Oct. 11, 1932. H. PALM 1,882,090

PATTERN ROLL FOR APPLYING COLORED DESIGNS ON PAPER, BOARD, OR THE LIKE WEBS

Filed Sept. 20, 1929

Fig. 1

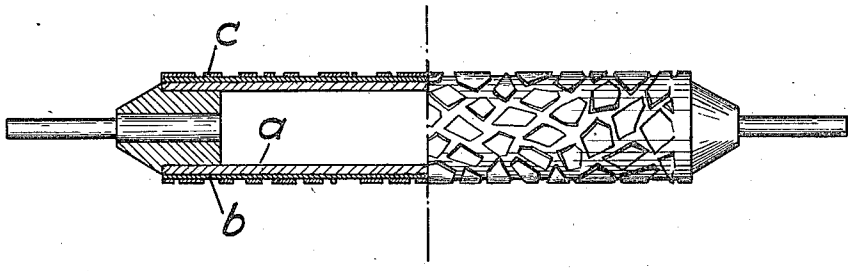
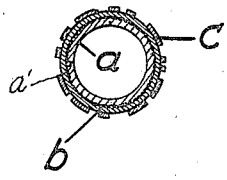


Fig. 2



Inventor
Herman Palm
by C. P. Goepel
his attorney

Patented Oct. 11, 1932

1,882,090

UNITED STATES PATENT OFFICE

HERMANN PALM, OF NEUKOCHEN, NEAR UNTERKOCHEN, GERMANY

PATTERN ROLLS FOR APPLYING COLORED DESIGNS ON PAPER, BOARD, OR THE LIKE WEBS

Application filed September 20, 1929, Serial No. 393,868, and in Germany May 9, 1927.

This invention relates to pattern rolls for use in conjunction with machines for making paper, paper board and the like, to apply to the wet web in its movement through the machine a predetermined design, signature or trade mark contrasting in color with the color of the paper or paper board.

It is the primary object and purpose of my present invention to provide a pattern roll for the above purpose of such construction that, without counter-pressure against the wet web, the impressions of the various parts of the design, signature or trade mark will have more or less sharply defined outlined contours.

To the above end, the invention is essentially characterized by the provision of a pattern roll having peirpheral surface portions in relief arranged to form the predetermined design pattern and composed of a yieldable absorbent material.

It is one of the detail objects of the invention to provide a metallic core for the pattern roll having a roughened surface and a base of flexible absorbent material upon which the separate relief parts of the design are superimposed and suitably secured, said base enveloping the core and being securely fixed upon the roughened surface thereof against shifting movement with respect to the core.

It is a further general object of the invention to provide a pattern roll for the above purpose, which is exceedingly simple and inexpensive in its construction, and in which the several parts may be easily produced and assembled so that the paper manufacturer may readily provide even small quantities of paper with such special designs, trade marks or signatures as may be desired by individual customers.

With the above and other objects in view, the invention consists in the improved pattern roll and in the form, construction and relative arrangement of its several parts as will be hereinafter more fully described, illustrated in the accompanying drawing, and subsequently incorporated in the subjoined claims.

In the drawing, wherein I have disclosed one simple and practical embodiment of the invention, and in which similar reference characters designate corresponding parts throughout the several views,—

Figure 1 is a side elevation partly in section showing a pattern roll as constructed in accordance with the preferred form of the invention, and

Fig. 2 is a transverse sectional view thereof.

Heretofore, in the paper making art, rolls have been used for applying patterns to the paper web which produced a batik or similar effect, such rolls being provided with a covering of textile material. Patterns of this kind are of an irregular character, the impression producing parts of the textile coating being of very slight elevation so that the markings of the paper are without definitive design characteristics and are ostensibly unintentional. My new pattern roll is quite distinct from such rolls as heretofore used, in that the relief or impression producing parts of the surface of the roll, are of such appreciable elevation and are composed of absorbent material of such character that the portion of the design applied by each of such pattern forming parts, will appear upon the paper web with a more or less sharp or distinctly outlined contour.

As shown in the accompanying drawing, my improved pattern roll includes a core *a* which may be formed of metal or any other desired material and is preferably of hollow or tubular construction. The outer peripheral surface of this core is also preferably roughened or provided with minute grooves or corrugations as indicated at *a'*. Stud shafts are rigidly secured to the opposite ends of this hollow core in any suitable manner as indicated in Fig. 2 of the drawing.

The core *a* is adapted to receive upon its outer surface the pattern carrying base sheet *b* of textile material, such as felt or the like. This base sheet may either be especially produced in the form of a tubular manchon or the abutting edges of a sheet of the material may be sewed together. This pattern carrying base sheet is securely gripped and held by the outer roughened surface of the core *a*, but if desired in addition, for the purpose of per-

manently affixing said base sheet to the core, I may first coat the outer surface of the core with an adhesive substance or solution before the base sheet is applied thereto.

The pattern forming parts *c* are now applied and suitably fixed upon the surface of the base sheet *b* in definite relation to each other to form in relief thereon, the desired predetermined design. These pattern forming parts are also of felt or other porous absorbent material and may be conveniently affixed to the base sheet by means of a suitable glue or adhesive substance which is neutral to the action of water or the coloring liquid absorbed by the pattern forming parts. It will be noted that these pattern forming parts are quite thick so that their impression forming surfaces are at a considerable elevation above the surface of the base sheet *b*. Thus, as shown in the drawing, the parts *c* have a thickness substantially equal to that of the base sheet *b*, and will therefore prevent any contact between the surface of this base sheet and the paper web upon which the impressions are made by the parts *c*. Therefore, the sharp outline configurations of the parts *c* will result in definite and unblurred color impressions upon the face of the paper web.

After the pattern roll as above described has been properly mounted in the machine with relation to the moving web of the paper or paper board, the coloring liquid may be applied to the pattern forming parts *c* by any convenient means, such liquid being readily absorbed by said parts.

Since the base sheet *b* is also of felt or other absorbent material, any of such liquid which may find its way between the relief parts of the design will be absorbed by said base sheet. Thus, as in the rotation of the pattern roll, the parts *c* are brought into contact with the wet web of paper or paper board, such parts will leave a distinct and sharply outlined impression upon the web, and without necessitating the application of any special counter-pressure against the web. In this manner, such special markings or designs may be readily produced upon the paper or paper board web in the process of its manufacture, and the paper manufacturer is thereby enabled to satisfactorily meet the special requirements of his customers, without decrease in quantity production or great additional expense for extra equipment.

I have herein shown and described a particular embodiment of my new pattern roll which has given excellent results in actual practice. Nevertheless, it is to be understood that in its essential features, the invention might also be incorporated in various other alternative structural forms, and I accordingly reserve the privilege of resorting to all such legitimate changes therein as may be fairly embodied within the spirit and scope of the invention as claimed.

I claim:

1. A pattern roll for applying colored designs to a paper or paper board web while in the wet state including separate design forming parts having an appreciable elevation from the peripheral surface of the roll to prevent contact of the said surface with the web and composed of an absorbent material.

2. The pattern roll described in claim 1, in which each of said pattern forming parts is affixed to a base sheet of absorbent material.

3. The pattern roll described in claim 1, in which said design forming parts are adhesively affixed by water-proof glue upon tubular base sheet of absorbent material secured upon a metallic core.

4. A pattern roll for applying colored designs to paper or paper board webs while in the wet state, comprising a metallic core having a roughened peripheral surface, a tubular base of absorbent material affixed to said surface of the core, and parts of absorbent material of appreciable thickness permanently affixtd to said base sheet and projecting from the surface thereof and forming a predetermined definite design thereon.

5. A roll for marking wet paper web during the manufacture thereof, having a base sheet of absorbent material and spaced design forming parts of similar absorbent material affixed to the peripheral surface of said base sheet, said parts having sharply defined outline configurations and being of a thickness substantially equal to the thickness of said absorbent base sheet, to thereby prevent contact between the surface of said base sheet and the paper web.

In testimony whereof I affix my signature.

HERMANN PALM.