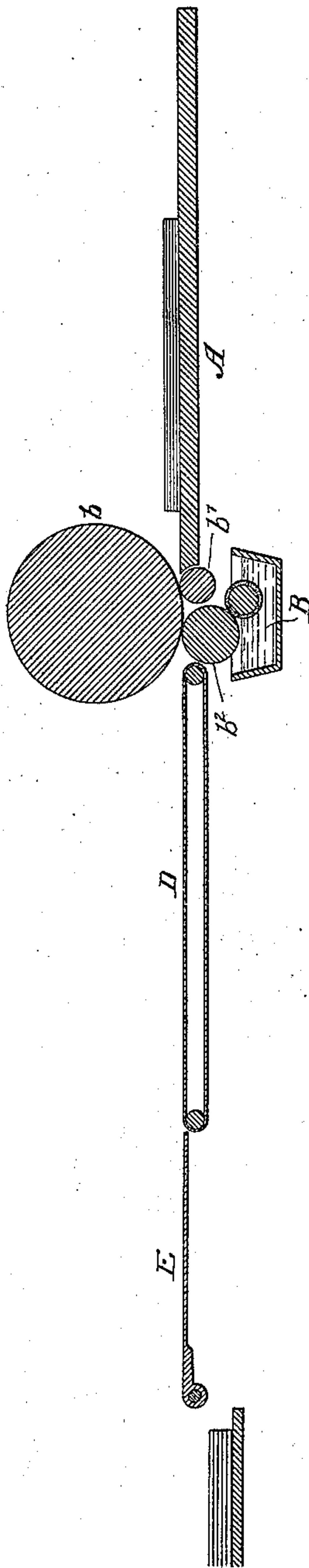


(No Model.)

G. BECK & C. L. HAMILTON.
PROCESS OF PRINTING.

No. 567,878.

Patented Sept. 15, 1896.



Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE BECK AND CHARLES L. HAMILTON, OF PHILADELPHIA, PENNSYLVANIA.

PROCESS OF PRINTING.

SPECIFICATION forming part of Letters Patent No. 567,878, dated September 15, 1896.

Application filed July 15, 1896. Serial No. 599,317. (No specimens.)

To all whom it may concern:

Be it known that we, GEORGE BECK and CHARLES L. HAMILTON, citizens of the United States, and residents of Philadelphia, Pennsylvania, have invented certain Improvements in Processes of Printing, of which the following is a specification.

The object of our invention is to increase the thickness of paper after printing to remove the calendered surface from calendered paper after it is printed and to dispense with what is commonly termed "dry pressing" to obliterate the embossing made by the type or engraving in printing and to prevent the offset of the printed matter.

Our invention is especially applicable to the printing of half-tone engravings for books and magazines, although it will be understood that our invention can be adapted to other classes of work. In printing half-tones it has been the common practice to use a calendered or polished paper, as the half-tone engraving is so fine that a rough paper will not receive a good print, and it is now the common practice to print all half-tone engravings on calendered paper for use in books and magazines, and in many instances in order to have uniformity the entire book is printed on calendered paper, and in some instances glazed or coated paper has been used to obtain the best possible results.

Calendered paper for bookwork is objectionable for three reasons: First, it is well known that a rough paper is easier for the eyes than a glazed or polished paper; second, a rough paper gives a much lighter book than a supercalendered or glazed paper of the same bulk, and is consequently easier to handle, and, third, a rough paper is used exclusively for the better class of books, as glazed paper is not considered good taste. The paper on which a book is printed is one of the essentials of a fine book.

By our invention we are enabled to print a half-tone on a glazed paper and so treat the paper after printing that it will be acceptable for use in books of the better class, and at the same time the bulk of the paper is increased so that a much thinner calendered paper can be used, making the book lighter and of the same bulk, and that the emboss-

ing or indentation is obliterated to a considerable extent, and we also find that the ink will set more quickly and will not offset to such an extent as heretofore.

The figure in the accompanying drawing is a diagram view illustrating one method of carrying out our process.

A is the feeding-table. The paper from the feeding-table is fed through the rolls $b\ b'$ and moistened by the moistening-roll b^2 , which is dampened by receiving water from the trough B. The paper then passes, preferably, to an endless belt D, over which it travels and is there subjected to the atmosphere, and from this belt it passes onto the fly E, which places the sheet on a pile.

It will be understood that while we have shown one form of apparatus for carrying out our improved process, any form of apparatus may be used without departing from our invention.

In carrying out the main feature of our invention we print upon any ordinary paper, either glazed or uncalendered, and we may take a paper that has been previously printed, and instead of subjecting the paper to hydraulic or dry pressing we dampen the paper, preferably by passing it through dampening-rolls. After the paper is dampened it is not subjected to heavy pressure. We then pack the paper in piles, and after the paper is dry it is ready to be bound in the ordinary manner.

The process above described leaves the paper with a dull finish and the embossing or indentation made by the type is removed, leaving the paper smooth and clear of any indentation.

In carrying out our invention with calendered paper on which half-toned engravings are printed we subject the paper to moisture, either by passing it through moistening-rolls, as above described, or by subjecting it to steam or dipping it in a bath of water. Either of these steps will raise the fine fibers that were laid during the calendering process. Thus the calendered surface is destroyed and a paper is produced having a comparatively rough and dull surface, as it is well known in the art that to produce the best results with a half-tone engraving or with any en-

graving in fact a calendered surface must be used to print upon.

We find that our process does not affect the print of the half-tone engraving, as all of the fine details of the half-tone are preserved and the paper is increased in bulk to a considerable extent, owing to the moistening process, so that the thickness of a calendered paper, after being subjected to our process, will be considerably increased, and that in printing books we are enabled to print on a comparatively thin calendered paper, and after treatment by our process the bound book will be of the same thickness as a book printed on the ordinary paper, but the book will be much lighter and more readily handled, which is quite an item in the book trade.

We claim as our invention—

1. The process herein described of increasing the thickness of a printed sheet of paper, said process consisting in subjecting said sheet to moisture and allowing the moistened sheet to dry without compression, substantially as described.

2. The process herein described of increasing the thickness and destroying the calendered surface of a sheet of paper, after printing, said process consisting in taking a printed sheet of calendered paper, subjecting it to moisture whereby the paper is increased in

bulk and a dull surface is obtained, substantially as described.

3. The process herein described of removing the calendered surface of a printed sheet of paper, said process consisting in printing a half-tone engraving on a sheet of paper, subjecting the said sheet to moisture whereby the fibers of the sheet are raised and the calendered surface removed without affecting the half-tone print, substantially as described.

4. The process herein described of treating paper after printing so as to increase its bulk, improve its surface and to obliterate the indentations caused by the impression, said process consisting in subjecting the paper after printing to the action of moistening-rolls whereby the paper is simultaneously rolled and moistened and then allowing the paper to dry without excessive pressure, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEORGE BECK.

CHAS. L. HAMILTON.

Witnesses:

WILL. A. BARR,

F. E. BECHTOLD.