

## UNITED STATES PATENT OFFICE

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## ENGRAVER'S COMPOUND

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The present invention relates to the art of photoengraving, and has particular reference to an improved compound for use by engravers in carrying out certain steps in the production of deep-etched or re-etched plates such, for example, as are used for the printing of half-tones in newspapers, magazines and other applications in the commercial printing field, both in color and in black and white.

Briefly stated, the invention provides a compound for use by engravers, whereby it is possible to produce printing plates in accordance with known photo-engraving methods, which are deep-etched without cutting away or weakening the half-tone dots therein, and without adversely affecting the gradation of tonal values. That is to say, by the utilization of my compound it is possible for an engraver of average skill to produce, entirely by photo-mechanical means, a plate in which the uppermost portions of the half-tone dots or figures are preserved intact, as regards the areas resulting from the first etch, while securing a deep etch or depression of the surrounding portions of the plate, as will hereinafter appear from the following description of the composition of the compound and its manner of use.

For purposes of illustration, the use and characteristics of my compound will be described with reference to its utilization in the production of half-tone plates from various materials on which the preliminary steps have been performed in the usual manner. For example, it will be assumed that a copper plate with a sensitized surface has been exposed to light action, developed and has been given its first etch in the usual manner. After the plate has been so developed and etched, its surface is broken up into a great number of dots or screen figures, by the action of the first etch. The present invention resides in the provision of a compound which is next applied to the tops or faces of the dots or screen figures of the plate, as well as to the side walls thereof, in advance of the carrying out of what is known as deep-etching of half-tones. As will hereinafter appear, my compound is applied as a rollup by any engraver of ordinary skill, and the use of the compound results in the production of a deep-etched plate without impairment of its original tonal value. Such use also results in greater depth for all tones than with any other known method or process.

In making up an engraver's compound in accordance with the present invention, a small quantity of body gum (boiled down varnish) is

dissolved in benzol, together with a considerable quantity of a carbon ink, such as printers ink composed of lampblack and linseed oil. Asphaltum, which is acid resistant, is then added to the mixture together with a quantity of corn starch, to give the mixture sufficient body. The mixture is then brought to the boiling point, after which a small quantity of candilla wax is added. Candilla wax is a hard wax and has the peculiar property of retaining a gummy consistency when heated, rather than spreading, as do the ordinary soft waxes in common with paraffins and oils. The importance of this non-spreading quality of candilla wax in the utilization of my compound will later appear.

As a basis of determining the exact proportions of the above described ingredients entering into the compound, I have found that the following proportions give excellent results in the final mixture. Assuming the use of one pound of carbon ink, the mixture will require four ounces of benzol, two ounces each of asphaltum and corn starch, and one ounce each of body gum and candilla wax. The general proportions of the ingredients stated above combine to produce a compound of the proper consistency for use in preparing a half-tone plate for deep-etching, and/or re-etching, as will now be described.

Assuming that the plate has been given its first etch, the compound described above is applied by use of a roller covered with a resilient composition, such as rubber. By reason of the fact that the roller surface is somewhat resilient, its passage over the plate while spreading the compound results in individual dots depressing the roll surface, and thus carrying the compound down the sides of the dots. In so applying the compound, the rolling is continued until the mix not only covers the tops or surfaces of the dots or figures, but goes down the sides of the dots thereof, thus protecting the side walls and maintaining all the tone values.

By reason of the uniform consistency of the compound, the sides of the dots are covered to a uniform depth, and the plate is now ready for deep etching by the application of an etching agent, such as iron perchloride. Since my compound is acid resistant in character and so protects both the top and side walls of each dot or figure, the deep-etching acts only in the depressions between said dots, without affecting the tops of said dots, or their side walls. As a result, the deep-etching does not decrease the size of the printing surface or area of the dots or figures, nor does it impair or vary the relative tones of



the plate. Due to the presence of the candilla wax in the compound, it does not run into the bottoms of the depressions when heated. Upon removal of the compound by a suitable solvent such as benzol, following completion of the deep-etching steps, the half-tone plate is now ready for whatever dot reduction or other steps that may be desired. There results an excellent printing plate, adapted for use with many different kinds of printing paper, and adapted for widely varying conditions of use in the entire field of commercial printing.

It has also been found that the compound is equally effective when used for re-topping of photo-engraved plates from which the original acid resisting enamel has been removed for further re-etching. When so employed, the compound completely re-tops the dots or figures, and protects them by reason of its acid resisting properties.

I claim,

1. An engraver's compound for the purposes described, consisting of a mixture including lampblack, linseed oil, resinous gum, asphaltum and candilla wax, with the lampblack, linseed oil, gum and asphaltum dissolved in a suitable solvent, said compound also including a body ingredient, such as cornstarch, to give said compound a consistency suitable for its application as a rollup.

2. An engraver's compound for the purposes described, consisting of a mixture including lampblack, linseed oil, resinous gum, asphaltum and candilla wax, with the lampblack, linseed oil, gum and asphaltum dissolved in a suitable solvent, said compound also including a body ingredient, such as cornstarch, to give said compound a consistency suitable for its application as a rollup, and with the candilla wax serving to prevent running of the compound after its application to a plate, prior to deep-etching.

3. An engraver's compound for the purposes described, consisting of the following ingredients in the proportions stated, namely, carbon printers ink consisting of lampblack and linseed oil, 16 parts, resinous gum 1 part, asphaltum 2 parts, cornstarch 2 parts and candilla wax 1 part.

4. An engraver's compound for the purposes described, consisting of the following ingredients in the proportions stated, namely, carbon printers ink consisting of lampblack and linseed oil, 16 parts, resinous gum 1 part, asphaltum 2 parts, cornstarch 2 parts and candilla wax 1 part, with the ink, gum and asphaltum being dissolved in 4 parts of benzol and with said candilla wax and said cornstarch being added to said solution.

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