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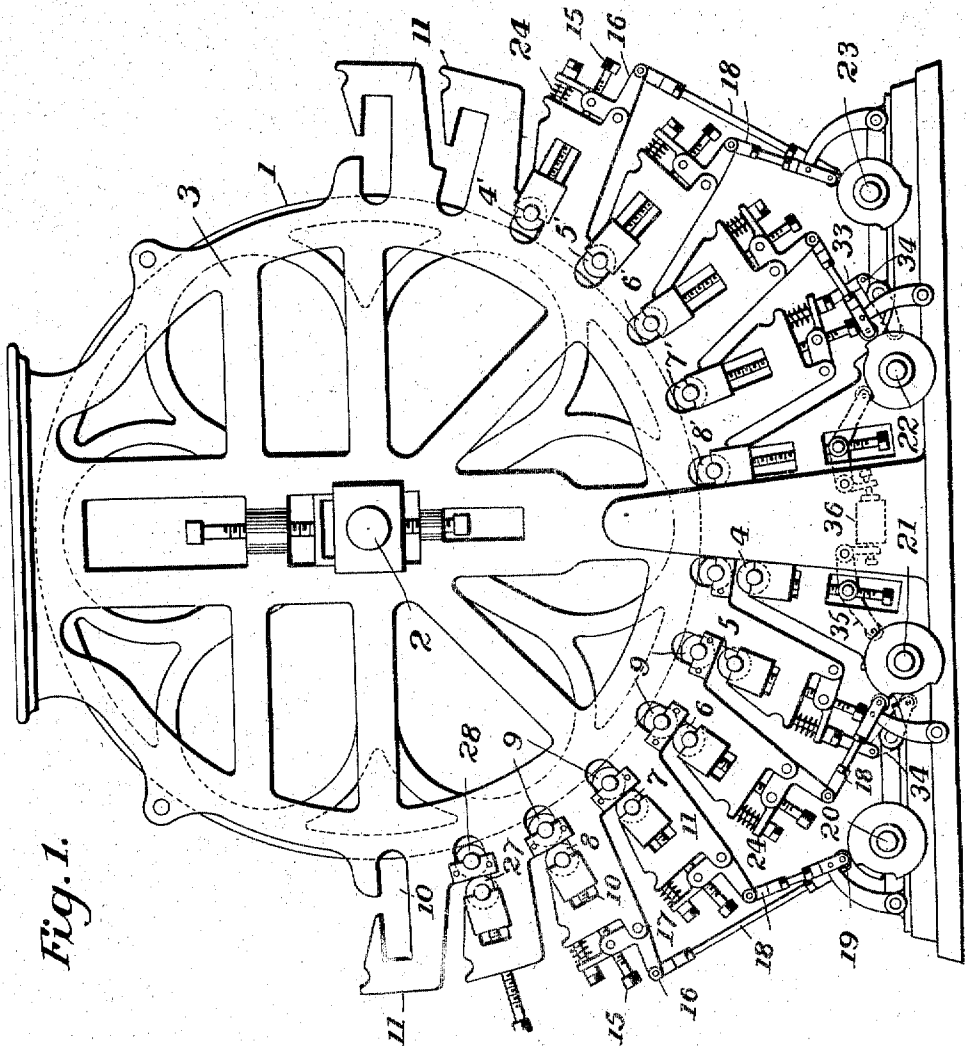


Fig. 1.

Witnesses

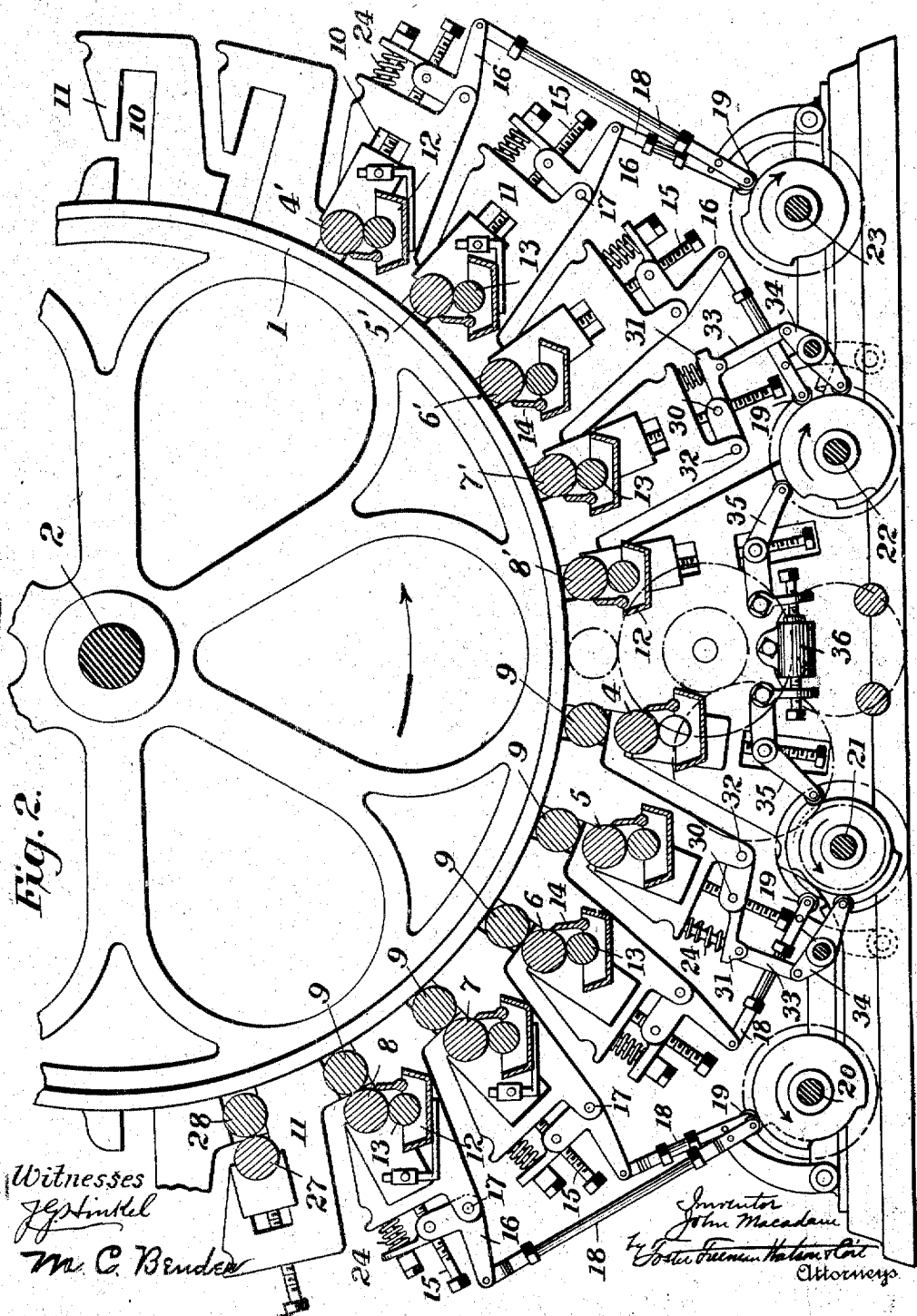
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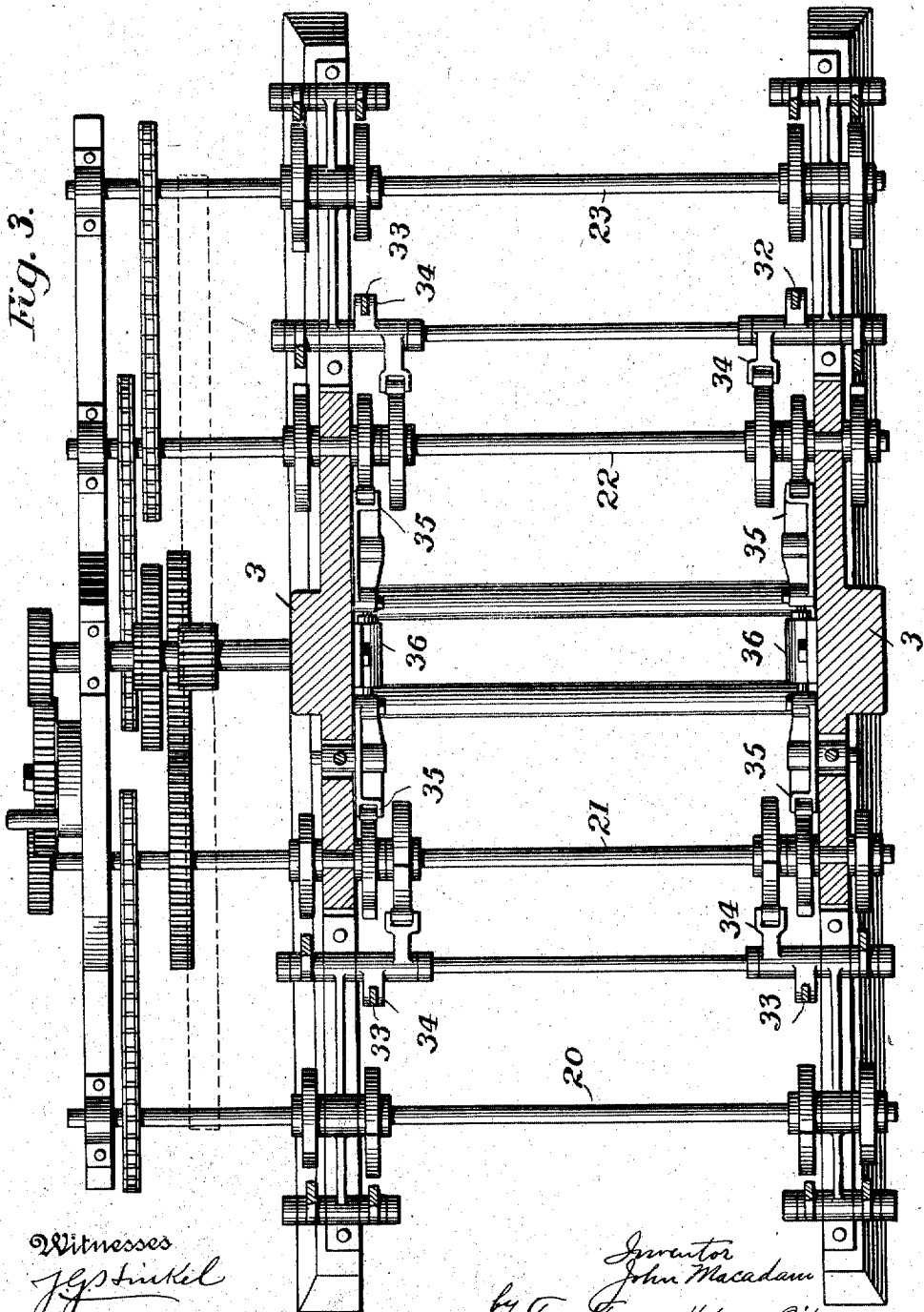
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Patented Feb. 14, 1911.

4 SHEETS-SHEET 2.



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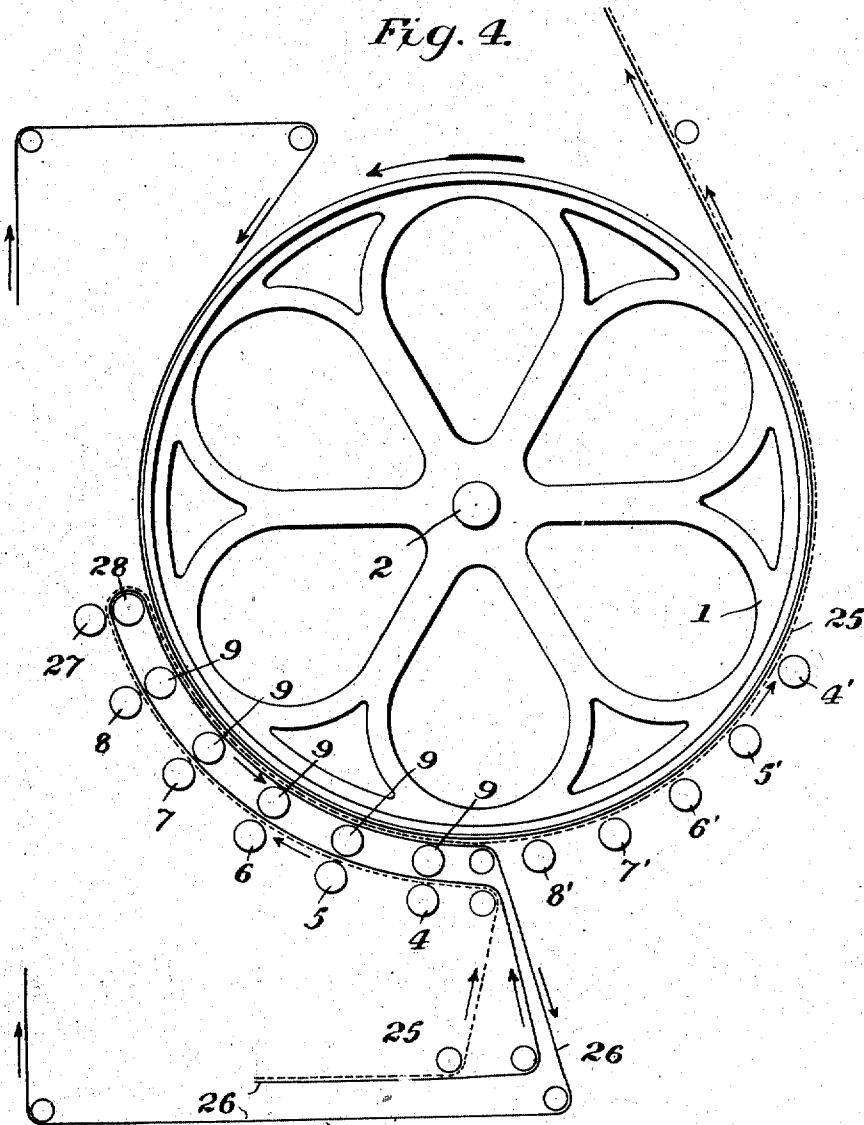
J. MACADAM.
FABRIC PRINTING MACHINE.
APPLICATION FILED MAY 28, 1910.

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4 SHEETS—SHEET 4.

Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN MACADAM, OF EDDYSTONE, PENNSYLVANIA, ASSIGNOR TO THE EDDYSTONE MANUFACTURING COMPANY, OF EDDYSTONE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

FABRIC-PRINTING MACHINE.

984,228.

Specification of Letters Patent.

Patented Feb. 14, 1911.

Application filed May 28, 1910. Serial No. 564,023.

To all whom it may concern:

Be it known that I, JOHN MACADAM, a citizen of the United States, and resident of Eddystone, in the county of Delaware and State of Pennsylvania, have invented certain new and useful Improvements in Fabric-Printing Machines, of which the following is a specification.

The present invention relates to improvements in fabric printing machines and has for its object to provide a machine adapted to print upon a fabric a plurality of designs or patterns, for example a "body" pattern and a "transverse border" of different design, such designs being duplicated in relative arrangement and detail on both surfaces of the fabric, whereby the product will closely resemble a woven textile having a plurality of patterns incorporated therein in alternating relation.

Fabric printing machines as heretofore constructed have not been adapted for producing goods such as is employed, for example, for curtains or draperies, where both surfaces should present a similar appearance and which commonly include one or more transverse border sections; and to provide a machine which will print fabric that will be adapted for such use is the particular object of the present invention.

In the accompanying drawings: Figure 1 is a side elevation of a fabric printing machine constructed in accordance with the present invention; Fig. 2 is a view partly in section, on an enlarged scale, of a portion of such machine; Fig. 3 is a plan view partly in section illustrating particularly the arrangement of cams for effecting movement of the printing rolls; Fig. 4 is a diagrammatic view illustrating the course or path of the fabric through the machine.

Referring to the drawings, the particular machine illustrated includes a main pressure cylinder 1 mounted on a shaft 2 having its bearings in a suitable frame 3, which frame also supports the various printing rolls, color applying devices, auxiliary pressure rolls, and means for actuating and adjusting the printing rolls, which will be hereinafter more particularly described.

The machine illustrated includes two sets of printing rolls 4, 5, 6, 7, 8 and 4', 5', 6', 7' and 8', the former or first of said sets co-operating with a series of pressure rolls or cylinders 9, while the cylinder 1 acts as an

impression roll for all of the second set. Each of said printing rolls is mounted in bearings adapted to move radially of the cylinder 1, being shown as fitted in grooves 10, formed in outwardly projecting parts 11 of the frame 3. Adjacent each printing roll is arranged a color apparatus of ordinary construction comprising a color box 12, a distributing roll 13, mounted in said box and projecting therefrom into contact with the adjacent printing roll, and a doctor blade 14 for removing superfluous color from the printing roll.

As shown the bearings for the printing rolls 6, 7, 8, 4', 5' and 6' are connected by screws 15 with bell crank levers 16, fulcrumed at 17 to the main frame, and each having one arm connected to one arm of a lever 18, the other arm of which is provided with a roll 19 extending into the path of one of a series of cams carried by shafts 20, 21, 22 and 23. The screws 15 connected with the printing rolls 5, 7 are connected at 30 with levers 31, fulcrumed on the main frame at 32 and connected by links 33 with levers 34 which at their opposite ends bear rollers extending into the paths of cams on the shafts 21, 22; and the rolls 4 and 8' are connected with levers 35 carrying rolls that bear upon cams on said shafts 21, 22.

The coiled springs 24, interposed between the frame members 11 and the several levers 16, 31 connected with the printing rolls act to draw each printing roll away from its impression roll or surface, and the action of the aforesaid cams and levers is to overcome the effect of said springs at such times as it is desired to have the particular printing roll operate. In the particular embodiment of the invention illustrated the levers 35 for moving the rolls 4 and 8' are normally held in such position that said rolls do not contact with their impression surfaces by a common spring or cushion arranged within a casing 36.

As hereinbefore indicated the rolls constituting each of the two series of printing rolls must be divided into groups and the rolls of each group bear a different pattern or design from that borne by the rolls of the other group or groups of the series. In the machine illustrated three of the rolls of each series are provided with a similar pattern, for example that which is to form the body or design of a curtain, while the other rolls

of the series carry a different design and are adapted to print the transverse zone or border sections of the fabric; for instance the groups of rolls 6, 7 and 8 and 6', 7' and

5 8' may bear the pattern hereinbefore referred to as a "body" pattern, and the rolls 4 and 5 and 4' and 5' the design for the "transverse border". It will be understood that the form and relative arrangement of the several cams on the shafts 20, 21 22 and 23 is such that the particular printing roll controlled by each cam will be moved away from its impression roll during the interval of time that a portion of the fabric which bears, or is to bear, the impression of a roll having a different design is passing the first said roll and its impression or pressure device; and the relative arrangement of rolls and adjusting parts is such that the two designs will be duplicated, both as regards arrangement or order and detail, upon both surfaces of the sheet of fabric in passing through the machine. That is the finished product will have the two designs or patterns printed upon alternate transverse portions of both surfaces and each of said sections will register exactly with the corresponding section on the other face.

The fabric sheet 25, as shown most clearly in Fig. 4, together with a backing or gray sheet 26, enters the machine at the bottom and passes successively between the co-operating impression rolls and the printing rolls 4, 5, 6, 7 and 8; thence between feed rolls 27, 28, around the latter, between the cylinder 1 and impression rolls 9 and between said cylinder and the printing rolls 8', 7', 6', 5' and 4'. The sheets 25, 26 travel together until they pass between the cylinder 1 and a guide roll arranged between the printing roll 8' and the impression roll 9 of printing roll 4. The said sheets then separate and the sheet 26 is carried about suitable guides outside of the machine to the top thereof and thence passes around the cylinder 1 and between such cylinder and the printed fabric, as indicated in Fig. 4.

It will be understood that the number of groups of rolls in each set may be varied from what is herein shown and described without departing from the scope of the invention. Also the number of rolls in the groups of each series need not vary in number as in the particular embodiment of the

machine illustrated, which is adapted to print two patterns or designs occupying different linear lengths of the fabric.

What is claimed is:

1. In a machine for printing a continuous web of fabric, the combination with suitable rotatable pressure cylinders, of two sets of color printing rolls arranged to print, respectively, upon opposite sides of the fabric, the rolls of each set being divided into groups, means for throwing the rolls of each group into and out of printing position at stated intervals, each group of rolls being arranged to print upon alternate transverse portions of the fabric, and all of said rolls being arranged and timed to operate in conjunction with said pressure cylinders, whereby different patterns may be printed upon alternate transverse portions of one surface of the fabric passing over said cylinder and exactly duplicated upon the other surface thereof, like portions of each pattern upon opposite sides of the fabric being in register.

2. In a machine for printing a continuous web of fabric, the combination with a single rotatable main pressure cylinder and a series of pressure rolls, of two sets of color printing rolls arranged to print, respectively, upon opposite sides of the fabric, each set including two groups of rolls adapted to print different patterns, and every roll of each set being duplicated in the other set, means for applying color to each printing roll, means for feeding a web of fabric to and around said main pressure cylinder and in operative relation to all of said printing rolls, means for rendering each printing roll alternately operative and inoperative to print on said fabric, all of said printing rolls being arranged and timed to operate in conjunction with said main cylinder and pressure rolls, whereby different patterns may be printed upon alternate transverse portions of one surface of the fabric passing over said cylinder and exactly duplicated upon the other surface, like portions of each pattern upon opposite sides of the fabric being in register.

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

JOHN MACADAM.

Witnesses:

JOHN MACINTYRE,
GEO. R. HUNTER.