

No. 664,743

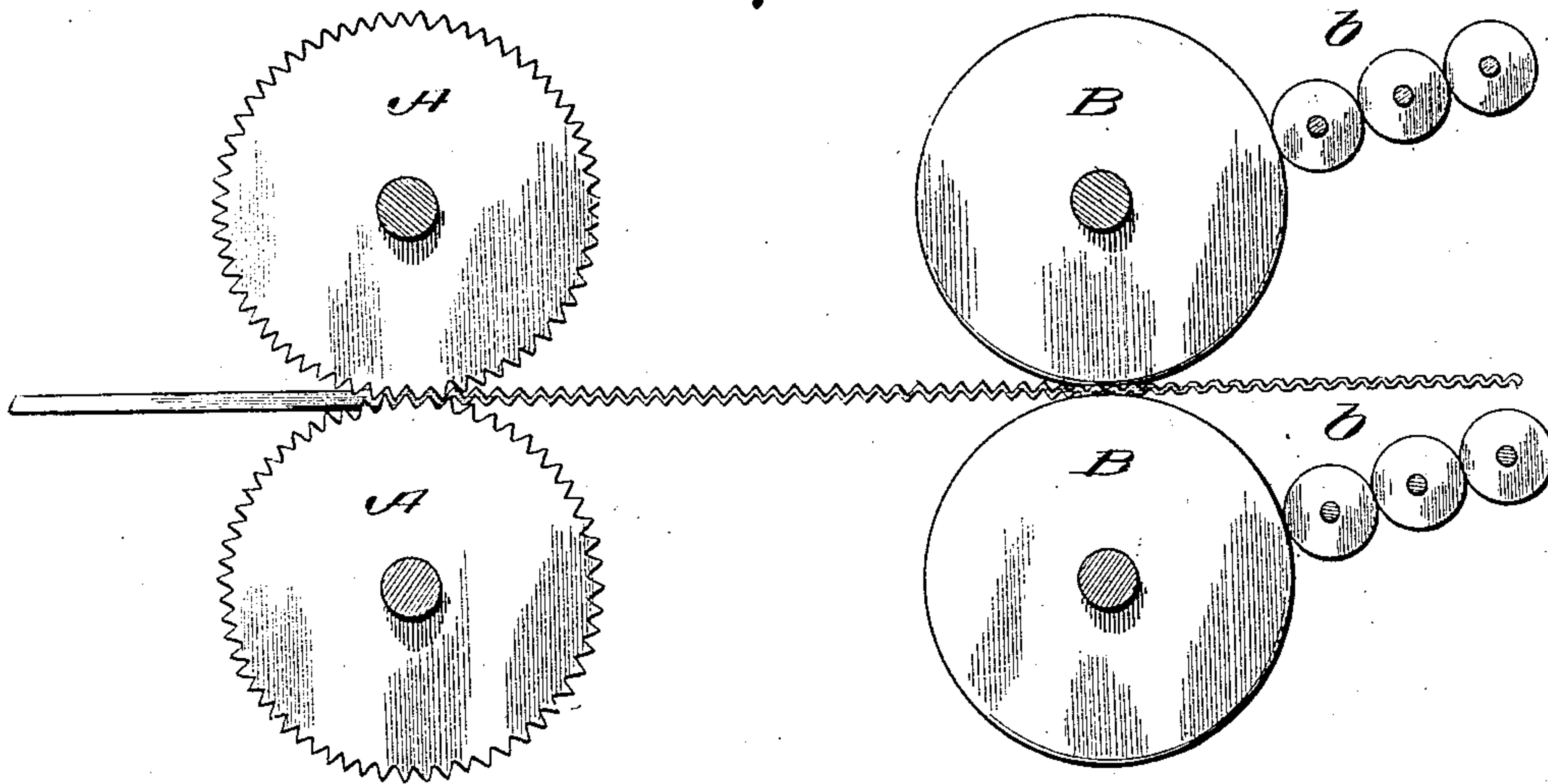
Patented Dec. 25, 1900.

P. HAKE.  
PAPER AND ART OF PRODUCING SAME.

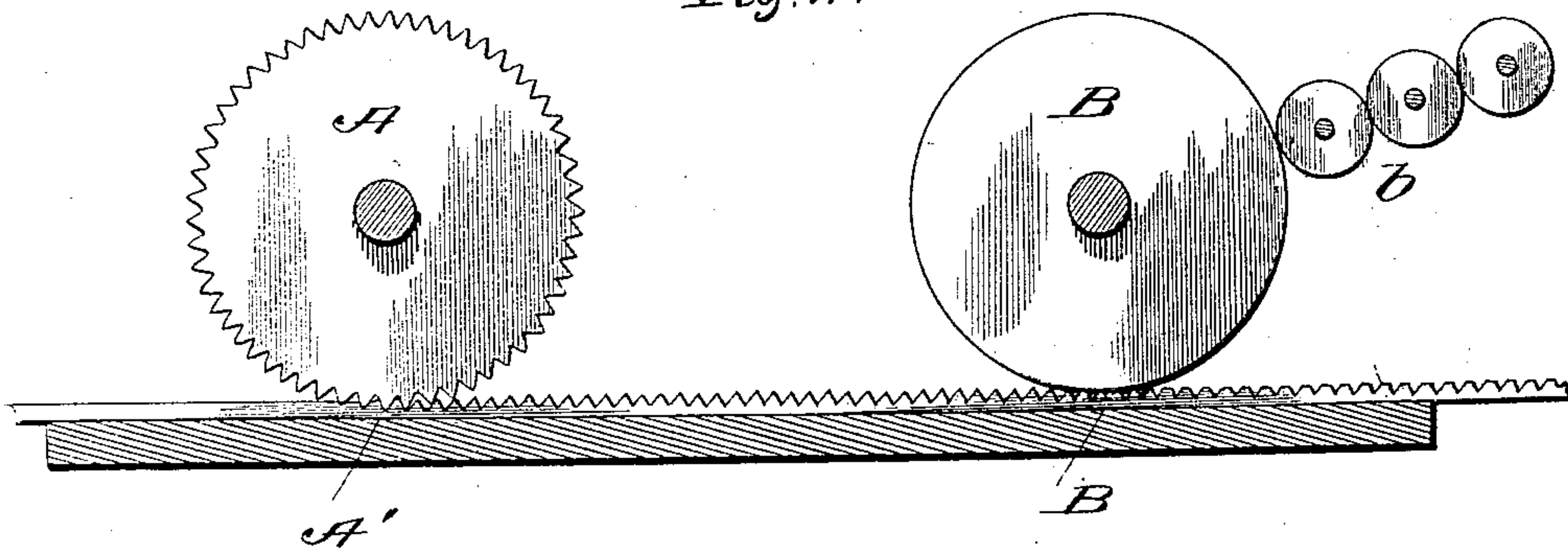
(Application filed Feb. 2, 1900.)

(No Model.)

*Fig. 1.*



*Fig. 2.*



Witnesses

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# UNITED STATES PATENT OFFICE.

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## PAPER AND ART OF PRODUCING SAME.

SPECIFICATION forming part of Letters Patent No. 664,743, dated December 25, 1900.

Application filed February 2, 1900. Serial No. 3,718. (Specimens.)

*To all whom it may concern:*

Be it known that I, PHILIPP HAKE, a citizen of the United States, and a resident of Hoboken, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Paper and Art of Producing Same, of which the following is a specification.

My invention relates to the production of highly-ornamental paper to be written or printed upon or for other uses, and has for one object to ornament paper in a plurality of shades or colors and by a bas-relief design, of which the relief sharply coincides with one color and the intaglio with another color, the paper being simultaneously finished with a surface suitable to be written or printed upon or for other purposes.

A further object is to simultaneously treat opposite sides of the paper to produce upon the one surface relief and intaglio corresponding, respectively, to intaglio and relief on the other surface and to produce the variations in coloring, as before described.

The invention involves in addition to the advantages of a cheap and effective process for producing a high grade of goods the advantage of affording an effective method of shading or figuring by varying the surface of the intaglio and relief, which correspondingly affects the density of the color and produces highly-ornamental effects in shading.

In carrying out my invention I employ, preferably, a pair of graven rollers, between which the paper is passed under considerable pressure for the purpose of producing upon its respective sides a pattern in relief, or I may employ one graven roller with a smooth roller, or a graven roller passing over a suitable platen or bed. The surface or surfaces of the paper thus prepared are then subjected to pressure under a hard smooth coloring-roller, which simultaneously evens up the relief portions of the pattern, so as to clearly define the limits thereof, and applies coloring-matter to the relief portions thus defined, with the result of producing a clear and sharp pattern in color. This step in the process may take place simultaneously on both sides of the paper by duplicating the coloring-roller.

The process above described will result in coloring the paper with a sharply-defined raised pattern of whatever color is applied to

the roller, with a ground of the original color of the paper. If the original color is white, then the ground or intaglio portions of the pattern will be white. If it be desired to have the intaglio portions of a color or shade other than the original color of the paper and yet in contrast with the color of the relief portions of the pattern, this is accomplished by treating the whole surface of the paper to the lighter shade of coloring previous to embossing it or passing it through the graven rollers and then applying the darker shade to the relief portions by the hard coloring-roller.

It will be seen from the foregoing that I have not only produced an improvement in the art of ornamenting paper, but I have obtained a new article of manufacture in the paper itself. Paper produced in accordance with my improvement has a clearly-defined raised pattern with the relief and intaglio in contrasting shades or colors and with the relief evened up without destroying the relief design and colored to produce a new writing and printing surface.

While any suitable arrangement of embossing and printing surfaces may be employed in carrying out my invention, two forms of apparatus are suggested in the accompanying drawings, in which—

Figure 1 is a view representing means for treating both sides of the paper simultaneously; and Fig. 2 is a similar view representing means for treating but one side of the paper, the effect in each case being shown on a greatly-exaggerated scale.

Referring to Fig. 1, A A represent a pair of graven embossing-rollers in which the relief on one corresponds to the intaglio on the other, and B B are a pair of hard smooth evening and coloring rollers which receive coloring-matter from applying-rollers *b* and which imprint the color upon the relief portion of the pattern embossed by the rollers A A, at the same time evening the relief portions of the pattern and imparting a finished surface thereto. Inasmuch as the rollers B B have smooth surfaces, it is obvious that the coloring-matter contained upon their surfaces will come in contact with only the raised portion of the embossed design. The coloring thus imparted to the paper will therefore sharply correspond in outline to the relief



portion of the design. In Fig. 2 substantially the same process is carried out except that the lower surface A' B' is smooth beneath the graven roller A, as well as beneath the coloring and evening roller B, and the paper is treated only on one surface.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

10 1. The art of ornamenting paper with intaglio and relief designs of contrasting color, by forming upon each side thereof a raised design corresponding to the intaglio of the other side, and simultaneously evening and  
15 coloring the raised portions without destroying the relief, and producing a surface thereon.

2. As a new article of manufacture, writing-paper having upon its surface designs of

intaglio and relief of contrasting colors, and with the relief portions evened to provide a  
20 suitable surface.

3. As a new article of manufacture, writing-paper provided on both sides with surface ornamentation comprising relief and intaglio designs of contrasting colors, with the  
25 relief of one side corresponding in position to the intaglio of the other side, and the raised portions of both sides being evened to produce writing or printing surfaces.

Signed at New York, in the county and  
30 State of New York, this 30th day of December, 1899.

PHILIPP HAKE.

Witnesses:

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