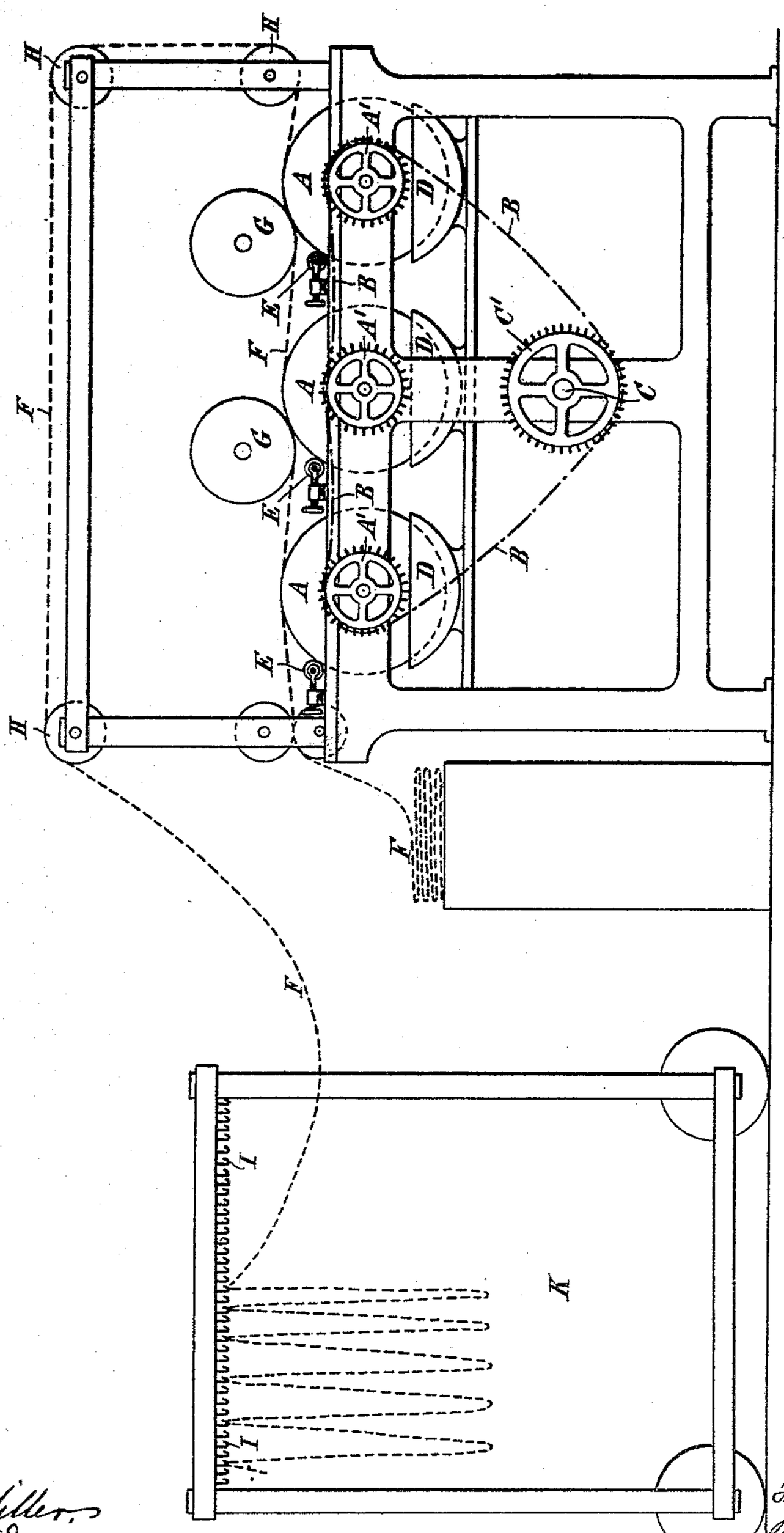
(No Model.)

F. BAMFORD.

PROCESS OF DYEING PILE FABRICS.

No. 545,420. Patented Aug. 27, 1895.



Witnesses
B. F. Miller.
Guy C. Davis.

Inventor
Frank Bamford,
By his Attorneys
Baldwin, Davidson & Wright

UNITED STATES PATENT OFFICE.

FRANK BAMFORD, OF BRADFORD, ENGLAND, ASSIGNOR TO LISTER & CO., LIMITED, OF SAME PLACE.

PROCESS OF DYEING PILE FABRICS.

SPECIFICATION forming part of Letters Patent No. 545,420, dated August 27, 1895.

Application filed June 24, 1895. Serial No. 553,855. (No model.)

To all whom it may concern:

Be it known that I, FRANK BAMFORD, a subject of the Queen of Great Britain, residing at Manningham Mills, Bradford, in the county of York, England, have invented certain new and useful Improvements in the Manufacture of Pile Fabrics, of which the following is a specification.

The object of this invention is to obtain a design or figure on pile fabrics of two or more different colors or shades. The pile fabric which is to have the design or figure formed upon it may be in the gray or undyed state, or previously dyed or made with yarn dyed of one of the shades, preferably the lightest, which it is desired to obtain in the finished piece. Portions of the pile surface, which are to be a different color to the rest of the piece, are first embossed or laid flat in any well-known manner, the remainder of the pile being left standing erect. The portions of the pile which are left standing now have dye applied to them. Afterward the piece is steamed for a length of time to set the dye on the fiber and is then washed, thereby partially raising the embossed portion of the pile, and subsequently the pile is completely raised by the usual process of finishing. If it is desired to obtain a third color, the piece may be again embossed and the process repeated, and so on, for as many colors as may be required. In place of applying a dye to the portions of the pile which are left standing after the embossing of the pile surface a mordant or resist might be applied to them and the piece then be dyed in the usual way, and the piece be afterward steamed, washed, and have its pile surface raised.

The embossing of the pile surface of the pile fabric may be effected by means of an embossed roller or plate in any well-known manner.

To apply the dye or mordant or resist to the portions of the pile surface which are left erect I cause it to be brought into contact with a horizontal revolving roller, the lower portion of which is immersed in dye, mordant, or resist contained in a trough.

The drawing annexed shows a side elevation of a machine by which this may be effected.

A A A are three horizontal rollers, each having on its axis a chain-wheel A′ driven by an endless chain B from a chain-wheel C′ on a driving-shaft C.

D D D are troughs, one below each roller A, and containing dye or mordant or resist into which the lower part of the rollers dip.

E E E are rollers held in proximity to the rollers A to regulate the amount of liquid carried up by them.

F is the embossed pile fabric.

G G are rollers which can be raised or lowered to regulate the pressure of the pile surface of the fabric against the rollers A.

Any number of rollers A may be used, but by using three or four the dye, mordant, or resist may be put on gradually and a better result obtained than when only one is employed. The fabric after leaving the rollers A is carried forward by rollers H and is hung onto hooks I on a carriage K, or is otherwise hung in folds, so that the wet surfaces of the pile are kept apart. In this state the fabric, if dye has been applied to its pile surface, is afterward put into a steam-oven and subjected to a pressure of steam for a length of time sufficient to set the dye on the fiber. After steaming, the piece is passed through a washing-machine in which it travels through water and between weighted rollers. This cleans the piece and partially raises the part of the pile which previously had been pressed down, and subsequently the pile is completely raised by the usual process of finishing. If it is required that the portions of the pile, which were embossed or pressed down, should be dyed, the whole of the piece may now be placed into an ordinary dye-bath and dyed in the ordinary manner, or the parts which were embossed or pressed down may be left in the gray state.

What I claim is—

1. The hereinbefore described process for obtaining a design or figure of two or more different colors on pile fabrics, which consists in first embossing the pile surface of the fabric to press down or lay flat portions of the pile,

then applying a dye to the parts of the pile which are left erect and afterward steaming and washing the fabric and raising the pile, which was previously embossed or pressed down, substantially as described.

2. The hereinbefore described process for obtaining a design or figure of two or more different colors on pile fabrics, which consists in first embossing the pile surface of the fabric, to press down or lay flat portions of the pile, then applying a mordant or resist to the portions of the pile which are left erect and afterward dyeing the piece and steaming and washing and raising the pile, which was previously embossed or pressed down, substantially as described.

3. The hereinbefore described process for obtaining a design or figure of two or more different colors on pile fabrics, which consists in first embossing the pile surface of the fabric in the gray or undyed state, to press down or lay flat portions of the pile, then applying a dye to the parts of the pile which are left erect, then steaming and washing the fabric and raising the pile which was previously embossed or pressed down, and afterward dyeing the piece in a dye bath in the ordinary way, substantially as described.

FRANK BAMFORD.

Witnesses:
J. N. FEE,
CHAS. E. GREEN.