(No Model.)

T. J. MARTIN.

MACHINE FOR PRINTING FABRICS.

No. 488,897. Patented Dec. 27, 1892.

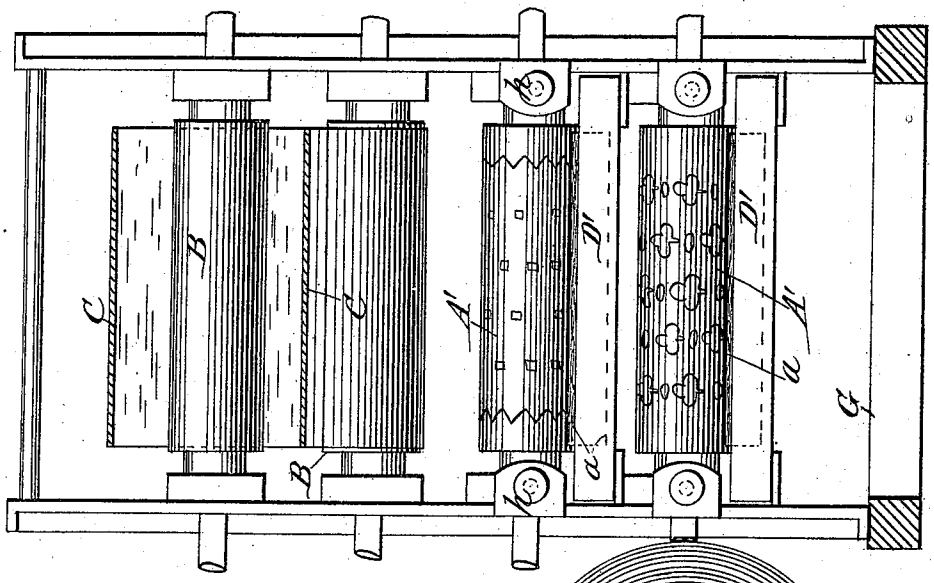

Fig. 2.

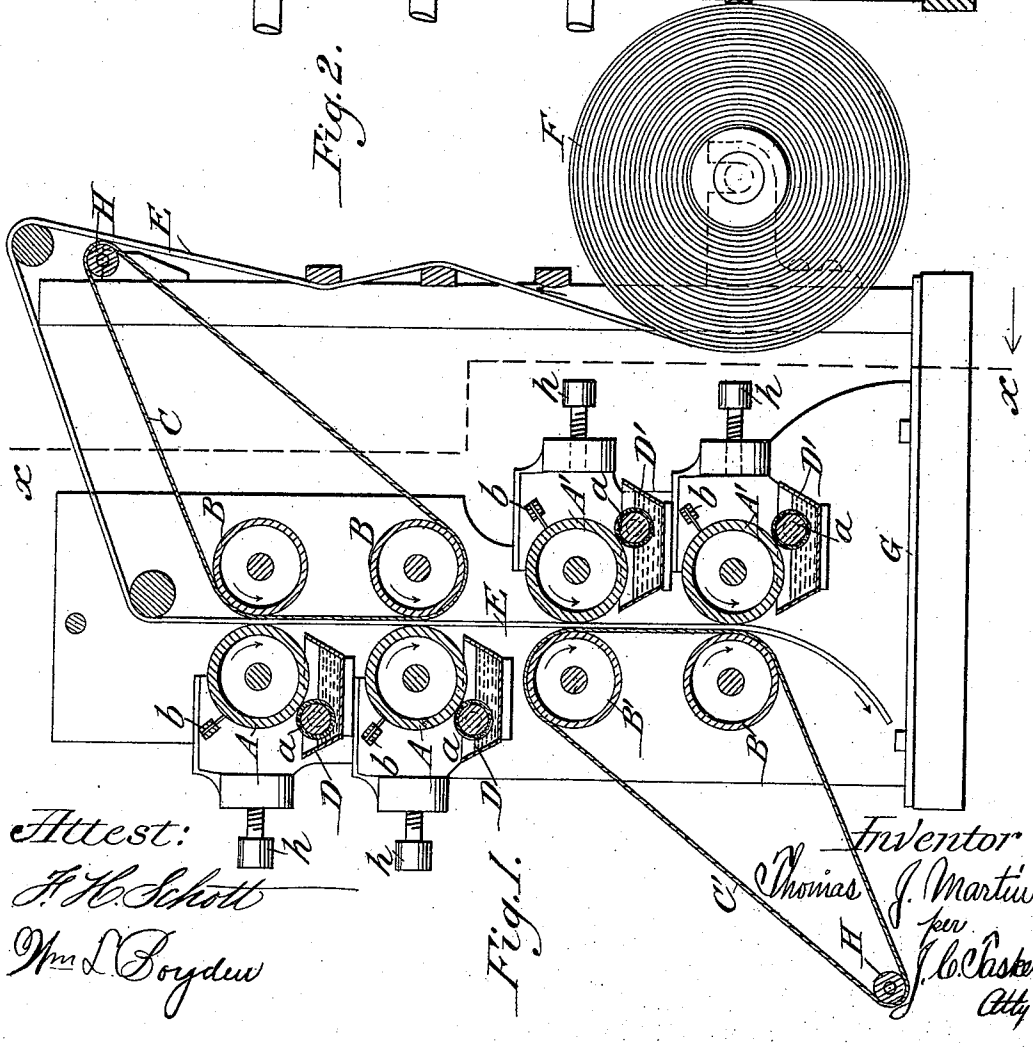

Fig. 1.

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UNITED STATES PATENT OFFICE.

THOMAS J. MARTIN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS TO EDWIN MARTIN AND WILLIAM L. MARTIN, OF SAME PLACE.

MACHINE FOR PRINTING FABRICS.

SPECIFICATION forming part of Letters Patent No. 488,897, dated December 27, 1892.

Application filed November 22, 1890. Serial No. 372,351. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. MARTIN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Printing Fabrics; 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.

My invention has reference to a machine for printing textile or other fabrics, it being intended for use with any kind of fibrous, textile or woven material, such as cotton, wool, silk, jute, &c. the object of the invention being to provide a machine which will print both sides of a fabric at one passage through the machine in the same pattern upon both sides, or different patterns on both sides, whichever may be preferred or desirable, in the same or different colors, in fact to print the cloth or textile fabric upon both its sides in any of the multitude of the kinds and varieties of patterns and forms which might be conceived, and further, a machine which will print in any number of colors on both sides, of the fabric by once passing it through the machine or will print two separate pieces of fabric on one side with the same pattern or with separate and multiplied patterns, and the invention therefore consists essentially in the construction, arrangement and combination of the printing rollers, the pressure rollers and the blankets as adapted for operation in conjunction with the traveling cloth, and also in certain details in the construction, arrangement and combination of the several parts of the machine, substantially as will be hereinafter described and then more particularly pointed out in the ensuing claims.

In the annexed drawings illustrating my invention: Figure 1 is a vertical section of my improved machine for printing textile or other fabrics. Fig. 2 is a front elevation of the same.

Similar letters of reference designate corresponding parts in both figures.

The frame of my improved machine for printing calicoes and all other kinds of fabrics may be of any suitable and desirable construction which may best adapt it for the convenient arrangement therein and therewith, of the several mechanical parts which constitute the invention.

G designates an example of frame work which I have shown here for illustration simply. It will be noted that I have not encumbered this case with a representation or description of the numerous parts ordinarly found in a printing machine but have endeavored to represent and describe only those parts in combination of which belongs the novelty of the invention and therefore it will be understood that I propose to employ in whatever way may seem best any of the well known arrangements for shifting and changing the positions of the printing rollers and for adjusting the several mechanical parts, which old devices I have omitted from the drawings.

In my improved printing machine I employ a separate engraved roller for each and every color which I propose to use. Further in conjunction with each engraved roller I employ a pressure or impression roller placed closely contiguous thereto, whatever intervening space there is being occupied by the traveling cloth and by the blanket and gray piece if desired. Of course there may be any number of engraved rollers and they may be arranged in any way. The machine may be upright or horizontal and therefore the rollers may be arranged accordingly and obviously the cloth or fabric may pass through the machine in any position, either horizontally, inclined, vertically or otherwise as experience may dictate or wisdom suggest. The rollers which print one side of the cloth will be arranged upon that side, while the rollers which print the other side will be arranged upon the other side. With this view of the scope of the invention I will proceed to describe in detail the example thereof which I have delineated in the drawings.

A A denote engraved rollers which are journaled horizontally in the main frame of the machine their surfaces touching the same vertical line, there being two of these rollers shown, although there may be any number of them and they being located toward the upper portion of the machine frame. A′ A′

denote similar engraved rollers likewise journaled in the machine frame in such a manner that their surfaces touch the same vertical line, said rollers A′ A′ being located nearer the base of the machine and out of line with the aforesaid rollers A A so that if the cloth as E, travels through the machine vertically. The surfaces of the rollers A A may touch it on one side, while the surfaces of the rollers A′ A′ may touch it on the opposite side. The rollers A A are provided with color boxes D D and the rollers A′ A′ are similarly provided with color boxes D′ D′, there being in each of these color boxes the usual small roller *a* partly submerged in the color material and operating in contact with the face of the engraved roller for the purpose of supplying the coloring material to the engraved surface of the roller. Also each one of the rollers A A′ A′ may or may not be provided with a color doctor *b*, the object of which is to remove any surplus coloring material from the face of the engraved roller before it registers its impression upon the cloth or other textile fabric. Opposite each one of the upper rollers A A and horizontally in line therewith is a pressure or impression roller B journaled in the main frame of the machine and separated only a very short distance from the engraved roller. It may be said that the impression roller runs in substantial contact with its companion printing roller, there being between them simply the traveling fabric which is to be printed and the blanket, if one is to be used. Again it will be observed that closely parallel and horizontally-adjacent to each of the lower printing rollers A′ is a companion pressure roller B′ exactly similar in its construction and arrangement to the pressure roller B just referred to.

The engraved rollers are all arranged so as to exert a pressure against the impression roller and any suitable devices may be employed for this purpose such as the screws *h h* for example or any desirable arrangement of adjustable bearings and levers. All the rollers, both printing and impression, on one side of the fabric, rotate in the same direction, while the rollers on the other side of the fabric likewise rotate in the same direction but their direction of rotation is different from that of those on the other side and in this way the cloth is passed steadily and evenly through the machine, the tension being equal and the motion regular.

C and C′ designate blankets. The blanket C passes around the upper pressure rollers B B and a small pulley H, while the blanket C′ passes around the lower pressure rollers B′ B′ and another small pulley H, said blankets passing between the pressure rollers and their adjacent printing rollers. Gray pieces may also be used if desired following the course of the blanket. These blankets may be of greater or less length and made of any suitable material. The printing may upon some fabrics be accomplished successfully without the use of the blankets. Yet I deem that the blankets constitute one of the features of my invention. In case gray pieces are used a gray piece will be required for each side. I have not thought it necessary to indicate the gray pieces in the drawings, and simply refer to them here by way of completeness.

The operation of my improved machine for printing textile fabrics will be evident from the foregoing description of the construction without need of any extensive additional matter. Suppose that F denotes a roll of cloth which is passing up over suitable pulleys and entering at the top of the machine, then passing downward in a vertical direction between the rollers and emerging from the machine at the base. Of course the direction of motion of the cloth through the machine is immaterial and may vary as desired. E denotes a piece of cloth or other fabric which is passing through the machine. It will first be acted upon or printed by the rollers A A, which by pressing upon the cloth and having their pressure sustained by the opposite pressure rollers, will, as the rollers revolve and the cloth travels on downward, register their engraved delineations accurately and correctly upon the surface of one side of the cloth in one or more colors and one or more patterns as the case may be. Then likewise the engraved rollers A′ A′ will operate in the same manner upon the other side of the cloth, pressing against it and having their pressure sustained by the oppositely located pressure rollers and accordingly the rollers A′ will register their impressions neatly and clearly upon the other side of the cloth. The blankets will perform their functions of keeping the cloth clean, the lower blanket C′ preventing any smearing of the impressions registered upon the cloth by the rollers A, while the blanket C will be found of value at the upper part of the machine. Thus it will be seen that the passage of the cloth through the machine may result in its being properly printed upon both sides. I have thus described the operation with reference to one piece of cloth, but it is very clear that two pieces of cloth may be passed simultaneously through the machine instead of one if desired and that the result of that will be to have these two pieces each printed on one side, the rollers A A acting on one of the pieces and the rollers A′ A′ acting on the other of them.

As I have already indicated herein the machine may vary greatly in its construction as regards the number, arrangement and function of the several printing rollers and I do not consider that I will in any way be restricted to anything that I have herein shown by way of example but will be permitted to build my machine in accordance with the principles herein suggested.

Having thus described my invention, what I claim as new and desire to secure by Letters-Patent, is:—

1. The combination of the printing rollers

which operate on one side of the fabric, their color boxes, the distributing rollers and doctors therefor, the impression rollers opposite said printing rollers and against which they press, the printing rollers operating against the other side of the fabric, their color boxes, distributing rollers and doctors, the impression rollers directly opposite said printing rollers and against which they press, the impression rollers opposite one set of printing rollers and all the rollers on one side of the fabric being located in line with each other and having the same direction of rotation while those on the other side are likewise in line with each other and have the same direction of rotation and the endless blankets passing around each set of impression rollers as well as around a supporting pulley, all arranged so that the fabric may pass between the printing and impression rollers with an equal and constant tension and be printed on both sides, substantially as described.

2. The combination in a calico printing machine for printing upon both sides of the fabric, of the two sets of printing and bearing rolls, the printing and bearing rolls for each side of the fabric being arranged in line so as to act upon the fabric while it travels in a straight line, inking devices for the printing rolls, an independent blanket for each set of bearing rolls, and guide rollers for said blankets.

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

THOMAS J. MARTIN.

Witnesses:
WM. R. COTTER,
JAMES D. TAYLOR.