

June 16, 1925.

1,541,787

E. CADGÈNE ET AL

METHOD AND APPARATUS FOR PRINTING TEXTILE FABRICS

Filed Dec. 29, 1923

2 Sheets-Sheet 1

Fig. 1.

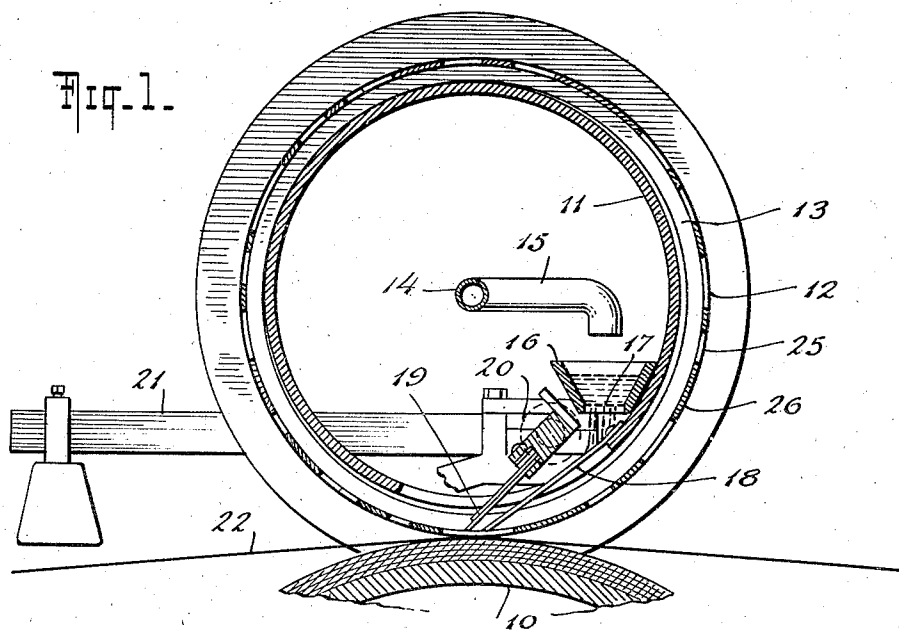


Fig. 2.

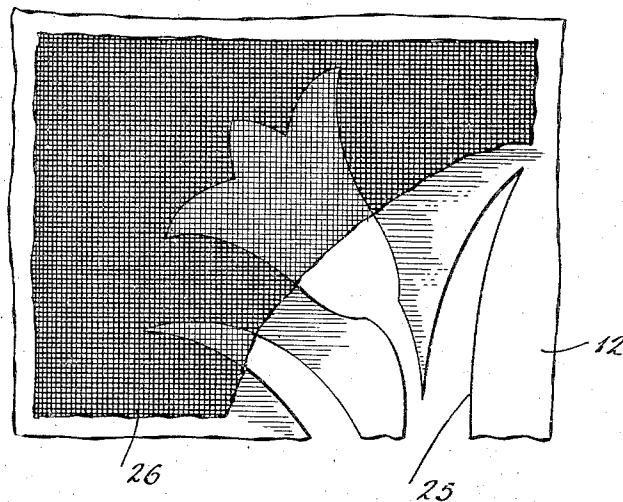
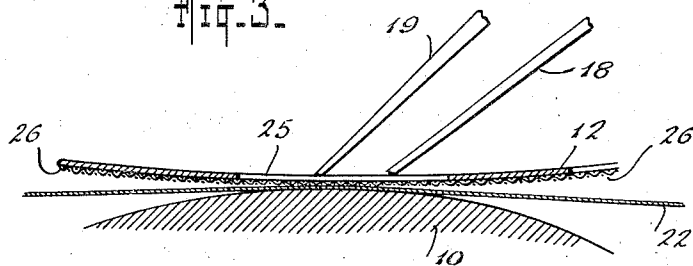


Fig. 3.



INVENTORS
ERNEST CADGÈNE
GEORGE DUPONT
BY *Richard & Geier*
ATTORNEYS

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Fig. 4.

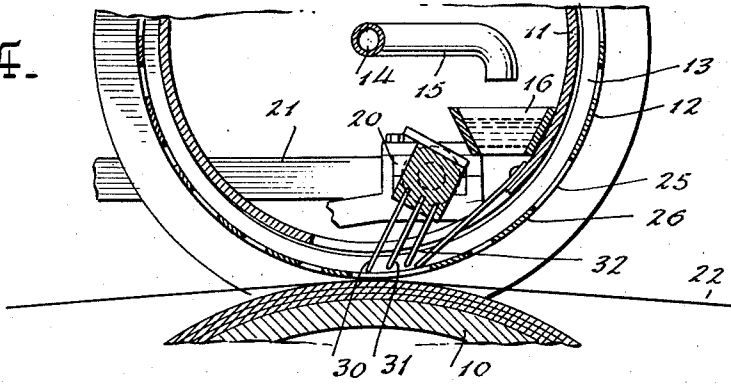


Fig. 5.

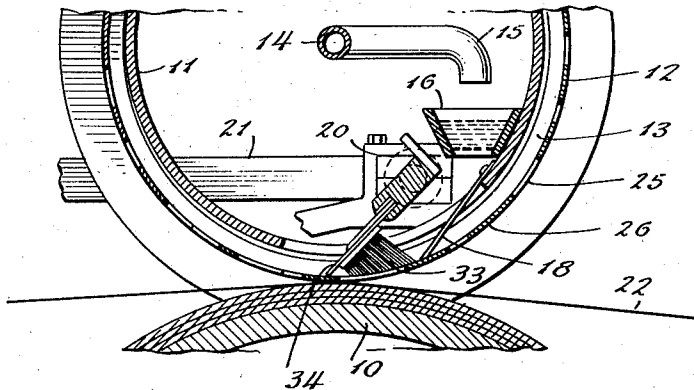
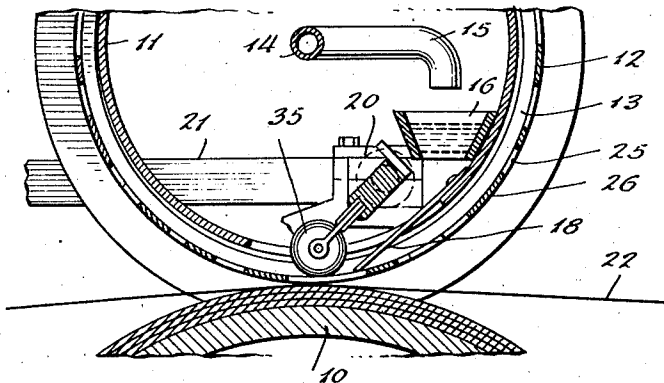


Fig. 6.



INVENTORS
ERNEST CADGÈNE
GEORGE DUPONT
BY *Richards & Seier*
ATTORNEYS

Patented June 16, 1925.

1,541,787

UNITED STATES PATENT OFFICE.

ERNEST CADGÈNE, OF ENGLEWOOD CLIFFS, AND GEORGE DUPONT, OF PATERSON,
NEW JERSEY.

METHOD AND APPARATUS FOR PRINTING TEXTILE FABRICS.

Application filed December 29, 1923. Serial No. 683,317.

To all whom it may concern:

Be it known that I, ERNEST CADGÈNE, a citizen of the Republic of France, residing at Englewood Cliffs, county of Bergen, and State of New Jersey, and I, GEORGE DUPONT, a citizen of the United States, residing at Paterson, county of Passaic, and State of New Jersey, have invented certain new and useful Improvements in Methods and Apparatus for Printing Textile Fabrics, of which the following is a specification.

In the dyeing or printing of textile fabrics it has heretofore been necessary in order to reproduce certain kinds of designs, to resort to the old hand or manual method of printing known as "block printing". Although this method of printing, being entirely an hand operation, requires highly skilled operators and is therefore very costly, as well as slow and tedious, it is used extensively and generally throughout the textile industry.

The objects of this invention are to provide a new and improved method for reproducing those kinds of designs heretofore capable of being reproduced only by "block printing" and to provide a new and improved apparatus for carrying out said method.

Other and further objects will be apparent to those skilled in the art to which this invention appertains from the following more detailed description and by reference to the accompanying drawings forming a part hereof, wherein are disclosed in an illustrative example apparatus for carrying out the principles of our invention.

Referring to the drawings:

Fig. 1 is a central vertical section through a portion of a machine embodying our invention.

Fig. 2 is an elevation of a portion of a stencil.

Fig. 3 is an enlarged sectional detail through the stencil and showing a form of printing composition applying and distributing means.

Figs. 4, 5 and 6 are views similar to Fig. 3, showing different forms of the printing composition applying and distributing means.

As shown in the drawings, the numeral 10 indicates a pressure roller above which is secured a stationary support 11, preferably in the form of a hollow cylindrical

drum, about which a cylindrical stencil 12 is mounted for free floating rotation. The stencil 12 is preferably constructed of a very thin sheet of any suitable metal and is reinforced at its ends by the flanged collars 13 which are secured adjacent to the ends of the stencil and project inwardly thereof to form a bearing which contacts, during the rotation of said stencil, with the stationary support 11, thereby preventing direct contact between said stencil and support.

A supply pipe 14 for the printing composition projects into the stationary support and is provided with a plurality of nozzles 15, which extend over a distributing trough 16, having a foraminated bottom 17.

The trough 16 is detachably mounted upon the stationary support 11 and delivers the printing composition to a distributing blade 18, the upper edge of which is secured to said support and the lower edge of which contacts with the inner wall of the stencil. A doctor blade 19 which is pivotally mounted upon the trunnions 20, has its lower edge held, by means of the weighted levers 21, with a yielding constant pressure in contact with the inner wall of the stencil, to force the printing composition into the cut out designs of the stencil and to hold the stencil against the fabric 22, which passes between the opposed outer surfaces of the stencil and pressure roller 10. The above construction is similar to that disclosed in our Patent No. 1,480,348, dated January 8, 1924, and differs therefrom principally in the construction of the stencil, the stencil of our earlier patent being especially adapted for that type of printing known as flock printing.

While the stencil 12 shown in the present application has been designed particularly for performing mechanically that type of printing which heretofore has been done by the manual "block printing", its use is not to be considered as confined exclusively to such printing. As pointed out above, the stencil 12 is constructed preferably of a thin sheet of suitable metal such as copper or brass, rolled or drawn into the shape of a hollow cylinder. Any suitable design is formed upon the stencil by cutting out the metal according to the figures to be reproduced, as indicated at 25 in Figs. 2 and 3 of the drawing. After the design has been cut out of the stencil, the outer surface of

said stencil is then covered with a foraminated covering consisting of a thin sheet of fine meshed netting 26, which may be constructed of silk, or other textile material, hair, or copper or other suitable metallic material. In placing the netting upon the stencil, a coating of any suitable adhesive is placed upon the stencil and the netting is drawn smoothly and tightly about said stencil, thereby providing a covering of foraminated material across the cut out designs of the stencil. In securing the netting to the stencil it will be understood that care must be taken to avoid having the meeting line of the ends of the netting extend across the cut out design portions thereof. After the netting has been placed upon the stencil and the adhesive has thoroughly set, an impervious coating of a varnish or shellac composition or the like is applied to the outer surface of the netting, upon those portions only of the netting which are in contact with the stencil, or in other words, those portions of the netting which extend across the cut out portions and which form the design are left uncoated with the varnish composition. In applying the varnish, the cut out portions of the stencil are carefully outlined so that all portions of the netting which extend across the cut out portions are left uncovered while the remaining portions thereof are covered, so that a clear sharp outline of the figures of the designs will be reproduced upon the fabric to be printed. The purpose of the netting is to permit more fluid coloring or printing composition to be used than could possibly be employed with the metallic stencil alone, and to secure an even distribution of the printing composition across the entire cut out portions. By coating the outer surface of the netting with varnish or the like, so as to provide an impervious border line for each figure of the design, the coloring or printing composition is prevented from running, a clear sharp outline is produced and due to the small interstices in the netting a printing composition of sufficient fluidity may be used to insure a complete and even printing of very large figures, which heretofore could only be done by the hereinbefore described "block printing".

Fig. 4 shows a form of construction in which a plurality of doctor blades 30, 31 and 32 are employed, the lengths of the blades being so arranged that the lower edges of the blades 31 and 32 will not press against the stencil as tightly as the blade 30 which provides the main printing pressure.

In Fig. 5 a brush 33 is mounted upon the doctor blade 34 to secure a thorough and even distribution of the printing composition, while in Fig. 6 a printing roller 35 covered with felt or other suitable yielding

material is used to distribute the printing composition and press the stencil against the fabric to be printed.

In carrying out the printing operation the fabric is drawn between the stencil 12 and pressure roller 10 by frictional drag thereon, the roller 10 being positively driven and the stencil being mounted freely, is rotated by frictional contact with the fabric. The printing pressure is supplied by any suitable means such as the doctor blades or roller to secure substantially a line contact between the stencil and fabric, which line contact is insured by the stencil being able to adjust itself because of its free floating mounting. As the fabric is drawn between the stencil and pressure roller the printing composition which has been evenly distributed across the stencil and through the interstices of the netting by any suitable means such as shown is transferred to the fabric.

It is to be understood that the term "netting" as used in the claims is intended to cover any thin foraminated material, and also that various changes, and modifications in the construction of the apparatus may be resorted to without departing from the spirit of our invention.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. In a textile printing machine, the combination of a pressure roller, an apertured floating stencil capable of contact with said roller and being driven thereby, a foraminated covering for said stencil, portions of said covering being coated with an impervious material to form the outlines of the design to be printed, which outlines register with the apertures in said stencil, and the remaining portions of said covering being uncoated and forming the figures of said design, and means to feed a printing composition through the apertures in said stencil to the uncoated portions of said covering.

2. In a textile printing machine, the combination of a pressure roller, an apertured floating stencil capable of contact with said roller and being driven thereby, a foraminated covering for said stencil, portions of said covering being coated with an impervious material to form the outlines of the design to be printed, which outlines register with the apertures in said stencil, and the remaining portions of said covering being uncoated and forming the figures of said design, means to feed a printing composition through the apertures in said stencil to the uncoated portions of said covering, and means to cause said printing composition to be distributed evenly through the uncoated portions of said covering and to maintain said stencil in contact with a

fabric passing between the same and said pressure roller.

3. In a textile printing machine, the combination of a pressure roller, an apertured floating stencil capable of contact with said roller and being driven thereby, a thin fine meshed netting secured to and supported by said stencil, portions of said netting being coated on both sides with an impervious coating to form the outlines of the figures of a design to be printed, which outlines register with the apertures in said stencil, and the remaining portions of said netting being uncoated and forming the figures of said design, and means within said stencil to feed a printing composition to the uncoated portions of said netting.

4. In a textile printing machine, the combination of a pressure roller, an apertured floating stencil capable of contact with said roller and being driven thereby, a thin fine meshed netting secured to and supported by said stencil, portions of said netting being coated on both sides with an impervious coating to form the outlines of the figures of a design to be printed, which outlines register with the apertures in said stencil, and the remaining portions of said netting being uncoated and forming the figures of said design, means within said stencil to feed a printing composition to the uncoated portions of said netting, and means also mounted within said stencil to cause an even distribution of said printing composition over the uncoated portions of said covering and to maintain said stencil in contact with a fabric passing between the same and said pressure roller.

5. In a textile printing machine, a hollow cylindrical apertured stencil formed of a thin metallic material, a thin wire meshed netting secured to and supported by said stencil, portions of said netting being

coated with an impervious coating to form the outlines of the figures of the design to be printed, which outlines register with the apertures in said stencil, and the remaining portions of said netting being uncoated and forming the figures of said design, means to feed a printing composition to the uncoated portions of said netting, and a plurality of doctor blades engaging and forcing said stencil and netting into contact with the fabric to be printed and distributing the printing composition through and to the uncoated portions of said netting, one of said blades having a different pressure against said stencil than the remaining blades.

6. In a textile printing machine, the combination of a pressure roller, an apertured floating stencil capable of contact with said roller and being driven thereby, a thin fine meshed netting secured to and supported by said stencil, portions of said netting being coated with an impervious coating to form the outlines of the figures of the design to be printed, which outlines register with the apertures in said stencil, and the remaining portions of said netting being uncoated and forming the figures of said design, means to feed a printing composition to the uncoated portions of said netting, and a plurality of doctor blades engaging and forcing said stencil and netting into contact with a fabric passing between said pressure roller and stencil and distributing the printing composition to and through the uncoated portions of said netting, one of said blades having a different pressure against said stencil than the remaining blades.

In testimony whereof we have affixed our signatures.

ERNEST CADGÈNE.
GEORGE DUPONT.