

C. CHISHOLM.
LITHOGRAPHIC PLATE AND THE PROCESS FOR PRODUCING THE SAME.
APPLICATION FILED NOV. 9, 1914.

1,149,974.

Patented Aug. 10, 1915.

Fig. 1.

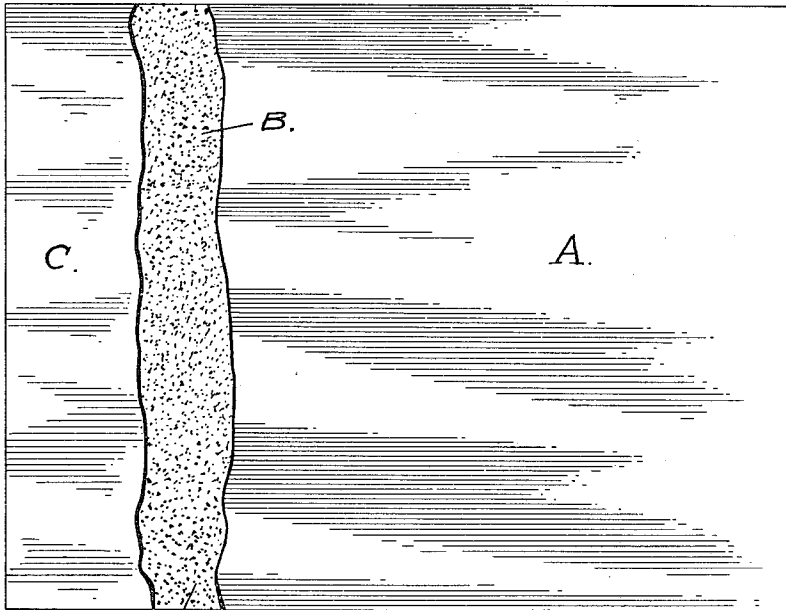


Fig. 2.

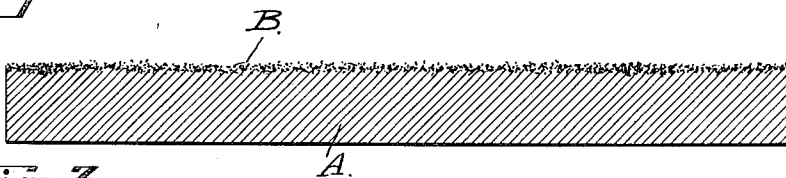


Fig. 3.

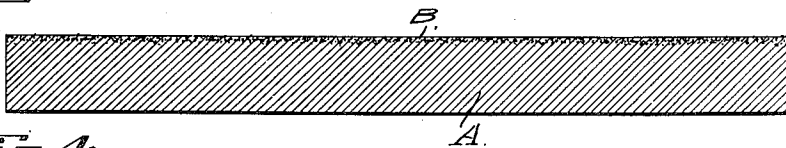
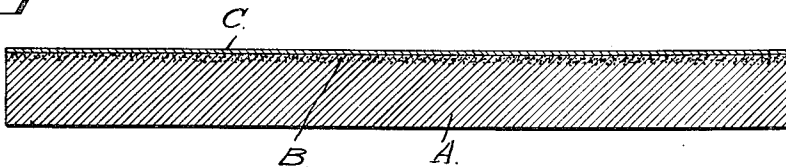


Fig. 4.



Witnesses

George Kromer
John P. Schmitt

Inventor

Clifton Chisholm

By Arthur L. Slee
His Atty.

UNITED STATES PATENT OFFICE.

CLIFTON CHISHOLM, OF SAN FRANCISCO, CALIFORNIA.

LITHOGRAPHIC PLATE AND THE PROCESS FOR PRODUCING THE SAME.

1,149,974.

Specification of Letters Patent.

Patented Aug. 10, 1915.

Application filed November 9, 1914. Serial No. 871,427.

To all whom it may concern:

Be it known that I, CLIFTON CHISHOLM, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented a new and useful Improvement in Lithographic Plates and the Process for Producing the Same, of which the following is a specification.

My invention relates to lithographic printing plates and the process for producing the same wherein a highly flexible and resilient base is provided with an extremely hard granular metallic surface; and the objects of my invention are, first, to provide an improved lithographic plate having a hard flexible granular printing surface with a resilient elastic base or backing, said base being adapted to absorb the shock of a type bar and prevent the indentation of the hard printing surface; second, to provide an improved lithographic plate that may be cheaply produced; third, to provide an improved plate that is highly flexible so that the same may be easily rolled around a type-writer or similar platen of small diameter; and fourth, to provide an improved plate of the character described having an extremely hard flexible granular surface adapted to readily retain moisture and ink such as is used in connection with the offset lithographic process.

I accomplished these several features by means of the process and plate hereinafter described, reference being had to the drawings forming a part of the present specification wherein like characters of reference are used to designate similar parts throughout the said specification and drawings, and in which—

Figure 1 is a plan view of a lithographic plate constructed in accordance with my process, a portion of the hard metallic surface being broken away in order to disclose the cathode thereon which is in turn partly broken away in order to disclose the resilient elastic base; and Figs. 2, 3 and 4 are greatly enlarged sectional views of the plate disclosing various stages of the process hereinafter more fully set forth.

In order to provide an improved lithographic plate of extreme flexibility and resiliency having a hard granular surface thereon a sheet of comparatively thin cellu-

loid plate A is painted with a suitable volatile solvent, such as acetone or the like, mixed with a very finely powdered metal B, preferably copper, or any metal possessing conductivity so as to form a cathode. As the surface of the celluloid plate A is partially dissolved the particles of copper suspended in the solvent are readily embedded in the said surface and as the solvent evaporates the said particles become fixed therein so that a greatly magnified section of the plate A would appear as illustrated in Fig. 2 of the drawings. After a suitable cathode is thus secured to the surface of the plate A a further plating of copper is electrolytically deposited thereon, as disclosed in Fig. 3 of the drawings, for the purpose of increasing the conductivity of the cathode thus formed in order that a plating of a harder and more porous metal C, preferably nickel, may be electrolytically deposited thereon, as disclosed in Fig. 4 of the drawings, such electrolytical deposition constituting the next step of the process, and also for the purpose of presenting a smooth surface, the purpose of which will be hereinafter more fully set forth. The electrolytical deposition of the nickel is to provide a hard, thin, non-oxidizing, absorbent surface C of a thickness suitable for lithographic purposes but not thick enough to destroy the physical properties of the celluloid base. The granular surface is provided for the purpose of effectively retaining such moisture and ink as is needed for the lithographic printing process and may be produced either chemically or mechanically.

A lithographic printing plate produced by the above described process will possess extreme flexibility and resiliency as well as extreme hardness of surface, which characteristics are essential for good sharp reproductions. The flexibility and resiliency of the celluloid base will tend to prolong the life of the hard granular printing surface and at the same time will provide an elastic layer of electrolytically deposited nickel C, which will yield readily and not strain or crack the thin nickel layer C when the plate is bent or rolled around a platen of small diameter. The resiliency of the celluloid base A also provides an elastic cushion ar-

ranged to prevent the indentation of the hard nickel surface C when raised type or the like is pressed thereon.

For short runs, where a small number of copies are to be produced, an efficient plate, suitable for the purpose, may be provided by omitting the final or nickel plating and the printing done directly from the smooth copper surface. I have found also from actual experiment that for light work where a small number of copies are to be produced, an efficient plate suitable for the purpose may be provided by omitting the electrolytically disposed second layer of copper.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is—

1. A lithographic plate comprising a flexible resilient base; a layer of powdered copper embedded in the surface of the base; and a layer of thin hard metal imposed upon the layer of copper.

2. A lithographic plate comprising a flexible resilient base; a layer of powdered copper embedded in the surface of the base; and a thin layer of nickel imposed upon the layer of copper.

3. A lithographic plate comprising a flexible resilient celluloid base; a layer of powdered copper embedded in the surface of the base; and a thin layer of hard metal imposed upon the layer of copper.

4. A lithographic plate comprising a flexible resilient celluloid base; a layer of powdered copper embedded in the surface of the celluloid base; and a thin layer of nickel imposed upon the layer of copper.

5. A lithographic plate comprising a flexible resilient celluloid base; a thin layer of powdered copper embedded in the surface of the celluloid base; an electrolytically deposited second layer of copper imposed upon the layer of powdered copper; and a thin layer of hard metal imposed upon the electrolytically deposited layer of copper.

6. A lithographic plate comprising a flexible resilient celluloid base; a thin layer of powdered copper embedded in the surface of the celluloid base; an electrolytically deposited second layer of copper on the first mentioned layer; and a thin layer of nickel electrolytically deposited upon the second mentioned layer of copper.

7. A lithographic plate comprising a resilient flexible celluloid base; a thin layer of powdered copper embedded in the surface of the celluloid base; a second layer of electrolytically deposited copper upon the first mentioned layer; and a thin granular layer of hard metal deposited upon the second mentioned layer.

8. A lithographic plate comprising a resilient flexible celluloid base; a thin layer of powdered copper embedded in the surface of

the celluloid base; a second layer of electrolytically deposited copper upon the first mentioned layer; and a thin granular layer of nickel deposited upon the second mentioned layer.

9. The step in the process of producing lithographic plates which consists in partially dissolving the surface of a thin celluloid plate, applying to such partially dissolved surface a thin layer of powdered copper.

10. The process of producing lithographic plates which consists in partially dissolving the surface of a thin celluloid plate, applying to such partially dissolved surface a thin layer of powdered metal, and electrolytically depositing on the powdered metal a thin layer of hard metal.

11. The process of producing lithographic plates which consists in partially dissolving the surface of a thin celluloid plate, applying to such partially dissolved surface a thin layer of powdered copper, and electrolytically depositing on the powdered copper a thin layer of hard metal.

12. The process of producing lithographic plates which consists in partially dissolving the surface of a thin resilient, flexible plate, applying to such partially dissolved surface a thin layer of powdered metal in order to form a cathode, and electrolytically depositing on the cathode a thin layer of hard metal.

13. The process of producing lithographic plates which consists in partially dissolving the surface of a thin resilient flexible plate, applying to such partially dissolved surface a thin layer of powdered copper in order to form a cathode, and electrolytically depositing on the cathode a thin granular layer of hard metal.

14. The process of producing lithographic plates which consists in partially dissolving the surface of a thin celluloid plate, applying to such partially dissolved surface a thin layer of powdered copper in order to form a cathode, electrolytically depositing a second thin layer of copper on the cathode, and electrolytically depositing a thin layer of hard metal on the electrolytically deposited copper.

15. The process of producing lithographic plates which consists in partially dissolving the surface of a thin celluloid plate, applying to such partially dissolved surface a thin layer of powdered copper in order to form a cathode, electrolytically depositing on the powdered copper a second thin layer of copper, and electrolytically depositing a thin granular layer of hard metal on the electrolytically deposited copper.

16. The process of producing lithographic plates which consists in partially dissolving the surface of a thin celluloid plate, applying to such partially dissolved surface a thin

layer of powdered copper so as to form a cathode, electrolytically depositing on the powdered copper a second thin layer of copper, and electrolytically depositing on the second layer of copper a thin granular layer of nickel.

17. The process of producing lithographic plates which consists in partially dissolving the surface of a thin celluloid plate with a solvent having particles of powdered copper suspended therein so as to form a cathode, and electrolytically depositing on the cathode a thin layer of hard metal.

18. The process of producing lithographic plates which consists in partially dissolving the surface of a thin celluloid plate with a volatile solvent having particles of powdered copper suspended therein so as to embed the said particles within the surface of the plate when the solvent evaporates, thus

forming a cathode, and electrolytically depositing on the cathode a thin granular layer of nickel.

19. The process of producing lithographic plates which consists in partially dissolving the surface of a thin celluloid plate with acetone having particles of powdered copper suspended therein so as to embed the said particles within the surface of the plate when the acetone evaporates, thus forming a cathode, and electrolytically depositing on the cathode a thin granular layer of nickel.

In witness whereof I hereunto set my signature in the presence of two subscribing witnesses.

CLIFTON CHISHOLM.

Witnesses:

IRENE DOWNEY,

CHAS. F. DUSENBERG.