Surface Covering and Process of Ornameting the Same.

The present invention relates to divisible subject matter described, but not specifically claimed, in our copending application, Serial No. 162,806, filed January 22, 1927, for surface coverings and process of ornamenting the same, upon which has issued Patent No. 1,642,954, dated September 20, 1927. In said application we have described and claimed flexible hard-surfaced floor coverings having a printed pattern brought into relief by having certain colored portions depressed. In said copending application the invention was described with particular reference to linoleum floor coverings and was so claimed in a more specific claim, although we there pointed out that it might be applied to felt base floor coverings.

The present invention is directed specifically to the process of ornamenting so-called felt base floor coverings and to floor coverings so produced. As hereinafter pointed out, the felt base floor coverings are particularly adapted for this process of ornamentation because the felt base goods do not become cured during the process of making like linoleum but retain a certain plasticity under heat even after paints are applied and dried.

The invention is shown as embodied in a so-called imitation handcraft tile pattern felt base floor covering of the type disclosed in the Humphreys patents, Reissue No. 16,510, reissued December 28, 1926, and Reissue No. 16,473, reissued November 16, 1926. As disclosed in the said Humphreys patents, a hard-surfaced floor covering, therein referred to as linoleum, has its surface formed with tile-like spaces which differ in color haphazardly so as to simulate the haphazard arrangement of ceramic tiling, forming what is known as a handcraft tile pattern linoleum. In the more expensive grades of linoleum the pattern is formed by the inlaying process. The pattern may be brought into relief by indenting certain of the colored inlays.

In the cheaper grades of floor coverings, and particularly in the so-called felt base goods, a color pattern is printed on the surface of the goods by printing machines in which printing blocks lay on the various colors in paints, usually oil paints.

As described in our copending application, Serial No. 162,806, the printed color pattern may be brought into relief by depressing certain colors, leaving other colors undepressed. For example, a printed floor covering simulating a tile pattern may be made by printing on the covering certain spaces colored to imitate tiles, and between these spaces, other elongated colored spaces imitating the mortar joints between the tiles, and this pattern may be brought into relief by depressing the colored spaces which simulate the mortar joints below the level of the spaces which simulate the tiles.

These printed hard-surfaced floor coverings, such as felt base goods and the cheaper grades of linoleum, are customarily printed with oil paints. In forming an embossed printed pattern floor covering of this type, it is preferable to first print the goods and then emboss the printed pattern. This is because of the difficulty of having printing blocks lay the paint in the depressed portions, and also because the embossing has a tendency to irregularly stretch the goods, resulting in a difficult registry between the printing blocks and the embossed goods. When it is attempted, however, to print a linoleum, and particularly with the relatively slow drying oil paints commonly employed, and thereafter emboss it, certain difficulties are encountered. After the linoleum has passed through the printing machine it goes into stoves where the paint is dried at a moderate heat. This paint drying operation, however, has a tendency to cure or partially cure the linoleum mix, which renders it resistant to embossing. While an uncured linoleum may be embossed, a cured linoleum cannot be satisfactorily embossed because, instead of flowing under the embossing plate like any uncured linoleum, it tends to spring back when the embossing plate is removed. If a sufficient pressure and depth of embossing should be applied to a cured linoleum to effect a permanent embossed pattern, the paint would be ruptured because of the fact that a cured linoleum would have to be indented considerably deeper than the final indentation because of the ability of the cured linoleum to spring back. Therefore, when a printed pattern linoleum is to be embossed, a quick drying paint, such as a nitrocellulose paint, is preferably employed. However, for commercial printing operations in mak-
ing printed floor coverings, it is of considerable advantage to use the usual oil paints. We have found that the difficulties which have been inherent in embossing printed lino-
leum may be readily overcome in felt base goods.

The term “felt base goods” is one commonly employed in the floor covering art to designate floor coverings made of felt impregnated with a semi-solid bituminous material, such as an asphalt. In making the felt base floor coverings, a sheet of cotton felt is passed through a heated bath of asphaltum which saturates the felt and renders it strong but flexible. The felt base thus formed is printed with color patterns much the same as the cheaper grades of linoleum are printed with color patterns.

The bituminous material with which the felt base is saturated does not oxidize and become cured like the drying oil binders in linoleum. Consequently, the felt base goods may be printed with the usual oil paints and then dried, and afterward may be readily embossed, particularly if the goods are warmed slightly so as to render the bituminous saturant more plastic. The felt acts under an embossing plate differently than a linoleum, particularly a cured or semi-cured linoleum. While such a linoleum has a certain amount of resiliency or comeback so that depressions would have to be made deeper than the permanent depressions, the felt base goods has practically no tendency to spring back but will flow under the embossing plate and readily retain the embossed pattern. The embossed pattern can therefore be applied with the minimum initial impression and with the consequent minimum liability of the paint to become ruptured where it is stretched into the depressions. Moreover, because of the plastic condition or ability to flow of the felt base material, deeper embossing may be done with less pressure than in the case of linoleum.

We have found that the felt base material has certain other characteristics which render it particularly adaptable for embossing. Linoleum, due to the flexibility of the mix and the burlap backing, may stretch somewhat during the process of calendering or pressing, thus throwing the pattern out of register with the embossing plate. This difficulty is not present in the manufacture of the felt base floor coverings. A piece of printed linoleum hanging in the stove may become slightly elongated; sufficient to render absolute registry of an embossing plate difficult. The felt base goods are not subject to this slight distortion. Moreover, because of the impossibility of weaving the burlap backing of the linoleum uniformly, there is sometimes a tendency to bow or buckle which tends to throw the pattern to be embossed out of register with the emboss-

ing plate. Felt base goods are not subject to this handicap. In embossing linoleum it has to be guided into the embossing press, which is rather difficult due to the rough sides of the linoleum which are later trimmed off. The felt base goods are fairly regular on the sides during the process of manufacture, so that the difficulties of guiding the goods to the embossing plate for proper register are minimized.

It will therefore be seen that we have found that the felt base goods have certain characteristics which particularly adapt them for being ornamented by embossed printed patterns. While for some of the reasons pointed out above it is preferable to first print the pattern on the felt base goods and thereafter emboss the goods, the procedure might be reversed, particularly with very shallow depressions or with printing apparatus which could lay the paint into the depressions. The present invention is illustrated as embodied in a felt base floor covering having a handcraft tile pattern printed thereon, but it will be understood that it may be embodied in felt base floor coverings having other patterns.

In the drawings—

Figure 1 is a plan view of a piece of handcraft tile pattern felt base floor covering embodying our invention;

Figure 2 is a plan view of a piece of the material before embossing;

Figure 3 is a section along the line III—III of Figure 2;

Figure 4 is a plan view of a piece of material after embossing; and

Figure 5 is a section along the line V—V of Figure 4.

Referring to the embodiment of the invention illustrated in the drawings, reference numeral 1 indicates a piece of felt base floor covering having a handcraft tile surface ornamentation, such as is shown, for example, in the said Humphreys Reissues Nos. 16,510 and 16,473. As shown in the drawings, three kinds of color units are employed to imitate the tile. The units 2 are alike in color, as indicated by horizontal lines; the units 3 are alike in color, as indicated by diagonal lines; and the units 4 are alike in color, as indicated by vertical lines. Usually the units 2, 3 and 4 will be of the same general color, but of different shades, to simulate the different shades of burnt tiling which, because of the intensity of the heat at which they are burnt, come out of the kiln with different shades of color; although, if desired, tile-like units of different primary colors may be employed, in case a striking decorative effect is desired. In referring to the colors as “varying colors,” we mean either different colors or different shades of the same color.

As further described in the said Hum-
phreys reissues, the varyingly colored tiles are arranged haphazardly over the area along the strip of material between the points A and B in Figure 1. The pattern thus formed is repeated by the printing operation over successive areas along the strip of the floor covering. The repeat is, of course, necessary because of the machine-printing of the floor covering. The area which is shown in Figure 1 as being the width of the strip of floor covering and in length from A to B, which is repeated in making the floor covering, should be of a sufficient size so that the repeat is not readily apparent to the eye. The minimum size of such repeat areas varies with the size, arrangement and varyings colors of the tile-like units. In general, the smaller the individual tile-like units, the smaller the areas over which the arrangement is repeated, and the larger the units and the more striking their appearance, the larger the areas necessary in order that the repeat will not be readily apparent to the eye.

As shown in Figure 1, and described particularly in the Humphreys Reissue 16,473, there are preferably units of striking decorative appearance, indicated by reference numerals 5, 6, 7, 8, 9, 10, 11 and 12 interspersed in an apparently haphazard manner to still further simulate hand tiling. These interspersed units are usually of some design differing strikingly in color from the plain tile from which the remainder of the pattern is made.

In order to still further simulate the appearance of hand-laid tiling and to obtain an improved artistic effect we separate the tile-like spaces by printed colored spaces or interliners 13 which imitate the mortar joints between the tiles. The color of the spaces 13 should differ from the color of the tile-like spaces 2, 3 and 4, as the color of mortar varies from the color of the base tiling. The variation in color may be that of a different primary color as for example, a black mortar with three shades of red tiling, or the mortar may be of a different shade of the same general color as the tiling.

The printed spaces 13 which simulate the mortar joints are sunk or depressed into shallow grooves 14, as shown in Figures 4 and 5, to simulate the depressed mortar joints occurring in ceramic tiling. The depressed grooves or recesses are relatively shallow, being usually about 1/292d to 3/64ths of an inch in depth and with a width corresponding to the width of the colored space which is depressed. The groove preferably has a smooth contour, that is to say, a cross section, as shown in Figure 5, does not present sharp angles or corners, in order to prevent the retention of dirt and allow of easy cleaning. The depressed mortar joints bring the tile pattern into relief. They cause a much better simulation of hand-laid ceramic tiling than a plane surface tile pattern felt base floor covering. The depressions make the colored patterns stand out strikingly. They also break up the smooth light-reflecting surface afforded by the rather glossy paint printed upon the felt base. In looking across the room toward a window, the colored pattern of a plane surface floor covering may be lost in the reflected light, whereas, the same pattern, if brought into relief as herein described, is distinctly visible under the same conditions. The number of varying colors printed on the floor coverings is, of course, limited because of the number of printing heads in the floor covering printing machine. However, by employing a limited number of varying colors for the tile and another color or shade for the mortar joints, with the tile arranged with a studied haphazard appearance, the artistic effect of hand-laid tiling may be secured with the limitations of mechanical printing reproduction, and particularly as the depressed mortar joints give the appearance of the texture of hand-laid tiling. The felt base goods may be used where hand-laid ceramic tiling would be too expensive or impracticable, or even where linoleum would be too expensive. The embossed felt base goods as herein described bring a highly artistic floor covering into the cheaper grades of material, that is to say, into the relatively low priced felt base floor coverings.

While the colors may be printed on the surface of the felt base either before or after the depressions are formed therein, it is much preferred to print the color pattern first and thereafter bring the color pattern into relief by embossing it. As previously mentioned, the felt base goods do not pass through the change in state known as curing in linoleum, so that an oil paint may be applied to the felt base goods, the paint dried in the usual manner, and the printed felt base goods may thereafter have the depressions formed in them. We have found that the usual linseed oil drying paints used in printing felt base goods are sufficiently stretchable after they have been dried in the usual manner so that the paint film will not be ruptured during the indenting operation. Care should be taken that a good grade of paint be employed which will form a paint film which is flexible or stretchable enough so as not to rupture during the indenting operation. Since the indenting operation will preferably be carried out immediately after the goods have come from the paint drying stoves and before the paint has had an opportunity to age, there is no particular difficulty encountered in rupturing the paint film during the indenting operation.

Referring particularly to the process as illustrated in Figures 2 to 5, the base of the material is the usual felt base consisting of a heavy sheet of felt impregnated with the
usual plastic bituminous or asphaltic materials well-known in the trade for this purpose. After the felt has been thus saturated, it is printed with the usual paint coating and then dried. The smooth surface material thus formed is shown in Figures 2 and 3. This printed material is then put beneath an embossing plate or roller which has ribs which indent the printed spaces 13 into the grooves 14.

As shown in the drawings, the entire color imitating the mortar joints is preferably bodily depressed, so that the marginal lines of the depressions or grooves substantially coincide with the lines of juncture between the printed spaces. By thus having a certain color or colors bodily depressed, the colors which are printed on the undepressed portions stand out strikingly by contrast. By having the marginal lines of the depressed portions substantially coinciding with the lines of juncture between the colors, the whole color pattern is brought into sharp relief.

While it is preferred to emboss entire printed color spaces, as for example, to depress the entire color spaces imitating the mortar joints in a tile pattern floor covering, the embossing might be otherwise done, as for example, a tile pattern floor covering might be made without the simulation of mortar joints, but having the lines of juncture between the tile-like spaces depressed in order to throw the tile-like spaces into sharper contrast and relief. Also, while we have illustrated the invention as embodied in a handcraft tile pattern design, it may be applied to other patterns. For example, instead of having the tiles arranged with haphazardly varying colors, the tiles may all be printed of the same color, or with a conventional color pattern. Also, floral or other colored figured felt base floor coverings may have their printed color patterns brought into relief by depressing certain colors of the pattern, leaving other colors standing undepressed.

The invention is therefore not limited to its illustrated embodiment, but may be otherwise embodied in felt base floor coverings and process of ornamenting the same within the scope of the following claims.

We claim:
1. The process of ornamenting the surface of a felt base floor covering, which comprises printing a color pattern on its surface, and thereafter applying an embossing pressure to cause the felt base material to flow and thereby indent certain of the colors of said pattern to bring the pattern into relief.
2. The process of ornamenting the surface of a felt base floor covering, which comprises saturating a sheet of felt with a plastic bituminous material, printing a color pattern on the saturated sheet of felt, and thereafter applying an indenting pressure over certain portions of the material to cause the saturated felt to flow and form indentations bringing the color pattern into relief.
3. The process of forming an ornamental surfaced felt base floor covering, which comprises saturating a sheet of felt with a plastic bituminous material, printing a color pattern on the saturated sheet of felt, and thereafter applying an indenting pressure over certain portions of the material to cause the saturated felt to flow and form indentations bringing the color pattern into relief.
4. The process of making an ornamental surfaced felt base floor covering, which comprises saturating a sheet of felt with a plastic bituminous material, and applying an ornamental coating of paint to the surface of the material and embossing a pattern on the material.
5. As a new article of manufacture, a felt base floor covering comprising a sheet of felt impregnated with a plastic filling material and having a color pattern applied thereon and brought into relief by having certain portions of the pattern depressed below the general surface level.
6. As a new article of manufacture, a felt base floor covering comprising a sheet of felt impregnated with a plastic filling material and having its surface formed with a series of tile-like colored spaces having a limited number of varying colors arranged in a pattern with an irregularity of occurrence so as to simulate the haphazard appearance of hand-laid tiling and separated by elongated spaces colored to simulate mortar joints, and having the elongated spaces depressed into the felt base material to simulate the depressed mortar joints of hand-laid tiling.
7. As a new article of manufacture, a felt base floor covering comprising a sheet of felt impregnated with a plastic filling material and having a color pattern printed thereon, the color pattern being brought into relief by having certain portions thereof depressed by an indenting pressure applied to the material after the printed color pattern is printed thereon.
8. As a new article of manufacture, a felt base floor covering comprising a sheet of felt impregnated with a plastic filling material having an applied color pattern simulating tile separated by mortar joints and brought into relief by having the mortar joints depressed below the level of the tile. In testimony whereof we have hereunto set our hands.

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