Sept. 6, 1938. H. W. SCHNEIDER 2,129,163

MULTICOLOR STENCILING APPARATUS

Filed July 2, 1937 3 Sheets-Sheet 1

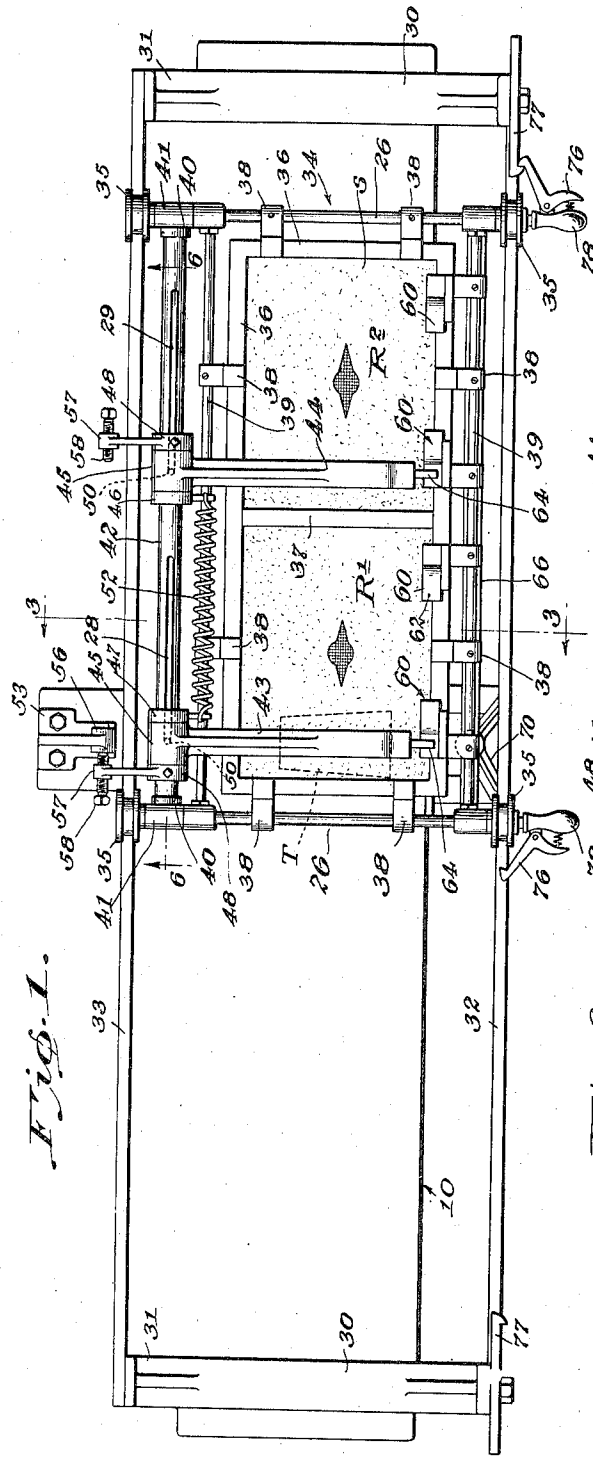


Fig. 1.

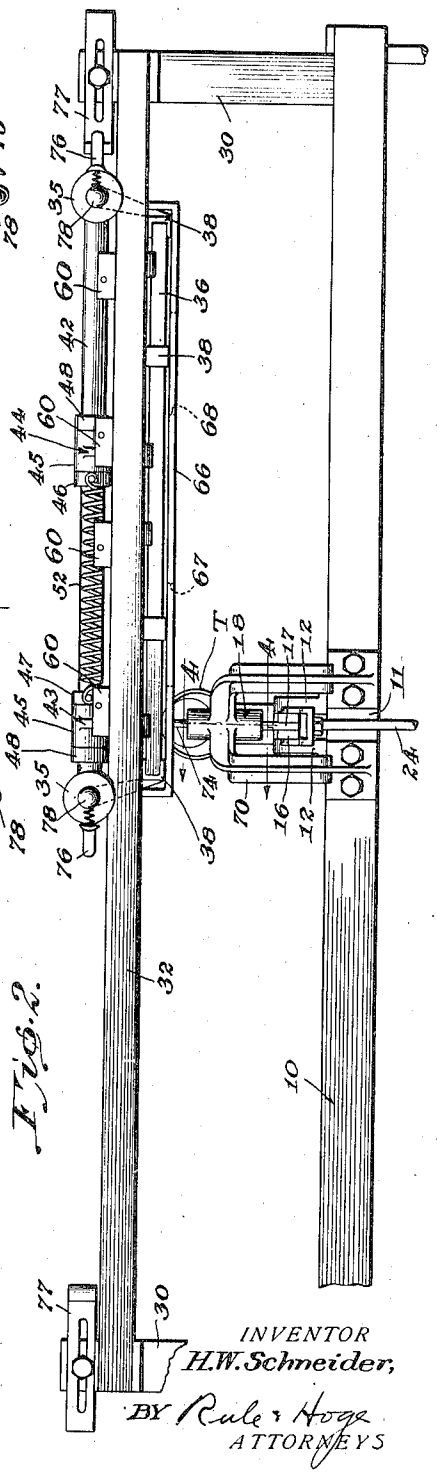


Fig. 2.

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MULTICOLOR STENCILING APPARATUS

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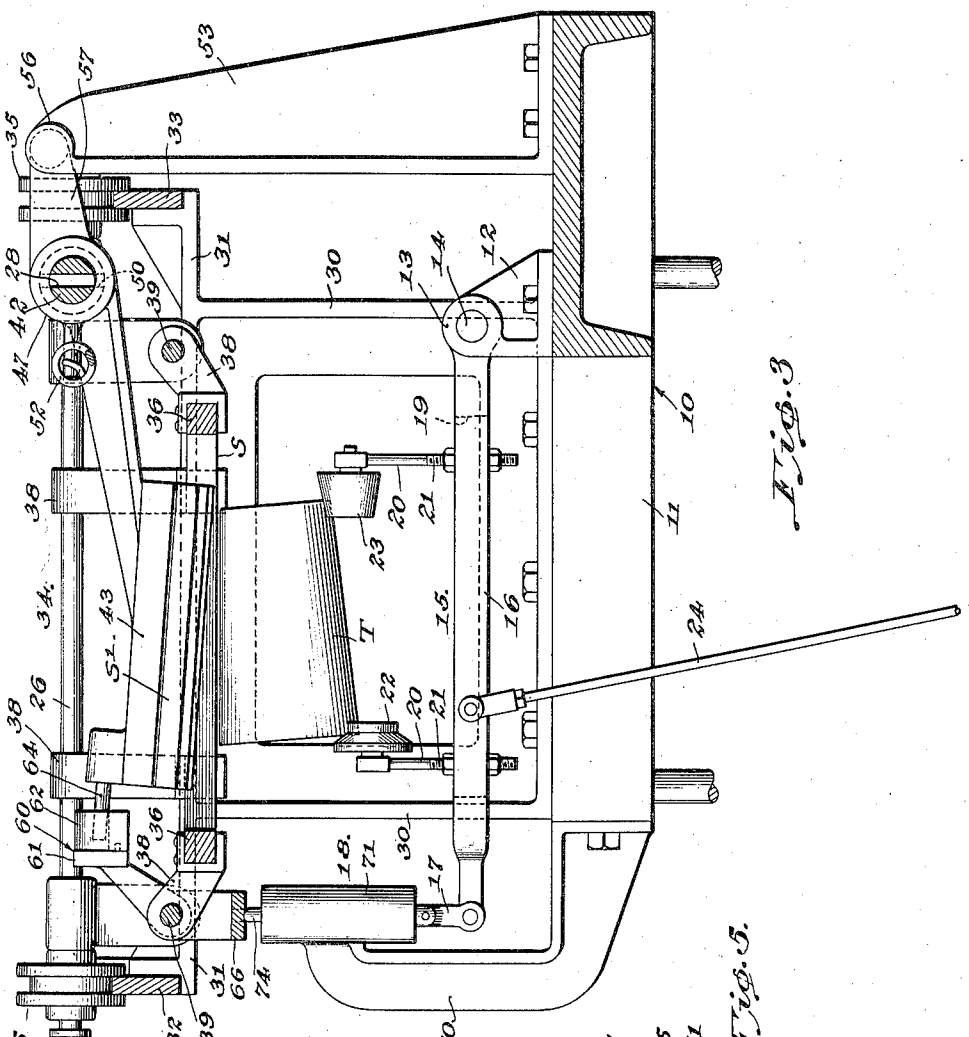


Fig. 3.

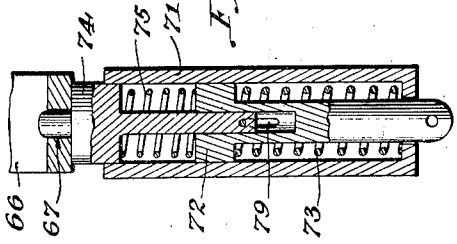


Fig. 5.

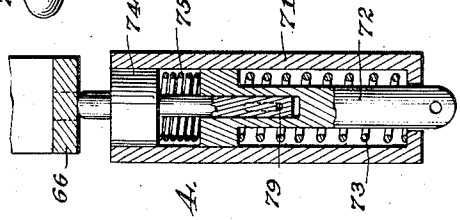


Fig. 4.

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MULTICOLOR STENCILING APPARATUS

Filed July 2, 1937 3 Sheets-Sheet 3

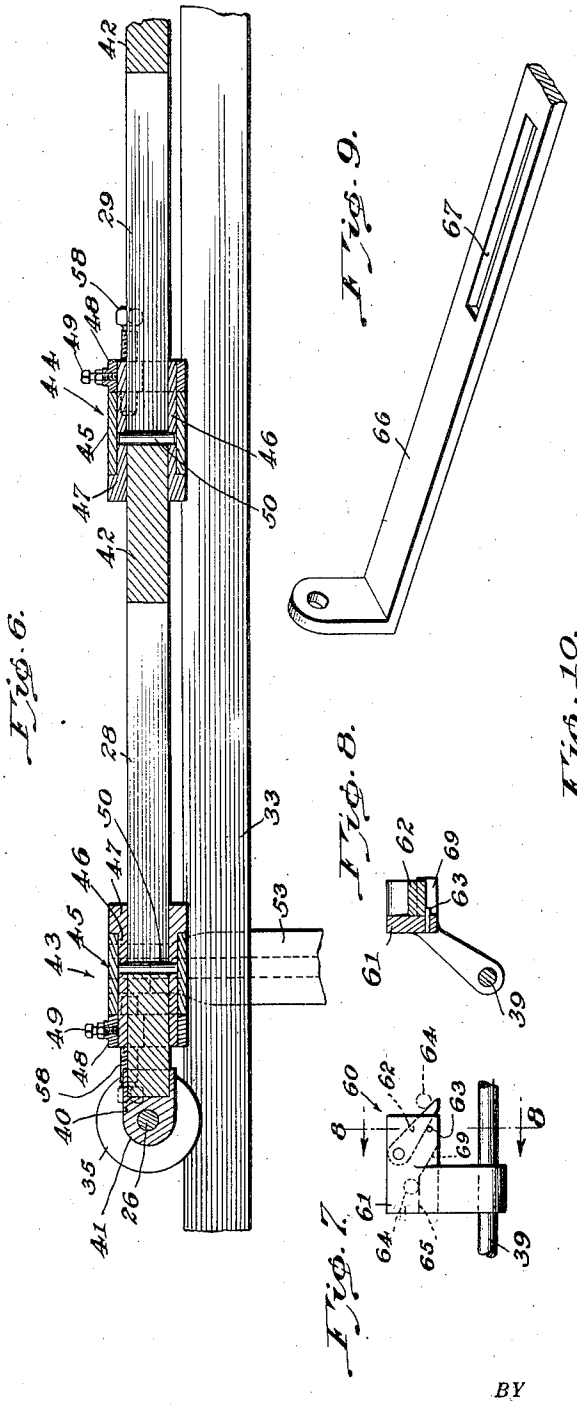


Fig. 6.

Fig. 9.

Fig. 8.

Fig. 7.

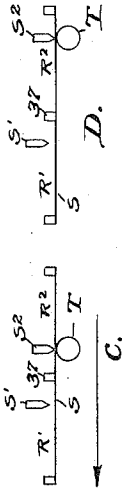


Fig. 10.

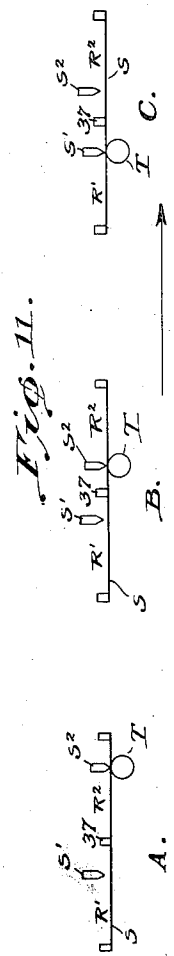


Fig. 11.

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Patented Sept. 6, 1938 2,129,163

UNITED STATES PATENT OFFICE

2,129,163

MULTICOLOR STENCILING APPARATUS

Henry W. Schneider, Toledo, Ohio, assignor to Libbey Glass Company, a corporation of Ohio

Application July 2, 1937, Serial No. 151,673

18 Claims. (Cl. 101—123)

The present invention relates to stenciling apparatus designed for use in applying vitreous enamel compositions or paints to articles of glassware such as tumblers, jars, bottles and the like, and to other articles of a vitreous or ceramic nature in the multi-color decoration thereof by a stenciling process.

More specifically, the invention relates to a stenciling apparatus of the type employing a reciprocable stencil screen capable of movement relative to the article undergoing decoration and having permeable portions through which the decorating material is transferred to the article by the spreading action of a squeegee which is maintained in contact with the screen along the line of contact between the screen and surface of the article undergoing decoration.

The principal object of the invention is to provide an apparatus of the type set forth above which is adapted for multi-color application and which, by a single stroke of the stencil screen in either direction, is capable of applying two or more differently colored designs, or the component colors of a single design, to opposite, adjacent, or spaced regions on the surface of an article. Toward this end, the invention contemplates the provision of an apparatus having a reciprocable stencil screen which is divided into a plurality of color applying regions through which differently colored decorating materials are respectively and successively forced onto the surface of an article by the successive spreading action of a like number of squeegees operating in their respective color applying regions of the screen during each stroke of the latter.

More specifically stated, the principal object of the invention is to provide a stenciling apparatus of the type set forth above in which the reciprocable stencil screen is divided into adjacent spaced color applying regions, each region having a squeegee associated therewith for forcing differently colored vitreous enamels through the screen, together with automatic means for causing the squeegees to successively traverse their respective color applying regions in operative decorating contact with the screen upon reciprocation of the latter.

Yet another object of the invention is to provide such a stenciling apparatus in which the article support normally occupies a position wherein the article is maintained in close proximity to, but out of contact with, the screen, together with automatic means operable upon commencement of the decorating operation for moving the article support toward the screen to bring the article supported thereby into decorating contact with the screen.

Other objects of the invention will become apparent hereinafter.

In the accompanying drawings:

Fig. 1 is a top plan view of a stenciling apparatus manufactured in accordance with the principles of the present invention;

Fig. 2 is a side elevational view of the apparatus shown in Fig. 1;

Fig. 3 is a sectional view taken substantially along the line 3—3 of Fig. 1;

Fig. 4 is a sectional view taken substantially along the line 4—4 of Fig. 2;

Fig. 5 is a sectional view similar to Fig. 4 with the parts thereof in a different position;

Fig. 6 is a sectional view taken substantially along the line 6—6 of Fig. 1;

Fig. 7 is a fragmentary side elevational view of a squeegee elevating device employed in connection with the present invention;

Fig. 8 is a sectional view taken substantially along the line 8—8 of Fig. 7;

Fig. 9 is a fragmentary perspective view of a latch bar employed in connection with the present invention;

Fig. 10 is a diagrammatic view illustrating the relative movements between the squeegees, screen, and article undergoing decoration with the screen moving in one direction; and

Fig. 11 is a diagrammatic view, similar in its representation to Fig. 10, with the screen moving in the opposite direction.

The apparatus involves in its general organization a table or base 10 in the form of an elongated, substantially rectangular casting provided with a recess 11 in the forward side thereof medially of its ends. Bolted or otherwise secured to the base 10 on opposite sides of the recess 11 and extending upwardly therefrom are a pair of brackets 12 (Fig. 3) having integrally formed aligned bearings 13 which serve to support therebetween a horizontal rock-shaft 14.

An article supporting assembly 15 is pivotally mounted on the rock-shaft 14 and is designed to support thereon a tumbler T or other article having a curved surface to be decorated. The article supporting assembly 15 consists of an elongated support 16, one end of which is pivotally carried and supported by the rock-shaft 14 and the other end of which is suspended from and supported by a plunger latch mechanism 18 which will subsequently be described. The support 16 is provided with a central longitudinal slot 19 which is substantially coextensive there-

with, and a pair of article-supporting racks 20 of T-shape design, each having a flat threaded shank 21, are adjustably mounted on the support 16 for vertical and longitudinal adjustment in the slot 19. Opposed pairs of rollers 22 and 23 are carried by the supporting racks 20 and serve to support therebetween the articles T to be decorated. The entire article-supporting assembly 15 is adapted to be lowered by pivotal movement of the same about the axis of the rock-shaft 14 and, in order to facilitate lowering thereof, the support 16 is connected by means of a link 24 to a treadle mechanism (not shown) disposed beneath the table 10.

A pair of open, rectangular, frame-like supporting members 30 (Figs. 1 and 3), each having laterally extending arms 31, are bolted or otherwise secured to the table 10 adjacent the opposite ends thereof. The arms 31 serve to support therebetween a pair of horizontal tracks 32 and 33 respectively which are substantially coextensive with the table 10 which they overlie.

Supported tractionally upon the tracks 32 and 33 and movable therealong in either direction transversely of the apparatus, is a stencil screen carriage 34 having associated therewith a stencil screen S adapted to occupy a position in the apparatus in tangential rolling line contact with the article T supported in the assembly 15 therebeneath. The carriage 34 includes supporting wheels 35 which ride upon the tracks 32 and 33 and which are mounted on a pair of opposite side bars 26 of the carriage 34. The screen is divided into two color applying regions R^1 and R^2 by means of a bar 37 which extends across the frame 36. The frame 36 is supported by means of a plurality of suspension brackets 38 from the opposed pairs of parallel side bars 26 and 39 of the carriage 34.

Extending transversely of the carriage 34 and supported at its ends in a pair of bosses 40 carried by a pair of sleeves 41 mounted on the opposed side bars 26, is a horizontally disposed rock-shaft 42 which forms a part of the carriage and is movable therewith. A pair of squeegee arms 43 and 44, which carry respective squeegees S^1 and S^2, are rockably mounted on the shaft 42 by means of integral sleeves 45 (Figs. 1 and 6) formed on the rear ends thereof and through which sleeves the shaft 42 extends. Each of the sleeves 45 is rockably mounted on a second sleeve 46 (Fig. 6) which is slidably mounted on the rock-shaft 42. Each sleeve 45 is centered upon its respective sleeve 46 by means of a thrust flange 47 formed on the sleeve 46, and a thrust collar 48 which surrounds the sleeve 46 and which is secured thereto by means of a set screw 49. The sleeves 46 are capable of sliding movement on the shaft 42 within limits, and in order to limit the extent of sliding movement thereof, pins 50 which extend diametrically across the sleeves 46, extend through elongated slots 28 and 29 provided in the shaft 42.

A coil spring 52 (Fig. 1) is connected to the two inner sleeves 46 and thus the two squeegee arms 43 and 44 are at all times normally urged toward each other.

Bolted or otherwise secured to the base 10 at the rear side of the apparatus is a standard 53 (Figs. 1 and 3) which projects upwardly to substantially the level of the shaft 42 and which carries at its upper end a limit stop 56. Each collar 48 is provided with a projecting arm 57 which carries at its outer end an abutment 58 in the form of an adjusting screw. The abutments 58 are adapted upon reciprocation of the carriage 34 to alternately engage the opposite sides of the limit stop 56 which projects into the respective paths of movement thereof to limit the extent to which the squeegee arms 43 and 44 are permitted to travel with the carriage upon reciprocation thereof.

The squeegees S^1 and S^2, which operate successively to force coloring material through the pervious portions of the screen and onto the surface of the tumbler T in their respective regions R^1 and R^2 of color application, are normally maintained in their elevated position out of contact with the screen and travel with the screen carriage 34 until such time as their services are required for actual application of coloring material to the tumbler T. After each squeegee is brought into operation, it is necessary that the same be elevated from the coloring material on the screen prior to movement of the latter to either of its extreme positions so that upon return movement of the screen and operative engagement thereof by the squeegee, the enamel composition on the screen will occupy a position in advance of the squeegee.

This clearing operation just referred to, and the maintenance of the squeegees in their elevated positions when their services are not required, are accomplished by the provision of a plurality of squeegee elevating and supporting members 60, one of which is shown in detail in Fig. 9 and which are arranged in pairs, one pair accommodating each squeegee arm 43 or 44, as the case may be.

The members 60 are secured to the forward side bar 26 of the carriage assembly 34 adjacent those regions of the screen S which are to be cleared by the squeegees S^1 and S^2. Each member 60 comprises a face plate 61 (Figs. 8 and 9) having pivoted thereto a lifting cam piece 62 which normally occupies an inclined position and which loosely rests upon a pin 63 secured to the plate 61. Each squeegee arm 43 and 44 is provided with a forwardly projecting pin 64 which is adapted to be engaged by one or another of the cam pieces 62 upon movement of the carriage 34 in one direction or the other in such a manner that the pin 64 rides upwardly over the cam piece 62 and falls by gravity onto a rest 65 formed on the plate 61. Upon relative movement between either squeegee arm and its respective member 60, as the carriage 34 moves in the opposite direction, the pin 64 moves off of the rest 65 and the squeegee rides downwardly on an incline 69 formed on the plate 61 and comes into contact with the screen S in its respective region of color application. As the pin 64 passes the cam piece 62, the latter trips lightly over the same with no effect thereon whatsoever. Thus the squeegee is not disturbed or elevated from the screen S once it has made contact therewith preparatory to traversing its respective region of color application.

Referring now to Fig. 1, it will be seen that with the carriage 34 in the extreme right hand position indicated, the squeegee arm 43 overlies the tumbler T which is supported in the assembly 15 beneath the screen in the first color applying region R^1 thereof. The screen S normally is slightly spaced from the surface of the tumbler T and means is provided for elevating the entire article supporting assembly 15 a slight distance in order to close the gap existing between the screen S and the tumbler T. This elevation of the article supporting assembly, together with

the pressure exerted by either of the squeegees S^1 or S^2 upon the screen when the same is lowered into operative decorating engagement therewith and which causes the screen to become flexed, causes the surface of the tumbler T to make tangential rolling line contact with the screen upon movement of the latter in either direction.

Additionally, in order that the commencement and termination of each application of color to the opposite sides of the tumbler T shall not be left to the skill and discretion of the operator of the apparatus, means is provided for arresting movement of the carriage 34 after each color applying region of the screen has been traversed by its respective squeegees S^1 and S^2.

The means for elevating the article supporting assembly 15 and the means for arresting movement of the carriage 34 just referred to, comprises the plunger latch mechanism 18, previously mentioned, together with a latch bar 66 which cooperates therewith. The latch bar 66 is suspended from the front side bar 39 of the carriage 34 and is movable therewith. A pair of aligned elongated slots 67 and 68 respectively are formed in the latch bar 66 and the length of each slot depends upon the extent or amplitude of movement of the respective squeegees S^1 and S^2 across the surface of the screen S in their respective regions R^1 and R^2 of color application.

The plunger latch mechanism 18 is supported at the upper end of a bracket 70 (Fig. 3) which is bolted or otherwise secured to the forward edge of the table 10. The latch mechanism consists of a cylinder 71 (Figs. 4 and 5) in which there is disposed a lower plunger 72 to which the link 17 that supports the forward end of the article supporting arm 16 is attached. The plunger 72 is normally maintained in an elevated position by means of a coil spring 73 and is adapted to be lowered upon lowering of the article supporting arm 16 when the treadle mechanism, previously mentioned, is actuated. An upper plunger 74 is connected by means of a pin and slot connection 79 to the lower plunger 72 and is normally maintained spaced from the lower plunger and extended from the cylinder by means of a coil spring 75 of less capacity than the capacity of the spring 73.

The plunger 74 bears against the underneath side of the latch bar 66 and slides therealong as the carriage 34 is reciprocated. The pressure of the coil spring 75, acting upon the coil spring 73, serves to limit the extent of the upward movement of the plunger and consequently the upper surface of the tumbler T is maintained close to the lower surface of the screen S but out of contact therewith. Shortly after the carriage 34 has commenced its stroke and after the squeegee has entered upon its operative decorative engagement with the screen S in the first color applying region R^1 thereof, the upper plunger 74 encounters the slot 67 and is projected upwardly therethrough, thus releasing the pressure of the spring 75 on the spring 73 and permitting the latter to expand and raise the plunger 72 to close the gap existing between the tumbler T and the screen S. The upper plunger 74 remains in the slot 67 until the first color application of the design or designs has been made upon the tumbler T.

As the extreme end of the slot 67 engages the upper plunger 74, the carriage is abruptly halted and the operator must actuate the treadle mechanism to lower the tumbler supporting carriage 15 and thus remove the partially decorated tumbler from the screen S. At the same time, the upper plunger 74 is withdrawn from the slot 67 to enable the carriage 34 to proceed along the tracks 32 and 33. Shortly after the squeegee S^2 has entered upon its decorative stroke in engagement with the screen S in the second region R^2 of color application, the upper plunger 74 encounters the slot 68 and is projected upwardly therethrough and remains therein until the second color application of the design has been completed. As the extreme end of the slot 68 engages the plunger 74, the carriage is again halted and before the carriage can be moved to its extreme position, the operator must again actuate the foot treadle to lower the article supporting carriage to remove the tumbler from contact with the screen S.

In order to retain the carriage 34 in either of its extreme positions against the tendency of the spring 52 to pull the same to a medial position, spring pressed latch members 76 are carried by the forward ends of the transverse side bars 26 and are designed for releasable holding engagement with counterpart members 77 which are mounted on the supporting members 30. A pair of actuating handles 78, by means of which the carriage 34 is reciprocated, are conveniently associated with the latch members 76.

In the operation of the apparatus, the tumbler T or other article to which the multi-color design, or differently colored separate designs, is, or are, to be applied is placed upon the rollers 22, 23 of the article supporting assembly 15. The foot treadle mechanism is released by the operator and the article supporting arm 16 assumes a horizontal position with the article or tumbler T slightly spaced from the underneath side of the stencil screen S in the color applying region R^1 thereof. With the carriage 34 in the position indicated in Fig. 1, the upper plunger 74 (Figs. 4 and 5) bears against the underneath side of the latch bar 66 adjacent one end thereof.

Inasmuch as the abutment or set screw 58 (Fig. 1), which is associated with squeegee arm 43, is in engagement with the limit stop 56, the coil spring 52 serves to maintain the squeegee arm 44 in its extreme left-hand position as determined by the slot 29 in the shaft 42. Thus, the tendency of the carriage 34 is to move toward the left to a medial position in its path of reciprocation. However, inasmuch as the latch member 76 and its counterpart 77 are in holding engagement, the carriage is releasably held in its extreme right-hand position.

In order to commence the decorating operation and apply decorating material of a selected color to the surface of the tumbler T, the operator engages the handle 78 and releases the latch 76, 77, and, with the aid of the coil spring 52 moves the carriage 34 toward the left on the tracks 32 and 33. The pin 64 formed on the end of the squeegee arm 43, which, prior to release of the carriage 34 had been supported upon the rest 65 (Fig. 7), moves therefrom by virtue of the relative movement between the two, and thus the squeegee S^1 is lowered into engagement with the screen S in the first color applying region R^1 thereof. As soon as, or after, movement of the carriage 34 has begun, the upper plunger 74 (Figs. 3, 4 and 5) is released into the slot 67 and the release of downward pressure on the lower plunger 72 formerly exerted by the spring 75 is sufficient to expand the coil spring 73 slightly and raise the entire article supporting assembly 15 until the tumbler T engages the underneath side of the screen S in the color

applying region R^1 as shown at A in Fig. 10 to receive the coloring material which is forced through the same by the spreading action of the squeegee S^1.

During initial movement of the carriage 34 so that the first color applying region R^1 of the screen S passes beneath the squeegee S^1, the squeegee arm 43 and squeegee S^1 remain stationary as shown at B in Fig. 10 by virtue of the engagement of the abutment or set screw 58 with the limit stop 56 (Fig. 1). Prior to engagement of the pin 50 with the end of the slot 28, the pin 64 formed on the end of the squeegee arm 43 rides upwardly on the cam piece 62 of the left hand inner squeegee elevating member 60. Thus the squeegee S^1 leaves the screen and the color applying operation ceases. Immediately thereafter, the pin 50 engages the end of the slot 28 and movement of the carriage 34 is abruptly terminated.

In order that the second color applying operation through the pervious portions of the second color applying region R^2 of the screen may proceed, it is necessary for the operator to depress the foot treadle mechanism slightly in order to lower the article supporting assembly 15 about the axis of the rock-shaft 14 (Fig. 3) and at the same time cause the upper plunger 74 to leave the slot 67. Release of pressure upon the foot treadle mechanism causes the plunger 74 to engage the underneath side of the latch bar 66. During further movement of the carriage 34, the squeegee arm 43 and squeegee S^1, which have been elevated by the lifting cam piece 62, are moved with the carriage 34 by virtue of the engagement between its respective abutment 58 and the limit stop 56. Thus as the pin 64 of the arm 44 moves from the rest 65 (Fig. 7), the squeegee S^2 is lowered into engagement with the screen S in the second color applying region R^2 thereof. Immediately after the carriage 34 resumes its movement toward the left (as seen in Fig. 1) the upper plunger 74 enters the slot 68 and again the article supporting assembly is moved upwardly to cause the tumbler T, which has been rotated throughout an angle of substantially one hundred and eighty degrees by virtue of its contact with the moving screen S, to engage the stencil screen S in the second color applying region R^2 thereof as seen at C in Fig. 10.

Further movement of the screen S toward the left as viewed in Fig. 1 to the position indicated at D in Fig. 10, causes coloring material to be forced through the pervious portions of the screen S in the second color applying region R^2 thereof and onto the tumbler T. As the pin 50 and the end of the slot 29 approach each other, the squeegee S^2 is elevated in the manner previously described by the lifting cam piece 62, thus terminating the color applying operation. Finally, as the pin 50 and the end of the slot 29 come into engagement, the carriage reaches the end of its stroke and its movement is abruptly terminated. The operator then depresses the foot treadle to lower the article supporting assembly 15 and permit the decorated tumbler to be removed from the apparatus and an undecorated tumbler to be substituted in its stead.

It is thought unnecessary to describe in detail the operation of decorating another tumbler with the stencil screen S moving in the opposite direction. It is believed sufficient to state that the operation of the apparatus is substantially the same as has just been described save that the squeegee S^2 comes into operative decorating relation on the screen S in the color applying region R^2 prior to such operative decorating relation being assumed between the squeegee S^1 and the screen S in the color applying region R^1. The diagrams A, B, C and D of Fig. 11 correspond to the diagrams A, B, C and D of Fig. 10 and illustrate in a like manner the relative positions of the squeegees S^1 and S^2 with respect to the screen upon movement of the carriage in the reverse direction.

Modifications may be resorted to within the spirit and scope of the appended claims. For example, while the apparatus herein shown and described has been embodied in an apparatus of the type employing a reciprocable stencil screen, the invention, by slight modification thereof, may be adapted for use with an apparatus of the type employing an oscillatable stencil screen which oscillates about a fixed center.

I claim:

1. In a multi-color stenciling apparatus, a stencil screen provided with spaced pervious portions through which differently colored decorating materials are adapted to be respectively forced onto the surface of an article, means for supporting an article having a curved surface in tangential rolling line contact with said screen, and a squeegee for each of said pervious portions, said screen and article being movable relative to each other whereby said pervious portions of the screen traverse the surface of the article successively.

2. In a multi-color stenciling apparatus, a stencil screen provided with spaced pervious portions through which differently colored enamels are adapted to be respectively forced onto the surface of an article, means for supporting an article having a curved surface in tangential rolling line contact with said screen, a squeegee for each of said pervious portions, said screen being movable in its own plane whereby said pervious portions traverse the surface of said article successively, and means operable upon such movement of the screen for successively aligning said squeegees with and for holding the same in contact with said screen along the line of contact between the curved surface of the article and screen.

3. In a multi-color stenciling apparatus, a stencil screen provided with spaced pervious portions through which differently colored enamels are adapted to be forced onto the surface of an article, means for supporting an article having a curved surface in tangential rolling line contact with said screen, a squeegee for each of said pervious portions, said screen being movable in its own plane whereby said pervious portions thereof successively traverse the surface of said article, and means operable upon movement of said screen for maintaining said squeegees successively in contact with their respective pervious portions of the screen along the line of contact between the curved surface of the article and the screen.

4. In a multi-color stenciling apparatus, a reciprocable stencil screen movable in its own plane and provided with spaced pervious portions through which differently colored enamels are adapted to be forced onto the surface of an article, means for supporting an article having a curved surface in tangential rolling line contact with said screen, a squeegee for each of said pervious portions, and means operable upon each reciprocation of said screen in either direction

for maintaining said squeegees successively in contact with said screen along the line of contact between the curved surface of the article and the screen.

5. In a stenciling apparatus, a reciprocable stencil screen movable in its own plane from one extreme position to another, said screen being divided transversely to its direction of movement into adjacent color applying regions, a squeegee for each color applying region, and means operable upon movement of said screen in one direction for causing said squeegees to successively traverse their respective color applying regions in operative decorating contact with the screen.

6. In a stenciling apparatus, a reciprocable stencil screen movable in its own plane from one extreme position to another, said screen being divided transversely to its direction of movement into adjacent color applying regions, a squeegee for each color applying region, and means operable upon movement of said screen in either direction for causing said squeegees to successively traverse their respective color applying regions in operative decorating contact with the screen.

7. In a stenciling apparatus, a reciprocable stencil screen, an article support for positioning an article having a curved surface in rolling contact with said screen, said support normally occupying a position wherein an article supported thereby is in close proximity to but out of contact with said screen, a squeegee for forcing coloring material through said screen and onto the surface of said article, and means operable upon reciprocation of said screen for moving said article support toward said screen to bring the article supported thereby into rolling line contact with said screen.

8. In a stenciling apparatus, a reciprocable stencil screen, an article support for positioning an article having a curved surface in rolling contact with said screen, said screen being movable from one extreme position to another and vice versa, said support when said screen is in either of its extreme positions occupying a position wherein an article supported thereby is in close proximity to but out of contact with said screen, a squeegee for forcing coloring material through said screen and onto the surface of said article, and means operable upon initial movement of said screen from either of its extreme positions toward the other extreme position thereof for moving said article support toward said screen to bring the article supported thereby into rolling line contact with said screen.

9. In a stenciling apparatus, a reciprocable stencil screen carriage, a stencil screen mounted on said carriage, said carriage being movable from one extreme position to another and vice versa, an article support for positioning an article in tangential rolling line contact with said screen, said support being movable toward and away from said screen, means normally urging said support toward said screen, a latch bar mounted on said carriage for movement therewith, and a latch mounted on said support, said latch bar being provided with abutments in the end regions thereof adapted to bear against said latch and maintain said support in a position whereby the article supported thereby is out of contact with said screen, said latch bar upon initial movement of said carriage from one of its extreme positions toward the other extreme position thereof serving to release said latch.

10. In a stenciling apparatus, a reciprocable stencil screen carriage, a stencil screen mounted on said carriage, said carriage being movable from one extreme position to another and vice versa, an article support for positioning an article in tangential rolling line contact with said screen, said support being movable toward and away from said screen, means normally urging said support toward said screen, a latch bar mounted on said carriage for movement therewith, and a latch mounted on said support, said latch bar being provided with a slot in the medial regions thereof, said latch bearing against said bar when said carriage is in either of its extreme positions thereof, said latch being adapted to be projected through said slot when said carriage is moved to a medial position thereof during reciprocation of the same in either direction.

11. In a stenciling apparatus, a reciprocable stencil screen carriage, a stencil screen mounted on said carriage and movable in its own plane upon reciprocation of the latter, an article support for positioning an article in rolling contact with said screen, said support normally occupying a position wherein an article supported thereby is in close proximity to but out of contact with said screen, a squeegee for forcing coloring material through said screen and onto the surface of the article, and cooperating means on said support and carriage and operable upon reciprocation of the latter for moving said support toward said carriage to bring the article supported thereby into rolling contact with said screen.

12. In a stenciling apparatus, a reciprocable stencil screen carriage, a stencil screen mounted on said carriage and movable in its own plane upon reciprocation of the latter, an article support for positioning an article in rolling contact with said screen, said support normally occupying a position wherein an article supported thereby is in close proximity to but out of contact with said screen, a squeegee for forcing coloring material through said screen and onto the surface of the article, and cooperating means on said support and carriage and operable upon reciprocation of the latter for moving said support and carriage relative to each other to bring the article supported on the former into rolling contact with said screen.

13. In a stenciling apparatus, a stencil screen movable in its own plane from one extreme position to another and vice versa, an article support, means normally urging said support toward said screen to position an article supported thereby in contact with the latter, and means operable when said screen is in either of its extreme positions for rendering said first mentioned means inoperative.

14. In a stenciling apparatus, a movable stencil screen carriage including a stencil screen movable with the carriage in its own plane in opposite directions from one extreme position to another, said screen being divided transversely to its directions of movement into adjacent color applying regions, a squeegee for each color applying region, said squeegee being bodily movable in the directions of movement of the screen, means normally urging said squeegees toward each other, a pair of stationary abutments positioned in the path of movement of said squeegees and occupying a position between the latter, and a pair of abutments on said carriage adapted upon movement of the latter successively in opposite directions to alternately engage respective squeegees and move the same.

15. In a stenciling apparatus, a reciprocable stencil screen carriage including a stencil screen movable with the carriage in its own plane in opposite directions from one extreme position to another, said screen being divided into adjacent color applying regions, a rock-shaft mounted on said carriage and movable therewith, a squeegee for each color applying region, said squeegees being mounted for sliding movement on said rock-shaft, means normally urging said squeegees toward each other inwardly on said shaft, means limiting the inward movement of said squeegees on said rock-shaft, and a pair of stationary abutments positioned between said squeegees in the path of movement thereof.

16. In a stenciling apparatus, a movable stencil screen carriage including a stencil screen movable with the carriage in its own plane in opposite directions from one extreme position to another, said screen being divided transversely to its directions of movement into adjacent color applying regions, a squeegee for each color applying region, said squeegee being bodily movable in the directions of movement of the screen, means normally urging said squeegees toward each other, a pair of stationary abutments positioned in the path of movement of said squeegees and occupying a position between the latter, a pair of abutments on said carriage adapted upon movement of the latter successively in opposite directions to alternately engage respective squeegees and move the same, and releasable means for locking said carriage in either of its extreme positions.

17. In a stenciling apparatus, a reciprocable stencil screen carriage including a stencil screen movable with the carriage in its own plane in opposite directions from one extreme position to another, said screen being divided into adjacent color applying regions, a rock-shaft mounted on said carriage and movable therewith, a squeegee for each color applying region, said squeegees being mounted for sliding movement on said rock-shaft, means normally urging said squeegees toward each other inwardly on said shaft, means limiting the inward movement of said squeegees on said rock-shaft, a pair of stationary abutments positioned between said squeegees in the path of movement thereof, and releasable means for locking said carriage in either of its extreme positions.

18. In a stenciling apparatus, a stencil screen carriage including a stencil screen movable in its own plane with the carriage in either direction from one extreme position to another, a squeegee for said stencil screen, means normally urging said stencil screen carriage inwardly of its extreme positions to a medial position, and releasable means for locking said carriage in either of its extreme positions.

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