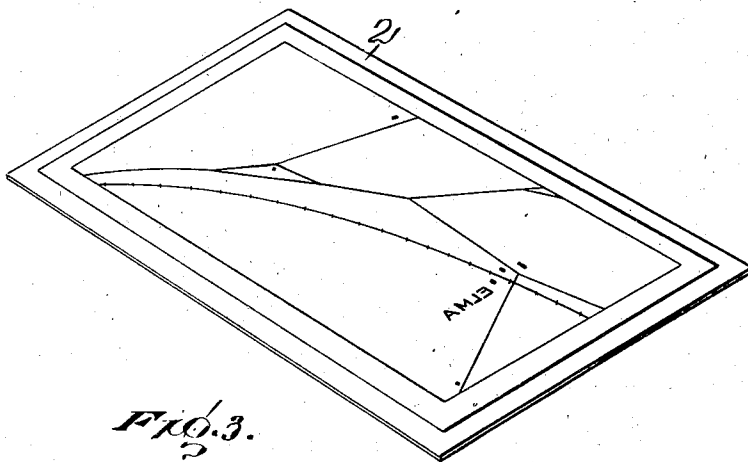
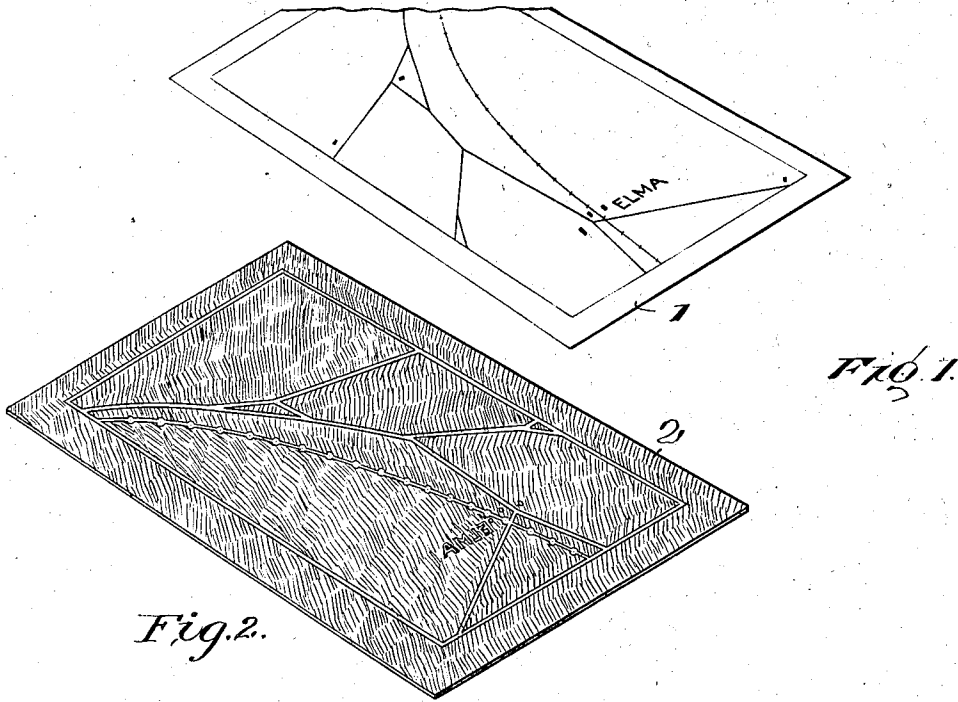


J. C. HOUSTON.
LITHOGRAPHIC PRINTING.
APPLICATION FILED NOV. 15, 1915.

1,185,506.

Patented May 30, 1916.



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UNITED STATES PATENT OFFICE.

JESSE C. HOUSTON, OF WASHINGTON, DISTRICT OF COLUMBIA.

LITHOGRAPHIC PRINTING.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JESSE C. HOUSTON, a citizen of the United States of America, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Lithographic Printing, of which the following is a specification.

This invention relates to lithographic printing and has for its object to provide a process for transferring an image such as an illustration, drawing, etc., directly without the use of a negative or copy on transfer paper as is now the practice to the surface of a prepared metallic plate, or any other plate or stone used in lithographic work, and then fixing the image on the plate in such a manner that ink may be applied thereto and innumerable copies of the original obtained by pressing upon the plate or the plate upon sheets of ordinary paper in the usual manner.

I have illustrated in the accompanying drawing several views showing the different steps by which my process is carried out and various paraphernalia incidental thereto in which drawings:

Figure 1 is a diagrammatic perspective view of a light translucent or transparent paper having a drawing inscribed upon its surface. Fig. 2 is a view of the plate after its exposure to actinic light and covered with anilin dye. Fig. 3 is a similar view of the plate after development.

In lithographic processes heretofore employed, it has been necessary to first make a negative, then to make a print of this negative upon sensitized transfer paper, and finally retransfer the image from the transfer paper to a lithographic stone. When it is desired to make large lithographic prints containing much detail by the aforesaid process, it becomes necessary to make the print in sections because of the fact that a large glass negative the same size of the print desired is expensive and difficult to handle, and therefore a number of glass negatives are made of sections of the original image and then transferred to a stone. With line designs a tracing is made and used in the transfer. Each case entails considerable work and opens up opportunity for errors to arise in many ways and consumes much time.

My process enables me to obviate the above disadvantages because I do not use a negative, tracing or copy on transfer paper, to transfer the original to the lithographic

stone or plate. As metallic plates are obtainable of any size at a comparatively small cost, these features are of obvious advantages and, furthermore, the image is fixed upon this plate which becomes an impression plate, the only remaining steps necessary are to ink this plate and to impress upon it ordinary paper to obtain duplicate copies of the original. My process therefore is of inestimable value when making copies of large map drawings, machine drawings or the like.

In carrying out my invention to the best advantage, it is preferable that the original drawing be upon some translucent or transparent substance such as tracing paper, linen, or the like, designated 1 in the drawing. A metallic plate, usually zinc, designated 2, but other metals such as aluminum, copper or tin may be employed, is prepared by flowing over it a sensitized solution prepared according to the following formula. I have found the following formula to give excellent results, but it is understood that changes of proportion of the ingredients may be made without departing from the spirit of my invention. 2 ounces clarified glue (preferably Le Page's), $\frac{1}{2}$ ounce ammonium bichromate, 16 ounces water, $\frac{1}{2}$ ounce spirits of ammonia.

A suitable coating of the solution is placed upon the plate and dried. The original drawing is then superposed upon the plate now sensitized, and the whole exposed to actinic light in a suitable frame. The time for exposure to obtain the image is best determined by experiment for it is effected by both the quality of light and the light transmitting property of the material upon which the original has been drawn or placed and a visual examination of the plate to note progress of the printing is not entirely dependable in view of a later developing process required, which brings out the images more clearly. The chief object of this exposure is to create a condition upon the plate whereby lithographic ink will be caused to become adhered to certain portions of the plate and expelled at others.

After the plate is sufficiently exposed it is placed in a developing bath prepared as follows; 1 ounce anilin dye, 16 ounces water.

Any colored dye may be used which is soluble in water.

The effect of this development is to cause those portions of the sensitized surface of

the plate which have been exposed to light to absorb the coloring matter of the developer, and as a consequence those portions of the sensitized surface which have been hidden from the light beneath the lines of the drawing will be sharply defined because of the washing away of the unaffected glue. After this development the plate is dried and a solution poured over its surface, which solution is prepared as follows: 1 lb. of best asphaltum, 4 ounces of white beeswax, and 4 ounces of mutton tallow, heated and melted together, and while this mixture is still hot the following ingredients are added: 5 pints of turpentine, 1 ounce of oil of lavender, and $\frac{1}{2}$ ounce of terpene, and the whole thoroughly mixed. After the plate is coated with the asphaltum mixture and dried, it is placed in a bath made up of 1 ounce hydrochloric acid, and 30 ounces water. As a result of this treatment the anilin tinted surfaces of the developed plate will be washed free of color and the asphaltum filled lines of the plate sharply defined. The plate is now ready for printing, which is accomplished by applying lithograph ink to the plate by means of a roller and then laying a sheet of ordinary paper down upon the plate and applying pressure in the usual press.

The effect upon the ink when applied to the plate is to become adhered to the asphaltum filled lines and to become expelled from surfaces not coated with asphaltum, thereby giving a positive print in fac-simile of the original drawings.

Of course it will be understood that if it be desired to carry out my process in connection with offset printing, the print is made positive on the plate and is then transferred to a blanket or the like, from which duplicates can be made in the usual manner.

Thus it will be seen that I have disclosed a process for obtaining a plate adapted for printing a positive copy from an original drawing or design without the intervening preparation of a negative or the transfer of a print to an impression surface.

It is to be further understood that while I have given specific directions for carrying out my process and have specified certain materials I do not wish to limit myself to the exact means described, but I wish to obtain the benefit of all modifications of the above described process without departing from the spirit of my invention or the scope of the appended claims.

Having thus described my invention what I claim is:

1. A process for preparing plates for printing which consists in exposing a metallic sensitized plate under a translucent medium containing the original image, treating the plate with a chemical which will cause the exposed part thereof to become repellent to a greasy substance, treating the plate with

a greasy substance and washing said plate to remove the unexposed sensitive medium, whereby ink will adhere only to the unexposed portions defined by the image.

2. A process for preparing plates for printing which consists in exposing a sensitized plate under a translucent medium containing the original image, treating the plate with a developer containing anilin dye which causes the exposed part thereof to become repellent to a greasy substance, treating the plate with a greasy substance and washing said plate to remove the unexposed sensitive medium, whereby ink will adhere only to the unexposed portions defined by the image.

3. A process for preparing plates for printing which consists in exposing a metallic plate sensitized with glue and ammonium bichromate under a translucent drawing, treating the plate in a solution containing anilin dye which will cause the exposed part thereof to become repellent to a greasy substance, washing the plate, applying a greasy substance to the plate, and then washing the plate in diluted hydrochloric acid, whereby ink will adhere only to the unexposed portions defined by the image.

4. A process for developing bichromated plates used for an impression printing surface, which plate has been previously exposed under a translucent drawing or the like, consisting in treating the exposed plate with a solution of anilin dye, further treating the plate to cause ink to adhere only to the unexposed portions, then washing the plate in diluted hydrochloric acid.

5. A process for preparing plates to be used for lithograph printing which consists in developing a sensitized plate which has been exposed beneath a transparent drawing or the like whereby the lines of the drawing are defined on the plate and treating the plate with anilin dye and then with greasy material, whereby the lines become filled with said material and offer a surface adapted to absorb ink.

6. A process for preparing plates to be used for lithograph printing which consists in coating said plates with a sensitizing solution made of glue, ammonium bichromate, water and spirits of ammonia, and exposing same, then developing said plate in a developing dye solution and subsequently subjecting the plate to a line filling material made of greasy substance, and finally washing the plate in a developer remover containing acid.

7. A process for preparing plates to be used for lithograph printing which consists in coating said plates with a sensitizing solution including bichromated colloid, then exposing the plate and developing the plate in a solution of anilin dye and water, and subsequently treating the plate with a line filling material composed of greasy sub-

stance, and finally washing the plate in a developer remover containing acid.

8. A process for preparing plates to be used for lithograph printing which consists in coating said plates with a solution containing sensitized glue, exposing the plate, and then subjecting the plate to a developing dye solution, and subsequently treating the plate with a line filling material made of asphaltum, beeswax, mutton tallow, turpentine, oil, and terpene, and finally washing the plate with a developer remover containing acid.

9. A process for preparing plates to be used for lithograph printing which consists in coating said plates with a solution containing sensitized glue, exposing the plate, then subjecting the plates after exposure to a developing dye solution, then treating the plate to a line filling material made of

greasy substance, and finally washing the plate in a developer remover of hydrochloric acid and water.

10. A process for preparing plates to be used for lithograph printing which consists in coating said plate with a sensitized colloid solution, subjecting the plate after exposure to a developing dye solution, subsequently treating the developed plate to a solution composed of sixteen parts of asphaltum, four parts of beeswax, four parts of mutton tallow, sixty parts of turpentine, two parts of oil, and one part of terpene.

In testimony whereof I affix my signature in the presence of two witnesses.

JESSE C. HOUSTON.

Witnesses:

J. M. IMIRIE,
F. M. MEYER.