No. 751,946. PATENTED FEB. 9, 1904.

E. SCHOENING.

PRINTING BY MEANS OF ELASTIC ROLLERS OR PLATES.

APPLICATION FILED MAY 26, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

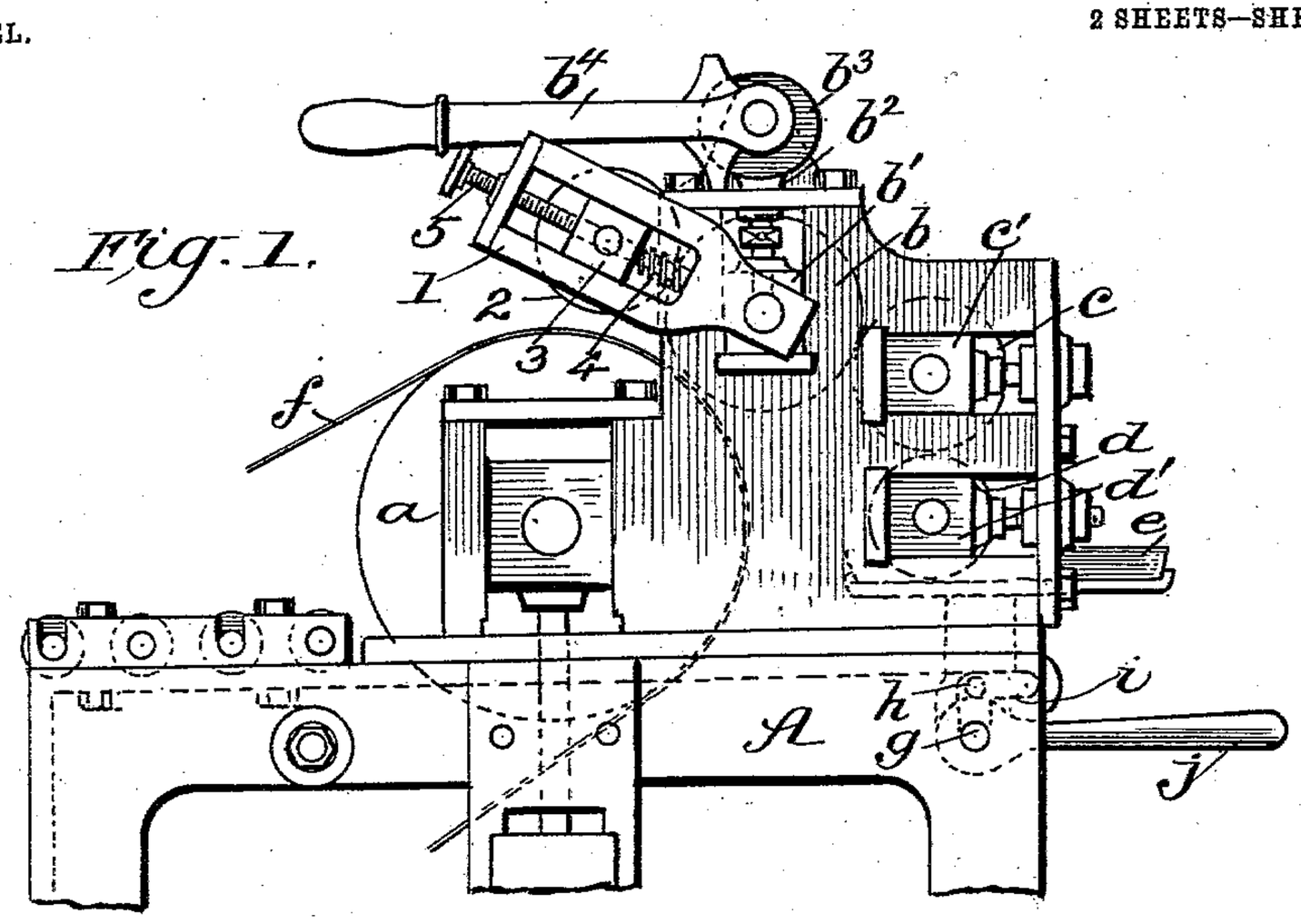
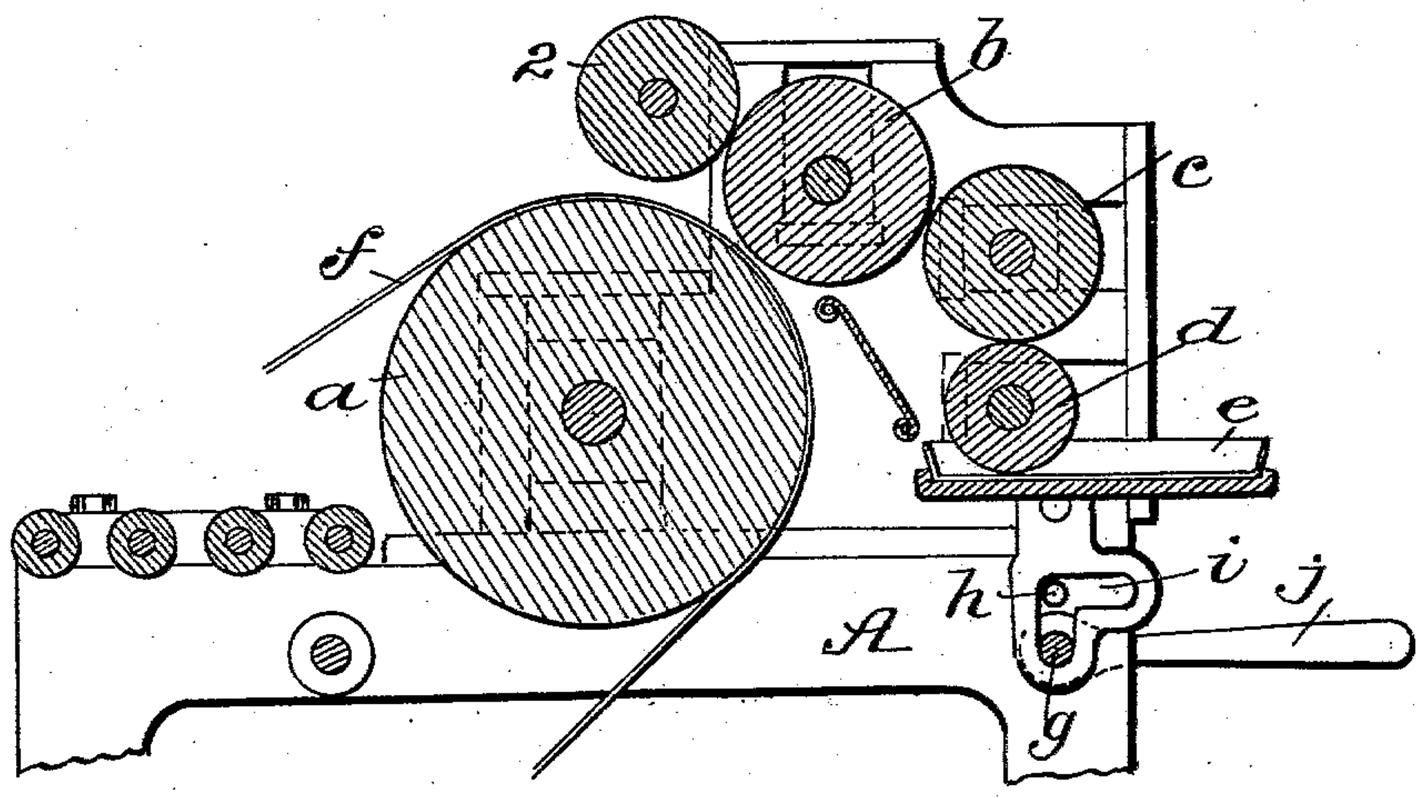


Fig. 2.



WITNESSES:
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NO MODEL. 2 SHEETS—SHEET 2.

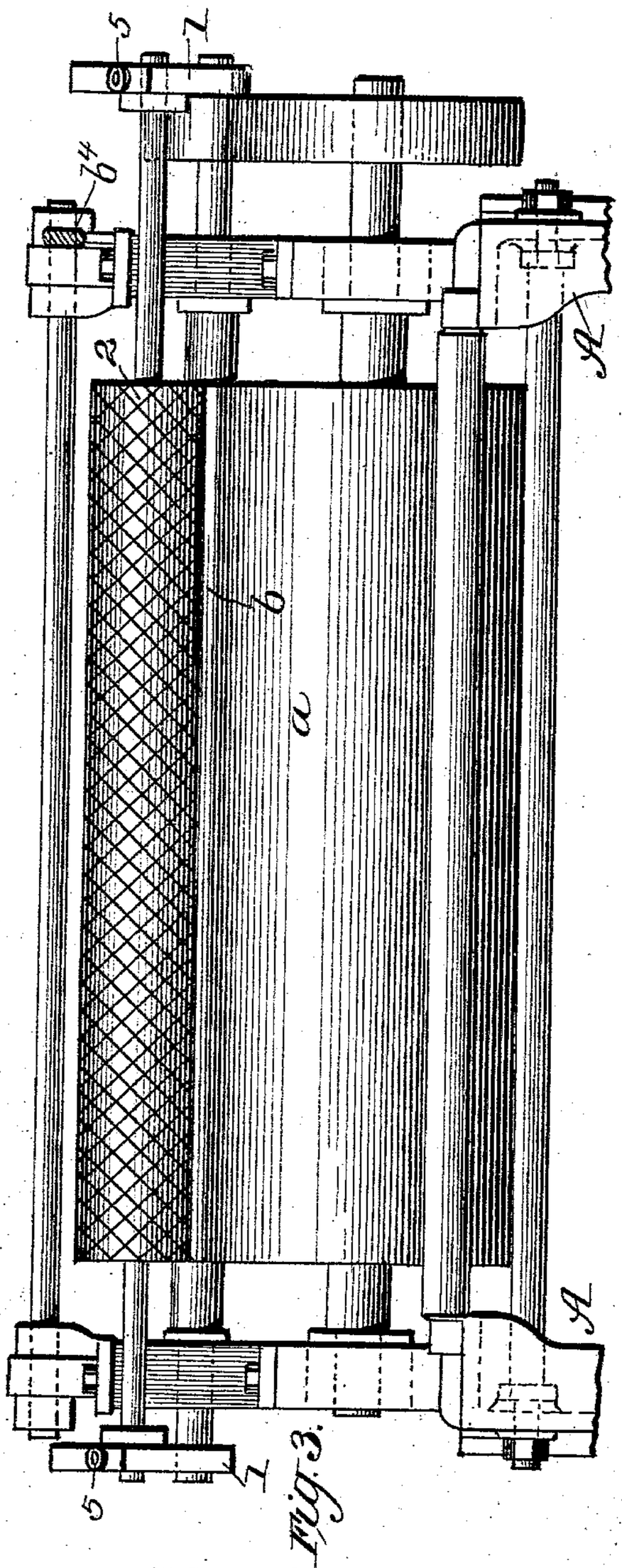

Fig. 3.

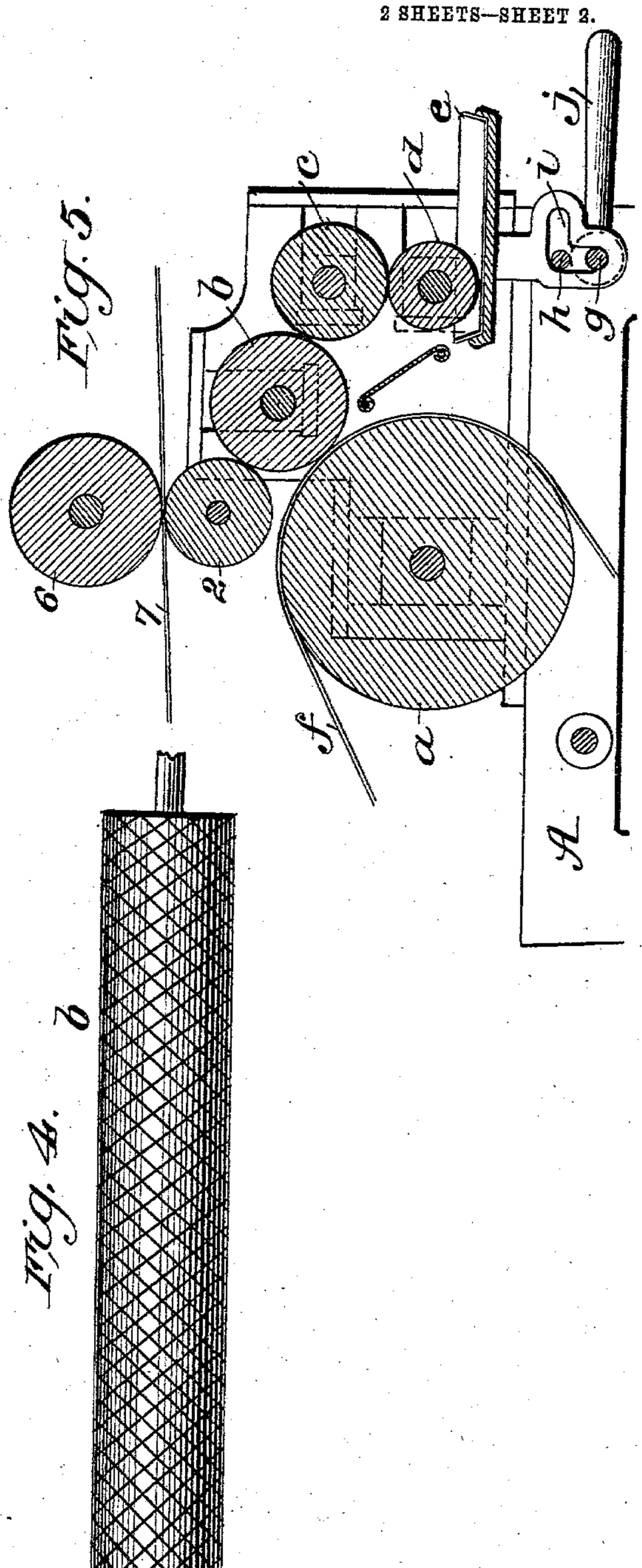

Fig. 5.

Fig. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

EDUARD SCHOENING, OF BERLIN, GERMANY.

PRINTING BY MEANS OF ELASTIC ROLLERS OR PLATES.

SPECIFICATION forming part of Letters Patent No. 751,946, dated February 9, 1904.

Application filed May 26, 1903. Serial No. 158,853. (No model.)

To all whom it may concern:

Be it known that I, EDUARD SCHOENING, a subject of the Emperor of Germany, residing at Berlin, Germany, have invented certain new and useful Improvements in Printing by Means of Elastic Rollers or Plates, fully described and represented in the following specification and accompanying drawings, forming a part of the same.

My invention relates to printing-machines, and more particularly to that class of machines employed for grounding wall-paper, and has for its object to produce an ornamental ground on the paper.

A further object of the invention is to produce a ground on the paper having two shades of the same color at one and the same operation and by the same printing-surface.

A still further object of the invention is to utilize the pattern-surface and the color removed from the printing-surface in producing the pattern on a printing-surface to print a second web, thus producing a duplex machine.

The invention consists in producing a pattern in the color on the printing-surface and then transferring the pattern thus produced to a web of paper or the like.

The invention also consists in producing the pattern in the color on the printing-surface by means of a pattern-surface coming in contact with the printing-surface.

The invention further consists in printing a second web of paper by means of the color removed by the pattern-surface from the printing-surface in producing the pattern for printing the first web.

Reference is to be had to the accompanying drawings, forming a part of the specification, and wherein similar letters and numerals of reference indicate similar parts in all of the figures.

Figure 1 is a side elevation of a portion of a grounding-machine having my improvement applied. Fig. 2 is a sectional view of the same. Fig. 3 is a front elevation. Fig. 4 is a plan view of the printing-roller having the pattern produced in the color on its surface, and Fig. 5 is a sectional view showing the machine arranged for printing two webs at the same time.

In the drawings, A is a portion of the supporting-frame; *a*, the web-bearing roller; *b*, the elastic printing-roller; *c*, the distributing-roller; *d*, the color or inking roller; *e*, the color or ink pan in which the roller *d* revolves, and *f* the web of paper fed from a feed-roller (not shown) to and over the roller *a* to receive the color from the printing-roller *b*. The web-bearing roller, the printing-roller, the distributing-roller, and the inking-roller are all operated in the usual manner. The printing-roller *b* is mounted in adjustable bearings b', which are mounted in a movable support b^2. The support b^2 is adjusted by means of the cam b^3 and lever b^4. The distributing-roller *c* and inking-roller *d* are mounted in adjustable bearings c' d', respectively, to permit them to be adjustable with respect to the printing-roller. The ink or color pan *e* is adjusted to and from the ink or color roller *d* by means of the shaft *g*, provided with crank-arms *h*, engaging grooves *i* in the frame, the shaft *g* being operated by the handle *j*.

All of the above parts are of the usual construction and about which there is nothing new.

Mounted at each end of the frame A and attached to the support b^2 of the printing-roller *b*, so as to be adjusted therewith by the means hereinbefore described for adjusting the said support, are yokes 1. In these yokes a pattern-roller 2, having any desired pattern produced on its surface, is mounted so as to contact with the printing-roller *b*. As shown in the drawings, the pattern-roller is revolved by frictional contact with the printing-roller; but it may be operated by any other suitable means. The pattern-roller is mounted in sliding bearings 3, which rest on springs 4, and said bearings are engaged by screws 5, working in the yokes 1. By thus mounting the pattern-roller it will be yieldingly held in contact with the printing-roller *b* and can be adjusted to bear with more or less pressure upon the said roller, as circumstances may require.

The closer the pattern-roller is placed to the web—that is to say, the nearer its point of

contact with the printing-roller is to the point of contact of the printing-roller with the web—the more distinct will the pattern be produced upon the web of paper.

As shown in the drawings, the pattern-roller 2 has diamond-shaped figures produced thereon, but it is obvious that the pattern can be of any other shape or design. In fact, any form of pattern-roller can be used, and even a plain wooden roller may be used with good results.

In operation the ink or color is applied to the printing-roller *b* by means of the rollers *c* and *d*, as usual, and the pattern-roller 2, contacting with the roller *b*, produces the pattern in the color on said printing-roller, and the said printing-roller then prints the pattern on the web at the point of contact of said roller with the web-carrying roller *a*.

With the design of pattern-roller shown in the drawings, the diamond-shaped figures being the raised portions and the cross-lines the sunken portions, the figures or raised portions on the pattern-roller will wholly or partially remove the color from portions of the printing-roller, while none of the color will be removed by the cross-lines or sunken portions, and consequently the figures produced on the web by the printing-roller will be of a very light shade, while the cross-lines will be of a shade of the full depth of coloring substance applied to the printing-roller.

In order to keep the pattern-roller clean and at the same time utilize the color removed from the printing-roller by the pattern-roller in producing the pattern on the printing-roller for grounding the first web, I arrange above the pattern-roller a roller 6. Between this roller and the pattern-roller a second web 7 is passed, as shown in Fig. 5, so that the pattern-roller prints upon this second web a pattern the reverse of that produced on the first web.

Instead of transferring the color removed by the pattern-roller from the printing-roller direct to this second web the color may be transferred to another printing-roller having color-applying devices, so that by employing and very lightly applying a different color from that employed for printing the first web a figured pattern in varied colors can be produced on this second web. The same result can be produced by previously coating the second web with a different color. By this latter arrangement it will be seen that I am enabled not only to print two webs at the same time, but that I employ the pattern-roller for printing the second web and utilize the color removed by it from the printing-roller in producing the pattern thereon for the first web.

While I have shown a printing-roller and a pattern-roller, yet it is obvious that the invention could be carried out equally as well by employing printing and pattern surfaces in the form of plates.

An elastic printing roller or surface is also not absolutely necessary to the successful carrying out of the invention. I have found out by actual tests that good results can be obtained by the employment of a pattern roller or surface in connection with a plain hard printing roller or surface; but when such printing-surface is used to obtain good results the web-bearing roller should be elastic.

When a plain wooden pattern-roller is employed, the roller by contacting with the printing-roller impresses the grain of the wood on the printing-roller by removing the color from the same corresponding to the grain, and the printing-roller transfers the grain-figuring to the web the same as hereinbefore described.

It will thus be seen that by employing wooden pattern-rollers I am enabled to produce different patterns by simply using different kinds of wood.

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

1. In a machine for printing, the combination with a printing-surface having a color thereon, of means for producing a pattern in the color on said printing-surface, as set forth.

2. In a machine for printing, the combination with a printing-surface having a color thereon, of means for wholly or partially removing the color from portions of the printing-surface to produce a pattern in the color on said printing-surface, as set forth.

3. In a machine for printing, the combination with a printing-surface having a color thereon, of a pattern-surface contacting with the printing-surface and producing a pattern in the color on said printing-surface, as set forth.

4. In a machine for printing, the combination with a printing-roller having a color thereon, of a pattern-roller revolving in contact with the printing-roller, as set forth.

5. In a machine for printing, the combination with an elastic printing-roller having a color thereon, of a pattern-roller contacting with the printing-roller and driven thereby, as set forth.

6. In a machine for printing, the combination with a web-carrying roller, of an elastic printing-roller, means for applying color to the printing-roller, and a pattern-roller contacting with the printing-roller and producing a pattern in the color on the printing-roller, as set forth.

7. In a machine for printing, the combination with a printing-surface having a color thereon, of a pattern-surface contacting with the printing-surface and producing a pattern in the color on said printing-surface, and means for keeping the pattern-surface clean, as set forth.

8. In a machine for printing, the combination with a printing-surface having ink thereon, of a pattern-surface contacting with the

printing-surface to produce a pattern on the printing-surface and to ink the pattern-surface, and means for printing by the aid of the printing and pattern surfaces, upon separate surfaces, as set forth.

9. In a machine for printing, the combination with a printing-surface having a color thereon, of a pattern-surface contacting with the printing-surface and producing a pattern in the color on said printing-surface to be transferred to a web, and a surface between which and the pattern-surface a second web is adapted to be passed to receive the pattern from the pattern-surface, as set forth.

10. In a machine for printing, the combination with a printing-roller, having a color thereon, of a pattern-roller contacting with the printing-roller and producing a pattern thereon to be transferred to a web, and a roller between which and the pattern-roller a second web is adapted to be passed to receive the pattern from the pattern-roller, as set forth.

11. In a machine for printing, the combination with a paper-bearing roller, an elastic printing-roller, and means for applying color thereto, of a pattern-roller revolving in contact with the printing-roller, and driven therefrom, said pattern-roller producing a pattern in the color on the printing-roller to be transferred to a web, and a roller, between which and the pattern-roller a second web is adapted to be passed to receive the pattern from the pattern-roller, as set forth.

12. In a machine for printing, the combination with two web-bearing rollers, a printing-roller adjacent to one web-carrying roller, and means for applying color to the printing-roller, of a revoluble and yieldingly-mounted pattern-roller adjacent to the web-bearing rollers, and contacting with the printing-roller, as set forth.

13. In a machine for printing, the combination with a printing-roller, and means for applying color thereto, of a yieldingly and adjustably mounted pattern-roller contacting with the printing-roller, as set forth.

14. In a machine for printing, the combination with a printing-roller, and means for applying color thereto, of a support adjacent to the printing-roller, a yieldingly-mounted pattern-roller in the support and contacting with the printing-roller and means for regulating the pressure of the pattern-roller on the printing-roller, as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EDUARD SCHOENING.

Witnesses:

I. NEWMAN,

CHAS. F. GESSERT.