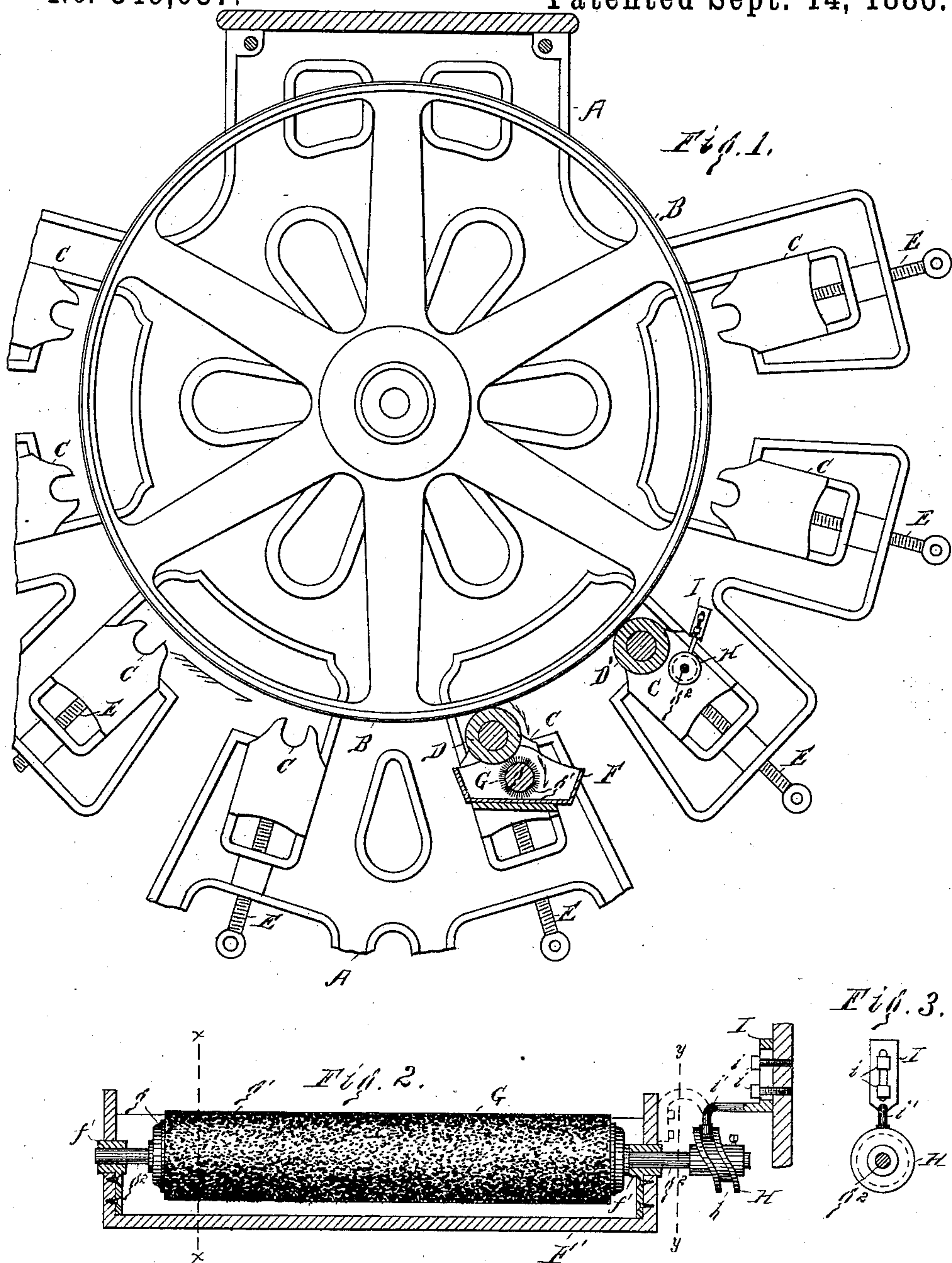


(No Model.)

H. E. GREEN.
CLOTH PRINTING MACHINE.

No. 349,037.

Patented Sept. 14, 1886.



Witnesses—
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UNITED STATES PATENT OFFICE.

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CLOTH-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 349,037, dated September 14, 1886.

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To all whom it may concern:

Be it known that I, HIRAM E. GREEN, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Cloth-Printing Machines, of which the following is a specification.

My invention relates to cloth-printing machines; and it consists in the devices and combinations hereinafter described and claimed, the object of which is, by causing the rotary brushes which apply the color to the printing-rolls to have a traversing motion in the direction of their axes, to prevent a blurring of the colors printed by the printing-rolls after the first printing-roll, and to prevent the colors from caking into the engraved parts of the printing-rolls.

In the accompanying drawings, Figure 1 is a longitudinal section of a part of the frame of a cloth-printing machine, showing an end elevation of the main cylinder, a side elevation of the "nips" or pillow-blocks and adjusting or "nipping" screws, also showing two printing-rolls in cross-section, and two color-furnishing brushes in cross-section, the lower brush being represented in section on the line *xx* in Fig. 2, and the upper brush, or brush at the right, being represented in section on the line *yy* in said Fig. 2; Fig. 2, a vertical section through the color-box in the axis of the color-furnishing brush, said brush being shown in side elevation, together with its shaft and cam, a part of the frame of the machine and part of a finger-supporting bracket being also in cross-section, the finger or leader being in front elevation, the dotted lines in this figure showing how the finger or leader may be supported by the color-box; Fig. 2, an enlarged section on the line *yy* in Fig. 1.

The frame A, main cylinder B, pillow-block C, the engraved printing-rolls D D', the journals of which turn in said pillow-blocks C, the nipping or adjusting screws E, which are turned up to force the pillow-block toward the center of the frame, and thereby to nip the work between the main cylinder B and the printing-rolls D D', and the color-boxes F F',

are all of the usual construction and operation as used in machines for printing cloth, leather, wall-papers, and similar articles. The color-furnishing brush G is also of the usual construction, (except as hereinafter specified,) being a cylinder, *g*, of wood, from which project bristles *g'* radially in the usual manner, and having metallic journals *g''*, which turn in metallic journal-boxes *f' f''*, secured to the ends of the color-box F or F' in any well-known manner, to allow the working-surface of said brush G to dip into the color contained in the color-box. There is a brush, G, and a color-box for each printing-roll, the brush being rotated usually by frictional contact with the printing-roll, and depositing color lifted from the color-box upon said roll. Ordinarily the brush is prevented from motion in the direction of its axis by its journal-boxes projecting into the color-box against the ends of the brush proper, *g*.

The difficulty experienced with the brush as commonly used is, that the wet color applied by the first printing-roll "marks off" or is partly left on the second printing-roll on the unengraved parts thereof, so that when the last-named roll has made a complete revolution it will be found that portions of the first color have been wiped by the "doctor" (which reciprocates against the surface of said second print-roll) from the unengraved parts of said second roll into the engraved parts thereof intended to print the second color. To take a simple instance, for illustration, suppose it be desired to print the cloth in two colors—a dark ground and narrow yellow stripes running lengthwise of the cloth. The first printing-roll would be provided with as many engraved annular depressions as there were yellow stripes required, and said first roll, being supplied with yellow color in the usual manner, would print as many yellow stripes as there were engraved annular depressions on said first roll. The second printing-roll would be engraved over its entire surface, except that there would be left unengraved on said second roll as many annular spaces as there were engraved rings on the first printing-roll, the unengraved annular spaces on the second roll being equal in num-

ber and width to the annular engraved spaces on the first roll, and being at the same distance apart. The two printing-rolls being arranged to register perfectly to bring the unengraved rings in contact with the parts of the cloth previously printed by the first printing-roll, the second roll would print the ground or second color upon the previously unprinted portions of the cloth; but in practice some of the wet yellow would come off from the cloth onto the raised or unengraved portions of the second roll. The doctor, reciprocating in the usual manner, as above stated, would then wipe some of the yellow on the unengraved parts of the second roll over the sharp edges of said unengraved parts into the engraved parts thereof, and the revolution of the second roll would print upon the cloth the ground color and also the yellow color improperly mixed with it at the edges of the unengraved parts. The result would be that, instead of clean yellow stripes with well-defined edges upon a dark ground, we should have bright-yellow stripes of the full width intended, but provided with ragged dirty yellowish edges.

Another difficulty frequently experienced is, that the color applied by the color-furnishing brush becomes partly dried or caked into the engraved parts of the printing-roll, thus, to the extent to which the caking takes place, tending to make a smooth printing-roll of uniform diameter, from which the color would be entirely wiped by the doctor, so that the parts upon which the color dries and fills up the engraving will not take the color and print it upon the cloth.

To remedy these difficulties, particularly the one last named, the color-furnishing brush has sometimes been made to have a positive motion in a reverse direction, to rub against the printing-roll, instead of being driven by frictional contact with said roll, and cloth-printing machines are usually supplied with an attachment consisting of a bracket adapted to be readily attached to the frame of the machine and supporting the intermediate gear, which, by so attaching said bracket, is made to engage with a gear on the shaft of the printing-roll and with another gear on the shaft of the brush. Driving the brush in this manner, however, wears the engraved surface of the printing-roll much more rapidly, and is not completely successful in obviating the difficulties named.

I provide means of giving to the brush *G* a traversing motion in the direction of its length, as follows: I leave spaces between the inner ends of the journal-boxes *f' f'* and the brush proper, *g*, so that said journal-boxes do not interfere with the sliding of the brush endwise, and I make the brush shaft or journals *g²* long enough to allow the brush to traverse without being drawn out of the journal-boxes. Outside of the color-box I secure to the

brush-shaft *g²* a cam, *H*, provided with a cam-groove, *h*. A bracket, *I*, which may be secured by bolts or screws *i i* to the frame of the machine, as shown by full lines in Fig. 2, or to the end of the color-box, as shown partly by dotted lines in said Fig. 2, is provided with a finger or leader, *i'*, which enters said cam-groove *h*, and, being stationary, causes said cam and brush to have a reciprocating motion in the direction of their axes when said brush is revolved. The brush may be revolved in the usual manner by frictional contact with the printing-roll, or by means, now sometimes used and well known and not of my invention, for giving a positive motion to said brush. Giving to the brush *G* a combined rotary and endwise-reciprocating motion causes the bristles of the brush thoroughly to scrub out the partly-dried colors from the engraved parts of the printing-roll, and thoroughly mixes the color which marks off from the cloth with the color being applied to the printing-roll, so as to leave no perceptible blur at the edges of the second color.

I claim as my invention—

1. The combination of an engraved printing-roll, a color-box, a color-furnishing brush located in said color-box and adapted to be rotated in contact with the engraved surface of said roll and free to move in either direction in the line of its axis, and means, substantially as described, of causing said brush, when rotated about its axis, to have a reciprocating endwise motion, as and for the purpose specified.

2. The combination of the engraved printing-roll, the color-furnishing brush adapted to be rotated in contact with the surface of said printing-roll, and provided with a shaft free to slide in its bearings, a color-box, the bearings of said brush supported upon the ends of said color-box, a stationary bracket provided with a finger, and a cam secured to said brush-shaft and adapted to engage with said finger to cause said brush when rotated to have a reciprocating endwise motion, as and for the purpose specified.

3. The combination of the engraved printing-roll, the color-furnishing brush adapted to be rotated by frictional contact with said roll, and provided with a shaft, the color-box, bearings supported upon the ends of said color-box, in which bearings said shaft is free to turn and to slide endwise, and a cam secured to said shaft, and a stationary bracket provided with a finger adapted to engage said cam and to cause said brush, when said roll is rotated in contact therewith, to have a reciprocating endwise motion, as and for the purpose specified.

HIRAM E. GREEN.

Witnesses:

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