UNITED STATES PATENT OFFICE.

MAX FRIEDRICH LEOPOLD EHRLICH AND CARL THEODOR STORCK, OF FRANKFORT-ON-THE-MAIN, PRUSSIA, GERMANY.

METHOD OF PRODUCING A BRIGHT PRINTING WITH GOLD, SILVER, OR PLATINUM.

SPECIFICATION forming part of Letters Patent No. 391,035, dated October 16, 1888.

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To all whom it may concern:

Be it known that we, MAX FRIEDRICH LEOPOLD EHRLICH and CARL THEODOR STORCK, both subjects of the King of Prussia, German Emperor, residing at Frankfort-on the-Main, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in the Method of Producing a Bright Printing Compound of Gold, Silver, or Platinum and Ornamenting Surfaces Therewith, of which the following is a specification.

Our invention has for its purpose to produce metalliferous compounds containing either gold or silver or platinum in such a quantity that it will produce a bright gold, silver, or platinum color when printed on a surface and burned into the latter. All metalliferous compounds of this kind heretofore used have been too liquid and could only be applied by means of a pen or of a brush to the surfaces to be ornamented. If we should try to make such liquid more gluey by adding resin or balsam of sulphur, the percentage of the gold would become too small in the compound for producing a beautiful bright metallic color on the surfaces when burned.

The process by which we obtain our new compound is as follows, taking, as an example, the process and compound for obtaining a gold color: We take the merchantable liquid gold composition, which is commonly used for ornamenting articles by means of a brush, and which consists of sulphuret of gold chemically combined with balsam of sulphur and some other ingredients. All the components of this gold compound are dissolved in volatile oils and similar dissolving matters; but the exact proportion of the employed substances and the exact process by which the liquid is made are kept secret by some laboratories for refining metals. From this liquid gold composition we take, for instance, two hundred grains and precipitate the sulphuret of gold chemically combined with balsam of sulphur by means of eight hundred grains of ether or similar media, which precipitate, as is well known, the sulphuret of gold with balsam of sulphur. We then filter the sulphuret of gold with balsam of sulphur from the remaining liquid and receive a compound, when dried, in the form of dust. The sulphuret of gold with balsam of sulphur is now in an amorphous state, and for the purpose of using this compound as printing-color on a surface it must henceforth again be dissolved, so as to be tough and adhesive. To attain this object we proceed in two ways. In both, however, it is nitro-benzole, or a similar medium which dissolves sulphuret of gold, combined with balsam of sulphur, which must be used. We either take, for instance, one hundred grains of this dry compound and mix it with fifty to seventy grains of nitro-benzole or similar matters dissolving sulphuret of gold with balsam of sulphur. We then add fifty to one hundred grains of balsam of sulphur, stir it well until all substances are well dissolved, and receive a tough and gluey compound, which may be applied to any surface by the common and well-known manner of printing, reprinting, stenciling, and stamping; or we take the dry compound above referred to and dust it over the surface to be ornamented with the golden color. The surface must previously have been prepared by printing upon it in the desired design with a lac or a like gluey matter. We then subject the prepared and dusted surface only to the influence of the vapors of nitro-benzole, or of those of other media which dissolve the sulphuret of gold with balsam of sulphur, and after this has been done the article must be burned. Of all the methods of applying this metalliferous compound to a surface we prefer that which is called "reprinting;" and the whole process, which shows some particulars and which will be described for its better understanding, is as follows: We take the dry gold compound, which we have obtained from the merchantable liquid-gold composition by the precipitating influence of ether and by filtering the residue from the liquid, and mix this compound with balsam of sulphur. This mixture is dissolved in another quantity of the above-mentioned merchantable liquid-gold composition, (for this composition is a dissolving medium too, as well as nitro-benzole, for the dry gold compound mixed with balsam of sulphur,) and there results a tough and gluey paste. Now we first coat the printing-block by means of printing-rollers with this tough gold-paste and then print the design on albumenized paper. We now subject the thus-prepared albumenized paper to the

influence of the vapors of nitro-benzole. By this operation the surface of the paste becomes more even and level, and by then passing the paper between metallic pressing-rollers this property of the printed surface is increased. After having first coated the surface which is to be ornamented with a gum-lac we apply the albumenized leveled paper to the surface in the well-known way as used in reprinting. The design of the gold composition is thus transferred from the paper to the surface, and after having washed off the paper the article, which now bears the printed design, is burned.

This compound and the method for producing it may well be used in ornamenting ceramic ware, &c., which, when burned, receives a bright color.

In the same manner as described with regard to gold compound we produce silver compound and platinum compound capable of being printed or reprinted or dusted on surfaces.

We claim—

1. A method for producing a metalliferous compound—such as gold, silver, or platinum—capable of being printed on surfaces, which consists in first precipitating from the merchantable liquid compositions described the sulphuret of gold, silver, or platinum chemically combined with the balsam of sulphur by means of ether, or similar media which precipitate such compounds, and by then redissolving the residue in nitro-benzole, or similar media which dissolve the sulphuret of gold, silver, or platinum, with balsam of sulphur, as and for the purpose described.

2. A method for producing a metalliferous compound—such as gold, silver, or platinum—capable of being printed on surfaces, which consists in first precipitating from the merchantable liquid compositions described the sulphuret of gold, silver, or platinum chemically combined with the balsam of sulphur by means of ether, or similar media which precipitate such compounds, and by then redissolving the residue received in another quantity of the merchantable liquid composition of gold, silver, or platinum, as and for the purpose described.

3. A method for ornamenting surfaces, which consists in applying a metalliferous compound—such as gold, silver, or platinum—capable of being printed on surfaces, which compound is obtained by first precipitating from the merchantable liquid compositions described the sulphuret of gold, silver, or platinum chemically combined with the balsam of sulphur by means of ether, or similar media which precipitate such compounds, redissolving the residue received in another quantity of the merchantable liquid composition of gold, silver, or platinum, or similar media which dissolve the sulphuret of gold, silver, or platinum, with balsam of sulphur, and then subjecting the received gluey paste, after having printed it on albumenized paper, to the vapors of nitro benzole, or of similar media which dissolve the sulphuret of gold, silver, or platinum, with the balsam of sulphur, as and for the purpose described.

4. A method for ornamenting surfaces, which consists in applying a metalliferous compound—such as gold, silver, or platinum—capable of being dusted on surfaces, which compound is obtained by first precipitating from the merchantable liquid compositions described the sulphuret of gold, silver, or platinum chemically combined with balsam of sulphur by means of ether, or similar media which precipitate such compounds, separating the residue received from the liquid and drying it, and then subjecting the received dust, after having applied it to the surface which is to be ornamented and which bears the design, to the vapors of nitro-benzole, or of similar media which dissolve the sulphuret of gold, silver, or platinum, with balsam of sulphur, as and for the purpose described.

In witness whereof we have hereunto set our hands in presence of two witnesses.

MAX FRIEDRICH LEOPOLD EHRLICH.
CARL THEODOR STORCK.

Witnesses:
ALVESTO S. HOGUE,
JEAN GRUND.