, almost, if not actually, dissolving therein and forming a bright blue permanent ink. Several other pigments or coloring-matters may be used in a similar way.

Another blue ink can be made by mixing the described aniline violet and green inks together, the shade of blue depending upon the relative proportions of the two inks.

Carbon may of course be incorporated with any of the ink mixtures described.

What I claim as my invention is—

1. A stamping or printing ink composed of oleic acid and a coloring-matter dissolved therein, substantially as herein set forth.

2. A printing or stamping ink composed of oleic acid and methyl violet dissolved therein, substantially as herein set forth.

3. A printing or stamping ink composed of oleic acid, an essential oil, and a coloring-matter dissolved in the same, substantially as herein set forth.

CHAS. M. HIGGINS.

Witnesses:

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