Aug. 27, 1929. J. B. CAMPBELL 1,726,055

ORNAMENTATION PROCESS AND APPARATUS THEREFOR

Filed Aug. 29, 1925 2 Sheets-Sheet 1

Fig. 1.

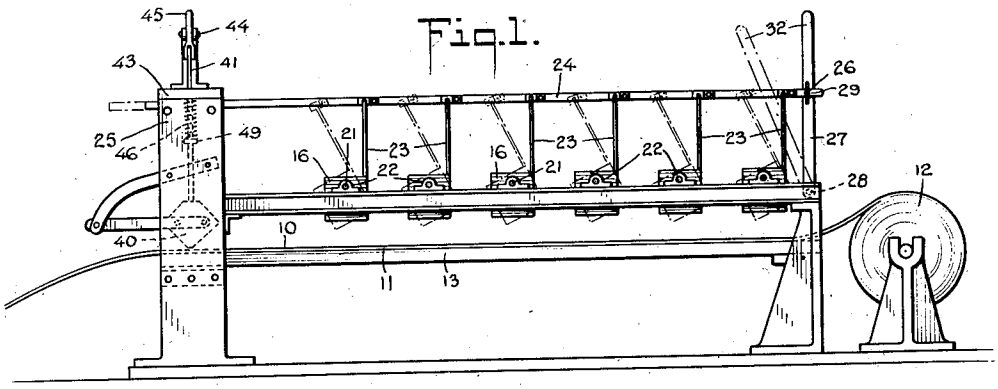


Fig. 2.

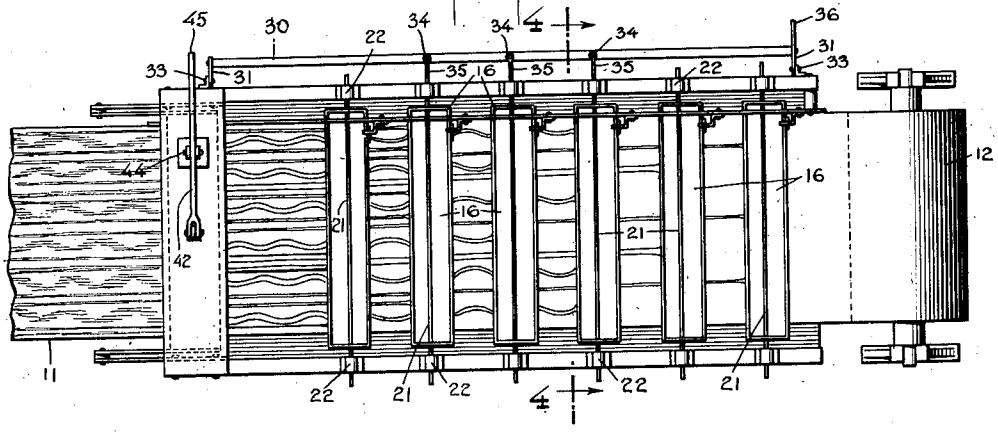


Fig. 3.

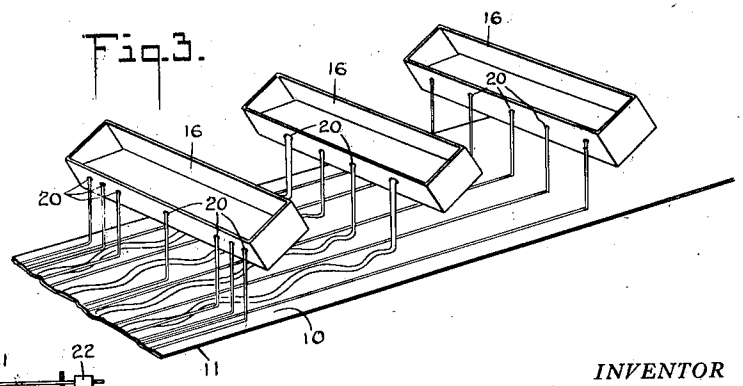
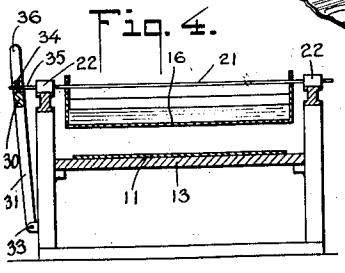


Fig. 4.



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Fig. 5.

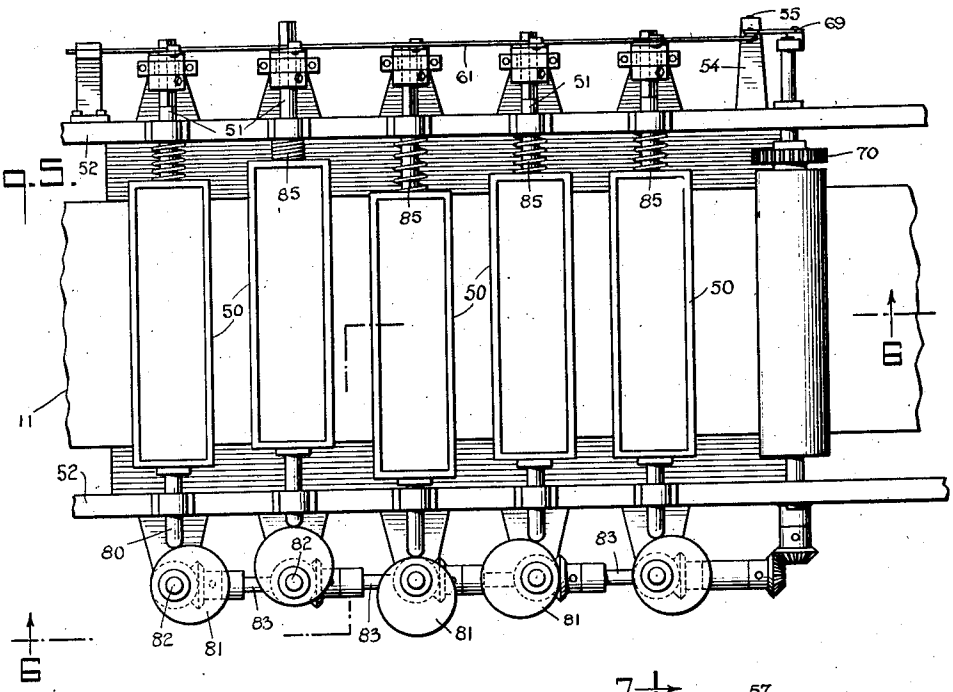


Fig. 6.

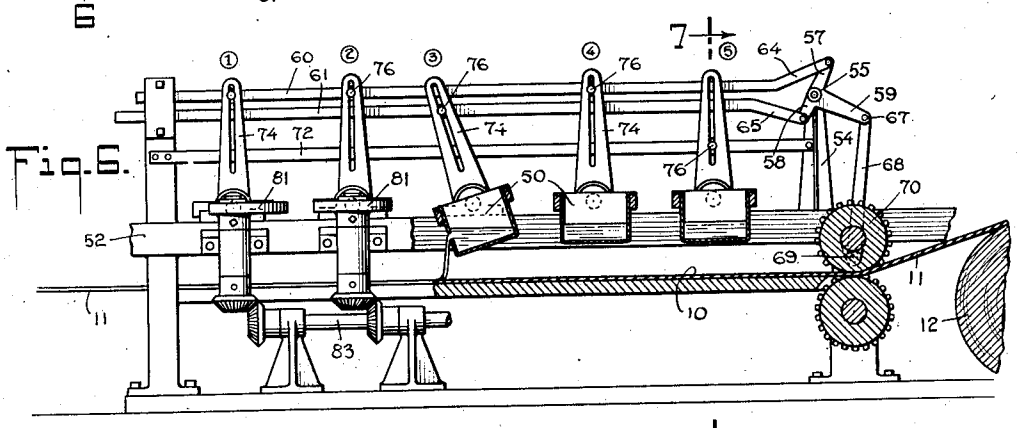
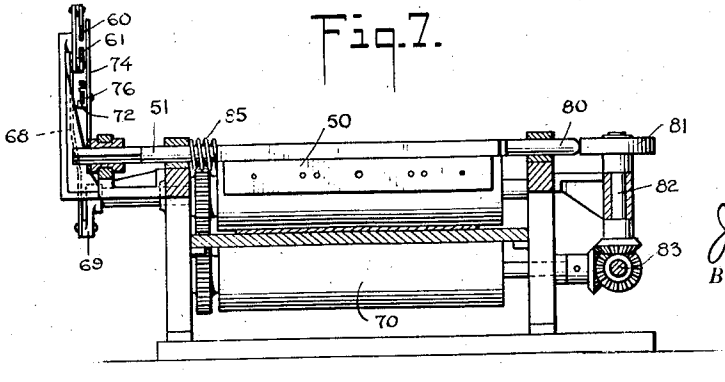


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN B. CAMPBELL, OF SALEM, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CARTHAGE MILLS INCORPORATED, OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

ORNAMENTATION PROCESS AND APPARATUS THEREFOR.

Application filed August 29, 1925. Serial No. 53,376.

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 floor covering, without the employment of applicating means of fixed configuration or contour.

While my invention is herein illustrated and described as employed for the purposes of producing a striped, striated or wavy effect so as to simulate marble, granite or wood graining, it will be understood this is done merely for purposes of convenience, as my process and apparatus can be also employed for producing other characters of designs such as geometrical repeats.

The employment of applicators having surfaces of predetermined conformation or contour so as to produce corresponding predetermined designs upon the surface of a floor covering such as a felt base fabric, of which printing rollers or blocks are examples, is not only expensive both in consumption of time and money, but also inconvenient in use because not only is it necessary to have a different applicator for each design, but any change in design requires the production of a new applicator. Furthermore, where applicators such as printing blocks and printing rollers are used, the factors of the coating material to be employed and the surfaces upon which the material is to be deposited are elements which must be considered in their production.

One of the objects of my invention is the production of an arrangement whereby the applicator is made up of standardized units and a change in design to be produced by the applicator is effected merely by a change in one or more of the units which go to make up the applicator and more specifically an arrangement wherein the units are standard stock elements which can be quickly and readily interchanged and removed so that any predetermined design can be produced merely by the predetermined association of any predetermined group of units.

My invention is herein disclosed specifically as employed for the application of a coating material to a surface so as to give a marble, granite or wood graining effect without the employment of an applicator having fixedly thereon or associated therewith the design which is to be reproduced.

Another object of my invention is the arrangement whereby the undulations characteristic of marble, granite or wood graining are produced merely by a predetermined shifting of the units in the process of coating so that the graining effect can be varied at will merely by a variation by shifting in the relative units.

One of the objects of my invention is the provision of an arrangement whereby the graining effect is enhanced by the operation upon the material deposited upon a surface along predetermined lines to simulate graining of an element to spread the deposition of material so as to still further heighten the simulation and increase the ornamental effect.

In the employment of the invention herein illustrated, I show broadly the employment of a series of units, each of which serves merely to control the application to the surface to be coated, of coating material from a single source, so that by varying the character of the coating material at each source, such as using differently colored coating materials, provision can be made for a varied color effect upon the surface of the floor covering.

In accordance with my invention, a number of units having different characteristics are employed, and different groups of these units will give different designs.

Each unit can be arranged so as to provide for the deposition of the material along one line in the direction of movement of the material to be coated or along a plurality of lines predeterminedly spacially related.

My invention further provides for an arrangement by which each unit can be given a movement laterally of such direction of movement to simulate a graining effect so that by the movement of a number of 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 containers, each of which is characterized by a differential positioning of the points of discharge of the material therefrom so that by combining these units differentially, any desired character of deposition can be attained.

For the attainment of these objects and such other objects as may hereinafter appear, I have illustrated embodiments of my appa-

ratus for practicing my process in the drawings, wherein:

Fig. 1 is a side elevational view of one embodiment of the apparatus for practicing my process;

Fig. 2 is a top elevational view of the apparatus of Fig. 1;

Fig. 3 is a perspective view showing diagrammatically my coating process for producing an ornamental effect;

Fig. 4 is a section taken on line 4—4 of Fig. 2;

Fig. 5 is a top plan view of another embodiment of an apparatus for practicing my process;

Fig. 6 is a longitudinal section taken on line 6—6 of Fig. 5; and

Fig. 7 is a vertical section taken on line 7—7 of Fig. 6.

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 as 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 units, any number of which may be employed, as will be fully understood later on, and each of which is intended to so control the deposition of material upon a surface as to cause each unit or predetermined combination of units to give a predetermined ornamental effect, and the different units or combination of units to give different predetermined ornamental effects.

Each of the units comprises a member 16 which in the present disclosure, is illustrated as of a character so as to serve to hold a supply of coating material as well as to control the application of such supply to the surface to be ornamented, although as will be later understood, it is not essential to the practice of my process that the unit 16 shall serve the first aforementioned function.

The control of the application of the coating material in my present embodiment is attained by providing the members 16 with outlets which are shown as formed in a side wall of each unit and the units differ from each other among other ways, either in the number or the position of the outlets or both and may also differ from each other in size of the outlets.

These units 16 are each carried by shafts or rods which in the embodiment illustrated, are shown as fixedly associated therewith so that the units or pans 16 will move with the rods 21. The rods 21 are loosely carried at their opposite ends in bearings 22 in the frame of the machine and extend a substantial distance beyond these bearings for purposes that will be understood as this application is read.

In the embodiment of an apparatus for practicing my invention, illustrated in Figs. 1, 2, 3 and 4, it is intended that the quantity of material received in the pans 16 shall be such with relation to the position of the outlets 20, that the outlets will be positioned above the top level of the material when the pans 16 are in any predetermined position, such as horizontal, and that in order to cause a material to be deposited on the surface 10, it is necessary to give to the pans a movement, which is a tilting one in the illustrated embodiment, and for giving to the pans this tilting movement from their normal position in which no material is fed from the pan 16, I connect one end of elements, such as rods 23, to one side of the pan 16 and connect the other end of such rods to a control bar 24 which in the illustrated embodiment is shown as so connected to all of the pans, although here too, as will be understood, arrangements can be made for differentially controlling the tilting of one or of any group of the pans 16.

The control rod 24 is arranged to have a sliding movement at one end in the front frame 25 of the machine, and has a lost motion connection at its other end 26 to the lever 27 which is pivoted at one end to the frame as at 28 and pivoted intermediate its ends as at 29 to one end of the rod 24, as by a pin 30 working in a slot on the lever 27.

Assuming therefore that the pans 16 are all supplied with coating material which may be of the same character or which may differ in character as to color, consistency or composition, a counter-clockwise operation of the handle extension portion 32 of the lever 27 will cause the rods 23 to tilt each of the pans as shown in dotted lines in Fig. 1 of the drawing so as to bring the level of the liquid above the feed control openings 20 so as to permit the material in the containers 16 to discharge from these outlets and down upon the surface.

As already has been explained, the surface 10 to be coated is moved continuously beneath these containers so that the discharge from each outlet 20 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 spacial 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 each outlet and 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 pro-

duced 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 outlets 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 a graining effect such as is found in marble or in wood graining, I provide in my apparatus for a movement of the openings or outlet controls 20 at an angle to the direction of movement of the fabric 11 and as in the illustrated embodiment, these outlet controls 20 are made integral with and part of the pans 16, I attain my object by providing for a corresponding movement to be given to the pan 16 in the manner which I will now describe.

Extending longitudinally along one side of the machine, is a bar 30 pivoted at its ends to one end of the levers 31 which are in turn pivoted to opposite ends of the machine frame as at 33, these levers being so arranged as to cause the bar 30 to have a limited lateral arcuate movement toward and from the machine frame. Pivoted upon the pins 34 carried by the bar 30, so as to permit upward movement thereof, are the extension ends 35 of the rods 21 so that the arcuate movement of the bar 30, produced as described, will move the rods 21 transversely of the frame and of the direction of movement of the fabric, the rod maintaining its predetermined horizontal position because of its lost motion connection to the pin 34.

In Fig. 2 of the drawing, I have illustrated the three intermediate rods 21 as connected to the cross bar 30 so that when the rod 30 is moved by means of the handle extension member 36 of one of the levers 31, the said three intermediate rods will be moved transversely of the machine apparatus and will carry with them the three containers or pans 16 carried thereby and by giving the lever handle member 36 or any portion of the apparatus numbered 31 and 36, a predetermined timed movement as by a cam (not shown), the lines produced longitudinally of the fabric will be wavy or undulating and the character of the undulations will be determined by the extent and the frequency of the movement of the aforementioned pans 16, all of which as already stated, can be controlled either manually or automatically as by a rotating cam.

In the embodiment of Fig. 2, I have shown all the pans as tiltable simultaneously, although as will be understood, the apparatus can be so arranged as to variably tilt the pans so as to make any number of the units effective for predetermined linear movement of the fabric being coated, as for instance, where it is desired to ornament the fabric with a number of repeats of different designs. In this embodiment also I have shown the arrangement for effecting the lateral movement of the pans as operating simultaneously and to the same extent upon a single group and here too, it will be understood that in practicing my process, the apparatus can be so arranged as to differentially control the lateral movement of groups of the pans so as to have a contrast produced between the undulations of one group and the undulations of another group.

While by my process thus far described, I am enabled to obtain highly ornamental effects which simulate marble and wood graining, yet I find that the lines of coating are rather too sharply defined and of too uniform a character transversely thereof to make the simulation to marble or wood graining 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 in Figs. 1 and 2 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 is 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 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 the 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. 1 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 to move closely approximate and simulate the grain-

ing in wood or a marble effect. It will be understood of course that the coating material which is employed is generally of a viscous character and I have found that a knife 40 which is made of steel and particularly which has that portion thereof which contacts with and spreads the viscous material, so made, is extremely effective for the attainment of the results aimed at by my invention.

In Figs. 5, 6 and 7, I show an apparatus for practicing my invention in which the control of the movements of the unit pans are wholly automatic and upon viewing these figures of the drawing, it will be observed that the units 50 in this embodiment have extending from one end thereof the pintles or shafts 51 which are mounted in the frame members 52 for angular movement therein, as well as for transverse movement with reference thereto and for controlling these movements of the unit pans, I show the arrangement shown more in detail in Fig. 6 of the drawing and which I will now describe.

Pivoted upon the standard 54 at 55 is the double bell crank lever comprising the legs 57, 58 and 59 and pivoted to the free end of the legs 57 and 58 are the slide rods 60 and 61 mounted so as to slide horizontally and longitudinally of the frame, these slide rods being bent as shown at 64 and 65 to accommodate themselves to the length of the legs 57 and 58. The leg 59 is in turn pivoted at 67 to the lever 68 oscillated by the cam 69 mounted upon and rotating with an element of the mechanism 70 which feeds the strip 10. It will therefore be understood that as the driving mechanism operates to feed the material 11 to be coated along the bed of the machine, the slide rods 60 and 61 will be oscillated back and forth in reverse directions.

Below the slide rods 60 and 61, I employ a rod 72 which is parallel to these slide rods and is fixed to the opposite ends of the frame as shown in Fig. 6.

Fixed to the shafts or pintles 51 extending from one end of the unit pans are the upwardly extending legs 74 vertically slotted as shown at 75, the slots being of length so as to straddle all three of the rods 60, 61 and 72 and in accordance with the apparatus of Figs. 5, 6 and 7, these legs 74 can be secured to any one of the rods by loosely passing a member such as a headed pin 76 through the slot and securing it in any preferred or desired manner to any one of the three rods and in Fig. 6 of the drawing, I show the unit pans 1, 2 and 4 counting from the left as secured to the uppermost rod 60, the intermediate unit pan 3 secured to the intermediate rod 61 and the end pan or fifth pan from the left secured to the lowermost rod 72.

In the operation of the apparatus of Fig. 6 of the drawing, as the feeding mechanism operates to feed the strip of material to be coated therealong, the double bell crank lever 55 will be oscillated synchronously therewith so as to move the slide rod 61 in one direction and the slide rod 62 in the opposite direction and due to the connection between these slide rods and pans 1, 2, 3 and 4 counting from the left, the pans 1, 2 and 4 will be oscillated in one direction while the pan 3 is being oscillated in the other direction so that in the position shown in Fig. 6 of the drawing, the intermediate or middle pan unit is in a position to discharge material upon the surface being fed, whereas the pans 1, 2 and 4 from the left are in their inoperative or vertical position and this I attain by so arranging the connection between the rod 61 and the upwardly extending legs 74 of the pans attached thereto so that when this slide rod 61 is at its extreme position to the right, which is the position shown in Fig. 6, the pin 67 will have tilted the pans connected with these legs so that the pans are in their vertical and inoperative position. In other words, these rods and the connection between them and the pan units is such that the oscillation of the unit pans is from a vertical position as shown in pan 4 from the left to a tilted position as shown in pan 3. When it is desired to render any of the pans wholly inoperative so that it will not feed at all, this pan is connected by means of a pin 76 to the fixed rod 72 which maintains it in its vertical position at all times.

The connection between the legs 74 extending upwardly from the pans is such that it can be shifted to any of the rods without trouble and inconvenience and while I have shown in Fig. 6 one of the pans as wholly inoperative and the second pan as operating reversely of the remaining three, it will be understood that any desired operative association can be attained.

On the opposite side of the frame in Fig. 5 of the drawing, I show my arrangement for automatically and predeterminedly moving the pans laterally of the direction of movement of the fabric being coated, and this comprises the shafts or pintles 80 extending from the opposite end of the pans so as to permit them to be moved transversely of the machine by cams 81 mounted upon stub shafts 82 geared to a shaft 83 as shown in the drawing, and the pans being held in contact with the cams in any preferred or desired manner. Here too, I have shown the timing as being such that the pans are moved laterally in definite sequence, although as will be understood, the sequence can be changed by rotating the cams, and in fact, the cams can be adjusted so as to move all the pans as a unit. At the opposite end, I employ spiral springs 85 to hold the pintles 80 against the cams 81.

In accordance with my process, the unit elements which are illustrated in the apparatus of the drawing as being in the form of pans having outlets therefrom are stock

units, any desired number of which can be held in reserve as supply and whenever it is desired to employ an applicator which will give a predetermined design, this can be done merely by the selection of a sufficient number of predeterminedly selected units of stock, assembling these in the apparatus such as herein disclosed. So also, when it is desired to make a colored change in the design, this can be done merely by changing the color of the material which is supplied to one or more of the units.

While the mechanism for controlling the movements of the pans disclosed herein is designed to give a marble or wood graining effect, it will be understood that the mechanism can be so designed as to give a geometrical design.

It will also be understood that while the units which I here employ are shown as in the form of pans which serve to hold a supply of the coating material, it will be understood that the units may be merely in the form of outlet controls, separated from the supply which can be held in a separate receptacle with a feeding means between the two.

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 the surface to be ornamented longitudinally thereof and means for ornamenting said surface as it is moved, said means comprising a plurality of applicator units, each adapted to control the application of a different coating material, each applicator being adapted to control the deposit of material along a plurality of lines different spacially from those of the other applicator units, said applicator units being interchangeable and removable and means for giving any predetermined unit or group of units a movement laterally of the surface to be ornamented at predetermined intervals.

2. In an apparatus of the class described, means for feeding the surface to be ornamented longitudinally thereof and means for ornamenting said surface as it is moved, said means comprising a plurality of applicator units, each adapted to control the application of a different coating material, each applicator being adapted to control the deposit of material along a plurality of lines different spacially from those of the other applicator units, and means for giving any predetermined unit or group of units a movement laterally of the surface to be ornamented at predetermined intervals.

3. In an apparatus of the class described, in combination, means for feeding a web or strip, means for producing a field upon the surface of said web comprising a plurality of applicator units, each associated with a predetermined character of coating material and each unit including means for controlling the deposit of material associated with its unit on areas of said web positioned laterally of each other and transversely of the web, whereby upon 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, and means for shifting units transversely of the web while the web is moving to cause said lines to change their direction, and means for causing said lines of deposit to spread beyond their original area of deposit.

4. The process of making an ornamental floor covering which comprises feeding a web of saturated floor base material, and flowing upon the surface thereof a plurality of streams of differently colored body coating material, said streams being laterally displaced one from another, and being moved relatively to each other and to the web, and applied at a plurality of points along the web.

5. The process of making an ornamental floor covering which comprises feeding a web of saturated floor base material, body coating the surface thereof, flowing upon said body coating while still wet a plurality of streams of differently colored coating material, said streams being laterally displaced one from another and being moved relatively to each other and to the web.

6. The process of making an ornamental floor covering which comprises feeding a web of saturated floor base material, and flowing upon the surface thereof a plurality of streams of differently colored body coating material, said streams being laterally displaced one from another, and being applied at a plurality of points along the web and being moved relatively to each other and to the web, and blending said streams upon said surface to form a ground coating therefor.

7. The process of making an ornamental floor covering which comprises feeding a web of saturated floor base material, body coating the surface thereof, flowing upon said body coating while still wet a plurality of streams of differently colored coating material, said streams being laterally displaced one from another and being moved relatively to each other and to the web, and blending said streams upon said surface to form a ground coating therefor.

In witness whereof, I have signed this specification.

JOHN B. CAMPBELL.