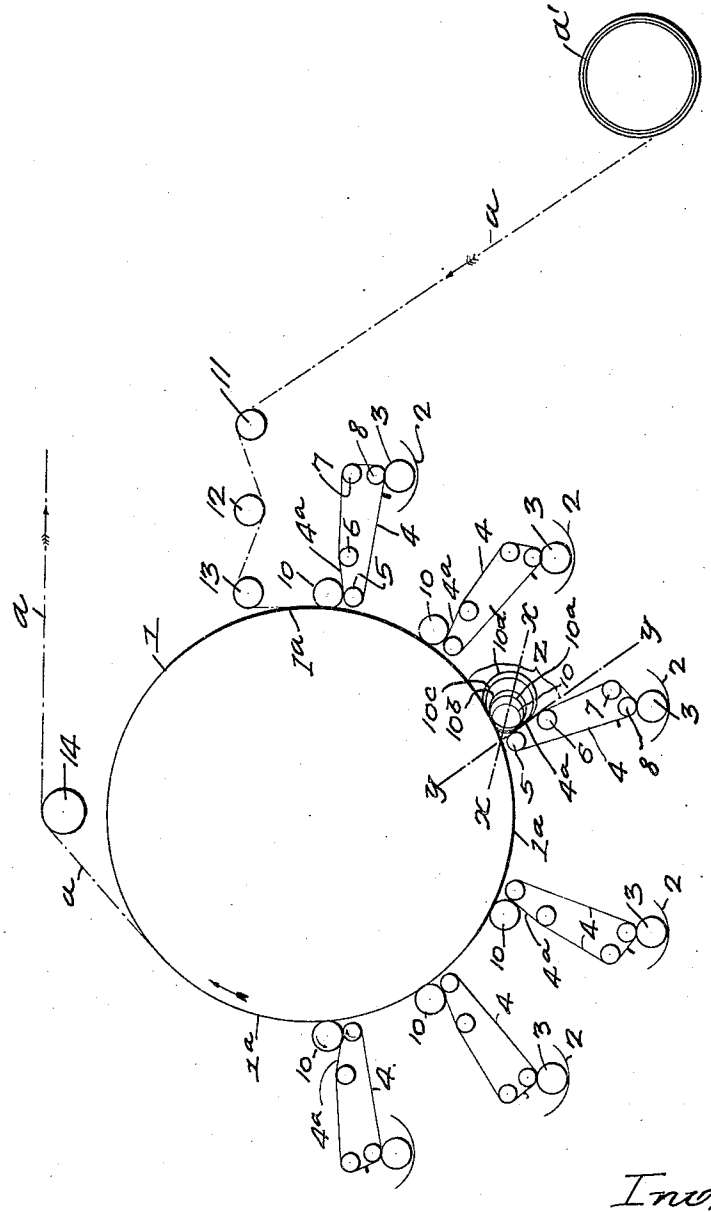
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PRINTING MACHINE

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# UNITED STATES PATENT OFFICE.

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## PRINTING MACHINE.

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This invention relates to machines for printing designs on the surface of web material, such as wall paper, calico, etc., and more particularly to cylinder machines.

The web of material, on the surface of which it is desired to print a design, is supported by a platen cylinder on the peripheral face thereof.

The design to be printed on the web is embossed, engraved, or otherwise formed on the peripheral face of one or more design cylinders, either in the whole or in part depending upon the number of different colors included in the design. The design cylinders are each of a comparatively smaller diameter than the platen cylinder, and are adapted to contact with the web material supported by said platen cylinder.

The color is applied to the design surface of the design cylinders by means of endless belts, or bands of felt or other suitable material, each of which receive a supply of color from a roller partially submerged in a quantity of color contained within a pan adjacent the platen cylinder.

The diameter of each design cylinder is governed by the size of the design to be printed on the face of the web material, thus each differently sized design requires a cylinder of special diameter.

In machines of this character, as constructed and used at the present time, it is necessary, when changing from one design to another, to adjust the color belts to accommodate the newly installed design cylinders, which requires considerable time and labor.

The principal object of this invention is to so arrange the color belts with respect to the platen surface of the platen cylinder that adjustment of the belts will not be necessary when the new design cylinders are installed in the machine.

This object is attained by arranging the rollers, which support the respective color depositing belts, in a manner to maintain one portion of the belt in such a position relative to the platen surface that the said portion of the belt and the said platen surface will together form a pair of convergent surfaces. The space between the convergent surfaces constitutes a throat into which a design cylinder of any desired diameter may be placed.

With this arrangement of the elements of the machine, regardless of the diameter of the design cylinder the periphery thereof will contact with both of said convergent surfaces and the axis of the cylinder will be positioned on a substantially straight line intermediate said convergent surfaces.

The single figure of the drawing diagrammatically illustrates the principles of my invention described above.

The platen cylinder 1 is rotatably mounted in any suitable form of frame (not shown); 2, 2 are the color pans; 3, 3 are the color rollers in the pans 2, 2; 4, 4 are the color belts which are respectively supported in a taut condition by rollers 5, 6, 7 and 8.

The rollers 5 and 6 support one portion $4^a$ of the respective belts 4 in such a position with respect to the platen surface $1^a$ of the platen cylinder 1 that these two surfaces are convergent and thereby form a throat $z$.

In each of the throats $z$ is positioned a design cylinder 10 which, regardless of its diameter, will contact with both of said convergent surfaces $1^a$ and $4^a$ and its axis will be positioned at some point along a line $x$—$x$, which lies intermediate the said convergent surfaces, from a point on the platen surface $1^a$ where the line $y$—$y$, representing a continuation of the surface $4^a$, crosses said platen surface $1^a$, outwardly into the throat $z$. This condition is illustrated by the showing of several design cylinders $10^a$, $10^b$, $10^c$ and $10^d$ of different diameters, the axis of each of which is positioned at some point along the line $x$—$x$.

The web $a$ passes from a source of supply $a^1$, over a guide roller 11, under a tension roller 12, over a second guide roller 13, around a portion of the periphery of the platen cylinder 1, and over a guide roller 14 to some form of drier or other finishing mechanism.

Obviously in a machine constructed in accordance with the principles of my invention, the frame thereof will be provided with some form of guides extending parallel to the line $x$—$x$ for the guidance of suitable bearings in which the trunnions of the design cylinders 10 will be journaled.

In changing such a machine from one job to another the only operation involved will be to remove the design cylinder bearings from their guides and place the new design cylinder trunnions therein, place the said bearings back on their guides, slide the bearings along the guides between the convergent surfaces $1^a$ and $4^a$ until the periphery of the

new design cylinder contacts with these said convergent surfaces.

By this invention the amount of time and labor required to change the machine from one job to another is materially reduced over the methods generally employed.

I claim:

1. In a printing machine, the combination of a platen surface; a color depositing element adjacent said platen surface and having a portion arranged in such a manner with respect to said platen surface as to form therewith a pair of convergent surfaces for the reception of a design cylinder therebetween, which, regardless of its diameter, will contact with both of said convergent surfaces and its axis will be positioned on a line, intermediate said convergent surfaces, bearing a fixed relation with respect to said convergent surfaces.

2. In a printing machine, the combination of a platen cylinder; a color depositing endless belt adjacent the surface of said platen; and means for supporting a portion of said endless belt in a convergent position with respect to said platen surface to form a throat therebetween; and a design cylinder adapted to be located in said throat and movable in a single plane, intermediate, and bearing a fixed relation with respect to, said convergent surfaces, into operative engagement with both of said surfaces.

3. In a printing machine, the combination of a platen cylinder having a fixed center of rotation; an endless color depositing belt adapted to travel in an invariable path, part of which is in a convergent line with respect to the periphery of said platen cylinder; rollers for supporting said belt in its path of movement; and a design cylinder adapted to be positioned intermediate and in contact with the convergent surfaces of said platen and said color belt, the axis of said design cylinder, regardless of the diameter of the design cylinder, occupying a position located on a substantially straight line intermediate said convergent surfaces and bearing a fixed relation with respect thereto.

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