March 10, 1942. H. J. STRAUSS 2,276,113

FABRIC PRINTING MACHINE

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FIG. 1.

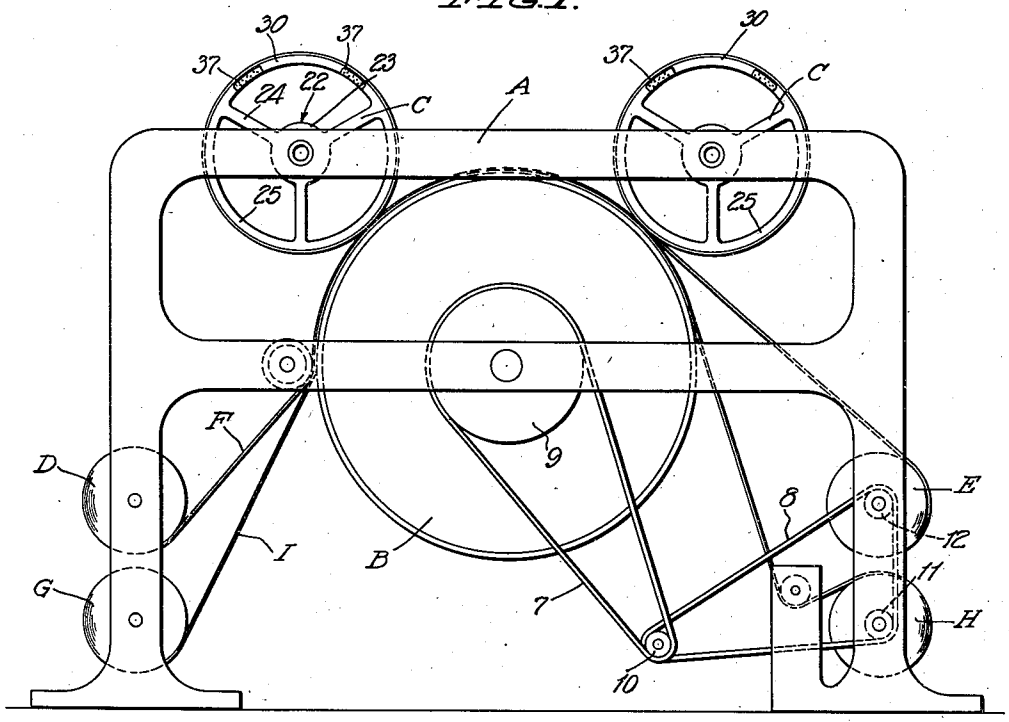

FIG. 2.

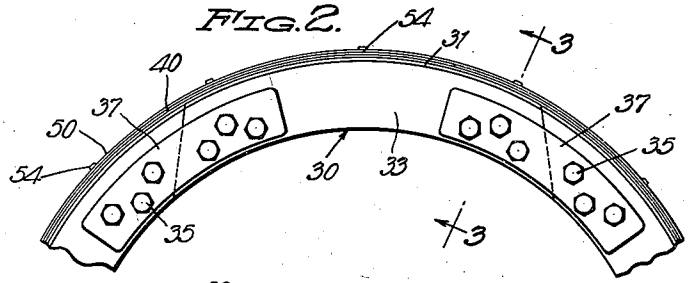

FIG. 3.

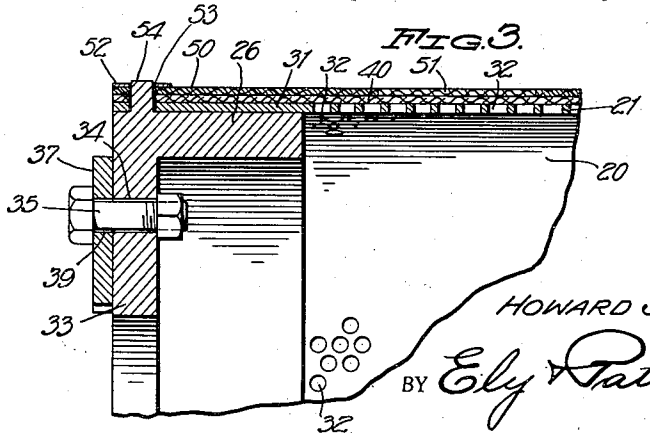

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FIG. 4.

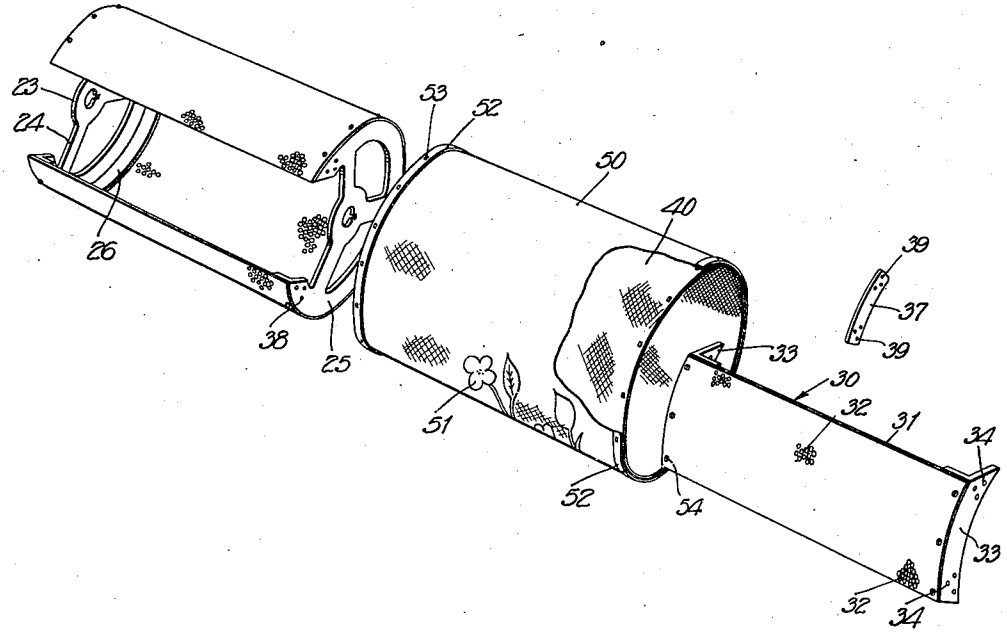


FIG. 5.

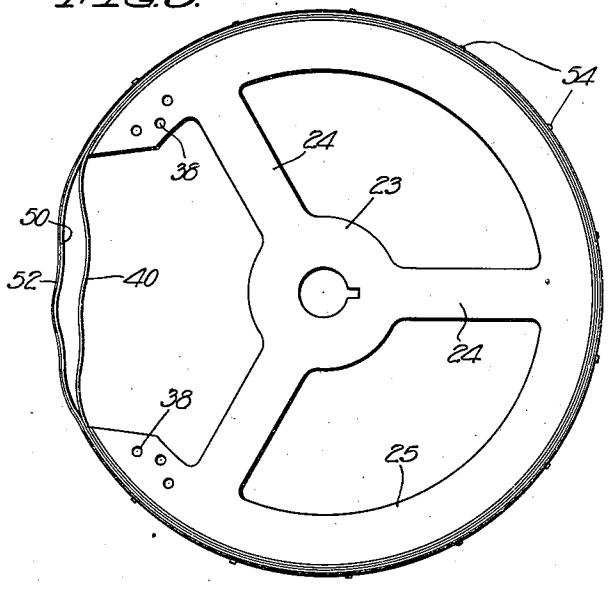
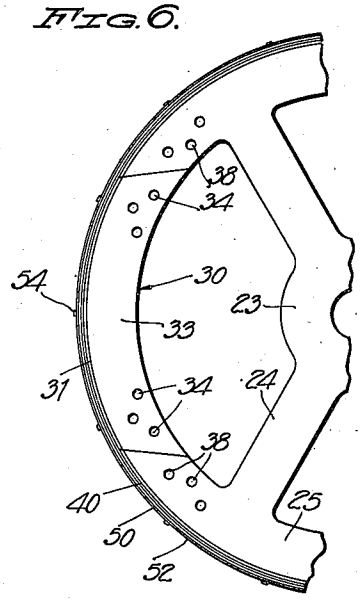


FIG. 6.



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Patented Mar. 10, 1942

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UNITED STATES PATENT OFFICE

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FABRIC PRINTING MACHINE

Howard J. Strauss, New York, N. Y.

Application December 26, 1940, Serial No. 371,717

4 Claims. (Cl. 101—116)

This invention relates to the art of printing upon fabrics and more particularly it pertains to a new and novel construction of printing cylinder or roll for use in machines for printing upon fabrics.

It is the object of the invention to improve the construction and operation of machines or devices of the aforementioned character whereby both the quality resulting from manually operated devices and increased production of power actuated devices may be combined in a single machine of the power actuated type.

I am aware that silk screens have been heretofore employed in the printing of fabrics. However, so far as I am aware, such devices have never been embodied in machines in which the printing operation is continuous.

I am also aware that power driven printing cylinders or rollers have been heretofore employed in printing upon fabrics, but in all such machines with which I am familiar, the printing element is in the form of an engraved roller of copper or similar material.

The present invention contemplates the use of a flexible stencil of cylindrical form constructed of silk or other suitable fabric or from metal combined with a printing cylinder or roller in such a manner as to produce a high quality product at costs at which such products cannot be otherwise produced.

A feature of the invention resides in the stencil which is employed, the same being in the form of a sleeve or cylinder of silk or other suitable fabric or metal which is adapted to fit a printing cylinder and cover substantially the entire peripheral surface thereof.

A further feature of the invention resides in a novel construction of printing cylinder or roll which will permit of use thereon of a stencil of the aforementioned type.

Still a further feature of the invention resides in a novel construction of printing cylinder or roll which serves to maintain the stencil under proper tension to produce clear and well defined printed designs upon the printed fabric.

Still a further feature of the invention resides in the provision of means for preventing relative movement between the stencil and the printing cylinder or roll upon which it is mounted.

Other features will appear as the nature of the invention is better understood and reference will now be had to the accompanying drawings and the following detail description of the construction therein shown.

In the drawings:

Figure 1 is a view in end elevation illustrating in a more or less diagrammatic manner, a conventional type of fabric printing machine to which the present invention is readily applicable,

Figure 2 is a fragmentary view on an enlarged scale illustrating in elevation, a portion of one end of one of the printing cylinders or rolls.

Figure 3 is a detail sectional view on an enlarged scale taken substantially on the line 3—3 of Figure 2,

Figure 4 is a distended perspective view of a printing cylinder or roll constructed in accordance with the present invention,

Figure 5 is a view in end elevation of the printing cylinder or roll with a removable portion thereof removed and illustrating the manner in which the base cloth and stencil may be applied to the cylinder or roll, and;

Figure 6 is a fragmentary view in end elevation of the printing cylindyer or roll illustrating the removable section in place thereon and the base fabric and stencil in position thereon.

Referring to the drawings by reference character and particularly to Figure 1, the frame of the machine is designated A. The reference character B designates a pressure roller and C designates the printing rollers of which there are two herein illustrated.

The reference character D designates a roll of fabric to be printed and E designates a take-up roll for the printed fabric, the fabric being designated F.

The reference character G designates a roll of fabric of an obsorbent nature, the fabric being designated I and H designating the take-up roll for this strip.

The pressure roller B may be driven in any suitable manner and the take-up rollers E and H may be driven from the pressure roller by means of belts 7 and 8 passing around driving pulley 9, 10, 11 and 12 as illustrated in Figure 1 of the drawings.

The printing cylinders or rolls C are of the same construction and the description of one will therefore suffice.

Each printing cylinder or roll C includes a cylindrical body portion 20 which is formed preferably from metal and which is perforated as at 21. Mounted in each end of the cylindrical body portion, there is an end member 22 which consists of a hub member 23, from which spokes or the like 24 extend in a radial direction. The outer ends of the spokes are connected by a circular flange or the like 25 from which extends

an integral flange 26 adapted to be received within the end of the cylindrical body portion.

The end members may be secured in the ends of the cylindrical body portion in any desired manner as for example by spot welding, screws or the like.

The hub members 23 provide means for mounting the printing cylinders or rolls upon a shaft which, in turn provides the means for mounting them in the frame of the machine as illustrated in Figure 1 of the drawings.

The reference character 30 designates a removable section with which each of the printing cylinders or rolls is provided and the purpose of these removable sections will be hereinafter more specifically set forth.

The removable section consists of a body portion 31 of arcuate cross-sectional form which is perforated as at 32. At each end it is provided with a flange 33 having openings 34 for the reception of bolts or the like 35, see Figure 3.

Means is provided to removably secure the section 30 in position and this means is herein illustrated as strap-like members 37 which bridge the joints between the ends of the flanges 33 and the adjacent ends of the flanges 25 of the main body portion of the printing cylinder or roll which latter are at this point provided with openings 38 for the reception of the bolts 35. Openings 39 are provided in the ends of the strap-like members 37 for registration with the openings 34 and 38 for reception of the bolts 35.

By the construction just described, it will be obvious that the removable section 30 of the printing cylinder or roll may be securely retained in position to complete the roll and may also be easily and readily removed therefrom when desired.

The printing cylinders or rolls are so positioned in the machine with respect to the pressure roll B that as the fabric F to be printed together with the absorbent fabric I pass between them and the pressure roll B, sufficient pressure will be provided to insure an impression upon the fabric.

Each printing cylinder or roll carries a base cloth or blanket such as designated 40 in the drawings and it is the purpose of this base cloth 40 to distribute the dye, ink or other printing fluid evenly over the surface of the printing cylinder or roll. The printing fluid may be introduced into the printing cylinder or roll in any well known conventional manner and apparatus therefor is therefore not herein illustrated.

The base cloth or blanket is designated 40 in the drawings and is preferably in the form of a continuous sleeve which snugly fits the outer surface of the printing cylinder or roll. It is formed from a suitable absorbent material through which the printing fluid upon passage through the perforations 21 of the printing cylinder or roll, will distribute evenly.

Carried by the printing cylinder or roll, there is a stencil designated 50 in the drawings and this stencil has the pattern or figure to be printed blocked out therefrom, the pattern being designated 51 in Figure 4.

The stencil 50 is formed from silk or other suitable stencil fabric, or it may be formed from a thin flexible metal, and it comprises a cylindrical body adapted to be slipped or passed over the outer surface of the printing cylinder or roll and the base cloth or blanket 40. The stencil is preferably formed from a strip of material having the pattern blocked out therefrom after which the ends of the strip are secured together in any desired manner to form a sleeve and also maintain a continuity of the pattern in such a manner that there will be no break or interruption of the pattern as printed upon the fabric to be printed.

The base cloth or blanket 40 heretofore mentioned need not necessarily be attached to the printing cylinder or roll since it will be held under sufficient tension to prevent relative movement between itself and the roll.

Means is provided to fixedly attach the stencil to the printing cylinder or roll and this means will now be described.

Upon each of the side edges of the stencil, there is a metallic strip 52 which is suitably secured to the stencil and which is provided with a series of openings 53. The strip 52 is formed from a suitable flexible metal of which relatively thin copper is one good example and the openings 53 therein are adapted to receive projections 54 preferably in the form of lugs which extend radially from the peripheral surface of the printing cylinder or roll.

Engagement of the lugs 54 in the openings 53 of the metal strip upon the edges of the stencil performs two functions as follows: First, it provides means for preventing relative movement between the stencil and the printing cylinder or roll during the printing operation, and second, it provides means whereby proper position of the stencil relative to the pressure cylinder B may be had in order to carry out the continuity of the design during the printing operation.

Both the base cloth or blanket and the stencil fit snugly the peripheral surface of the printing cylinder or roll and are retained under tension while in position thereon, and I will now describe the manner in which the base cloth or blanket 40 and the stencil 50 are positioned upon the printing cylinder or roll and in which the aforementioned tension is obtained.

The removable section 30 and the printing cylinder or roll is first removed after which the base cloth or blanket in the form of a sleeve is passed over the printing cylinder or roll and positioned thereon between the lugs or projections 54 thereof. After this has been done, the stencil is passed over the printing cylinder or roll and the openings 53 in the metal strip along the edges thereof are engaged with their respective lugs 54 when the stencil is in proper position upon the printing cylinder or roll.

As illustrated in Figure 5 removal of the section 30 of the printing cylinder or roll provides sufficient slack in both the base cloth or blanket and the stencil to permit of placing them upon the printing cylinder or roll and also permits of stretching or other manipulation of the stencil in order to place it in its proper position relative to the printing cylinder or roll.

After the base cloth or blanket and the stencil have been placed upon the printing cylinder or roll, the removable section 30 is placed in position and secured in its position by the bolts 35 in the manner heretofore described.

As the removable section 30 is secured in place, it fills out the peripheral surface of the printing cylinder or roll making it continuous and uninterrupted and also places under tension the base cloth or blanket 40 and the stencil 50, it being understood that the base cloth or blanket 40 and the stencil 50 are so constructed that this tension will result when the removable member 30 is secured in place.

While the invention has been herein disclosed

in its preferred form, it is to be understood that it is not to be limited to the specific constructions in which it is shown, but may be practiced in such other forms as rightfully fall within the scope of the appended claims without departing from the spirit thereof.

Having thus described my invention, what I claim as new is:

1. In a machine for printing fabrics, a printing cylinder, said printing cylinder comprising a main body portion and a removable section extending throughout the length of the cylinder, said main body portion and said removable section being perforated, means for removably attaching the removable section to the main body portion of the cylinder, a sleeve-like base cloth removably carried by the printing cylinder, and a sleeve-like stencil removably carried by the cylinder and overlying the base cloth, said base cloth and said stencil being maintained under tension upon the cylinder when the removable section of the printing cylinder is in position thereon.

2. In a machine for printing fabrics, a printing cylinder, said printing cylinder comprising a main body portion and a removable section, said main body portion and said removable section being perforated, means for removably attaching the removable section to the main body portion of the cylinder, a plurality of lugs projecting from the peripheral surface of the cylinder at each end thereof, a sleeve-like base cloth carried by the cylinder, and a stencil carried by the cylinder and overlying the base cloth, said stencil having openings for reception of the lugs on the cylinder to retain the stencil against movement relative to the cylinder and the base cloth carried thereby.

3. In a machine for printing on fabrics, a printing cylinder, said printing cylinder comprising a main body portion and a removable section, said main body portion and said removable section being perforated, means for removably attaching the removable section to the main body portion of the cylinder, a sleeve-like base cloth carried by the cylinder, a sleeve-like stencil carried by the cylinder and overlying the base cloth, said base cloth and said stencil being maintained under tension upon the cylinder by the said removable section when it is in position upon the cylinder, and means for preventing movement of the stencil relatively to the base cloth and the cylinder.

4. In a machine for printing on fabrics, a printing cylinder, said printing cylinder comprising a main body portion and a removable section, said main body portion and said removable section being perforated, means for removably attaching the removable section to the main body portion of the cylinder, a sleeve-like base cloth carried by the cylinder, a sleeve-like stencil carried by the cylinder and overlying the base cloth, said base cloth and said stencil being maintained under tension upon the cylinder by the said removable section when it is in position upon the cylinder, and means for preventing movement of the stencil relatively to the base cloth and the cylinder, said means comprising lugs projecting from the peripheral surface of the cylinder and extending through openings in the side edges of the stencil.

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