Aug. 11, 1925. 1,549,677

P. H. McGIEHAN

COMBINATION MULTICOLOR INTAGLIO AND RAISED OR FLOCK PRINTING MACHINE

Filed March 15, 1924 3 Sheets-Sheet 1

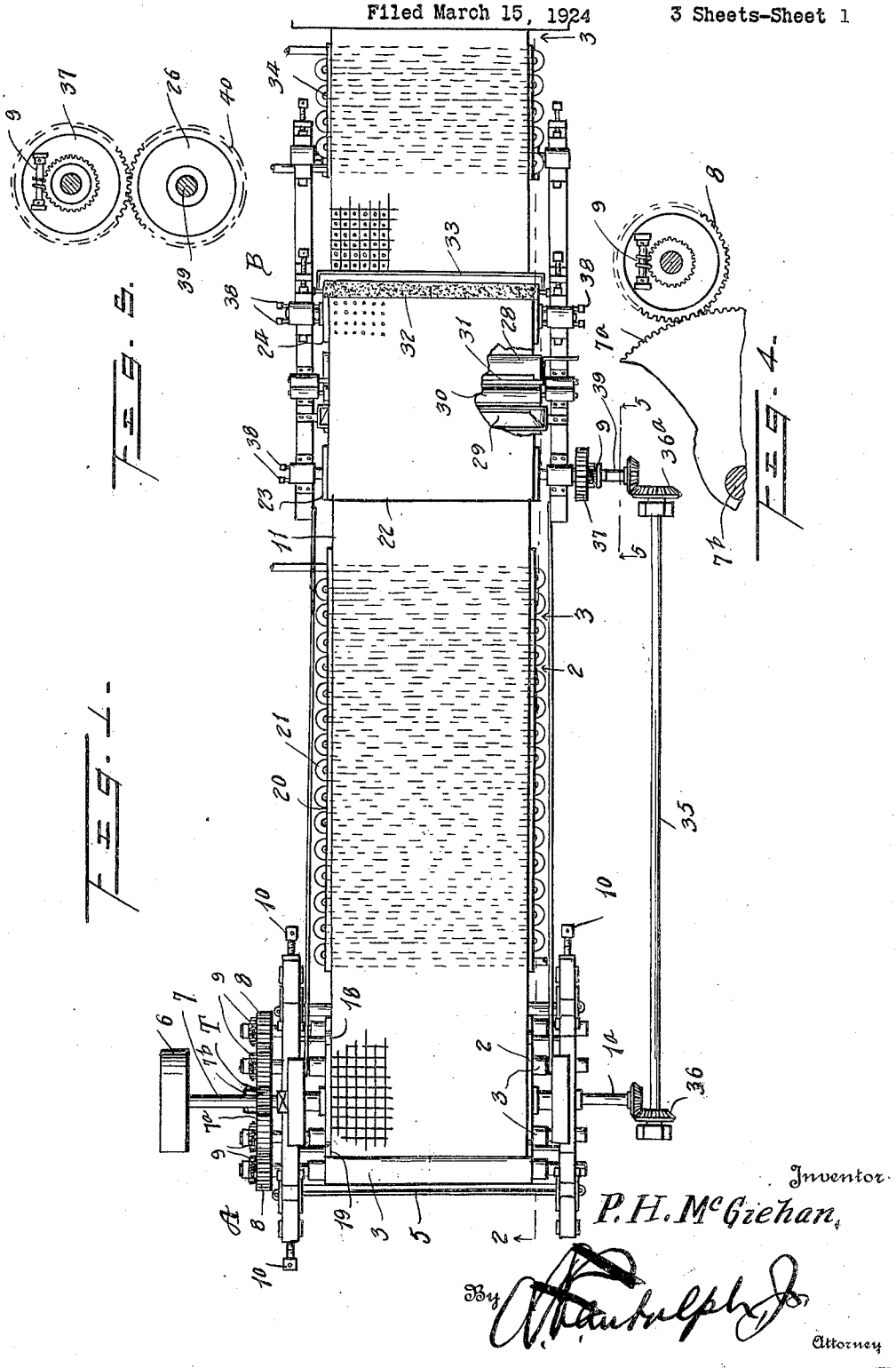


Fig. 5.

Fig. 4.

Fig. 1.

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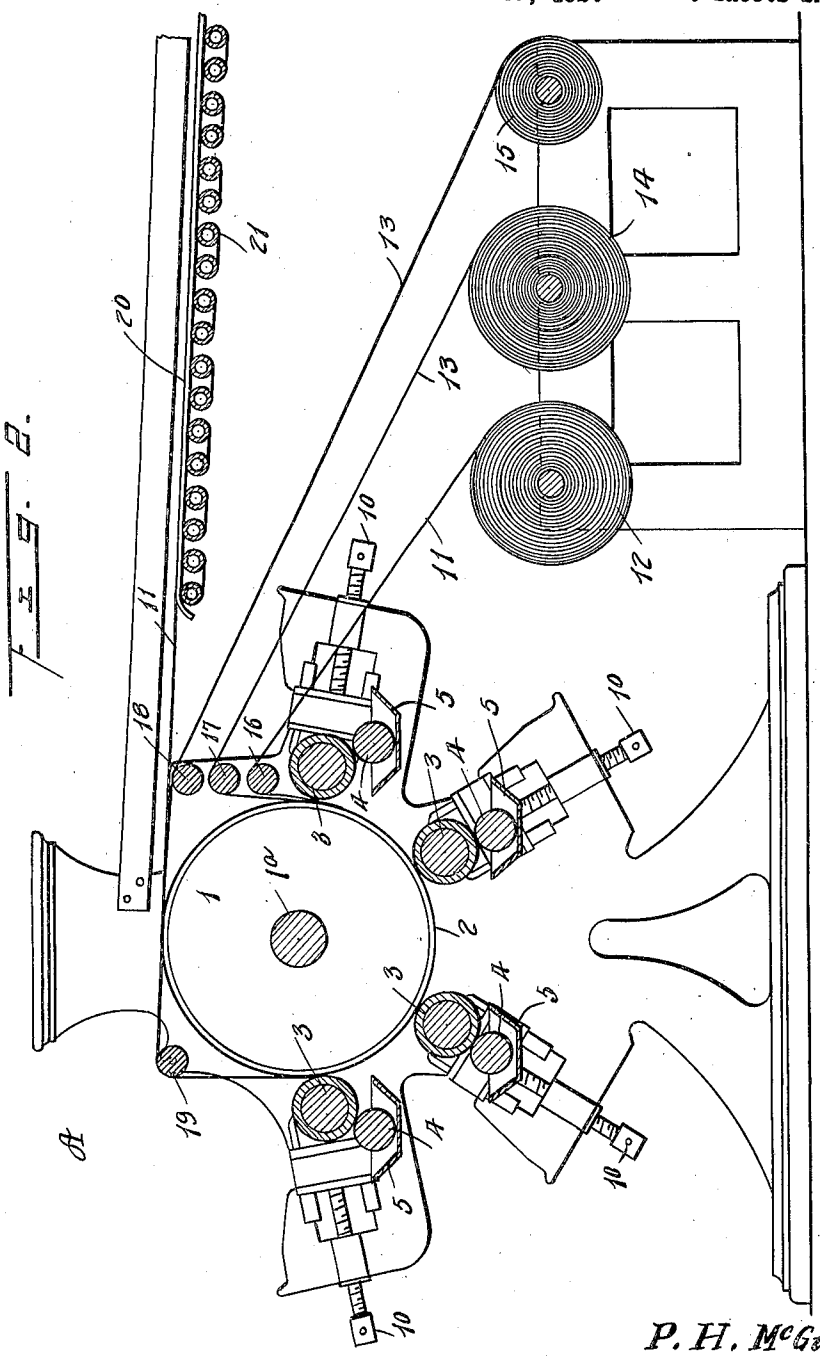
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Filed March 15, 1924 3 Sheets-Sheet 2

Fig. 2.



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Filed March 15, 1924 3 Sheets-Sheet 3

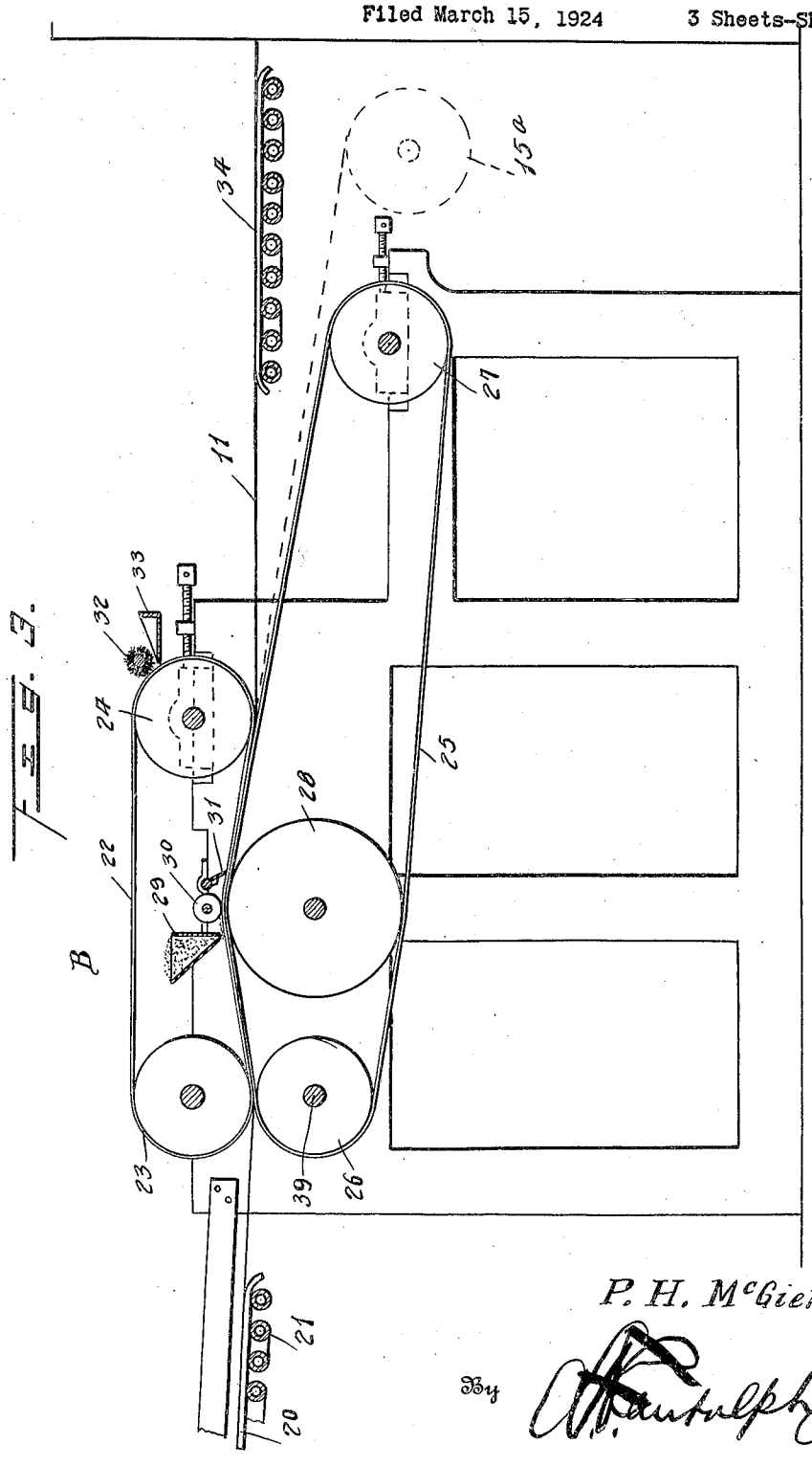


FIG. 3.

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UNITED STATES PATENT OFFICE.

PATRICK H. McGIEHAN, OF NEW YORK, N. Y.

COMBINATION MULTICOLOR INTAGLIO AND RAISED OR FLOCK PRINTING MACHINE.

Application filed March 15, 1924. Serial No. 699,581.

To all whom it may concern:

Be it known that I, PATRICK H. McGIEHAN, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Combination Multicolor Intaglio and Raised or Flock Printing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to a machine for printing fabrics and has for its object to provide a multi-color printing machine and a flock or raised printing machine in a single organization, whereby to minimize the cost and the handling in two operations and insure the registration of the several prints of patterns which are effected in successive order and in a continuous cycle of operation, thereby reducing the chances of misprint to the smallest amount possible.

Other objects and advantages will be apparent and suggest themselves as the nature of the invention is understood.

While the drawings illustrate an embodiment of the invention it is to be understood that in adapting the same to meet different conditions and requirements, various changes in the form, proportion and minor details of construction may be resorted to without departing from the spirit of the invention.

Referring to the accompanying drawings forming a part of the application:

Figure 1 is a top plan view of a combined multi-color and flock or raised printing machine unit embodying the invention;

Figure 2 is an enlarged sectional view on the line 2—2 of Figure 1;

Figure 3 is an enlarged sectional view on the line 3—3 of Figure 1;

Figure 4 is a detail view of the fitting gear whereby provision is had for bringing the several printing devices and patterns on cloth into registration, and

Figure 5 is a sectional detail on the line 5—5 of Figure 1.

Corresponding and like parts are referred to in the following description and designated in the several views of the drawings by like reference characters.

The organized machine embodies a multi-color rotary printing machine A and a flock or raised printing machine B, the two machines being so combined and related that the fabric is printed in intaglio and flock or any raised printing design in a continuous cycle of operation without intermediate handling, thereby insuring registering of the printed design by the printing mechanism and obviating any intermediate handling.

The multi-color printing machine embodies a cylinder 1 having its surface covered with rubber 2. A plurality of printing rollers 3 are disposed about the cylinder 1, each being provided with the component part of the design to be printed in color. An ink distributing roller 4 cooperates with each of the printing rollers 3 and is supplied with ink from a pan 5. The cylinder 1 may be driven from any suitable source of power transmitted to driving shaft 7 direct or by belt (not shown) cooperating with pulley 6 fixed to shaft 7 to which is attached a pinion gear T which meshes with an intermediate gear wheel 7^a (shown directly under pinion T) mounted on individual shaft or stud 7^b and which gear 7^a engages all fitting gears 8 which are keyed to mandrels or shafts upon which the printing rollers 3 are fixed by pressure exerted with screws 10 against bearings on mandrels upon which the printing rollers are fixed bringing them in close contact with cylinder 1 which is rotated by friction therefrom, thus revolving the extension of fixed cylinder shaft 1^a which transmits power to shaft 35 thus driving flock or raised printing machine B at the same peripheral speed as intaglio machine A. The printing rollers 3 are adapted to be adjusted by set screws 10 and fitting gears 8. The numeral 11 designates the fabric to be printed and the same is provided in a roll 12. A backing 13, gray cloth, coacts with the fabric 11 and comes between it and the rubber covered surface 2 of the cylinder 1 and takes up any surplus ink or color. This backing is provided in a roll 14 and may be rewound to provide a roll 15 or may pass through the flock or raised printing machine and form a roll 15^a, as indicated by the dotted lines in Figure 3. A plurality of guide rollers 16, 17 and 18 are provided to give direction to the fabric and backing and a guide roller 19 supports both the fabric and backing in line with the top of the cylinder 1 forwardly thereof. A hot plate 20 interposed between the multi-color and flock printing mechanisms, serves to dry the intaglio printing in advance of the flock

or raised printing. Heating coils 21 are disposed beneath the plate 20 for bringing the same to the proper temperature.

The flock or raised printing machine comprises an endless copper printing apron 22 through which the design is perforated which is mounted upon rollers 23 and 24. An endless rubber-faced apron 25 supported upon rollers 26 and 27 has its upper run passing over a cylinder 28 which is disposed intermediate the rollers 23 and 24 and engages the lower run of the endless flock printing apron 22. A trough 29 contains the pigment for the flock or raised printing and discharges the same upon the lower run of the endless copper printing apron 22. A surfacing roller 30 forces the pigment through the openings of the endless copper printing apron and the surplus pigment is removed by a vibrating doctor blade 31. A cleaner brush 32 removes any pigment that may remain in the openings of the flock printing apron or appear upon the outer surface thereof. A trough 33 receives this surplus pigment. The fabric passes over a hot plate 34 similar to the hot plate 20, whereby the raised printing is partly dried so as to set the same and prevent blur or smear. The bevel gear 36 connects with bevel gear fixed on the extension of cylinder shaft 1^a, furnishing power to the shaft 35. Bevel gear 36^a connects with bevel gear on end of shaft 39 of roller 26, on which shaft directly under fitting gear 37 there is also fixed a pinion gear marked 40, as indicated in Figure 5. To this gear 40 the fitting gear 37 meshes and receives its power to drive roller 23 which roller in turn drives roller 24 by friction of the copper belt, in which case, fitting gear 37 with its worm screw 9 will adjust the copper apron backwards and forwards and the side motion screws 38 in the bearings are for adjusting and fitting the pattern sidewise.

What is claimed is:

1. A fabric printing machine comprising a multi-color printing mechanism and a flock printing mechanism of stencil form disposed in cooperative position to act in succession and in a continuous cycle of operation and means between the mechanisms to support the fabric as it passes from one mechanism to the other mechanism.

2. A fabric printing machine comprising an intaglio multi-color printing mechanism and a flock printing mechanism of stencil form in cooperative relation and adapted to print the fabric in various colors in succession in a continuous cycle of operation and a heating means intermediate the mechanisms constituting a support for the fabric as it passes from one mechanism to the other mechanism.

3. A fabric printing machine comprising an intaglio printing mechanism, a flock printing mechanism of stencil form and an intermediate hot plate for supporting the fabric being printed as it passes between the two mechanisms and for drying the intaglio printing in advance of the flock printing, and a hot plate in the rear of the flock printing mechanism to partly dry the flock printing to insure a setting thereof.

4. A fabric printing machine including a flock printing mechanism, a stencil for said flock printing mechanism comprising an endless belt, rollers for supporting the two flights of said belt, an endless apron supporting the fabric, rollers supporting said apron, a cylinder engaging said apron intermediate of the last mentioned rollers and raising the apron and the lower run of the stencil.

In testimony whereof I affix my signature in presence of two witnesses.

PATRICK H. McGIEHAN.

Witnesses:
GEORGE E. BROWN,
LILLIAN M. KLEIN.