

Dec. 10, 1929.

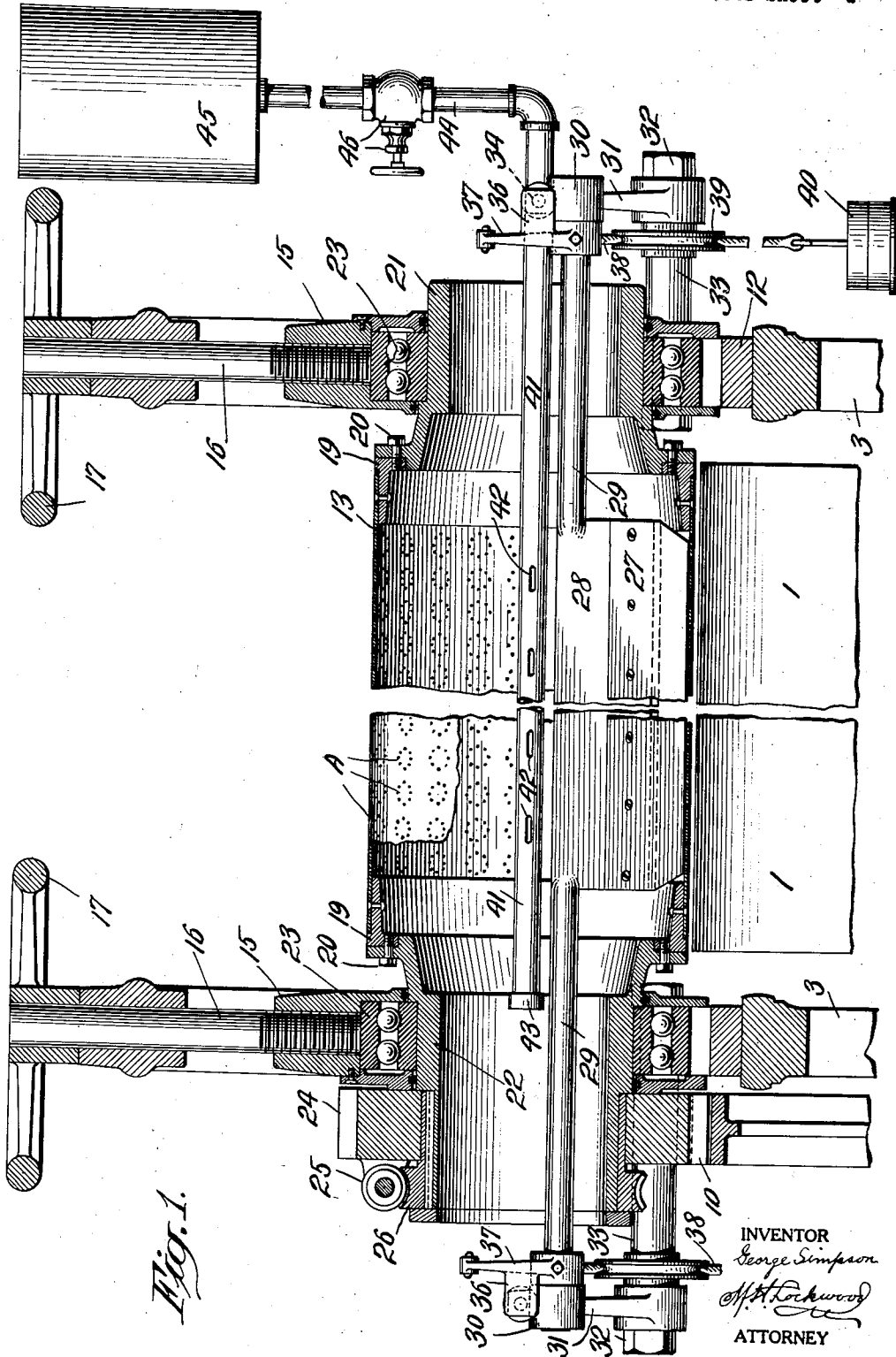
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COMBINED COLOR AND FLOCK PRINTING MACHINE

Filed April 24, 1924

2 Sheets-Sheet 1



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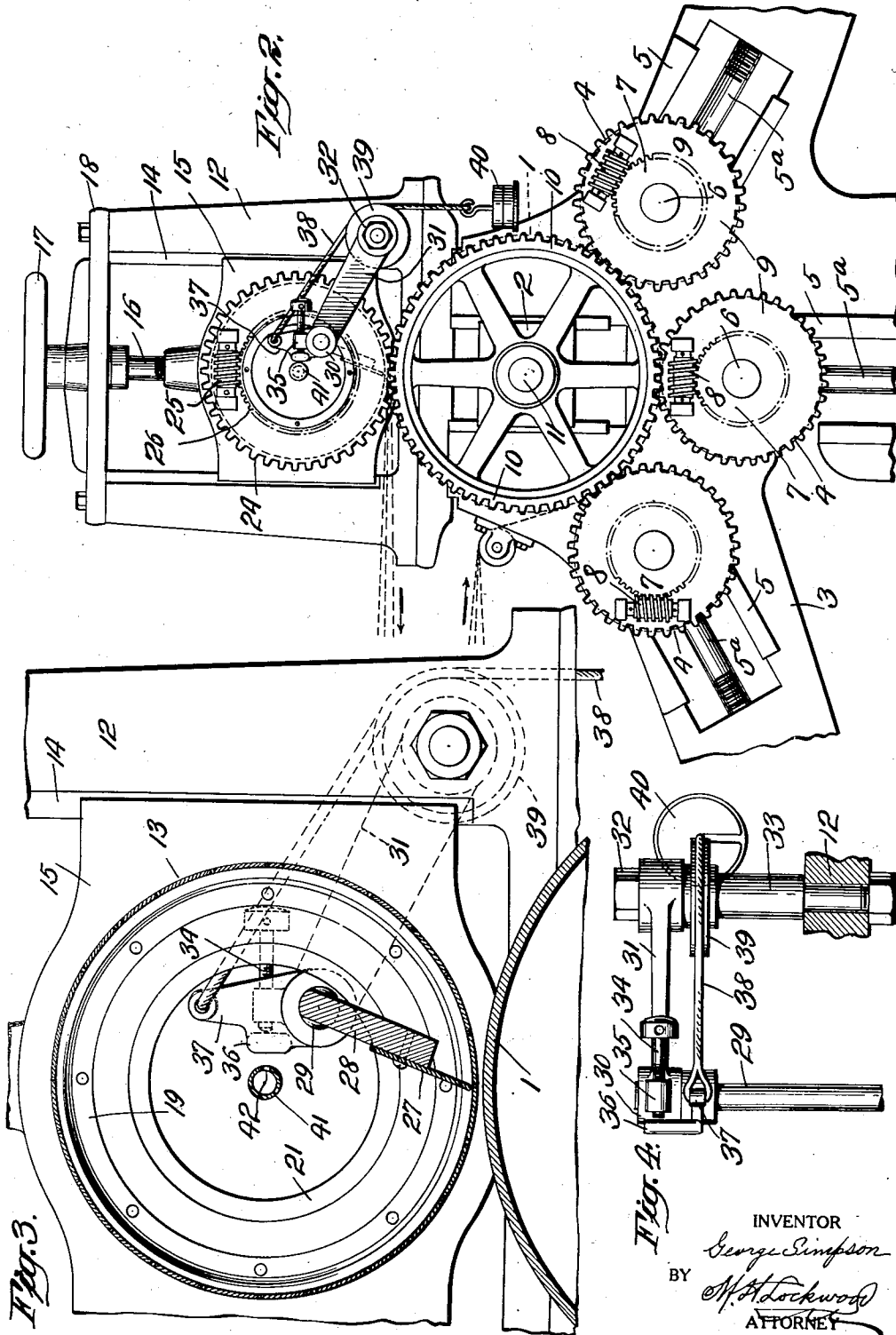
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COMBINED COLOR AND FLOCK PRINTING MACHINE

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My invention relates more particularly to a textile printing machine, which is adapted to print a pattern or design in one or more colors with which there is associated a flock printing pattern or design, said color pattern and the flock pattern being always applied in proper register, by a continuing operation of printing from successive synchronized printing rolls cooperating with the same impression or platen cylinder.

The method of flock printing heretofore employed has been to run the fabric through a printing machine for printing the color pattern and then run it through a separate flock printing machine for printing the flock printing pattern. But the difficulty with this method is that it is almost impossible to maintain the flock printing pattern in proper register with the previously printed color pattern or design. The result is that only a few yards can be done at a time for the pattern soon gets out of register, and then the cloth and flock printing roll must be adjusted to obtain better registration of the pattern. This causes delay and added expense and the work turned out is imperfect and unsatisfactory.

Therefore, the object of my improved method is to simultaneously complete the color and flock printing designs or patterns, as a continuing operation over the same platen cylinder, so that the color pattern and flock pattern, once brought into register, are applied successively to the fabric under the same conditions so that proper register of the pattern is maintained without difficulty. Thus, since the entire job is completed in one operation by passing the fabric through one machine, there is a considerable saving in time and cost.

A further object in my improved printing machine is to provide means for independently adjusting the flock printing roll to bring the pattern thereof into register with the pattern or design printed by the color printing rolls.

These and other objects will be more particularly brought out in describing my improved machine, one form of which is shown in the accompanying drawings. Fig. 1 is a

side elevation of the upper part of my printing machines, showing the flock printing roll and its bearings in section longitudinally of the roll; Fig. 2 is an end elevation with parts of the frame broken away; Fig. 3 shows an enlarged section of the flock printing roll of Fig. 2, and Fig. 4 shows a detail of the adjusting device for the doctor blade.

Referring to the drawings, it will be seen that the usual impression or platen cylinder 1 is mounted in bearing blocks 2, which are slidably supported in the end frame members 3. Any suitable number of color printing rolls 4 (in the present machine three are shown) may be mounted in adjustable bearing blocks, slidably mounted on ways 5, formed in the end frame members 3 and extending radially of the main cylinder 1. The usual screws 5^a are provided for regulating the pressure of the color rolls on the cylinder 1. Each of the color printing rolls 4 is mounted upon an arbor 6, to one end of which a worm wheel 7 is secured. A worm 8, co-operating with the worm wheel 7, is rotatably mounted on the face of the usual fitting gear 9 or pinion 9, concentric with the worm wheel 7 and rotatable relative thereto, thus providing the usual means for adjusting the design or pattern of the printing roll 4 relative to the pinion 9. All of the pinions 9 mesh with the crown wheel or intermediate gear 10, mounted for rotation on the stud 11, preferably in axial alignment with the axis of the platen cylinder 1 when the latter is adjusted for the printing operation. The intermediate gear 10 is power driven by a pinion (not shown) in the usual manner, and thus through the synchronized pinions 9 and printing rolls 4 drives the cylinder 1 and carries the cloth or fabric to be printed through the machine.

The machine as thus far described may be of the usual construction of the ordinary multicolor textile printing machine, and in adapting the machine for carrying out my method, brackets 12 are mounted upon each of the end frame members 3, for supporting a flock printing roll 13, directly above the platen cylinder 1, as will be seen in Figs. 1 and 2. The brackets 12 are provided with

slide ways at 14, upon which bearing blocks 15 are adjustably mounted. Screws 16 and hand wheels 17 are preferably mounted, between caps 18 of the brackets 12 and the bearing blocks 15, for adjusting the flock printing roll 13 toward and from the cylinder.

The flock printing roller 13 is preferably formed of a thin walled copper cylinder, which is perforated over its entire surface by small holes arranged to form the pattern A to be flock printed upon the cloth. The ends of the copper cylinder preferably may be provided with flanged rings 19 secured by screws 20 to tubular bearing thimbles 21 and 22. The latter are supported by ball bearings 23 in the respective bearing blocks 15, so that the roll 13 is freely rotatable. In order that the flock printing roll 13 may rotate in synchronism with the color printing rolls 4, the bearing thimble 22 is provided with fitting gear or pinion 24 meshing with the crown wheel or intermediate gear 10. For adjusting the design or pattern of the flock printing roll to register with the color pattern on the fabric the pinion 24 is loosely mounted and provided with a worm 25 meshing with a worm wheel 26, keyed to the outer end of the bearing thimble 22, substantially as shown in Fig. 1.

For ejecting or forcing the size, varnish, paint or other suitable flock printing material through the holes, forming the design or pattern on the flock printing roll 13, any suitable means may be employed but preferably this is done by the usual doctor. In the present instance, I preferably mount within the flock printing roll 13 a doctor blade 27 on a doctor shear 28, provided with pivot rods 29, extending, parallel to the axis of the roll, through the end thimbles 21 and 22 thereof. The outer ends of the rods 29 are preferably pivoted in bearings 30 on the ends of arms 31 secured by nuts 32 to studs 33, secured to and projecting from the respective bearing blocks 15, as shown in Figs. 1, 2 and 4. The position of the doctor blade 27 relative to the inner wall of the flock printing roll 13 is preferably regulated by screws 34 mounted in lugs 35, located on the pivot bearings 30, (see Figs. 2 and 4). The ends of the screws 34 engage lugs 36 on arms 37; the latter being secured to the pivot rods 29 and located adjacent the pivot bearings 30, so as to hold the doctor in proper position within the flock printing roll 13. The arms 37 preferably have cords 38, attached thereto, which extend over pulleys 39 and carry weights 40, thereby providing resilient means for holding the doctor in adjusted position and for lifting it when the screws 34 are adjusted outward relative to the lugs 36.

To supply the interior of the flock printing roll 13 with the size, paint or material to be forced, by the doctor blade 27, through the pattern of the roll, a pipe 41 (Fig. 1) preferably extends axially of the flock printing roll

and is provided with a plurality of slots 42, or other suitable openings, through which the material escapes and falls to the lower side of the flock roll. One end of the pipe 41 is closed by a cap 43 and the other is preferably connected by means of a pipe 44 with a supply or storage tank 45, from which the flock printing material may be forced by compressed air or fed by gravity; the quantity of material passing to the pipe 41 being regulated by a valve 46.

From the foregoing, it will be understood that in the operation of my improved color and flock printing machine, it is clothed and power operated, substantially the same as the ordinary textile color printing machine. That is, the impression or platen cylinder 1 is suitably padded and then the blanket, the grey or backing cloth, and the cloth to be printed are threaded between the platen cylinder 1 and the color printing rolls 4 and then between the cylinder and the flock printing roll 13. The three cloths as threaded through the machine are indicated by dotted lines in Fig. 2, and the direction of feed thereof by arrows. After the cloths are threaded into the machine, the various printing rolls 4 and 13 are adjusted toward the cylinder 1 to exert the proper pressure for printing, and if necessary, the color printing rolls are adjusted by the worms 8 to get the color patterns in register and then the flock printing roll 13 may be adjusted, by the worm 25, to bring the pattern thereof into register with the color pattern. After the flock printed cloth leaves the machine, it is carried horizontally for some distance during which time flock powder is sprinkled over the flock printed design or pattern, and the cloth is dried and treated and finished in the usual manner.

It will be understood that while I have described one form of printing machine for carrying out my improved method of color and flock printing, I do not wish to be limited to the construction shown, for various modifications therein may be made without departing from the spirit and scope of the invention.

I claim:—

1. A combined color and flock printing machine, comprising an impression cylinder over which the fabric to be printed is passed, a printing roll cooperating therewith to print a color pattern, a stencil roll for implanting a flock printing design in register with the color pattern, gears for rotating the respective printing and stencil rolls in synchronism and means for maintaining the axis of rotation of the stencil roll in fixed position radially of the impression cylinder during the printing operation.

2. A combined color and flock printing machine, comprising an impression cylinder over which the fabric to be printed is passed, a printing roll cooperating therewith to print

a color pattern, a stencil roll for implanting a flock printing design in register with the color pattern, gears for rotating the respective printing and stencil rolls, an intermediate gear mounted concentrically of the impression cylinder and intermeshing with said roll gears for rotating the printing and stencil rolls in synchronism and means for adjusting the stencil roll radially of the impression cylinder and maintaining printing contact therewith while the stencil rotates about a relatively fixed axis.

3. A combined color and flock printing machine, comprising an impression cylinder over which the fabric to be printed is passed, a printing roll cooperating therewith to print a color pattern, a stencil roll for implanting a flock printing design in register with the color pattern, gears for rotating the respective printing and stencil rolls, an intermediate gear mounted concentrically of the impression cylinder and intermeshing with said roll gears for rotating the printing and stencil rolls in synchronism, means for maintaining the axis of rotation of the stencil roll in fixed position radially of the impression cylinder during the printing operation and means for adjusting said stencil roll circumferentially to bring the flock printing design into register with the color pattern.

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