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G. TILLET ET AL

2,816,811

PRINTING AND DYEING OF PILE CARPETING

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FIG. 1

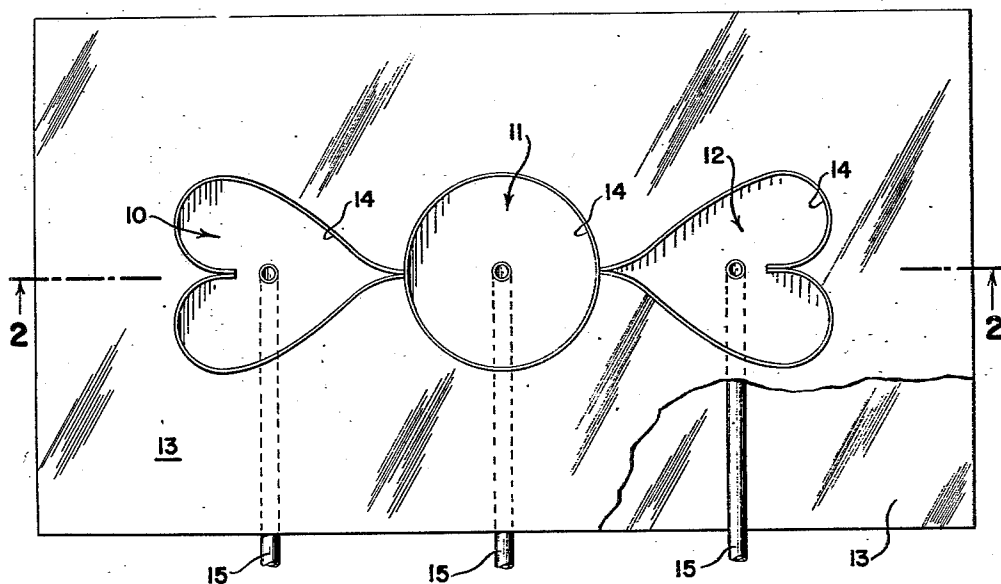


FIG. 2

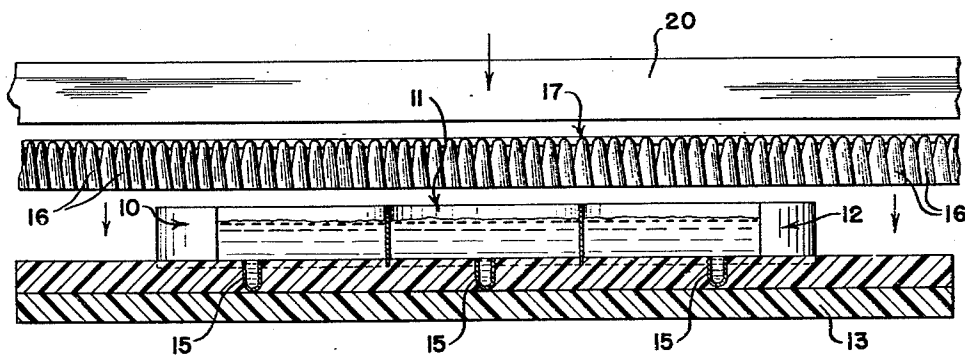
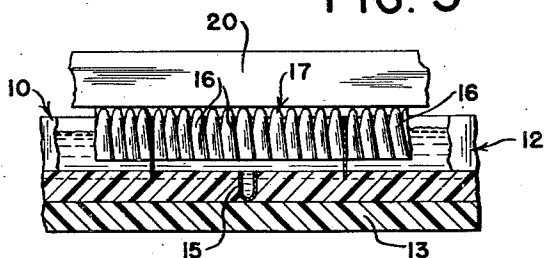


FIG. 3



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PRINTING AND DYEING OF PILE CARPETING

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9 Claims. (Cl. 8-148)

The present invention relates to the application of colored designs to pile carpeting, and more specifically to such design application in which the pile may be colored as deeply as desired, even to the carpet backing, while boundaries between colors in a multi-colored design may be strictly preserved.

While color designs may be applied to pile carpeting by existing techniques, such application is unsatisfactory. Primarily this is because as a practical matter it has only been possible superficially to apply such patterns. Where deep dyeing is to be achieved it is necessary to resort to methods which are prohibitive in their complexity. Yet for a truly satisfactory application of color designs to carpets they should be applied by deep dyeing in some manner. Previous efforts along these lines have been many and have taken the form of use of stencils, screens, air sprays and the like. It has been possible to induce deep penetration of coloring agents into the pile but generally there have been disastrous effects accompanying these attempts. The problem arises primarily in connection with designs in which various colors are to be applied in contiguous areas of the pile. The disastrous effects have been of the nature of the dye spreading sideways, with the adjacent colors interpenetrating. Thus boundaries have been rendered indistinct, destroying the crisp appearance which is of the essence for a quality product. Such have been the results where all the colors in a given design have been simultaneously applied. To overcome this difficulty, others have tried application of colors successively. Aside from the obvious increase in time for the color process, there has also been a distortion of line as each color is introduced to and successively penetrates into the pile.

Accordingly it is the primary object of this invention to make possible the deep dyeing of pile carpeting, in which a plurality of colors may be simultaneously applied without distortion of boundary lines, and in which the coloring agent will penetrate into the pile as deeply as may be desired. To achieve this object apparatus is provided in which the various areas of the pile to be colored are isolated one from the other. In the apparatus the isolated areas are then simultaneously treated with the desired color of dye. Isolation of the respective areas of the pile assures well defined boundaries between colors.

It is a further object herein to provide for the coloring of carpet piling, not by forcing coloring agent into the pile, but by permitting the pile to soak up the coloring agent upon immersion therein. To carry out this object provision is made for a continual replenishment of the coloring agent as may be necessary in order to achieve the required depth of penetration.

It is a final object herein to carry out the foregoing by a simple apparatus, simple in construction and simple to use, whereby the process of applying color design to pile carpeting may be inexpensively and effectively carried out.

How these and many other objects are to be implemented will become apparent through a consideration of the accompanying drawing, wherein:

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Fig. 1 is a plan view of the dye carrying portion of the apparatus;

Fig. 2 is a section at 2-2 of Fig. 1, showing carpeting in position for immersion, and

Fig. 3 shows carpeting in place in the apparatus during immersion.

An infinite variety of varying color designs might be dyed into carpeting by the present invention but the drawings are confined to a single design adaptation. Receptacles 10, 11, and 12 are defined upon base member 13 by free standing thin walls 14. Each receptacle is leakproof, so that different colors may be carried in the receptacles without intermingling. Provision is made for supplying coloring agent from reservoirs, not shown, to each receptacle through channels 15 which pass through the base member 13. The channels extend from the reservoirs outside the base member, and open into the bottom of each receptacle.

In order to dye a design into the pile 16 of a carpet 17, the carpet is placed over the receptacles, pile side downward. Obviously, the carpeting should be held level or taut. A flat rigid sheet 20 may then be placed over the back of the carpeting in order that the pile be uniformly introduced into the various receptacles. During a period of immersion, additional coloring agent may be fed as may be necessary, into the receptacles through channels 15.

By making the walls 14 of thin material, it is possible, when pressure is exerted against the back of a carpet, to cause the walls 14 to extend into the pile. When the walls do so extend into the pile, an area of the pile is confined within each receptacle, and each area so confined is isolated from other areas. By this provision, it is apparent that coloring of the pile to any desired depth, right down to the backing of the carpet is possible, as shown in Fig. 3. All that is necessary is that sufficient coloring agent be introduced into the receptacles during immersion, and channels 15 provide means for satisfying this need.

While we have described a specific embodiment of our invention, it is apparent that changes and modifications may be made therein without departing from the spirit of our invention. For example, the peripheral configuration of the receptacles may be varied, as well as the size and number of the various receptacles and number of feed channels.

We claim:

1. A process for the application of colored designs to pile fabrics, comprising the spreading of said carpeting above a plurality of receptacles having perpendicular walls, causing an area of said pile to enter each receptacle by applying pressure to the carpeting by means of a flat rigid plate, the walls of each receptacle extending into the pile, whereby the area of pile within a given receptacle is isolated from the balance of the pile, evenly and simultaneously feeding a coloring agent into each of said receptacles, and exposing simultaneously each of such isolated pile areas to permit the pile to absorb the coloring agent during the pressure applying operation.

2. A process for the application of color designs to pile fabrics comprising the spreading of said carpeting over a plurality of receptacles, each receptacle being bounded by a thin wall, an area of said pile entering each receptacle, the application of pressure against the back of the carpeting whereby the receptacle walls are caused to reach substantially to the bottom of the pile, and the feeding of a coloring agent evenly and simultaneously into all portions of each of said receptacles.

3. A process as claimed in claim 2 wherein coloring agent is fed into each said receptacle through the bottom thereof.

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4. A process as claimed in claim 2 wherein a different colored coloring agent is fed into each receptacle.

5. A process as claimed in claim 2 wherein each of said receptacles adjoins another thereof, adjoining receptacles having a common wall.

6. An apparatus for the application of color designs to pile fabrics comprising free perpendicularly standing walls defining a plurality of adjacent and contiguous receptacles, a base member from which said walls extend, and means for evenly and simultaneously conducting a liquid coloring agent into all portions of each of said receptacles.

7. An apparatus as claimed in claim 6 wherein said means for conducting a liquid coloring agent comprises a plurality of channels, each of said channels extending from a reservoir containing liquid coloring agent outside said base member, through said base member into one of said receptacles.

8. An apparatus as claimed in claim 7 wherein each

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said channel opens at one end thereof into the bottom of one of said receptacles.

9. An apparatus as claimed in claim 6 including a sheet of rigid material above said receptacles whereby uniform pressure may be applied against the bottom of a carpet when said carpet is spread over said receptacles between said receptacles and said rigid sheet.

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