Dec. 30, 1930. J. B. CAMPBELL 1,787,140

PROCESS AND APPARATUS FOR THE PRODUCTION OF FELT BASE FLOOR COVERING

Filed Nov. 17, 1925 2 Sheets-Sheet 1

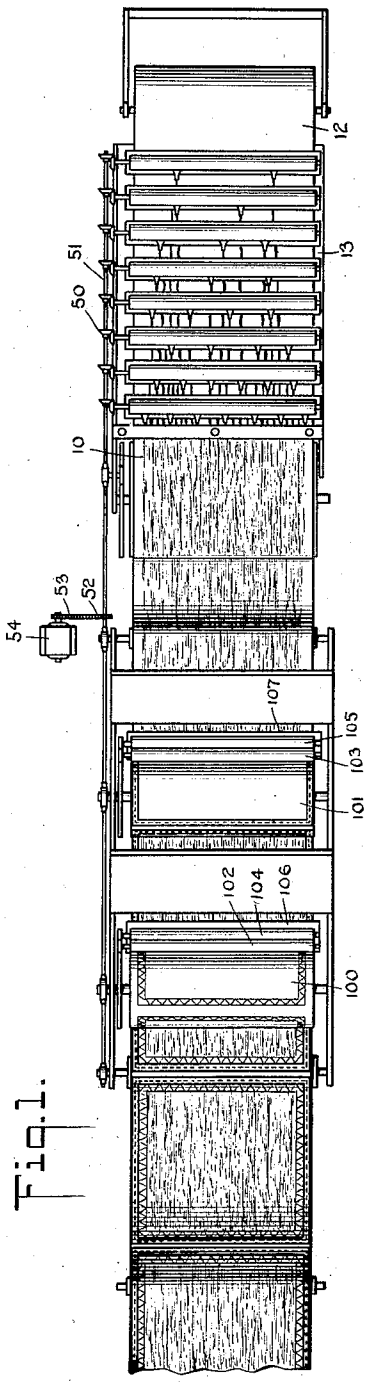


Fig. 1.

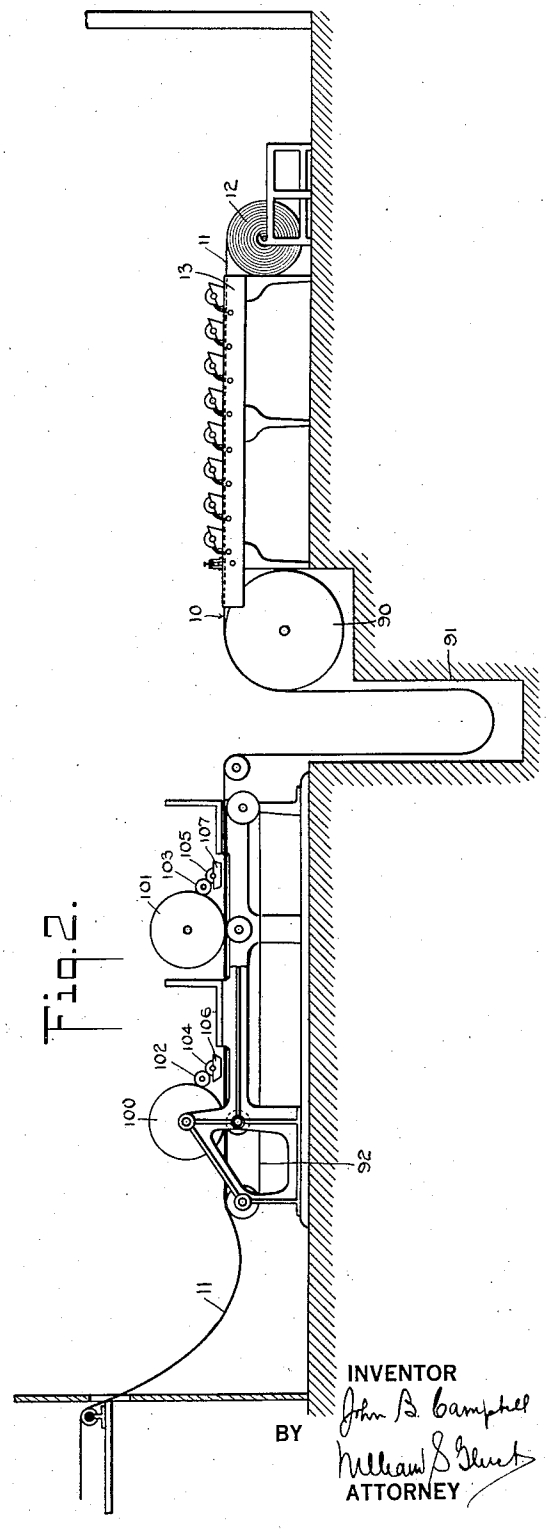


Fig. 2.

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PROCESS AND APPARATUS FOR THE PRODUCTION OF FELT BASE FLOOR COVERING

Filed Nov. 17, 1925 2 Sheets-Sheet 2

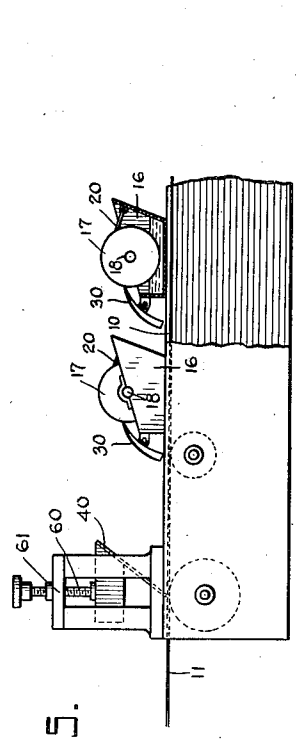


Fig. 5.

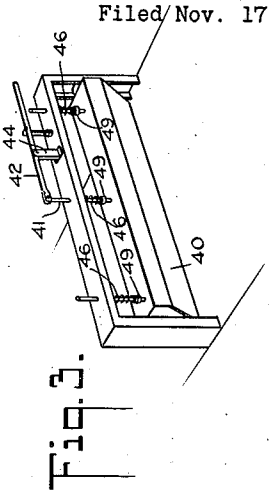


Fig. 3.

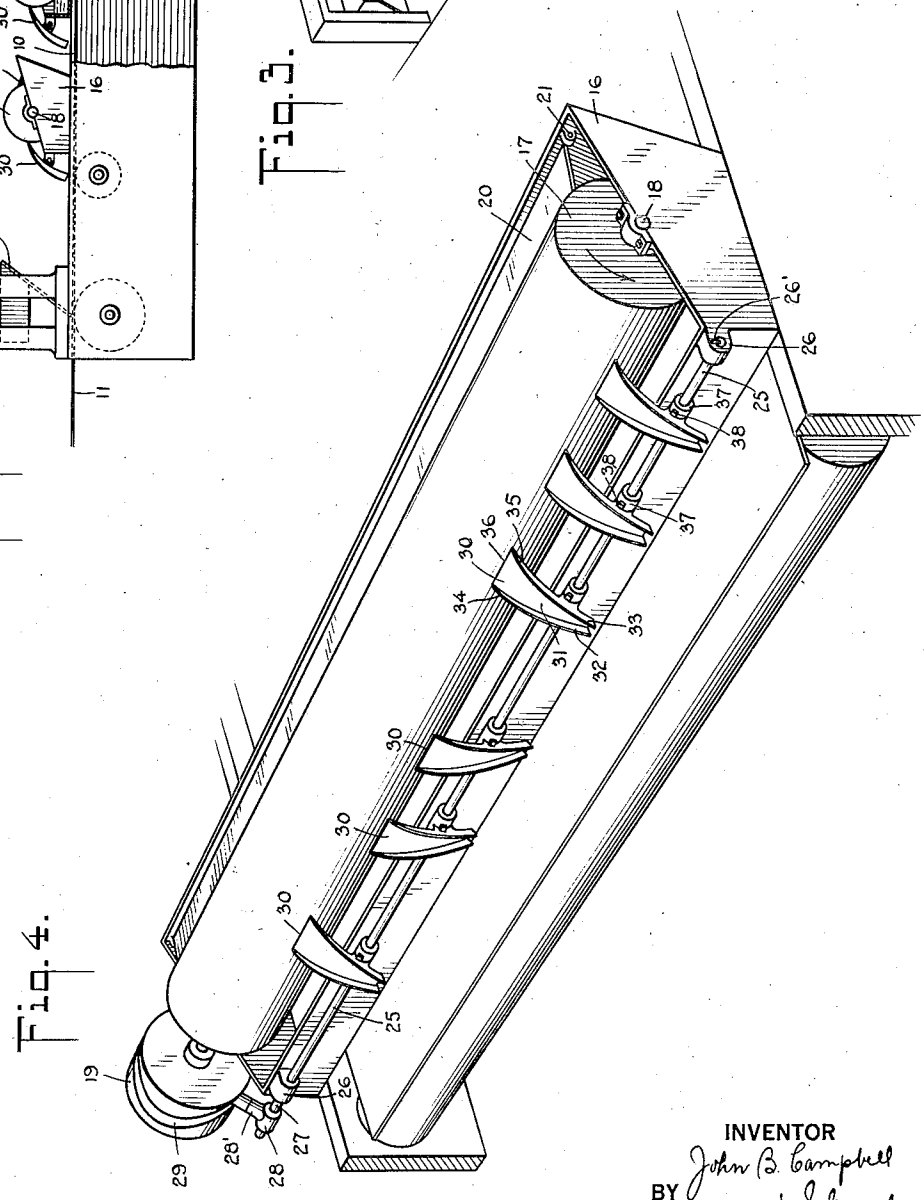


Fig. 4.

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UNITED STATES PATENT OFFICE

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PROCESS AND APPARATUS FOR THE PRODUCTION OF FELT-BASE FLOOR COVERING.

Application filed November 17, 1925. Serial No. 69,610.

My present invention relates generally to coating materials and more particularly to a process and apparatus for producing a predetermined ornamental effect upon material, such as a felt base, intended to serve as a floor covering and co-ordinately involves a process and apparatus for the continuous production of rugs, from a strip of such material.

One of the objects of the invention is the production of a field coating for a floor covering and more particularly for a felt base rug in which shall be embodied a number of colors so treated as to cause them to be shaded off and to commingle and more particularly the production in such a field in addition to the colors originally deposited, of additional colors resulting from the manner of treatment of the colors so originally deposited.

The employment of applicators having predetermined impression surfaces such as printing rollers or blocks for producing predetermined designs upon a floor covering surface is not only inconvenient and expensive because of the necessity of employing a different applicator for such design, but in addition, I have found that effects such as marbleizing or wood graining cannot be effectively produced with applicators of this character not only because of the fact that there is a limit to the number of colors that can be employed practically, but also because of the fact that marble or wood graining effect necessitates the intermingling of shades and tints which cannot possibly be attained by these methods or the employment of such apparatus.

Neither the mash block process nor a printing roller process can possibly give a shading off or merging of one color into another because of the fact that even though successive colors are merged, they will be merged at a time when one has reached a greater degree of dryness than the other and furthermore in the use of a printing roller, its action is to suck up the paint with it as it moves away from the printed surface.

One of the objects of my invention is the production of an ornamental surface upon a floor covering or similar material in which I dispense with the employment of applicators having surfaces of predetermined conformation or contour and intended to produce corresponding predetermined design impressions upon the surface of a floor covering, such as a felt base product, of which applicators printing rollers or blocks are examples.

Another object of my invention is an arrangement for producing the field ornamentation by the deposition of paints on a surface in a stream and the ornamental effect which it is desired to produce is dependent to a great extent upon the relative movement between the material being ornamented and the applicators, and more particularly an arrangement whereby paints so deposited are treated to cause the different colors where different colors are used, to shade off into each other and at times to intermingle and produce new tints so as to enhance and more effectively approach the desired marbleized or wood graining effect.

Another object of my invention is the provision of an arrangement whereby the coloring material to form the field of the rug or floor covering is applied by applicators made up of standardized units arranged to discharge upon or supply material to the surface to be ornamented, the units being so arranged as to be capable of discharging variably upon different portions of the surface so that any unit or group of units discharging upon predetermined portions will give a predetermined design.

In the apparatus herein described, I show broadly the employment, for the production of the body or field coating on the strip or web of material, of a series of standardized units, each of which serves to control the application of a coating material to predetermined areas of the surface to be coated so that by a change in the units or by a change in the predetermined portions of the surface upon which each unit deposits, an unlimited variety of designs can be produced incident to the relative movement between the surface being ornamented and the units of deposit.

The deposits forming such field will be arranged generally longitudinally of the

strip and in the direction of the line of movement of the strip and where the deposit is continuous for predetermined periods, line of deposits will also be continuous for predetermined lengths depending upon how long the application of the deposits is continued.

In accordance with my invention it will be further understood that the points of application of the deposits from the different sources may be shifted relatively transversely of the line of movement of the material, predeterminedly or otherwise, so as to cause the lines of deposit while running generally lengthwise of the material to undulate.

Another object of my invention is the treatment of these lines of deposit forming the field so as to cause the coloring matter in one or more lines of deposit to spread beyond the original area upon which they have been deposited to cause not only a shading off in the color deposit but also in commingling of adjacent deposits whereby new tints or shades are produced.

My invention further provides for an arrangement by which each unit can be given movements laterally of such direction of movement of the surface being treated to simulate a graining effect so that by the movement of one or more units, each of which may control different colors where so desired, a varied colored graining effect may be produced by the compound relative movement of the units and the surfaces to be coated and in my preferred embodiment, these units are in the form of a series of controlling elements, each of which is characterized by the differential positioning of the point of discharge of the material thereby upon the surface being treated so that by varying the point of discharge of the element of each unit and by combining these units differentially, any desired character of deposition can be attained.

A still further object of my invention is an arrangement whereby a rug border can be applied to a strip of felt base product or the like, while the strip is in motion, and my invention involves an arrangement whereby the rug border is produced by an impression member having thereon an impression surface to form a complete rug border or to form complete the complete single color impression for the border.

A still further object of my invention is the production of rug repeats from a strip, while the strip is in motion, and this phase of my invention involves an arrangement whereby the body coating or field is applied uninterruptedly to the strip while the strip is in motion and the rug border also applied while the strip continues to move.

A still further object of my invention is the successive applications of rug body and rug border ornamentations, so that one is applied before the other is completely dry so that the disadvantages of the application of a second coat upon portions only of a coat which is already dry, will be avoided.

Another object of my invention is the production from a continuous strip of material of rug repeats by applying to the strip a continuous uninterrupted body or field ornamentation then superposing thereon ornamentation to not only predetermine the rug lengths but also provide the rug borders for each length.

In accordance with my invention, I first apply a rug body coating to the strip of felt base fabric, which may be uninterrupted and which may be produced by the manner already referred to above and to be more fully described hereinafter, although as will be understood while this character of field and its manner of its production is not essential to this phase of my invention, it nevertheless possesses decided advantages. I then employ an impression member such as a printing roller to apply the rug border the impression member being of such a character that each operation thereof produces an impression for at least a full rug length.

My invention further involves the process and apparatus whereby the field coating applied to a strip shall be not only of a character but of such dimensions as to permit portions thereof to form the field of the rug border.

In accordance with the embodiment of my apparatus herein disclosed for practicing my process, I show a plurality of sources of supply for the different characters of coating material and elements in connection with these sources of supply, adapted to cause the material from said source of supply to be deposited upon predetermined areas of the surface to be coated. These elements which are arranged to deposit the material by gravity are positioned laterally of each other with reference to the length of the web being coated and are arranged to be shiftable laterally independently of each other so as to vary the areas upon which each deposits, and the apparatus is so constructed and arranged that the unit including the elements associated therewith are each shiftable either together with or independently of the units and transversely of the direction of movement of the web so that having predetermined the relative positions of the elements in each unit with reference to each other, the deposit from each element of each unit as the web is moved along will be generally in a direction longitudinally of the web and the line of deposit by each element will be determined by its position with reference to the edges of the web and the character of deposits by each unit will be determined by the relative positions of the elements of each unit with reference to each other and the lines of deposit can be varied to cause them to undulate by a transverse shifting of the units. In con-

nection with this, I employ an element which I term the "spreader", the effect of which is not only to even off the upper surface of the deposits but which will also spread each line of deposit beyond its original area of deposit so as to cause the different materials deposited along the lines as indicated to shade off and also to cause adjacent deposits to commingle, and with the proper selection of colors, such commingling can be caused to produce new or additional shades or tints.

This coating so produced, which I will term the "field" coating is preferably deposited on the strip for the full width thereof and is an uninterrupted field coating. I then employ an impression member which is illustrated in the drawings as being one or more impression rollers, for impressing directly on this field, the rug border the size of the roller and the impression surfaces thereon being such that one rotation of the roller will produce an impression for the full length of the rug which it is desired to produce. It will be observed that in this manner, the first coating which forms as stated the field coating will also appear in the border.

For the attainment of these objects and such other objects as may hereinafter appear or be pointed out, I have illustrated embodiments of my apparatus for practicing my process, in the drawings, wherein:

Fig. 1 is a top plan view of the apparatus for practicing my process;

Fig. 2 is a side elevational view thereof;

Fig. 3 is a side elevational view partly broken away of a portion of the apparatus showing the details of the knife or spreader mechanism;

Fig. 4 is a perspective view on an enlarged scale of one of the coating units; and

Fig. 5 is a view similar to Fig. 3 showing a slight modification.

Before proceeding to describe my invention, I will state that my process involves the treatment of a web of material such as felt base to cause a coating to be deposited thereon which coating I will term the body coating and also contemplates the application along with said coating of a second form of ornamentation which serves not only to predetermine rug lengths but also to form the border of such rugs and I will first proceed to describe process and apparatus for producing the body coating.

It will be understood however that while in the present apparatus the body coating is used as such in connection with a rug, this is not essential as it may equally be employed in connection with the manufacture of runners, and in fact can serve as the sole ornamentation for a floor covering.

Upon viewing Fig. 1 of the drawing, it will be observed that my process is to be employed in connection with the coating of the surface 10 of any preferred or desired material 11, such felt base floor covering, which is fed from a source of supply such as a roll 12 along a bed 13 in any preferred or desired manner and my apparatus, disclosed in that figure for employing my process, comprises generally a series of controlling elements, any number of which may be employed, as will be fully understood later on, and each of which is intended to control the deposition of a material upon a surface, the controlling elements being so associated as to cause each element or predetermined combination of elements to give a predetermined ornamental effect, and the charge in the elements or combination of elements to vary the ornamental effects.

Where the application or deposition of the same material to a surface is controlled by more than one element, I employ in the illustrated embodiment of my invention, a single source of supply for such coating material and have associated together the elements supplying such coating material and will hereinafter refer to such association of controlling elements as units and where as in the herein described embodiment of my invention, the ground or field coating is to have supplied thereto depositions of eight differently colored materials, I show the employment of eight of such units and upon viewing Fig. 4 of the drawing, in which one of these units is illustrated on a large scale, it will be seen that each of the units comprises a member 16 which is illustrated as in the form of a conventional type of container within which dips the feed roller 17 mounted to rotate with the shaft 18, carried in the bearings in side walls of the container 16. Mounted upon an end of the shaft 18, extending beyond the container is the driven member 19 which may be of any preferred or desired character, such as a pulley or gear, and is driven in any preferred or desired manner, and to be more fully described hereinafter, so as to cause the roller 17 to be given a continuous rotation so as to feed the coating material contained in the receptacle 16. To provide a uniform feed of coating material, I employ a doctor or wiper member 20 pivoted at 21 as shown and so arranged as to normally gravitate against the pulley so as to predetermine the amount of material carried on the surface of the roller 17, it being understood that the roller is driven counterclockwise as shown by the arrow.

Mounted in advance of the roller is the rod 25 which is carried in the pintle bearings or ears 26 extending forwardly from the frame, the rod 25 being mounted in these ears 26 as to be freely slidable therethrough. The rod 25 is held against rotation in its bearing 26 as by a pin and keyway connection 26'.

Upon this rod 25 is mounted a series of elements which I will term the controlling and applying elements and which can be

varied considerably from the illustrated embodiment to perform the function which it is desired it shall perform. In the preferred embodiment illustrated in the drawing, these elements are all shown as duplicates of each other and a description of one will therefore suffice for all. Each controlling element comprises what might be termed a funnel defined by the floor or bottom 31 and the opposite side walls 32 and 33. These side walls approach each other toward the lower or front end of the elements 30 so as to provide a tapering channel or passageway therebetween. These walls gradually decrease in height toward their rear ends 34 and 35 and merge into the rear edges 36 of the controlling element or funnel 30. Extending downwardly from the lower wall or bottom of the elements 30 are the ears 40 having openings therethrough which can be received the rods 25.

From the description thus far given, it will be understood that the controlling elements 30 are mounted on the rod 25 both for a swinging movement thereabout and also for a sliding movement with reference thereto and for preventing the accidental occurrence of such movements, I provide an arrangement such as the extension sleeve 37 having an opening therethrough to receive a locking member such as a screw 38, threaded therein and arranged to abut against and lock the element 30 to the rod 25. The lower wall 31 of each of the elements is preferably, although not necessarily, curved as shown in the drawings and the rear edge 36 thereof is so arranged and constructed that when positioned to contact with the surface of the roller 17, this edge 36 will lie flush and in scraping engagement therewith.

The rollers 19 are driven in any preferred or desired manner as by friction rollers 50 mounted on a shaft 51 driven by the gear 52 in mesh with the gear 53 driven by the motor 54.

From the description thus far given, it will be understood that the number of units employed corresponds to the number of differently colored coating materials which it is desired to employ, one unit being employed for each coating material and that the number of lines of deposit of each coating material which it is desired to apply, predetermines the number of the elements 30 which are rendered operative, the rest of the elements associated with each unit being moved to the inoperative position as shown with some of the elements in Fig. 4 of the drawing.

The position which it is desired that the lines of deposit shall have with reference to the side edges of the fabric 10, predetermines the positioning of the elements 30 on the rod 25, these elements being adjustable longitudinally thereof in the manner already described.

As already has been explained, the surface 10 to be coated is moved continuously beneath these containers so that the discharge from each element 30 will in effect produce a line of coating in the direction of movement of the fabric and longitudinally thereof. The number of lines produced by each container, their position with relation to the side edges of the material and their spatial relationship, will be determined by the number of outlets in each unit container and their relative position in the container not only with reference to the container but also with reference to each other.

The thickness of the lines or the amount of material deposited at any one point in a line will be determined by the size of the discharge mouths of the element 30 and the action of the roller 17 and the doctor 20 and also the character of the material employed. By employing in the different pans materials which vary from each other, either as to consistency or color, a contrast can be produced between the groups of lines produced by any one predetermined container and the groups of lines produced by other containers and it will therefore be understood that by associating together different units, that is units which have different characteristics with reference to the elements as to their number, size and position or by varying the material controlled by the units an infinite number of contrasting lined designs can be produced.

The design thus far described is what I might term a straight line design and in order to give an effect such as is found in marble or in wood graining, I provide in my apparatus for a movement of the controls 30 at an angle to the direction of movement of the fabric 11 and as in the illustrated embodiment, these outlet controls 30 are fixed to the rods 25, I attain my object by providing that a corresponding movement be automatically given to the rods 25 in the manner which I will now describe.

The rods 25 are each provided preferably at the end adjacent its driven member 19 with an extension 27 to which is fixed the sleeve 28 having mounted thereon the pin 28′ arranged to receive in the cam slot 29 formed in the driven member 19.

It will therefore be understood that, as the driven member 19 rotates to feed the material to the controlling elements 30, which in turn discharge such material upon the surface of the saturated felt base 10 upon which the ornamentation is being formed, a movement will be given the units and along therewith to the elements of each unit, laterally of the web 10 and transversely of the direction of the feed thereof. The character of the slots 29 and the speed of

rotation of the driven elements 19 will predetermine the undulating character of the lines of deposit thus formed by each controlling element and by varying the characters of the cam slots 29 relatively to each other, not only can the undulation of each controlling element be varied, but an infinite variation in the movements of the controlling elements 30 with reference to each other can thus be attained. Furthermore, by having one or more of the driven elements 19 provided with slots which are merely guide slots and have no cam action, an enhanced effect can be produced because of the contrast between the undulating lines of deposit and straight lines of deposit.

While by my process thus far described, I am enabled to obtain highly ornamental effects such as the simulation of marble and wood graining, yet I find that the lines of the different coatings are rather too sharply defined and of too uniform a character transversely thereof to make such effect complete and my process further involves a treatment of the material after it has been deposited so as to eliminate the sharp definition of the lines of deposit and also to shade them off and also to cause adjacent colors to combine, and in Fig. 3 of the drawing, I show for this purpose the knife or wiper member 40 which may be of any desired configuration, character or material and which in the illustrated embodiment is shown as carried by the rod 41 mounted to have an up and down movement. For lifting the wiper or knife member 40, the rod 41 is connected at its upper end with the free end of the lever 42 so as to have a loose pivotal connection therewith, said rod or lever 42 being pivoted intermediate its ends to the top frame member 43 as shown at 44, the opposite free end 45 of the lever 42 serving as an operating handle portion. In order to cause the knife or wiper member 40 to apply sufficient pressure to the surface of the material being treated, I provide any desired number of spiral springs 46 encircling the rods carried and projecting upwardly from the wiper or knife member 40 and guided through the top frame member 43. These springs 46 abut in nuts 49 adjustably carried by the rods to give any desired pressure to the knife or wiper member 40 upon the material that is to be treated.

The knife 40 extends transversely of the direction of movement of the material 10 and is at least of a length equal to the width of the material and is positioned as will be observed upon viewing Fig. 5 of the drawing, a distance beyond the point at which the coating material is deposited on the surface 11 by the applicator units. As the lower edge of the knife contacts with the lines of deposit, it will have what might be termed a spreading effect which will not be uniform particularly as to those lines which undulate and the result of this will be to cause these lines of coating to spread beyond their original areas of deposition and closely approximate and simulate the graining in wood or a marble effect.

I have found that the use of a steel spreader such as that shown at 40, is extremely effective for the results desired. The steel knife spreads the colors evenly and thus gives to the coating a smooth, even surface due to the absence of any suction such as is present when an extended surface such as an impression member is moved relatively to the coating deposited by it. In addition, the spreader acts to force the paint into the material and therefore gives to the floor covering not only an ornamental coating but a highly effective wearing surface. I have further found that not only is the merging of colors almost imperceptible, but that by the employment of for instance, six colors, any number of additional colors or tints can be produced.

The strip of material is fed from off the roller 12 by the suction roller 90 and as my invention contemplates that where desired the process and apparatus hereinbefore described may be employed to form rugs from a strip or web 10 by a continuous process, I show the association of such apparatus of rug border applicating means so arranged and associated that the rug repeats can be formed from the strip in one continuous process. The web is fed from the suction roller 90 into a well 91 to provide an excess length of the strip between the feeding mechanism of the apparatus for producing the field thus far described and the feeding means of the rug border applicating means to be now described. The strip coating as set forth is fed through the border applicating means in any preferred or desired manner, as by the endless belt 92 which may have associated therewith pins (not shown) or any other form of web gripping means. In the illustrated embodiment, I show my rug applicating means as constructed to form a two color border and for this purpose, I use two impression rollers 100 and 101 to the surface of which coloring material is applied by means of the rollers 102 and 103 contacting with the rollers 104 and 105 which dip into the color pans 106 and 107. The impression rollers 100 and 101, each has thereon impression surfaces which outline a complete border and the circumference of the roller is preferably made equal to the length of the rug which it is desired to form and, therefore, the impression surface upon each roller will extend around the roller for the full perimeter thereof, the two cross-portions of the border preferably, although not necessarily, merging into each other so that the two end portions of the continuous impression surface will merge into each other. This arrangement

will provide rug border impressions which in turn will merge into each other so that when the rugs are cut apart, the lines of cut will be midway through this and rug border impression areas. Where on the other hand, it is desired that a space shall be provided between the rugs, this can be arranged for by increasing slightly the size of the roller, making the continuous rug border impression surface of less length than the circumference of the impression rollers, thus causing the ends of such impression surfaces to be spaced apart a short distance which in turn, will produce a space in between the rug repeats.

One of the important features of my invention is the fact that I produce a field coating which is continuous for the full width of the rug which it is desired to produce and where the width of the rug which it is desired to produce is equal to the width of the strip, also for the full width of the strip. As a result of this method, the rug border is impressed directly upon the body coat so that the coat which forms the field of the rug merges into and forms part of the border so that by properly predetermining the ornamental association of the border in such field coat, not only is a highly ornamental border produced as well as a contrast between the border and the field coat, but in addition, there will be an ornamental relationship between the field coat and the border with which both the continuity of ornamentation and the contrast is effective.

In Fig. 5 of the drawing, I show a modified embodiment of the knife support in which the spreader knife 40 is carried by a threaded post 60 which engages through a corresponding threaded opening in the top platform 61 so as not only to be able to render the spreader operative and inoperative, but also to be able to adjust the pressure thereof.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is:

1. In an apparatus of the class described, means for feeding a web, means for producing a field upon the surface of the web comprising a plurality of applicator units interspaced in the direction of travel of said web, each associated with a predetermined character of coating material and each unit comprising a reservoir of coating substance and a plurality of elements which control the application of the coating material associated with its unit to the surface to be coated, said elements being shiftable relatively to each other and transversely of the direction of movement of the web, whereby upon the movement of the web, the coating material associated with each unit, will be deposited thereby along a plurality of lines, each extending generally longitudinally of the web, with the lines of deposit positioned laterally of each other, the relative position of said lines varying with the relative position of the elements and means for shifting said elements relatively of each other as the elements are applying the coating material to the surface being coated.

2. In an apparatus of the class described, means for feeding a web, means for producing a field upon the surface of the web comprising a plurality of applicator units interspaced in the direction of movement of said web, each associated with a predetermined character of coating material and each unit comprising a fixed reservoir and means for withdrawing material therefrom and a plurality of delivery controlling elements which control the application of the coating material associated with each unit to the surface to be coated, said elements being shiftable relatively to each other and transversely of the direction of movement of the web, whereby upon the movement of the web, the coating material associated with each unit, will be deposited thereby in streams along a plurality of lines, each extending generally longitudinally of the web, with the lines of deposit positioned laterally of each other, the relative position of said lines varying with the relative position of the elements and means for shifting said elements independently of each other as the elements are applying the coating material to the surface being coated.

3. In an apparatus of the class described, means for feeding a web, means for producing a field upon the surface of the web comprising a plurality of applicator units interspaced in the direction of movement of said web, each associated with a predetermined character of coating material and each unit comprising a fixed reservoir and means for withdrawing material therefrom and a plurality of delivery controlling elements which control the application of the coating material associated with its unit to the surface to be coated, said elements being shiftable relatively to each other and transversely of the direction of movement of the web, whereby upon the movement of the web, the coating material associated with each unit, will be deposited thereby in streams along a plurality of lines, each extending generally longitudinally of the web, with the lines of deposit positioned laterally of each other, the relative position of said lines varying with the relative position of the elements, said elements being so constructed and arranged as to be capable of being rendered operative or inoperative, and means for effecting the relative movement of the said elements.

4. In an apparatus of the class described, means for feeding a web, means for produc-

ing a field upon the surface of the web comprising a plurality of applicator units interspaced in the direction of movement of said web, each associated with a predetermined character of coating material and each unit comprising a fixed reservoir and means for withdrawing material therefrom and a plurality of delivery controlling elements which control the application of the coating material associated with its unit to the surface to be coated, said elements being shiftable relatively to each other and transversely of the direction of movement of the web, whereby upon the movement of the web the coating material associated with each unit, will de deposited thereby along a plurality of lines, each extending generally longitudinally of the web, with the lines of deposit positioned laterally of each other, the relative position of said lines varying with the relative position of the elements, and means for impressing rug border repeats directly upon said field.

5. In an apparatus of the character described, means for feeding a web, means for producing a field upon the surface of the web comprising interspaced sources of supply of coating material and means for controlling the application of the coating material from such sources comprising a plurality of rollers and a plurality of channelled members associated with each roller and arranged to direct the material from said roller to said web surface.

6. In an apparatus of the character described, means for feeding a web, means for producing a field upon the surface of the web comprising interspaced sources of supply of coating material and means for controlling the application of the coating material from each source comprising a roller and a channelled member associated therewith and adjustable laterally thereof, and arranged to direct the material from said roller to said web surface, said channelled member being arranged so as to be movable into and out of operative relation to said roller.

7. In an apparatus of the character described, means for feeding a web, means for producing a field upon the surface of the web comprising a source of supply for coating material and means for controlling the deposition of said coating material to the surface comprising a member tiltable into and out of operative position and adjustable transversely of the web so as to predetermine the area of deposition of the coating, said member having therein a channel narrowing towards its discharge end.

8. In an apparatus of the class described, means for feeding a web, means for producing a field upon the surface of the web comprising a plurality of applicator units arranged in back of each other and each associated with a predetermined character of coating material, and each unit comprising a source of coating material and a plurality of elements associated with each source for depositing the material on the surface along lines extending generally in the direction of movement of the web, the elements of each unit being shiftable laterally of each other, to vary the relative position of said lines of coating laterally of each other, said elements being each tiltable to render each operative or inoperative.

9. In an apparatus of the class described, means for feeding a web, means for producing a field upon the surface of the web comprising a plurality of applicator units arranged in back of each other and each associated with a predetermined character of coating material, and each unit comprising a source of coating material and a plurality of elements associated with each source for depositing the material on the surface along lines extending generally in the direction of movement of the web, the elements of each unit being shiftable laterally of each other, to vary the relative position of said lines of coating laterally of each other, said elements being each tiltable to render each operative or inoperative, and means for shifting said units transversely of the direction of movement of the web.

10. In an apparatus of the class described, means for feeding a web, means for producing a field upon the surface of the web comprising a plurality of applicator units arranged in back of each other and each associated with a predetermined character of coating material, and each unit comprising a source of coating material and a plurality of elements associated with each source for depositing the material on the surface along lines extending generally in the direction of movement of the web, the elements of each unit being shiftable laterally of each other, to vary the relative position of said lines of coating laterally of each other, said elements being each tiltable to render each operative or inoperative and means for shifting said units independently of each other and transversely of the direction of movement of the web whereby each line of deposit can be caused to undulate independently of the other lines of deposit.

11. In an apparatus of the class described, means for feeding a web, means for producing a field upon the surface of the web comprising a plurality of applicator units arranged in back of each other and each associated with a predetermined character of coating material, and each unit including a plurality of elements which control the application of the coating material associated with its unit to the surface to be coated, said elements being shiftable relatively to each other and transversely of the direction of movement of the web, whereby upon the

movement of the web, the coating material associated with each unit, will be deposited thereby along a plurality of lines, each extending generally longitudinally of the web, with the lines of deposit positioned laterally of each other, the relative position of said lines varying with the relative position of the elements, and means for impressing rug border repeats directly upon said field.

12. In an apparatus of the class described, means for feeding a web, means for producing a field upon the surface of the web comprising a plurality of applicator units arranged in back of each other, and each associated with a predetermined character of coating material, and each unit including a plurality of elements which control the application of the coating material associated with its unit to the surface to be coated, said elements being shiftable relatively to each other and transversely of the direction of movement of the web, whereby upon the movement of the web, the coating material associated with each unit will be deposited thereby along a plurality of lines, each extending generally longitudinally of the web, with the lines of deposit positioned laterally of each other, the relative position of said lines varying with the relative position of the elements and means for shifting said elements relatively of each other as the elements are applying the coating material to the surface being coated.

13. In an apparatus of the class described, means for feeding a web, means for producing a field upon the surface of the web comprising a plurality of applicator units arranged in back of each other, and each associated with a predetermined character of coating material, and each unit including a plurality of elements which control the application of the coating material associated with its unit to the surface to be coated, said elements being shiftable relatively to each other and transversely of the direction of movement of the web, whereby upon the movement of the web, the coating material associated with each unit will be deposited thereby along a plurality of lines, each extending generally longitudinally of the web, with the lines of deposit positioned laterally of each other, the relative position of said lines varying with the relative position of the elements, said elements being so constructed and arranged as to be capable of being rendered operative or inoperative.

In witness whereof, I have signed this specification this 3rd day of November, 1925.

JOHN B. CAMPBELL.