

**July 7, 1942.**

**O. S. R. BECK**

**2,288,773**

MACHINE FOR PRODUCING COLOR CARDS

Filed Nov. 10, 1939

4 Sheets-Sheet 1

**HIS** ATTORNEY.

July 7, 1942.

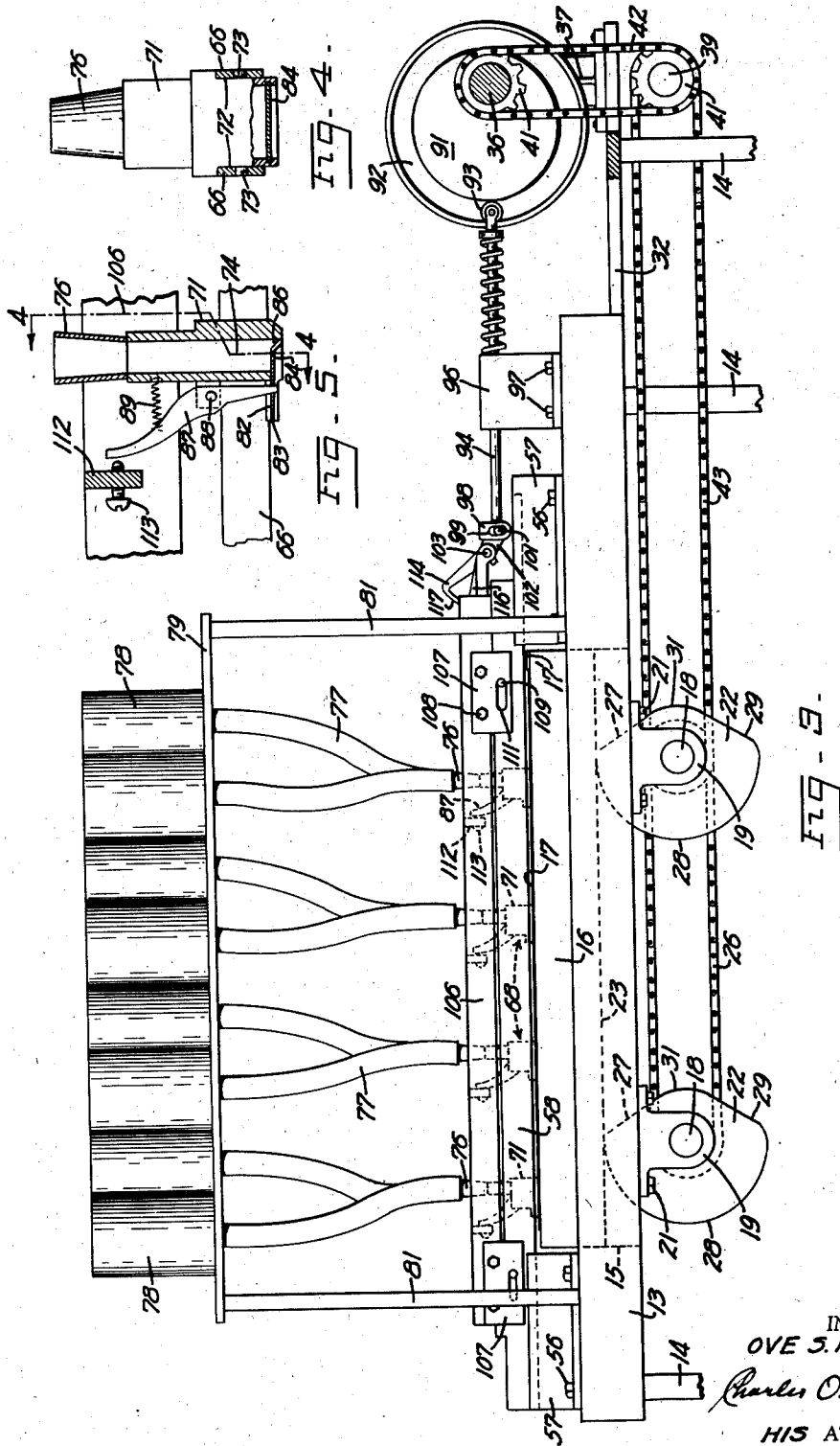
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MACHINE FOR PRODUCING COLOR CARDS

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4 Sheets-Sheet 2



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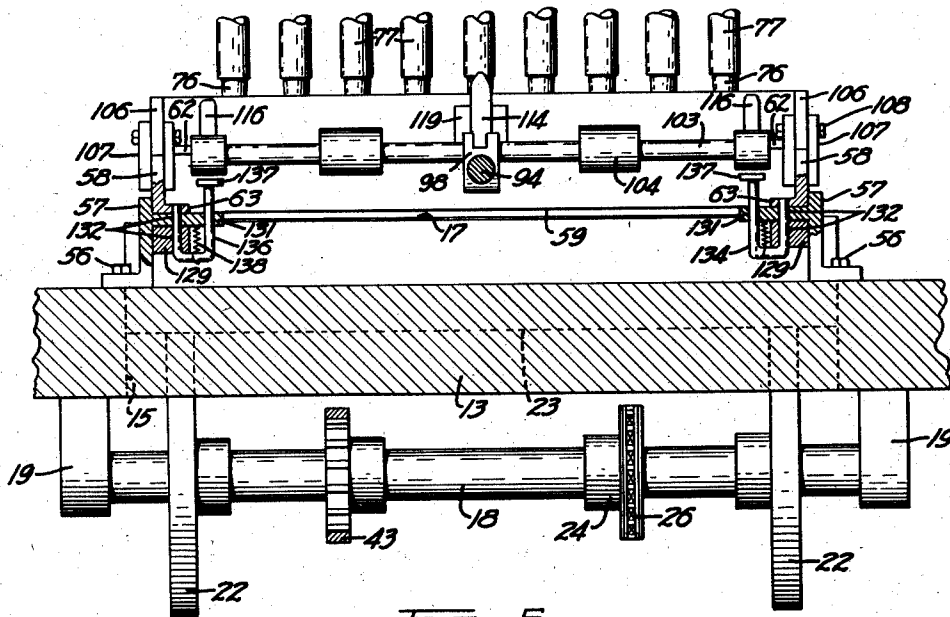
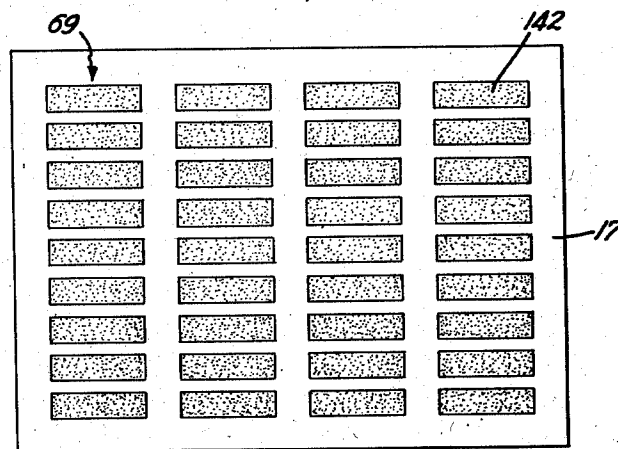
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# MACHINE FOR PRODUCING COLOR CARDS

Filed Nov. 10, 1939

4 Sheets-Sheet 3



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July 7, 1942.

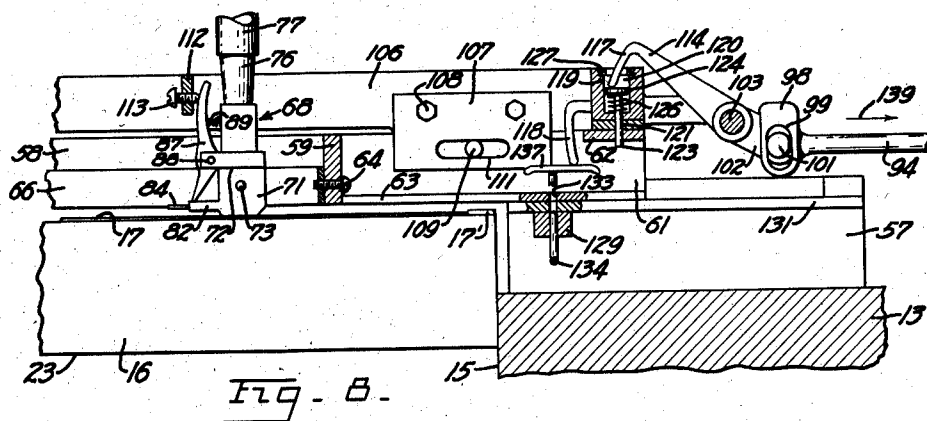
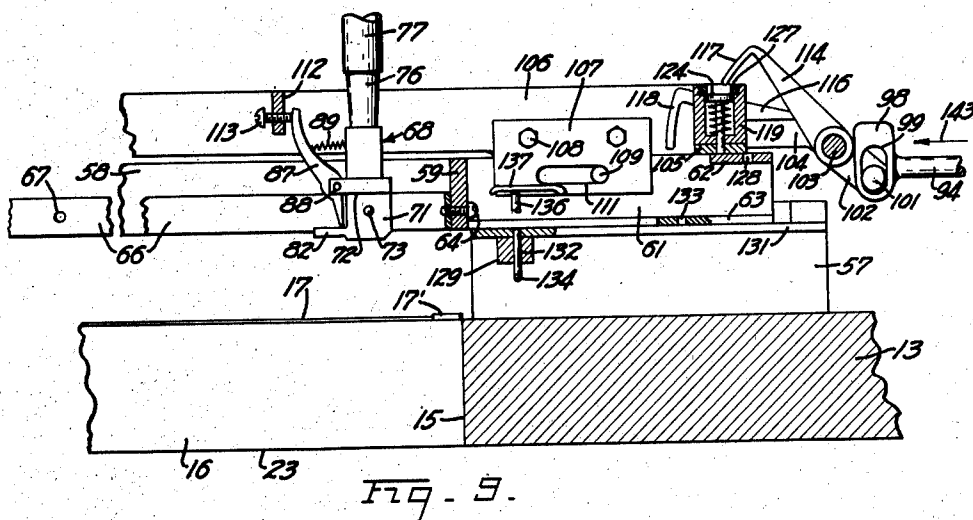
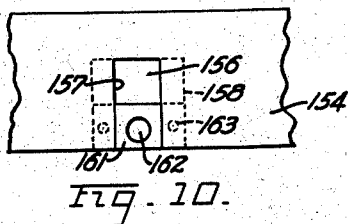
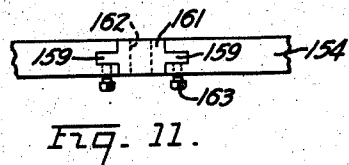
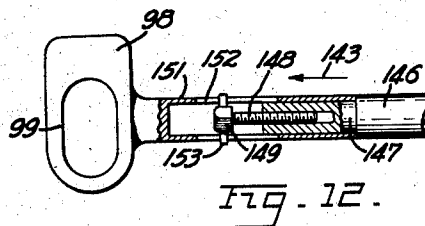
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2,288,773

MACHINE FOR PRODUCING COLOR CARDS

Filed Nov. 10, 1939

4 Sheets-Sheet 4



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## UNITED STATES PATENT OFFICE

2,288,773

## MACHINE FOR PRODUCING COLOR CARDS

Ove S. R. Beck, Alameda, Calif.

Application November 10, 1939, Serial No. 303,811

19 Claims. (Cl. 91—12)

This invention relates to machines for applying superficial coatings to surfaces.

It is an object of the invention to provide a machine of the class described which is particularly adapted to the production of color selection cards of the type distributed to consumers by paint manufacturers.

A further object of the invention is to provide a greatly simplified machine of the class described.

Another object of the invention is to provide a machine for applying to separate areas of a surface different types of coating materials, or materials of different color, which may each possess a different thickness.

Still another object of the invention is to provide, in a machine of the type referred to, an improved coating applicator.

Yet another object of the invention is to provide, in a machine of the class described, a color applicator which may be adjusted while the machine is operating so as to vary the thickness of the coating being applied thereby.

A still further object of the invention is to provide, in a machine of the class heretofore described, color applicators which may be easily removed from the machine for cleaning.

A further object of the invention is to provide a machine of the type referred to which, although capable of applying to a surface a large number of different and dispersed color coatings, is extraordinarily compact.

The invention possesses other objects and features of advantage, some of which, together with the foregoing, will be specifically set forth in the detailed description of the invention hereunto annexed. It is to be understood that the invention is not to be limited to the specific form thereof herein shown and described, as various other embodiments thereof may be employed within the scope of the appended claims.

Referring to the drawings:

Figure 1 is a top plan view of the complete machine of my invention. A portion of the view is broken away so as to more clearly disclose the internal construction.

Figure 2 is a fragmental vertical sectional view of a portion of the machine showing the slide latch in one of its operative positions. The plane in which the view is taken is indicated by the line 2—2 of Figure 1.

Figure 3 is a view of the machine for the most part in front elevation. A portion of the view is broken away and shown in vertical section so as to clarify the showing, and the general plane in

which the view is taken is indicated by the line 3—3 of Figure 1.

Figure 4 is a view, partly in end elevation and partly in vertical section, of one of the coating applicators. The plane in which the view is taken is indicated by the line 4—4 of Figure 5.

Figure 5 is a vertical sectional view of one of the coating applicators and the immediately adjacent associated parts of the machine.

Figure 6 is a transverse vertical sectional view of the machine. The plane in which the view is taken is indicated by the line 6—6 of Figure 1.

Figure 7 is a top plan view of a color card which may be produced by the machine of my invention.

Figure 8 is a fragmental vertical sectional view, similar to Figure 2, showing the relationship of parts of the machine in one operative position thereof.

Figure 9 is a view identical with Figure 8 showing the parts of the machine in another operative position.

Figure 10 is a fragmental top plan view of a portion of the mechanism showing the adjustable slide latch socket.

Figure 11 is a front elevational view of the structure shown in Figure 10.

Figure 12 is a fragmental side elevational view of the connecting rod. A portion of the view is broken away and shown in vertical section so as to more clearly disclose the internal construction.

In broad terms, my machine comprises a suitable supporting base upon which is mounted a reciprocable platen upon which an object having a surface to receive a superficial coating may be placed. On the base is mounted a plurality of separate reservoirs in which fluid coating materials of different types or colors may be placed, and reciprocally mounted on the base, adjacent the platen, is an applicator frame which carries a separate applicator for each of the reservoirs. Flexible means is provided connecting each reservoir with its respective applicator so that the fluid coating material in the reservoir will be conducted to the applicator. Each of the applicators has a controlled port therein through which the fluid coating material may flow. Power means is provided for moving the platen so as to bring the surface of the object carried thereby into juxtaposition with the applicator ports and means is provided for maintaining these relative positions of the object and applicators during a predetermined interval of time. Means is provided, operative during the said in-

terval of time, for primarily opening the ports of the applicators to allow the fluid coating material therein to contact the surface of the object carried by the platen and for secondarily moving the applicators along said surface of the object so that the coating material will be deposited on the object surface in a layer of appreciable area. Means is provided, associated with each applicator for varying the thickness of the individual coating being applied thereby and means is also provided for varying the relative movement of the applicators and the surface of the object so that the area receiving the coating may be selectively varied. After the object has received its coating, the platen and applicators are cycled back to their starting positions so that another object to be coated may be placed on the platen. Means is provided, associated with the power means, for limiting the cycles of the moving parts of the apparatus.

In greater detail, the machine comprises a horizontal table 13 which may be provided with a plurality of depending legs 14 by means of which the table may be supported in an elevated position above the surface of a floor or other supporting surface. Formed in and extending through the table 13 is a rectangular opening 15 in which is mounted for vertical movement a horizontal complementary rectangular platen 16 on which the object to be coated, such as the sheet of paper 17, may be placed. Suitable stops which may be ridges or pins 17' engage the edges of the sheet 17 to position it and prevent shifting thereof on the platen.

Means is provided for moving the platen 16 in a vertical direction, between elevated and depressed positions. Disposed below the table 13 and extending transversely across the opening 15 is at least a pair of shafts 18 which are journaled in suitable bearing brackets 19 secured by bolts 21 to the lower surface of the table adjacent the longitudinal edges of the opening, each having fixed for rotation therewith one or more disk cams 22 which engage the lower surface 23 of the platen 16. Each of the shafts has fixed for rotation therewith a sprocket 24 which meshes with an endless chain 26 so that the cams 22 are connected together for synchronous rotation. It will be seen that when either one of the shafts 18 is rotated, preferably in a clockwise direction, the successive surfaces of the cams coming into engagement with the lower surface 23 of the platen will be first, the lifting face 27, which raises the platen to the upper limit of its travel as shown in Figure 3; second, the upper dwell face 28, which is arcuately concentric with the axis of rotation of the cam and which maintains the platen at its elevated limit of travel during substantially 180 degrees of rotation of the cam; third, the lowering face 29, which is reversely complementary to the lifting face 27 and which permits the platen to descend to its lower limit of travel; and finally, the lower dwell face 31 which is also arcuately concentric with the rotational axis of the cam and which retains the platen at its lower level until the cycle is repeated and the lifting face 27 engages the platen to again lift the latter.

Power means is provided for rotating the shafts 18, to reciprocate the platen, and means is provided for limiting the rotation of the shafts to unit cycles. Mounted on an extension 32 of the table 13 is a motor 33 which drives, through a suitable speed reducing gear 34, a power shaft 36 which is divided into a pair of independently

rotatable sections, one of which is journaled in the reducing gear housing 34 and the other of which is journaled in suitable bearings 37 mounted on the table extension. A clutch 38, which is preferably the positive jaw type, is provided for connecting the two sections of the power shaft 36 for rotation together. As is best shown in Figure 3, a jack-shaft 39, journaled in suitable bearings secured to the lower surface of the table extension 32, is positioned below the power shaft 36, and the respective shafts are provided with sprockets 41 which mesh with an endless chain 42 so that the shafts are connected for rotation together. Another endless chain 43, which engages sprockets secured for rotation, respectively, with the jackshaft and one of the camshafts 18, connects the latter shafts for rotation together.

The clutch 38 is preferably of the selectively engageable type and is provided with an operating lever 44 which, when depressed, withdraws a pin 46 from engagement with a shoulder 47 formed on the head 48 of a latch pin 49 reciprocally mounted in bearings 51 carried by one section of the clutch. Release of the latch pin permits one end thereof to be projected by a spring 52 into a notch 53 which thereby locks the two sections of the clutch together and consequently connects the two sections of the power shaft 36 for rotation together. This, of course, causes the camshafts 18 to rotate and to cycle the platen 16 between its depressed and elevated positions. After the clutch makes one revolution, a sloping surface 54 on the head 48 of the latch pin 49 engages the lever pin 46 and causes withdrawal of the latch pin from the notch 53 thereby disengaging the two sections of the clutch and stopping the cycle of the platen when the latter is in its lowest depressed position.

Mounted by bolts 56 on the upper surface of the table 13, and positioned in spaced pairs adjacent the transverse edges of the table opening 15, are slide bearing blocks 57 on which is slidably supported, for movement horizontally across the surface of the platen 16, a coating applicator slide comprising spaced parallel side rails 58 connected together adjacent their ends by transverse cross members 59 and having integral extensions 61 provided with horizontally directed top and bottom flanges 62 and 63, respectively. Secured by mounting screws 64, to the cross members 59, is a plurality of applicator support members each comprising a U-shaped strip 66 of flexible metal having transversely aligned and longitudinally spaced pairs of apertures 67 therein as shown in Figure 9. Coating applicators, generally indicated by the numeral 68, are removably mounted, as will be presently explained, in each pair of the apertures 67. The number of sets of apertures 67 provided longitudinally of the applicator support members determines the number of vertical columns 69, Figure 7, which will be imprinted on the sheet or color card 17, and the number of applicator support members provided transversely of the applicator slide determines the number of separate vertically spaced imprinted areas which will appear in each column 69.

Each of the coating applicators, as is best shown in Figures 4 and 5, comprises a body 71 having in opposite sides thereof grooves 72, which are complementary, in cross-section, to the strips of the applicator support members 66, having pins 73 mounted therein which are engageable in the apertures 67 of support member strips. Since

the strips of the support members are flexible and may be forced apart, to disengage the pins 73 from the apertures 67, the applicators may be readily separated from the support members for replacement or cleaning. Extending vertically through the applicator body 71 is a rectangular bore 74, and secured to the body 71 at and concentric with the upper end of the bore is a tubular nipple 76. To the nipple 76 is attached one end of a flexible conduit 77, which may conveniently be rubber tubing, the other end of the conduit being connected to a suitable discharge nipple extending from the bottom of a preferably cylindrical hopper 78 carried on an elevated platform 79 which is supported, by legs 81, on the table 13. A hopper 78 and conduit 77 is supplied for each of the coating applicators used, and in the hoppers may be placed considerable quantities of the various types of colors of coating materials, to be applied to the sheet or color card 17, which material may flow through the conduits 77 into the bores 74 of the applicators.

Means is provided at the lower end of the applicator body for permitting coating material contained in the bore 74 to flow therefrom to be deposited on the surface of the sheet or color card 17, and means is provided for controlling the flow of said coating material. Formed on and extending horizontally from one transverse side of the applicator body 71, adjacent the lower end thereof, is a pair of parallel lugs 82, each of which, on the inner face thereof confronting the other, is provided with horizontally aligned guide grooves 83 which extend transversely of and into the bore 74. One transverse wall of the applicator body bordering the bore 74 is cut away to a plane coinciding with the upper side of the guide grooves 83. A sheet metal gate 84 is slidably mounted in the guide grooves and has a lip 86 which extends angularly downwardly to terminate in the plane of the lower horizontal end of the applicator body and in contiguous relation to the forward edge of the bore 74 which edge may be termed the leading edge of the port. A lever 87 journaled on a pivot pin 88 carried by the applicator body 71 has its lower end extending through an aperture provided adjacent the rear edge of the gate 84 so that movement of the lever will cause the gate to move in the guide grooves 83 and to create a discharge port for the bore 74 defined by the parallel side edges and the forward transverse edge of the lower end of the bore 74 and the lowermost edge of the lip 86. A spring 89 engaging, at its respective ends, the lever 87 and the applicator body 71 serves to forcibly return the lever to a normal position of rest in which the port of the applicator bore 74 is closed.

When the platen is raised to its uppermost position, the upper surface of the sheet 17 will contact the lower end surface of the applicators carried by the applicator slide. It will, therefore, be seen that if the gate 84 is moved to open the applicator port, the coating material contained in the applicator will come into contact with the surface of the sheet 17. It will be noted, upon careful examination of Figure 5, that the guide grooves 83 lie at a slight angle with respect to the horizontal so that when the gate 84 is moved by the lever 87, the lowermost edge of the gate will be gradually elevated thereby creating between it and the surface of the sheet 17 a gap having a vertical dimension which depends upon the degree of movement of the gate from its closed to its fully opened position. It will be seen

that with the gate open, movement of the applicator across the sheet will draw a stripe of the coating material on the sheet and that the thickness of the coating will be determined by the extent to which the gate is opened.

Means is provided, operative when the platen and the sheet 17 carried thereon are in their uppermost position, for primarily operating the levers 87 to open the applicator ports and secondarily for moving the applicator slide to move the applicators bodily across the surface of the sheet. Mounted on and fixed for rotation with the power shaft 36 is a disk cam 91 having a cam groove 92 therein engaging a cam roller 93 carried by and journaled on one end of a connecting rod 94 which is supported and axially slidable in a bearing 96 mounted by bolts 97 on the table 13. The other end of the connecting rod is provided with a clevis 98 having in the spaced parallel side arms thereof vertically elongated slots 99 in which is slidable a horizontal pin 101 carried at the distal end of a lever 102 fixed for rotation with a shaft 103 which is journaled in bearing brackets 104 extending from a cross-member 105 which ties together the parallel side bars 106 of a valving slide mounted on and slidable relatively with respect to the applicator slide. The slidable mounting of the valving slide is effected by clips 107 which are secured to the side bars 106 by bolts 108 and extend downwardly along the inner sides of the side bars 58, and the slides are held against relative vertical displacement by pins 109 which are fixed in the side bars 58 of the applicator slide and which engage elongated slots 111 provided in the clips 107. The valving slide is provided with separate trip bars 112, for each transverse set or row of applicators, which are secured at their ends to the side bars 106 and are provided with adjustment screws 113 which, when the valving slide is moved, engage the applicator levers 87.

Fixed on the shaft 103 and extending toward the applicator slide is a centrally positioned valving slide latch lever 114 and a pair of applicator slide latch levers 116. Both the lever 114 and the levers 116 have at their distal ends, respectively, downwardly directed spurs 117 and 118. Mounted medially of the ends of the cross-member 105 is a latch bolt block 119 having a recess 120 therein and an axial bore 121 in which is slidably mounted a valving slide latch bolt 123. The latch bolt 123 has at its upper end, and positioned within the recess 120, an enlarged head 124 between which and the bottom of the recess is interposed a coil spring 126 which normally urges the latch bolt upwardly toward the upper end of the recess. An annular collar 127 threaded into the block 119 engages the head 124 of the latch bolt and limits the upward movement of the latter, and the opening in the center of the collar is to allow admittance of the spur 117 into the recess 120 to contact the latch bolt head for the purpose of depressing the latch bolt. A latch bolt aperture 128 provided in the cross-member 62 of the applicator slide is positioned to come into axial alinement with the latch bolt 122 so that the latter may pass into the aperture 128 and thereby lock the valving slide and the applicator slide together.

As will be most clearly seen in Figure 6, blocks 129 are secured to each of one pair of the slide bearing blocks 57 below the bearing plates 131 thereof, and apertures 132 bored vertically through the blocks 129 and bearing plates 131, and axially registrable with latch apertures 133

provided in the flange 63 of the applicator slide, slidably receive U-shaped applicator slide latch bolts 134 each being provided with upwardly directed arms 136 having shoes 137 mounted on the upper ends thereof and springs 138, secured at their opposite ends, respectively, to the bearing blocks 57 and the latch bolts 134, resiliently urge the latch bolts in an upward position.

At the start of an operative cycle, the platen 16 is at the lowest level of its travel resting on the lower dwell face 31 of the cams 22, and the combined applicator and valving slides 58 and 106 are about midway of their recovery stroke to the left-hand end of the machine. A sheet of material 17 to be coated is now placed on the platen 16. The operator now depresses the operating lever 44 which engages the power shaft clutch and connects the power shaft for rotation, through the reduction gear 34, with the drive motor 33. As the power shaft rotates, rotation will be imparted to the cams 22 through the chain drive to start the platen 16 upwardly, and rotation will also be imparted to the disk cam 91 which will drive the applicator and valving slides toward their aforesaid left-hand limit of travel. This limit is reached just as the upper dwell surfaces 28 of the cams engage the underside of the platen which is now at its uppermost position with the sheet 17 engaging the lower end of each of the applicators 71. Continued rotation of the power shaft will cause further rotation of the disk cam 91 which now starts moving the connecting rod 94 toward the right as indicated by the arrows 139 of Figures 2 and 8. The elevated position of the platen will not be altered by continued rotation of the cams 22 since the platen is resting on the concentrically arcuate upper dwell surfaces 28.

Referring now to Figure 2, it will be seen that when the connecting rod 94 starts its motion toward the right-hand end of the machine, the lever 102 will be urged upwardly thereby imposing a downward force on the latch levers 114 and 116. This will swing the lever 114 downwardly so that the spur 117 enters the recess 120 and contacts the head 124 of the latch bolt 123 depressing the latter until the lower end thereof contacts the upper surface of the cross-member 105. The arrangement of the parts is such that the spurs 118 of the latch levers 116 do not descend quite far enough to contact the shoes 137 of the applicator slide latch bolts 134 which are engaged in the apertures 132 and, therefore, lock the applicator slide to the table.

As soon as the latch bolt 123 bottoms, the horizontal movement of the connecting rod 94 will be imparted to the valving slide thereby causing the latter to move toward the right until the latch bolt 123 registers with and snaps into the aperture 128 thus locking together the valving and applicator slides. This primary movement of the valving slide and the engagement of the latch bolt 123 in the aperture 128 causes two distinct actions. First the movement of the valving slide moves the trip bars 112 to press the levers 87 toward the applicator bodies thereby moving the respective applicator gates 84 to open the applicator ports so that the coating material in the several applicator bores 74 will come in contact with the surface of the sheet. Secondly, the spurs 118 which were held out of contact with the latch bolt shoes 137, by the bottomed latch bolt 123, will now descend to engage the shoe thereby depressing the latch bolt 123 and causing the latter to unlock the applicator slide

from engagement with the bearing plates 131. Since the valving and applicator slides are now locked together, and since the applicator slide is freed, they will be moved by the connecting rod as a unit thereby causing the applicators to be moved linearly over the surface of the sheet 17. This will cause the coating material issuing from the port of each applicator to be deposited in short stripes 142, as shown in Figure 7, thus forming the separate coating or color areas which are the equivalent of the familiar adhesively attached color chips found on the color cards or charts distributed to dealers or consumers by paint or other coating material manufacturers.

As heretofore explained, the thickness of the color coatings, and consequently the density of the color, depends upon how far the individual ports of each applicator is opened, this being controlled by the individual adjustment screws 113 provided on the trip bars 112 for each applicator. It is thus possible to regulate the machine so that only a very thin coating of a material possessing good covering qualities is deposited in one area of the sheet 17 while a considerably thicker coating of a material having poorer covering power is deposited in another area thereof.

After the disk cam 91 has rotated to move the interlocked valving and applicator slides as far as they will go to the right, as viewed in Figure 3, which is the degree of throw of the cam and which incidentally governs the length of each coating stripe 142, the cam will start on its recovery cycle thereby causing the connecting rod 94 to start recovery movement to the left as indicated by the arrow 143 of Figure 9. This immediately causes the lever 102 to be swung downwardly thereby raising the spurs 117 and 118 out of engagement, respectively, with the head 124 of the latch bolt 123 and the shoe 137 of the latch bolt 134. As soon as the latch bolt 123 is released, from the aperture 128, the collective action of the springs 89 of the applicators will forcibly cause the valving slide to be shifted to left relative to the applicator slide, as shown in Figure 9, thereby allowing all of the applicator ports to fully close simultaneously thus cutting off the contact of the coating material in the applicator bores 74 with the surface of the sheet 17.

The timing between the components of the drive mechanism of the machine is such that immediately following the release of the valving slide, to effect closing of the applicator ports, the platen and the sheet 17 carried thereby will start to move downwardly away from the bottom of the applicators, directly after which the continued movement of the connecting rod 94 will cause the applicator slide to be moved to the left to the point marking the start of the operative cycle as described above. The power shaft 36 will now have made one complete revolution and the clutch will become disengaged, in the manner previously described, thereby disconnecting the shaft 36 from the drive motor 33. The coated sheet 17 may now be removed from the platen 16, replaced with a blank sheet, and the cycle of operation repeated by depression of the operating lever 44.

In Figure 12, I have shown means whereby the length of the color stripes 142 may be varied. It will be seen in Figure 3 that since the throw of the disk cam 91 is fixed and the length of the connecting rod 94 is invariable, the travel of the applicator slide will be between fixed limits,

equal to the throw of the cam, which will determine the length of the stripes 142. In the structure of Figure 12, I provide a two-piece connecting rod, the main section 146 thereof, at the end adjacent the slides, being provided with a diametrically reduced shank 147 which is internally bored and threaded to receive the threaded stem 148 provided with an enlarged head 149. The clevis 98 is provided with an integral tubular sleeve 151, which is in slidable telescopic engagement with the shank 147 and is provided with a pair of longitudinally extending slots 152. A pin 153, passing transversely through and secured in the stem head 149 enters and is movable in the slots 152. It will be seen that by removing the pin 101 from the lever 102, the clevis may be disengaged from the lever and rotated thus causing the stem 148 to be rotated so that the stem head 149 may be positioned at various distances from the end of the shank 147. This will, of course, position the pin 153 at various distances from the right end of the slots 152. When a solid connecting rod is used, as shown in Figure 3, the movement of the applicator slide starts very shortly after the connecting rod starts to move toward the right. However, if the telescopic connecting rod of Figure 12 is used, the main section 146 of the connecting rod will move to the right until the pin 153 engages the right end of the slots 152 before motion will be imparted to the clevis 98 and, therefore, before motion is imparted to the valving and applicator slides. It will be seen, therefore, that this lag or lost motion will be deducted from the amount of throw of the cam 91 thereby producing a stripe 142 having a length which is less than the maximum obtainable with the solid connecting rod.

In Figure 10, I have shown means for adjusting the position of a latch bolt aperture. This construction may be used either with the aperture 133 or the aperture 128 and comprises forming in the frame bar 154, which may be either the frame member 62 or 131, a notch 156 which is provided, in the parallel sides 157 thereof, with grooves 158 which slidably receive tongues 159 formed on the opposite edges of, preferably, a hardened steel block 161 in which the aperture 162, corresponding to the apertures 133 and 128 is formed. Set screws 163 tapped into the bar 154 so as to enter the slots 158 and engage the tongues 159, serve to lock the block 161 in position in the notch 156. It will be seen, therefore, that the block 161 is capable of limited movement so as to desirably position the latch bolt aperture and may thereafter be securely locked in place.

It will be seen from the foregoing detailed description of my invention that I have provided a machine of the class described which is very simple in construction; which may, by the simple expedient of manipulating the several adjustment screws 113, be quickly adjusted to vary the thickness of the individual coatings applied to the separate areas of the sheet 17; that this adjustment may be accomplished even though the machine is in operation; that the improved applicator is capable of making clean-cut deposits of coating material without any wastage of the latter; that the applicators may quickly be removed from the machine for cleaning, thus materially reducing the set-up time necessary to effect rearrangement of the colors deposited on the sheet 17; and that although a large number of separate color stripes 142 are grouped to-

gether, the mechanism necessary to produce them is extraordinarily compact thus rendering the machine capable of occupying only a small amount of floor space. In addition to the above features, the machine may be operated at high speed, the output being governed by the rapidity at which the operator can replace the coated sheets with blank ones.

It will further be observed that the applicators are of such character and so supported that a plurality of stripes may be applied thereby to a sheet with very little space between the stripes. This is an important consideration from the point of view of economy of production and compactness of display.

I claim:

1. In a machine for producing a color card or the like, a platen for supporting said card, an applicator positioned adjacent said platen and having a chamber therein provided with an inlet port and outlet port having an appreciable dimension in at least one direction, a fixed reservoir for containing fluent coating material disposed above said applicator and having a flexible discharge conduit communicating with the inlet port of said applicator, a closure for said outlet port, means normally holding said closure in its closed position, means for moving said closure to its open position to release said color material therethrough, and means for subsequently moving said applicator across a portion of the surface of said card in a direction normal to said outlet port dimension to spread said released color material over a predetermined area of said card.

2. A machine of the class described comprising a platen on which an object having a surface to be coated may be supported, an applicator having therein a chamber containing fluent coating material, positioned above said platen and having a discharge port through which said coating material may flow by gravity from said chamber, a gate normally closing said discharge port, means for bringing said platen and said applicator together to position the surface of said object against the discharge port of said applicator, and means for subsequently opening said gate to permit gravity flow of coating material through said applicator port.

3. A machine of the class described comprising a platen on which an object having a surface to be coated may be supported, an applicator having therein a chamber containing fluent coating material, positioned above said platen and having a discharge port through which said coating material may flow by gravity from said chamber, a gate normally closing said discharge port, means for bringing said platen and said applicator together to position the surface of said object against the discharge port of said applicator, means for subsequently opening said gate to permit gravity flow of coating material through said applicator port, and means for moving said applicator along the surface of said object for a fractional portion of the dimension of said object in the direction of movement.

4. A machine of the class described comprising a platen on which an object having a surface to be coated may be supported, an applicator having therein a chamber containing fluent coating material, positioned above said platen and having a gated discharge port through which said coating material may flow from said chamber, means for moving said platen toward said applicator to position the surface of said object

against the discharge port of said applicator, means for opening said applicator port, means for subsequently moving said applicator along the surface of said object, and means for adjustably varying the degree of relative movement between said applicator and the surface of said object.

5. A machine of the class described comprising a supporting frame, a platen, on which an object having a surface to be coated may be carried, mounted for vertical movement on said supporting frame, an applicator slide mounted on said supporting frame and movable transversely of the path of movement of said platen, applicators, carried by said applicator slide, each having therein a chamber in which fluent coating material may be placed and a gated port through which said coating material may be discharged from said chamber, means for moving said platen vertically to position the object surface to be coated closely adjacent said applicator ports, means for opening said applicator ports to deposit a layer of said coating material on said object surface, means for moving said applicator slide transversely of the path of movement of said platen, and means for connecting for synchronous movement together the platen and applicator slide moving means.

6. A machine of the class described comprising a supporting frame, a platen, on which an object having a surface to be coated may be carried, mounted for vertical movement on said supporting frame, an applicator slide mounted on said supporting frame and movable transversely of the path of movement of said platen, applicators, carried by said applicator slide, each having therein a chamber in which fluent coating material may be placed and a port through which said coating material may be discharged from said chamber, a gate slidably mounted on each said applicator and movable transversely across said port to successively open and close the latter, means movably mounted on said applicator slide and operatively connected, upon movement thereof to move said gates, means for moving said platen vertically to position the object surface to be coated closely adjacent said applicator ports, means for primarily moving said gate moving means to open said applicator ports, to effect contact of the coating material and the object surface to be coated, and for secondarily moving said applicator slide to move said applicators over the said object surface, and means connecting said platen moving means and the moving means of said gates and applicator slide for movement together.

7. A machine of the class described, comprising a support having an opening therein, a horizontal platen mounted for vertical movement in said support opening, said platen having thereon a surface for supporting an object to be coated, slide bearings on said support adjacent said opening, an applicator slide slidably mounted on said slide bearings for movement across said support opening, applicators carried by said applicator slide, each of said applicators having therein a chamber, in which fluent coating material may be placed, and a downwardly directed discharge port through which said coating material may flow, a slide gate slidably mounted on each said applicator for successively opening and closing said discharge port thereof, a lever carried by each said applicator and operatively connected with said slide gate, a valving slide movably mounted on said applicator slide and en-

gageable with said levers to move the latter, drive means for raising and lowering said platen to move the object to be coated toward and from said applicator ports, said drive means including a movable connecting rod, means for operatively connecting said connecting rod to move said valving slide relative to said applicator slide, and means for connecting said valving and applicator slides for movement together across said support opening.

8. A machine of the class described comprising a support having an opening therein, a horizontal platen mounted for vertical movement in said support opening, said platen having thereon a surface for supporting an object to be coated, slide bearings on said support adjacent said opening, an applicator slide slidably mounted on said slide bearings for movement across said support opening, a platform carried by said support, a plurality of reservoirs for receiving fluent coating material carried by said platform, a plurality of applicators carried by said applicator slide, each of said applicators having therein a chamber and a discharge port for said chamber, a slide gate slidably mounted on each of said applicators for successively opening and closing said discharge port thereof, a lever carried by each of said applicators and operatively connected with said slide gate to move the latter, means for conducting said fluent coating material from said reservoirs into the chambers of the respective applicators, a valving slide mounted on and movable relative to said applicator slide, said valving slide being engageable during said movement thereof with said levers to move the latter, drive means for raising and lowering said platen to move the object to be coated toward and from said applicator ports, means for moving said valving slide to open said applicator ports so that coating material in said applicator chambers may contact said object to be coated, and means for connecting said applicator slide for movement with said valving slide.

9. A machine of the class described comprising a support having an opening therein, a horizontal platen mounted for vertical movement in said support opening, said platen having thereon a surface for supporting an object to be coated, bearings on and below said support, shafts journaled in said bearings and extending transversely across and below said support opening, cams mounted on and rotatable with said shafts, said cams, upon rotation of said shafts, being engageable with said platen to raise and lower said platen, means connecting said camshafts for rotation together, slide bearings on said support, an applicator slide slidably mounted on said slide bearings and movable horizontally across said support opening, a plurality of applicators mounted on said applicator slide and arranged thereon in spaced rows, each of said applicators having a chamber therein provided with a discharge port, a gate slide carried by each applicator and movable across said applicator discharge port from a position wherein said port is open to a position wherein said port is closed, a platform fixedly mounted on said support, a plurality of reservoirs for containing fluent coating material carried by said platform, means for conducting said coating material from said reservoirs into the chambers of the respective applicators, each of said applicators having pivotally mounted thereon a lever in operative engagement with and to move said gate slide, resilient means on each applicator for normally re-

taining said gate in position to close said applicator port, a valving slide slidably mounted on said applicator slide, said valving slide having thereon a plurality of trip bars each being positioned to respectively engage the levers of rows of said applicators when said valving slide is moved relative to said applicator slide, a power shaft, means for rotating said power shaft, means connecting said power shaft and camshafts for rotation together, a connecting rod slidably mounted on said support, means connecting said connecting rod to be moved by said power shaft, means connecting said connecting rod and valving slide for movement together, and means for releasably connecting said valving and applicator slides for movement together.

10. A machine of the class described comprising a support having an opening therein, a horizontal platen mounted for vertical movement in said support opening, said platen having thereon a surface for supporting an object to be coated, bearings on and below said support, shafts journaled in said bearings and extending transversely across and below said support opening, cams mounted on and rotatable with said shafts, said cams, upon rotation of said shafts, being engageable with said platen to raise and lower said platen, means connecting said camshafts for rotation together, slide bearings on said support, an applicator slide slidably mounted on said slide bearings and movable horizontally across said support opening, U-shaped support members removably mounted on said applicator slide, applicators mounted on said support members, each of said applicators comprising a body having therein a chamber provided with a discharge port, a gate slide mounted for movement on said body transversely of said port for opening and closing the latter, a plurality of reservoirs, for the reception of fluent coating material, mounted on said support, means for conducting said fluent coating material from said reservoirs into the chambers of the respective applicator bodies, a valving slide movably mounted on and relative to said applicator slide, means interposed between said valving slide and said applicator gate slides connecting said slides for movement together, a power shaft, means for rotating said power shaft, means connecting said power shaft and camshafts for rotation together, a connecting rod slidably mounted on said support, a disk cam secured on and rotatable with said power shaft, said disk cam having thereon a peripheral cam groove, a cam roller carried by one end of said connecting rod and engaged in said cam groove, said connecting rod being connected at its other end to said valving slide for moving said valving slide, and means for releasably connecting said valving and applicator slides for movement together.

11. A machine for the production of a color card or the like in which the color is applied directly to a plurality of independent geometric areas of said card, comprising a row of aligned color applicators supported in spaced relationship to one another, means for supporting a card in position to receive coloring material from said applicators, means for producing limited relative movement between said applicators and said card in a direction along the axis of said row and for a distance less than the spacing between said applicators, and means for applying coloring matter to said card from said applicators simultaneously during such limited movement.

12. A machine for the production of a color

card or the like in which color is applied to a plurality of independent geometric areas of said card, comprising a plurality of rows of spaced aligned color applicators, means for supporting a card in position to receive coloring material from said applicators, means for producing limited relative movement in a direction along the axes of said rows, between said applicators and said card for a distance less than the spacing between said aligned color applicators of each row, and means for applying coloring matter to said card from said applicators during such limited relative movement.

13. A machine for the production of a color card or the like in which color is applied to a plurality of independent geometric areas of said card, comprising a plurality of rows of spaced aligned color applicators, each having a discharge outlet for gravity discharge of coloring matter therefrom, means for temporarily supporting a card against the discharge outlet of each of said applicators, in position to receive coloring material from said applicators, means for producing limited relative movement in a direction along the axes of said rows, between said applicators and said card for a distance less than the spacing between said aligned color applicators of each row, and means for applying coloring matter to said card from said applicators during such limited relative movement.

14. A machine for the production of a color card or the like in which color is applied to a plurality of independent geometric areas of said card, comprising a plurality of rows of spaced aligned color applicators, each having a gate-controlled discharge outlet for gravity discharge of coloring matter therefrom, means for supporting a card adjacent said discharge outlets, in position to receive coloring material from said applicators, means for producing limited relative movement in a direction along the axes of said rows, between said applicators and said card for a distance less than the spacing between said aligned color applicators of each row, means for opening said gates in said applicators simultaneously during such limited relative movement for applying coloring matter to such independent geometric areas, and means for adjusting the thickness of such coloring matter as applied to said card.

15. Apparatus for the dispensing of a color fluid to a card or the like to produce a color area having sharp, clear-cut starting and terminating edges; comprising an applicator including a chamber terminating in a discharge port having a leading edge and side edges in a common plane for engagement with such card and a trailing edge slightly removed from the plane of said leading and side edges; means for supporting a card in engagement with said leading and side edges of said applicator port; means for causing limited relative movement between said applicator and card with said leading edge ahead of said trailing edge in the direction of relative movement of said applicator, while maintaining such engagement; means enabling contact of color fluid through said discharge port with said card for the complete duration of such relative movement, means for cutting off such contact of color fluid following said limited relative movement between said applicator and said card, and means for displacing said card supporting means away from said applicator port following the cutting off of contact between the color fluid and said card.

16. Apparatus for the dispensing of a color fluid to a card or the like to produce a color area having sharp, clear-cut starting and terminating edges; comprising an applicator including a chamber terminating in a discharge port having a leading edge and side edges in a common plane for engagement with such card and a trailing edge slightly removed from the plane of said leading and side edges; means for adjusting the distance of said trailing edge with respect to such plane; means for supporting a card in engagement with said leading and side edges of said applicator port; means for causing limited relative movement between said applicator and card with said leading edge ahead of said trailing edge in the direction of relative movement of said applicator, while maintaining such engagement; and means enabling contact of color fluid through said discharge port with said card for a period greater than the time duration of such relative movement.

17. An applicator for apparatus for the dispensing of a color fluid to a card or the like to produce a color area having sharp, clear-cut starting and terminating edges, comprising a chamber terminating in a discharge port having a leading edge and side edges in a common plane for engagement with such card and a trailing edge slightly removed from the plane of said leading and side edges, and means for closing said discharge port, said means comprising a closure supported for movement above the plane of said leading and side edges and located in said discharge port adjacent said leading and side edges.

18. An applicator for apparatus for the dispensing of a color fluid to a card or the like to produce a color area having sharp, clear-cut starting and terminating edges, comprising a chamber terminating in a discharge port having a leading edge and side edges in a common plane for engagement with such card during application of color fluid thereto, a gate normally closing said discharge port and including an edge in abutment against said leading edge when said gate is in its closing position, and means for sliding said gate to an open position and simultaneously altering the space relationship between said edge of said gate and the plane of said leading edge and side edges.

19. An applicator for apparatus for the dispensing of a color fluid to a card or the like to produce a color area having sharp, clear-cut starting and terminating edges, comprising a chamber terminating in a discharge port having a leading edge and side edges in a common plane for engagement with such card, an inclined groove adjacent each of said side edges and extending upwardly from said leading edge, a gate slidably positioned in said grooves and including an edge in abutment against said leading edge when said gate is in its closing position, means for sliding said gate to an open position, and means for adjusting the extent to which said gate may be opened to alter the space relationship between said edge of said gate and the plane of said leading edge and side edges.

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