No. 758,108. PATENTED APR. 26, 1904.

R. J. SACHERS.

ART OF PLANOGRAPHIC PRINTING.

APPLICATION FILED FEB. 23, 1897.

SPECIMENS.

Fig. 1.

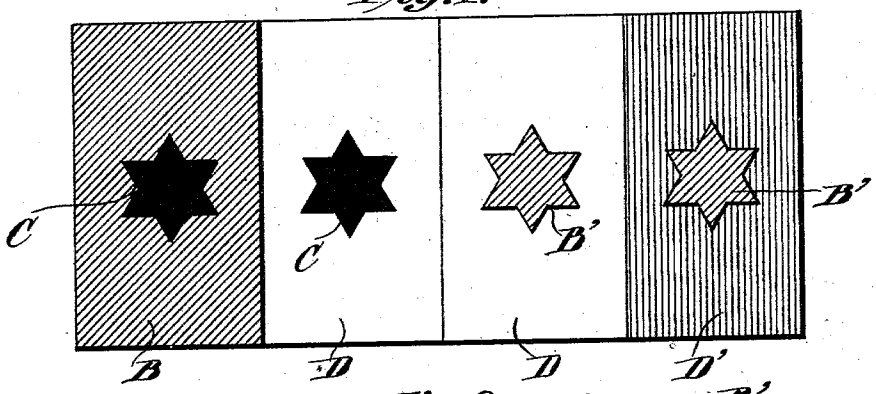


Fig. 2.



Fig. 3.

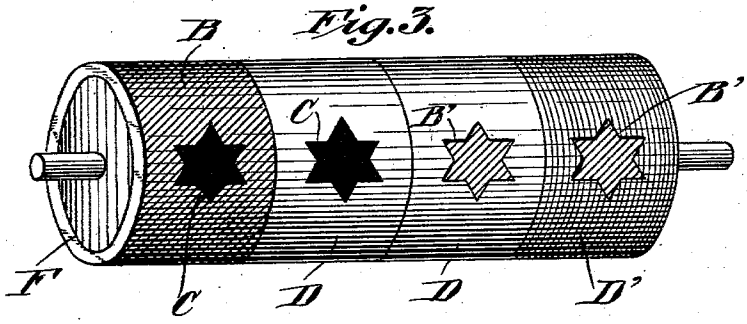
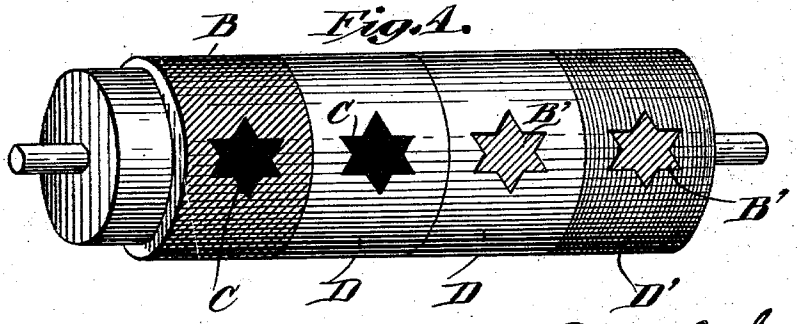


Fig. 4.



Witnesses.
Edmund Mitchell
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Inventor
by Jean Weimore
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 758,108. Patented April 26, 1904.

UNITED STATES PATENT OFFICE.

RALPH JULIAN SACHERS, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO JEAN A. WETMORE, OF NEW YORK, N. Y.

ART OF PLANOGRAPHIC PRINTING.

SPECIFICATION forming part of Letters Patent No. 758,108, dated April 26, 1904.

Application filed February 23, 1897. Serial No. 624,624. (Specimens.)

To all whom it may concern:

Be it known that I, RALPH JULIAN SACHERS, a citizen of the United States, and a resident of the borough of Manhattan, in the city, county, and State of New York, have invented certain new and useful Improvements in the Art of Planographic Printing, of which the following is a full, clear, and exact specification.

In my Patent No. 518,826, dated April 24, 1894, I claim a process of manufacturing compound printing-surfaces consisting of a soft-metal foundation and a surface layer of other metals on the face of the parts in relief.

My present invention relates to an improvement upon and an adaptation of my said patented process.

It consists in the use of aluminium or aluminium-coated metal as the foundation or base, with copper, nickel, steel, or any other metal or alloy as a surface layer on the face of the ink-retaining-parts and the adaptation of this compound printing-surface to the cylinder of a rotary or web press.

The successive steps of my improved process of making surfaces for printing processes are as follows: first, providing commercial aluminium or aluminium-coated metal with one or more layers of other metals or alloys; second, producing the picture or design upon said surface layer; third, etching the uncovered parts of the surface layer until they are removed, and thereby the aluminium foundation exposed; fourth, treating said exposed portions of the aluminium base, so as to repel printing-ink.

The adaptation of my invention to a rotary or web press consists in the construction of a printing-cylinder the surface portion of which is produced in substantially the same manner as hereinabove described.

The drawings which accompany this present application and form a part thereof illustrate the different steps of my improved process, whereon similar letters of reference indicate corresponding parts.

Figure 1 is a top view of a surface illustrating the various stages in the preparation of a single design. Fig. 2 is a vertical longitudinal section of the same. Figs. 3 and 4 are perspective side views of modifications.

The thickness of the surface layers, which in practice is microscopically small, is exaggerated in order to show the same more distinctly.

In the practice of my invention I clean the surface of an aluminium plate A or aluminium-coated plate E or of an aluminium cylinder or aluminium-coated cylinder F in any convenient manner and provide the same by electrodeposition with one or more thin layers B B of other metals or alloys. I think copper deposited by the electric current the best mode which I know of for doing this; but there are other modes which I consider fully protected by my claims.

Aluminium may be coated electrolytically with an alloy—for instance, German silver, formed of copper, nickel, and zinc—by using a German-silver anode and preparing the electrolyte by dissolving German silver of the same composition as the anode in nitric acid, adding to it a solution of carbonate of potash, a strong solution of cyanid of potash, and some liquid ammonia.

I produce the desired picture or design C C upon the surface layer as a direct drawing or by means of a transfer print or reprint from a lithographic stone or other planographic surface or by a photolithographic print or direct photographic process. This picture or design C C is made acid-proof by dusting on and melting in finely-powdered resin, whereafter I submit this plate or this cylinder to an etching process by placing the same at the anode terminal of an electroetching-bath. This etching process is interrupted as soon as the surface layer or layers B B of the portions D D which are not covered by the picture C C are etched away. Then I wash the plate or cylinder very thoroughly with water and clean and dry the same. I now wipe off the acid-proof picture C C by the use of turpentine, benzene, &c., and the picture will appear as a delicate copper or other metal facing B B on the silver-white surface D D of

the aluminium foundation. In order to make this picture B B printable on the printing-press, I treat the exposed parts D D of the aluminium foundation in such a way as to more fully absorb water and repel printing-ink. I obtain this result by means of solutions non-corrosive relatively to aluminium. For instance, a solution of about ten to fifteen per cent. of gallic acid or about five to ten per cent. tannic acid, &c., and five to ten per cent. of gum-arabic not acidulated by means of nitric acid have been found to give good results. Gallic and tannic acid in connection with gum-arabic are some of the strongest media to prevent the aluminium surface from absorbing greasy or fatty substances, the gum-arabic thereby forming a very thin coating, which entirely prevents the retaining of the printing-ink on these portions of the surface. The main characteristic of these "non-corrosives" is that they do not disintegrate the aluminium surface and do not form upon the same a precipitate of aluminium salt adhering to the plate. The plate or cylinder is now finished and has all the necessary qualities of a planographic-printing surface—*i. e.*, its ink-retaining and ink-repelling parts are practically in the same plane. It forms a perfect substitute for the lithographic stone.

I am aware that heretofore aluminium has been used for printing purposes and that attempts have been made to adapt planographic printing to the rotary printing-machine, and I do not broadly claim this, but only the combination and process as substantially hereinbefore described, and set forth in my claims.

In my process any commercial impure aluminium or any aluminium-coated metal may be used, and by the selection of appropriate surface layers a superior result may be obtained at much smaller expense than heretofore, whereby the adaptation of my process to the printing on a rotary or web press gives a really incalculable advantage over all the known planographic-printing methods.

What I claim as new and useful, and desire to secure by Letters Patent, is—

1. The process of producing printing-plates for printing purposes which consists of the following steps: first, coating aluminium with one or more surface layers of other metal or alloy; second, placing the design on the face of said surface layer; third, removing the surface layer at all points not covered by the design; fourth, treating the now exposed portions of aluminium in order to repel printers' ink with a non-corrosive.

2. The process of producing printing-plates for printing purposes which consists of the following steps: first, coating a base-plate with a surface layer of aluminium; second, coating this aluminium surface with one or more layers of other metal or alloy; third, placing a design on said metallic layer; fourth, removing said metallic layer at all points not covered by the design; fifth, treating the now exposed portions of aluminium in order to repel printers' ink with a non-corrosive.

3. The process of producing printing-plates for printing purposes which consists of the following steps: first, coating electrolytically aluminium with one or more surface layers of other metal or alloy; second, producing a design on the face of said surface layer; third, removing electrolytically said surface layer at all points not covered by the design; fourth, treating the now exposed portions of aluminium with a non-corrosive so as to repel printers' ink.

In witness whereof I have hereunto set my hand in presence of two witnesses.

RALPH JULIAN SACHERS.

Witnesses:
P. FRANCIS DELEHANTY,
ROBERT C. O'NEIL.