(No Model.)

L. PIETTE.

METHOD OF AND APPARATUS FOR COLORING PAPER.

No. 318,652. Patented May 26, 1885.

Fig. 2.

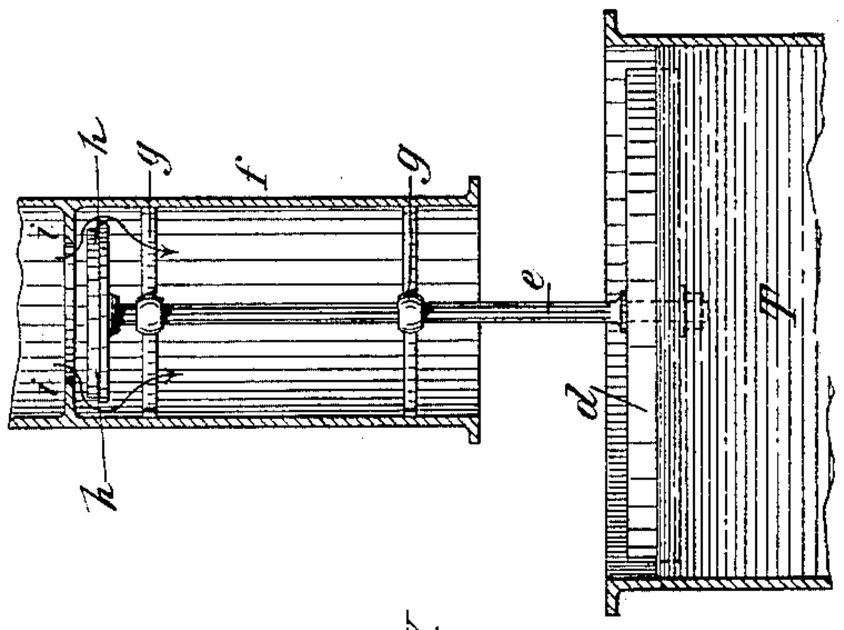
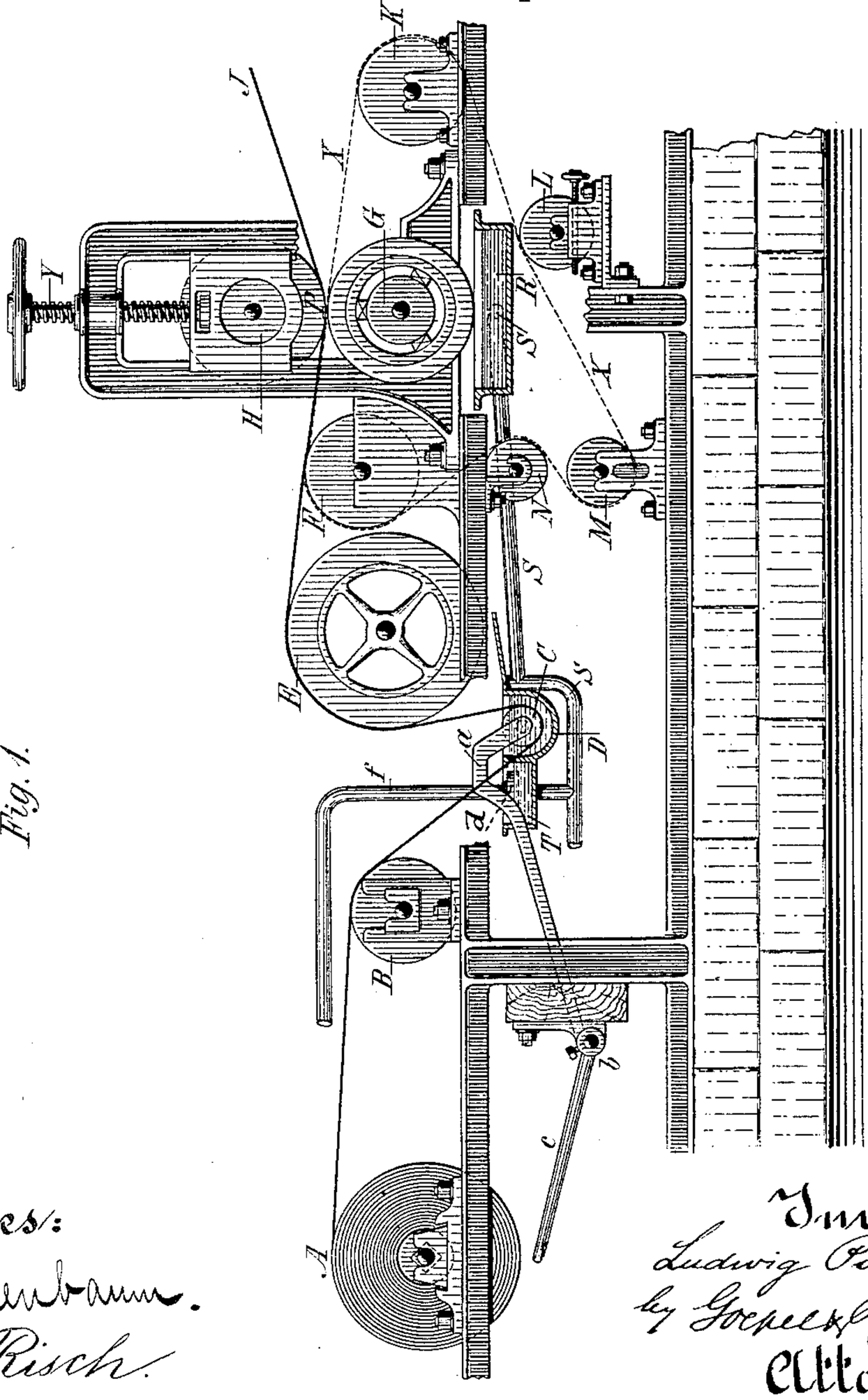


Fig. 1.



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UNITED STATES PATENT OFFICE.

LUDWIG PIETTE, OF PILSEN, AUSTRIA-HUNGARY.

METHOD OF AND APPARATUS FOR COLORING PAPER.

SPECIFICATION forming part of Letters Patent No. 318,652, dated May 26, 1885.

Application filed September 13, 1884. (No model.)

To all whom it may concern:

Be it known that I, LUDWIG PIETTE, of Pilsen, in the Empire of Austria-Hungary, have invented a new and Improved Method of Coloring Paper and Apparatus to be Employed Therewith, of which the following is a specification.

My invention relates to an improved process for coloring paper in endless rolls and in apparatus to be employed therewith. According to the former methods of coloring paper the coloring-matter was either added directly to the paper-pulp or applied to and rubbed into the same in sheet or endless roll form.

My invention consists of a method of coloring paper in endless rolls by passing the paper through a suitable coloring-bath in such a manner that the paper is thoroughly impregnated with the coloring-matter, then removing the surplus color by pressure, and subsequently drying the paper.

The invention consists, further, of an apparatus for coloring paper in endless rolls, the construction of which will be fully described hereinafter, and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation, partly in section, of my improved apparatus for coloring paper in endless rolls, and Fig. 2 is a vertical central section drawn on an enlarged scale of a device for regulating the supply of color to the bath and keeping up the uniform level of coloring-matter in the color-reservoir.

Similar letters of reference indicate corresponding parts.

The roll of paper to be colored is placed on the roller A, and the paper then conducted over the tension-roller B and under a roller, C, which rotates in the color-reservoir D. After leaving the color-reservoir the paper is passed over the tension-roller E, which is covered with india-rubber, then over the guide-roller F, and between the pressure-rollers G and H. In order to remove any superfluous color from the surface of the paper before the said paper is passed to the well-known drying-cylinders in the direction indicated by the arrow at 1, the paper is fed through between the rollers G H and over a felt cloth or band, X, which runs over the tension and guide rollers K L M N F G, and on which the paper is pressed by the pressure-roller H, that is supported in bearings P and adjusted by set-screws Y, and thus all superfluous color pressed out. The color so expressed flows from the roller G into a reservoir, R, below the roller G, in which reservoir the color is collected for future use. As, however, the color so collected has in most cases lost somewhat of its intensity, the same is not fed directly into the reservoir D, but passed through a tube, S, arranged at one side to the reservoir R, into a collecting vat or trough, T, where it is mixed with a quantity of fresh color and conducted from the vat T through a connecting-tube into the reservoir D. The roller C is rotated in the reservoir D, and the coloring-matter contained in the same agitated by means of the running or moving paper. The roller C is supported in bearings of two lever-arms, *a*, which, with the lever-arms *c*, oscillate around the centers *b*. By means of this arrangement the roller C can be raised entirely out of the coloring-bath by pressing down the lever-arms *c* and thus raising the arms *a* and the roller C.

In order to attain a correct operation of the apparatus and a constant level of coloring-matter in the reservoir D, and a correspondingly-regulated supply of fresh color from the color vat or trough, I employ a float and float-valve consisting of a disk, *d*, which floats on the surface of the liquid in the collecting vat or trough T, and carries a vertical stem, *e*, at the center, which stem reaches into the color-supply pipe *f*, that communicates with the color vat or trough. The stem *e* is guided in the supply-pipe *f* by means of a center sleeve, *g*, supported by radial arms, as shown in Fig. 2. The stem *e* also carries at its upper end a disk-shaped valve, *h*, of india-rubber or other suitable material, and of smaller diameter than that of the tube *f*. The valve *h* closes the tube *f* when it is raised and pressed against an annular valve-seat, *i*, when the level of the fluid in the collecting-vessel T is normal. If, however, the fluid sinks below the normal level, the float will also sink, and the valve *h* will not close the opening of the valve-seat *i*, so that a fresh supply of color can flow to the reservoir until the normal level of the said fluid is reached, and the valve *h* again raised and pressed against the valve-seat *i*, so as to cut off all further supply so long as the fluid

maintains its normal level. Fig. 2 shows the float in a position so as to allow a fresh supply of coloring-fluid to flow to the reservoir.

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

1. The method herein described of coloring paper in endless rolls, which consists in passing the paper through a bath of the coloring-fluid, so as to thoroughly impregnate the paper, removing the surplus color by pressure, and then drying the paper in the usual manner, substantially as set forth.

2. The combination of the rollers A and B, color-reservoir D, roller C, supported in said reservoir, guide-rollers E and F, pressure-rollers G and H, and an endless band, X, that is guided through between the pressure-rollers, substantially as set forth.

3. The combination of the rollers A and B, color-reservoir D, roller C, supported in said reservoir, guide-rollers E and F, pressure-rollers G and H, endless band X, guided through between the pressure-rollers G and H, and a collecting vat or trough, R, below the lower pressure-roller, G, substantially as set forth.

4. The combination of the rollers A and B, color-reservoir D, roller C, supported by arms *a a* in said reservoir, guide-rollers E and F, pressure-rollers G and H, endless band X, rollers K, L, M, and N for guiding the band, and a collecting vat or trough, R, below the lower pressure-roll, G, substantially as set forth.

5. The combination of the color-reservoir D, receiving-vessel T, float *d*, having a stem, *e*, and valve *h* at the upper end of the stem, and supply-pipe *f*, having guide-sleeves *g g* for the stem, and an annular valve-seat, *i*, whereby by the rise and fall of the float the supply of color is regulated, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

LUDWIG PIETTE.

Witnesses:
JULIUS SCHUBERT,
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