

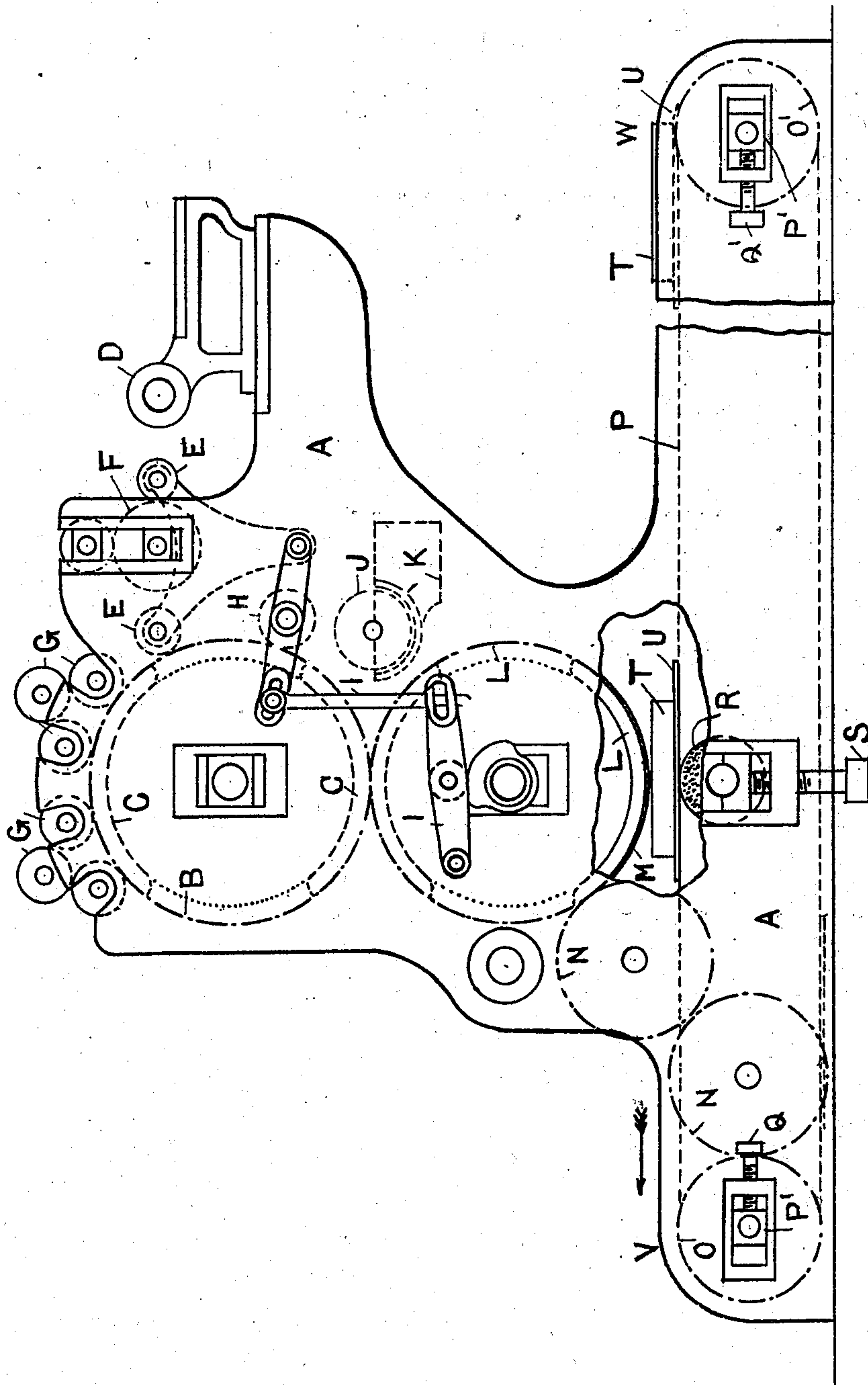
No. 702,139.

Patented June 10, 1902.

E. LEE.
PRINTING MACHINE.

(Application filed Dec. 23, 1901.)

(No Model.)



Witnesses.

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EDWARD LEE, OF LEEDS, ENGLAND.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 702,139, dated June 10, 1902.

Application filed December 23, 1901. Serial No. 86,939. (No model.)

To all whom it may concern:

Be it known that I, EDWARD LEE, lithographer, a subject of the King of Great Britain, residing in Leeds, in the county of York, England, (whose full postal address is 10 Midland road, Hyde Park, Leeds,) have invented certain new and useful Improvements in Printing-Machines, (for which provisional application has been made in England under No. 10,550, dated May 21, 1901,) of which the following is a specification.

This invention was originally designed as a machine for printing tiles and other like objects with various patterns. It can, however, be used for printing glass, wood, wall-paper, and other fabrics. Tiles cannot be printed by the ordinary mechanism, as their surface is liable to be uneven, and a very slight degree of unevenness prevents the impression in ordinary printing devices from taking effect. Further, in existing machines it is not practicable without cleaning and setting to print simultaneously from the same pattern or block in several different colors.

Now my present invention is designed to accomplish these results. By it I can print very uneven tiles with great accuracy and without altering the machine change the color.

The process consists, essentially, in what I may call a "double-transfer" system, the original block transferring the image in ordinary printing-varnish onto a yielding block or surface, which in turn deposits the transfer onto the tiles, web of cloth or paper, or other article to be printed. The latter is then while the varnish is still sticky powdered with the requisite color, and thus the image obtained. In this way numerous different colors can be printed one on top of the other, and the same printing-block can be used for any color that is desired. Further, a portion of the image can be colored with one color and another portion with another by sprinkling the right powders over them.

In carrying out this process I use special machinery, set forth in elevation and partly in section in the drawing. It is merely a modification of an ordinary machine for printing from collotypes, zinc or aluminium plates, or the like; but instead of printing direct

onto the tile it prints onto a further roller of a very elastic character, which in turn prints the tile.

Referring to the drawing, A is the framework of the machine.

B is the main cylinder of the apparatus, carrying plates or blocks C, shown in line-dots and constituting the impression device. In printing tiles only these two blocks are used; but in printing webs of paper or cloth the entire circumference of the cylinder is covered with printing-plates, forming a continuous repeat design.

D is the ordinary ink-duct; E E, feed-rollers; F, main inking-cylinder, and G the various spreading-rollers; H, the damping-roller; I, usual train of levers; J, damping-cylinder in water-trough K. In some cases parts H, I, and J are not required. Up to now everything that has been mentioned is well known, being found in an ordinary lithographic and letter-press machine, with the exception of my extra cylinder L, hereinafter called the "second set-off cylinder." This cylinder L is preferably slightly smaller in diameter than the upper cylinder and has its working parts M formed of an elastic composition.

N is gearing connecting the cylinder L with sprocket-wheel O, hereinafter described.

P is an endless skeleton or other endless apron formed of two sprocket-chains connected by leather bands or the like and passing over sprocket-wheels O O'. Wheels O and O' are supported in sliding bearings P P', the position of which can be regulated by screws Q and Q', so that the chain shall always be sufficiently tight not to sag appreciably.

R is a roller, preferably of a somewhat yielding material, held in a bearing adjustable vertically by the screw S. This wheel supports the apron or chains P in the center line immediately under the second set-off cylinder L.

T T are tiles placed on frames U U, firmly secured to the chains P. These frames carry angle-guards, so that the position of the tiles therein can be accurately adjusted.

The mode of action is as follows: The tiles being placed by hand in the guard-frames U are spaced absolutely accurately. The at-

tendant has simply to drop the tiles into these frames. They pass on under cylinder L. In the meantime the cylinder B has had the printing-blocks C C or its entire surface, as the case may be, well inked in the usual lithographic or ordinary manner, but with printing-varnish. The cylinder B in turn transfers the image to the peculiar composition plates M on cylinder B, which in printing tiles are segmental as shown in line-dots, if for printing webs, they extend all around the cylinder, as shown by the point-dot line and line-dot line combined, and these in turn transfer them to the tiles T, (or to the webs.) The tiles run on in the direction of the arrows and are taken off at the point V by another attendant. The frames U continue to travel on until they again reach the commencing-point at W, when a fresh tile is put in their place. Where continuous webs are printed, the tile-frames U are removed and the web passes along on the rotating apron or the apron is also removed and the web is fed in synchronously or by the grip of the rollers R and L, which are brought close against each other by screw S.

I declare that what I claim is—

1. In a printing-machine, the combination of an impression-cylinder carrying the printing-surfaces on its periphery, and means for supplying the same with ink color or varnish, of a transfer-cylinder geared synchronously with it, thick elastic cylindrical transfer-surfaces on this transfer-cylinder, an apron be-

low carrying the articles to be printed under and against the transfer-surfaces, and an adjustable cylinder immediately below and between the ends of the upper run of the apron pressing with adjustable pressure the apron and its contents against the transfer-cylinder; substantially as described.

2. The combination of an impression device, inking devices, and a transfer-roller with an apron carrying the blanks to be printed, pulleys, shafts and sprocket-wheels carrying and driving said apron sliding bearings for said shafts, adjusting devices for regulating the distance apart of said bearings, and an adjustable roller supporting the upper run of the apron directly beneath the transfer-roller; substantially as described.

3. The combination with the impression device and transfer-cylinder, of an endless carrier below the transfer-cylinder and provided with transverse frames U, U, for the articles to be printed, and an elastic roller directly under the transfer-cylinder and supporting the upper run of the endless carriers between the bearings thereof; substantially as described.

In witness whereof I have hereunto signed my name, this 13th day of December, 1901, in the presence of two subscribing witnesses.

EDWARD LEE.

Witnesses:

EDWARD FORSTER CHAPMAN,
LIONEL WARNER STANLEY.