Feb. 22, 1927. 1,618,505

M. C. BEEBE ET AL

OFF-SET LITHO PROCESS

Filed Sept. 7, 1922

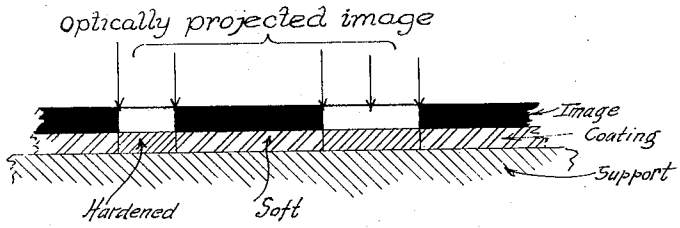


Fig. 1.

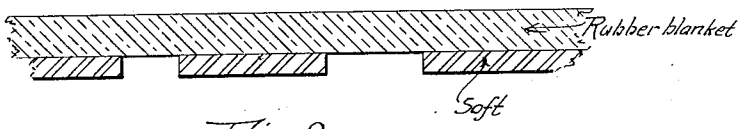


Fig. 2.

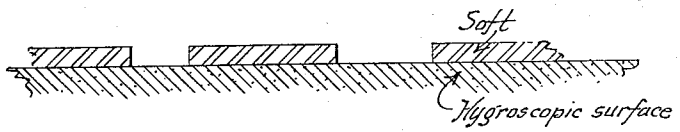


Fig. 3.

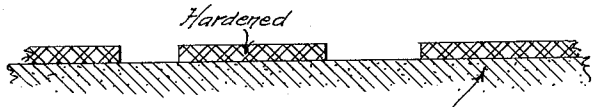


Fig. 4.

Murray C. Beebe
Alexander Murray
Inventors

By W. S. Austutz
Attorney

Patented Feb. 22, 1927. 1,618,505

UNITED STATES PATENT OFFICE.

MURRAY C. BEEBE AND ALEXANDER MURRAY, OF CINCINNATI, OHIO, ASSIGNORS TO THE WADSWORTH WATCH CASE COMPANY, OF DAYTON, KENTUCKY, A CORPORATION OF KENTUCKY.

OFFSET LITHO PROCESS.

Application filed September 7, 1922. Serial No. 586,796.

Our invention relates to improvements in off-set litho process and it more especially consists of the features hereinafter pointed out in the annexed claims.

The purpose of our invention is to provide steps for rapidly producing litho printing plates in connection with half tone negatives by transferring the soluble portions of a coating to a lithographic stone or plate; and that thereafter subjects the transferred coating to a suitable cooperating medium for further treatment to produce a lithographic printing surface.

With these and other ends in view, we set forth such instances of adaptation as will disclose the broad underlying features of our invention without in the broadest sense limiting ourselves to the specific details described herein.

Fig. 1 is a diagrammatic elevation in section of a sensitive coating under the action of luminous rays.

Fig. 2 is a diagrammatic section showing the unhardened portions of the coating removed by a rubber transfer blanket.

Fig. 3 is also a diagrammatic elevation showing the unhardened areas transferred to a hygroscopic surface.

Fig. 4 shows the areas of Fig. 3 in a hardened state.

In practically carrying out our invention, we coat a suitable surface 1 with a light sensitive medium 2 and optically project an image 3 thereon consisting of maximum and minimum light areas so as to harden the coating at 4 under all the illuminated areas and retain it soluble or relatively soft under all the shaded areas at 5 after which instead of washing out the soluble coating 5 as is usual in the direct production of printing surfaces we place in contact with the exposed coating a rubber blanket 6 to which the soluble part 5 of the coating adheres. The blanket 6 is then placed in contact with a hygroscopic surface 7, such as a lithographic stone, or metal plate, under slight pressure so as to transfer the soft coating 5, which adheres to the rubber blanket 6, to the surface 7. After treatment in the usual lithographic manner the portions 5 become the hardened, ink receiving, parts 8 ready for duplication by printing.

Our process lends itself admirably for the production of posters, etc., in which the original is represented by a half tone screen but we do not limit ourselves to the use of a regular geometric patterned screen because the image may be represented by an irregular grain negative and it is immaterial whether the reproduction be enlarged more or less from the original, though for poster work the ultimate screen pitch may be as coarse as twenty per inch.

We do not limit ourselves to the use of any specific coating media other than that such medium must be sufficiently sensitive to receive an optically projected image with relatively short exposures and that the coating shall become hardened under the action of light and remain soft in the shadows. The outstanding feature of our invention lies in bodily transferring the unacted upon coating 5 to a suitable lithographic surface without any intervening treatment. However, it is possible that the transferred coating may be available for other reproduction processes which will obviously come within the spirit of our present invention.

By transferring the unacted upon portion 5 of the coating 2 to a hygroscopic surface and subsequently hardening the same at 8, it becomes possible to roll up such a surface with fatty ink which will only adhere to the hardened or non-hygroscopic transferred coating 8 and will be repelled by the adhering moisture of the hygroscopic surface 7 as is well known in lithographic practice. It is understood that our process is equally applicable to the production of printing surfaces in one or any combination of colors made by color separation, negatives or otherwise.

Among various media the tung-oil varnish described in the co-pending application, Ser. No. 542,124, filed March 8, 1922, by Murray C. Beebe, may be used. This application has matured into Patent Number 1,574,356 on Feb. 23, 1926.

What we claim is:

1. A reproductive process, consisting in coating a suitable surface with a light sensitive medium, in optically projecting an image on said surface to selectively cause portions thereof to become partially insoluble and retain other portions thereof soluble, in transferring the soluble portions of the coating to another surface, and in subsequently

treating the transferred coating to harden the same and thereby produce a printable reproduction.

2. A reproductive process, consisting in preparing a suitable surface with a light sensitive coating adapted to become hardened under the action of light, in projecting an image on such coating said image consisting of cooperative opaque lines or dots having transparent areas therebetween that are optically impressed upon the coating to produce thereon inter-related hard and soft portions, in transferring the soft portions to a hygroscopic surface, and in subsequently causing said portions to become non-hygroscopic.

3. A reproductive process, consisting in optically projecting an image onto a sensitive coating to thereby harden the portions of the coating covered by the luminous areas of the image leaving the other portions of the coating unhardened, and in transferring the unhardened portions of the coating to another surface.

4. A reproductive process, consisting in coating a suitable surface with a light sensitive medium, in projecting thereon an image composed of variable sized transparent and opaque areas so as to admit light through the transparent areas of the image to harden the sensitive medium without changing the unacted upon portions of the coating which is not subjected to the light, in transferring the unacted upon portions to a hygroscopic surface and in subsequently making said portions non-hygroscopic.

5. A photographic reproductive process, consisting in subjecting a sensitive coating to an image having separated luminous areas to thereby harden the coating and leave unhardened portions lying between which are inversely related to the hardened portions, in transferring the unhardened portions by means of a rubber blanket to a hygroscopic surface, and in subsequently hardening the transferred portions.

6. A photographic reproductive process, consisting in projecting on a light senstive coating an image the opaque areas of which causes the portions of the coating thereunder to remain in a soluble state, and in transferring the soluble portions of the coating to another surface without destroying the identity of said portions.

In testimony whereof we affix our signatures.

MURRAY C. BEEBE.
ALEXANDER MURRAY.