

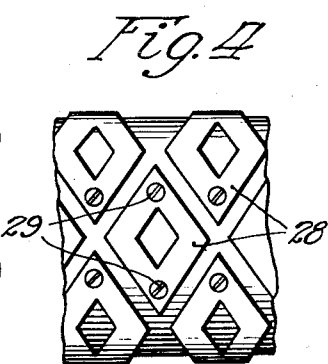
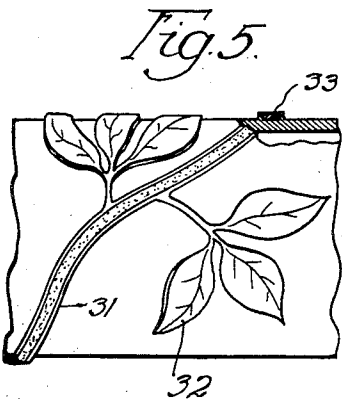
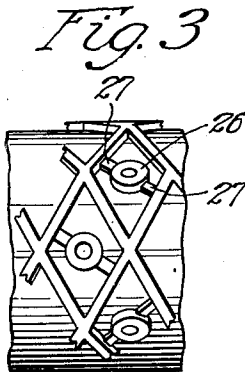
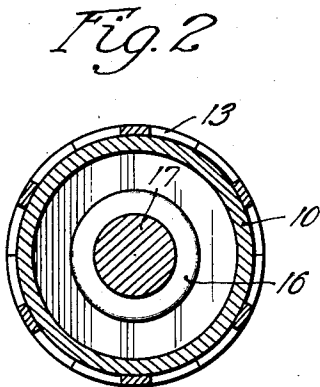
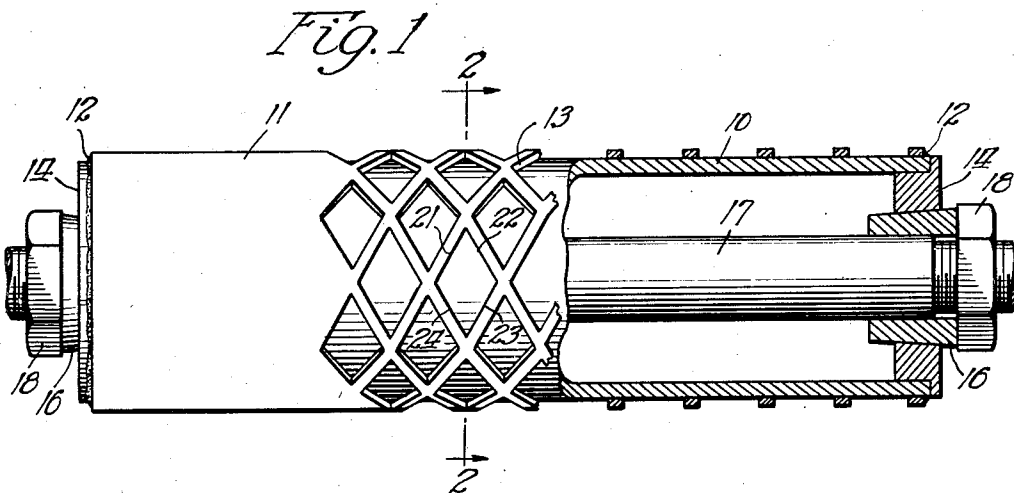
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W. M. CONNELLY

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PRINTING ROLLER

Filed July 9, 1928



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UNITED STATES PATENT OFFICE

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PRINTING ROLLER

Application filed July 9, 1928. Serial No. 291,327.

My invention relates to printing rollers, particularly rollers of this character employed in the production of wall paper.

In the printing of wall paper the design of the paper is produced on a printing roller or rollers, one being employed for each color, and the paper printed by bringing it in contact with the roller in a manner similar to the usual printing operation. In forming the designs on the rollers it is customary to employ a metal roller of a diameter to properly accommodate the design to be used. The selected design is marked on to the face of the roller, and then the surface of the roller is routed out to leave the design in relief upon the surface. This is a big improvement over the use of the old wooden rollers but is sometimes expensive since in certain designs the amount of routing required is very great and a great deal of work must be put into the making of the roller which greatly increases the cost. There are other objections to the use of this method and the roller resulting from its use which are well known to those skilled in this art.

Accordingly it is the principal object of my invention to provide an improved method for producing a wall paper printing roller.

Another object is to produce a better roller more economically.

Another object is to produce a metal roller wherein the amount of routing required to produce a given design is greatly decreased.

Other objects and features of the invention will be apparent from a consideration of the detailed description taken with the accompanying drawings, wherein

Fig. 1 is an elevational view partly in section of a roller made in accordance with my invention and having a conventional design;

Fig. 2 is a sectional view taken along line 2—2 of Fig. 1;

Fig. 3 is a fragmentary view of a roller bearing a different design than that shown in Fig. 1 and making use of a modification required in producing this design, and

Fig. 4 shows another method for accomplishing the result obtained by the structure of Fig. 3.

Fig. 5 shows some additional features of the invention.

It is believed that the details of my improved method will be clearer from an understanding of the apparatus with which the invention is practiced, and accordingly I shall first refer to the structure of the roller as shown in the drawings.

The print roller comprises a permanent roller 10 and a shell 11 telescoped over the roller and secured thereon by suitable means, for example, solder 12. The shell bears a design which is shown on the drawings as lattice 13, this design being cut the full depth of the shell so that the roller 10 is seen through the design. The roller 10 is supported by a pair of heads 14—14 which receive the usual conical centering bushings 16. These bushings are slidably supported on a centering shaft 17 which is threaded and bears spacing nuts 18—18 which force the bushings into the apertures in the heads 14 so as to center the roller accurately.

In the production of this roller I preferably employ brass tubing for the roller 10 with cast iron heads 14 and ordinary hard type metal for the shell 13, although these materials can be modified very greatly within the scope of the appended claims.

In producing a roller of this type I maintain the roller 10 with its heads as a permanent member and employ a different shell 11 for each design. That is to say, the design is preserved on the roller preferably as long as it will be used; but when a design is obsolete I simply remove it from the roller, and the roller is then ready to receive a new shell bearing a new design.

In making a design I slip an imperforate shell over the roller and secure it in place in any suitable manner. This can be accomplished by sweating it on, by soldering it in position as shown in the drawings, by bolting it in place, or in fact in any suitable way depending upon the specific materials used. When the shell is in position the design is drawn on the surface of the shell

and then the shell is routed along the outline of the design. For example in producing the design of Fig. 1 the shell would be routed along the lines 21, 22, 23 and 24 thus forming a triangular design. In the present instance this design is repeated over the entire roller but a reference to the single position is sufficient for purposes of explanation. These lines are routed the full depth of the shell so that a portion of the shell of diamond shape would be lifted entirely out of the shell and thus save a great amount of routing. This same practice is observed independent of the design and in this way relatively large sections of material may be removed from the shell with no routing required except along the margins thereof.

In producing some designs it is obvious that there will be unconnected or isolated sections thereof which if not secured to the roller in some separate manner would fall off and so be separated from the design, in other words would not be effective for printing. Figs. 3 and 4 show two ways in which these isolated or unconnected portions of the design may be secured in place.

In Fig. 3 I show a lattice like design the same as shown in Fig. 1 with the exception of a circular portion 26 between the lattices. In order to support this circular portion in position I provide a pair of tie pieces 27—27 which are left connecting the isolated portion of the design with the balance thereof, in the specific form shown, connecting the circular portions 26 with the lattice design. These tie sections are routed below the surface to about one half the normal thickness of the shell.

In certain designs the arrangement of Fig. 3 is entirely satisfactory but there are instances where this method cannot be employed with optimum results.

In Fig. 4 a design is shown in the form of diamond shaped portions with the space between them having the character of an open lattice, but the diamond shaped portions are not connected to each other when the shell is routed clear through as occurs in the making of the design. These portions may be interconnected, however, by a non-printing tie piece as shown in Fig. 3, but for purposes of explanation I show it secured to the roller by screws 29—29. These screws have their heads arranged so as not to interfere with the design. With this arrangement it is not necessary to employ the tie sections, although they may be employed when forming the design and after the screws are put in position they may be removed. In addition to the screws or instead of them I may also employ solder around the edge of the design as shown at 12 in Fig. 1. I also may employ a small

amount of solder wherever the nature of the design seems to require it, as for example where a design is not overly compact portions of the design may be strengthened by the use of solder.

When printing a solid design (in contradistinction to simple printing of outlines) it is often impossible to obtain the result desired with metal alone, and for this reason the use of a substitute material such as felt, which is a common material used for the purpose, may be resorted to. I show this arrangement in Fig. 5 wherein the design shows a tree branch 31 with leaves etc. 32. Assuming that the branch 31 is to be printed as a solid color I rout out the center of the design to leave relatively narrow outlines between which a felt filler 33 is inserted. In routing out the inside of the design the shell is preferably entirely cut through and the side walls are made exactly perpendicular and at exactly right angles to the surface of the roller to facilitate holding the filler in place. I may undercut these side walls also if desirable but I have found that better results are obtained by cutting them straight. The filler 33 is preferably felt, but other materials may be employed depending upon the result desired.

When employing certain designs bearing a number of colors I am able to extend my improved method in such a way as to produce a number of rolls for printing the different colors practically as economically as the cost of one roller in the method heretofore practiced.

The features above described are dependent upon the particular character of the design and while they cannot be explained in detail for each design it is believed that the illustrative explanations here given will be sufficient to permit anyone skilled in the art to practice the invention without difficulty.

Although I have shown and described a great many details of my invention it is obvious that I am not restricted to the particular form and materials described, and the invention is limited only by the scope of the appended claims.

What I claim as new and desire to protect by Letters Patent of the United States is:—

1. The method of producing a printing roller which comprises sliding a cylindrical shell of relatively soft material over a cylindrical roller of relatively hard material, and forming printing designs on the shell by routing such shell along the outline of the design to the depth of the hard roller, so that the shell material between the design outlines may be lifted from the roller without routing.

2. The method of producing a printing roller which comprises forming a roller of relatively hard material, selecting a cylin-

drical shell of relatively softer material of a diameter to embrace the outside of the roller snugly, forming a design on said shell by routing along the outline of the design and entirely through the shell, and securing the designed shell to the roller in proper printing position.

3. The method of forming a printing roller which includes the employment of a shell roller, mounting said shell roller on a base roller leaving the contracting surfaces unattached to each other, and routing entirely through said shell roller along the outlines of a design so that areas of the shell roller not to be printed may be removed substantially intact from said shell.

4. The method of producing a printing roller which comprises forming a roller of relatively hard material, forming a cylindrical shell of a size to fit around the roller marking a design on the face of the shell, routing along the outlines of the design to remove non design shell sections in entire sections, routing out the internal part of the design so as to leave a narrow margin entirely around the same with openings in the center thereof, and inserting printing material in said center openings.

5. The method of producing a plurality of complementary wall paper printing rollers adapted to print different colors of a design which comprises forming a number of rollers of relatively hard material equal in number to the number of colors, forming a shell of printing material, sliding said shell onto one of the rollers, marking the design onto the surface of the shell, routing through the shell along the outlines of the design to form the design upon the shell, and removing portions of the design corresponding to the different colors and transferring said shell portion to the proper printing positions on the other rollers.

6. In a printing roller of the character described a cylindrical roller of hard durable material and an outer shell of printing material unsecured between the contacting surfaces of the shell and cylinder and of small thickness, the sections thereof which are not required to be printed being routed entirely therefrom.

7. In a printing roller a cylindrical roller with tapered heads inserted in the ends thereof to form a roller body, and a metal shell disposed on the outside of the roller and having a design formed thereon, the entire thickness of the shell between the design being removed.

8. The method of producing printing rollers for color printing which consists of providing a pair of rollers of relatively hard material, mounting a shell roller of softer material upon one of said rollers, removing portions of said shell roller and transferring and securing said portions upon the other

of said rollers whereby said rollers are adapted for color printing.

9. The method of producing a printing roller which comprises forming a roller of durable self-supporting material, selecting a cylindrical shell of printing material of a diameter to embrace the outside of the roller snugly, forming a design on said shell by routing along the outline of the design and entirely through the shell, and securing the designed shell to the roller in proper printing positions, an unconnected isolated section of the design being secured to the balance of the design by tie pieces formed of shell material with their outside surfaces partly routed to prevent their printing.

10. In a printing roller a permanent roller portion in cylindrical form, and a shell portion of a size to fit snugly around the permanent roller, said shell portion bearing a design and secured to the permanent roller, disconnected portions of the design being connected to the shell portion by tie sections partially routed to prevent printing thereof.

In witness whereof, I hereunto subscribe my name this 9th day of June, 1928.

WILLIAM MITCHELL CONNELLY.

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