

Jan. 23, 1945.

G. B. GUTHRIE

2,367,722

DINNERWARE DECORATING MACHINE

Filed Feb. 11, 1943

4 Sheets-Sheet 1

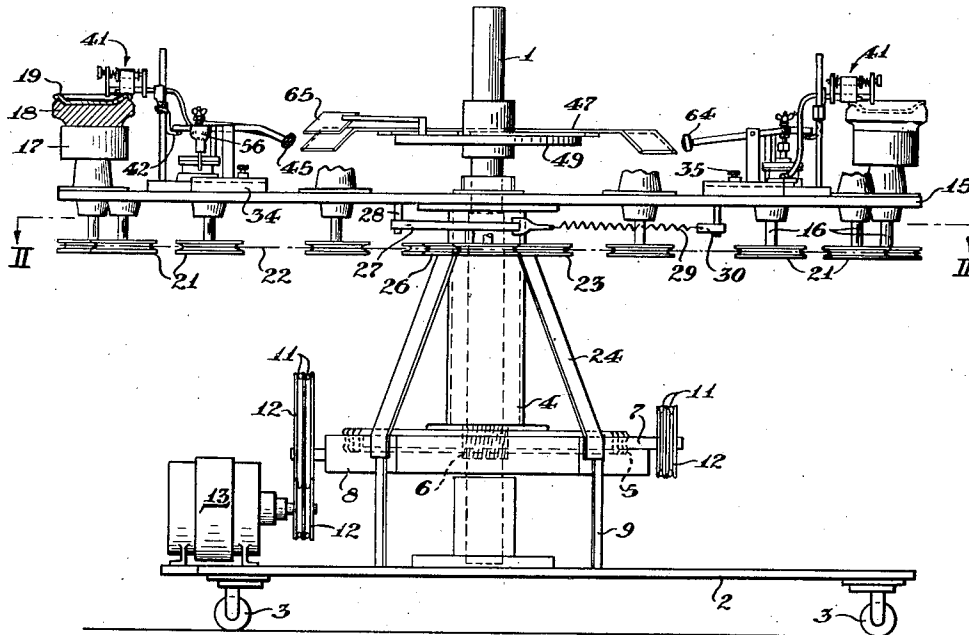


Fig. 1.

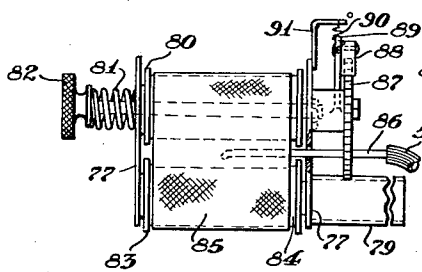


FIG. 7.

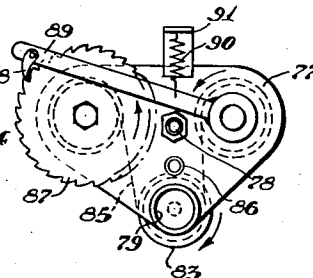


FIG. 8.

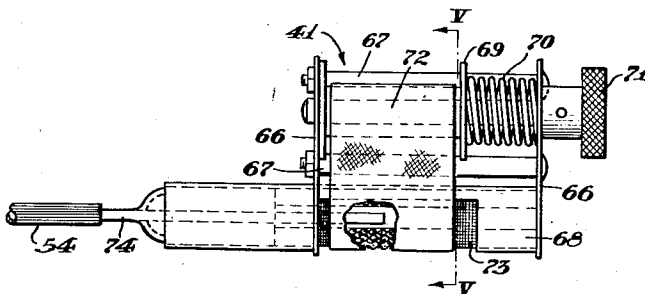


FIG. 4.

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4 Sheets-Sheet 2

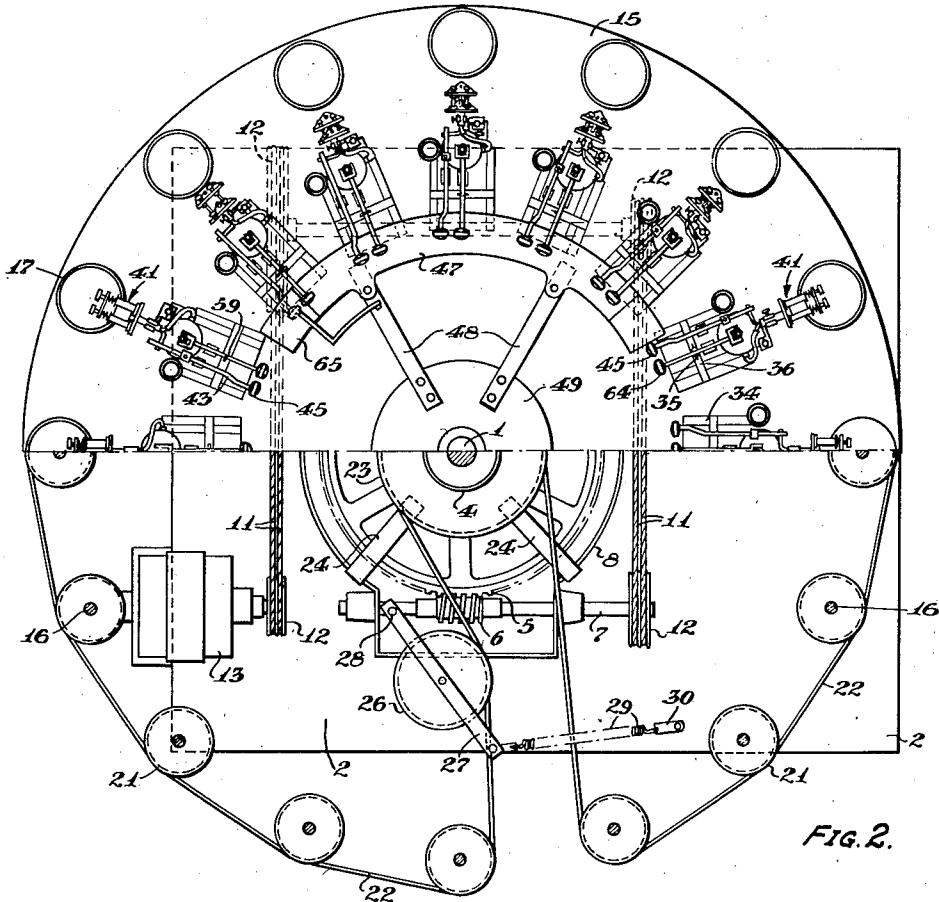


FIG. 2.

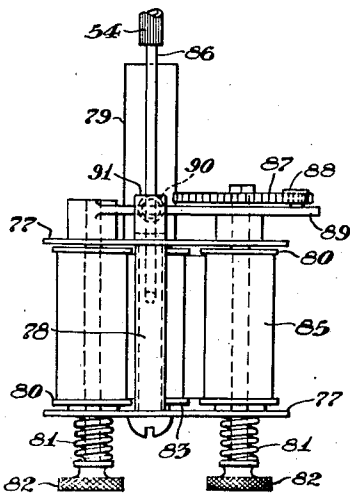


FIG. 6.

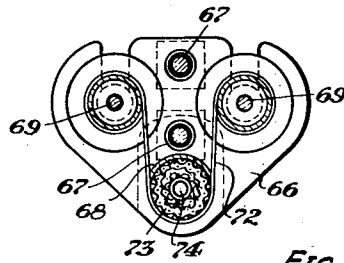


FIG. 5.

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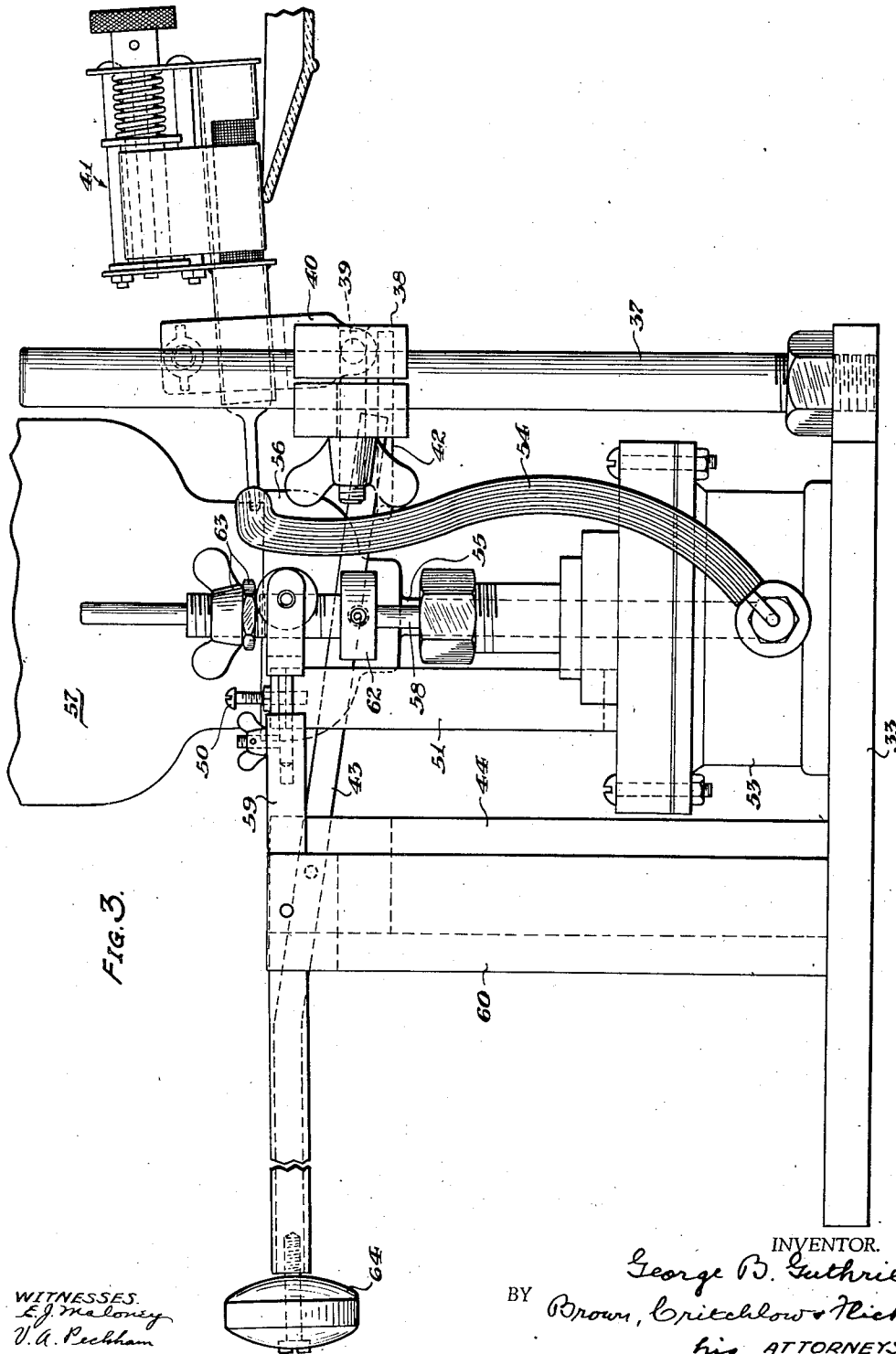
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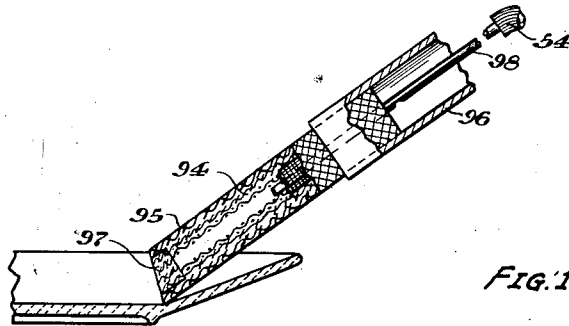


FIG. 10.

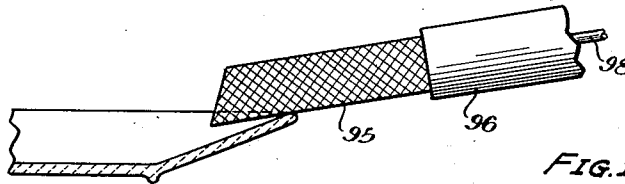


FIG. 11.

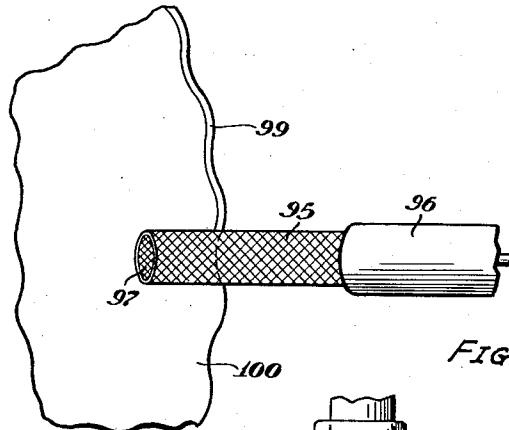
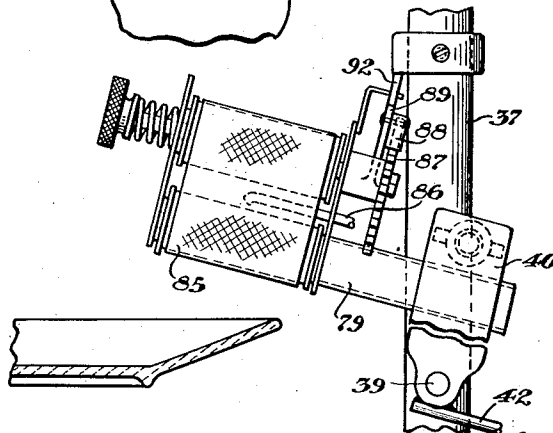


FIG. 12.

FIG. 9.



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UNITED STATES PATENT OFFICE

2,367,722

DINNERWARE DECORATING MACHINE

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Application February 11, 1943, Serial No. 475,503

35 Claims. (Cl. 91—12)

This invention relates to apparatus for decorating dinnerware and the like, and more particularly to apparatus for painting continuous or discontinuous lines on ware, usually near the edges.

A standard way of decorating china and semi-vitreous dinnerware is to paint a line around the edge of the ware in gold, silver, or any other color. Often a line is painted around the inner edge or verge of the shoulder of the ware, or even nearer to the center of the piece. The customary way of doing such lining has been to set the ware on a small rotatable table that is turned by the workman while he holds a paint brush against the rotating ware with a steady hand. It takes considerable skill to thus paint a line of uniform width and in proper relation to the edge of the ware, and the workers who do it are highly paid. Due to this and the inherent slowness of the hand process, this type of decoration is relatively expensive. To decrease the cost, it has been proposed to line dinnerware by mechanical means, but none of the apparatus suggested thus far has proved to be very successful. One of the chief difficulties has been the lack of a suitable applicator for painting the lines, especially when the ware is intentionally or unintentionally out of round as it often is. This problem is complicated by the difficulty of providing satisfactory means for continuously supplying coloring material to the applicator. Another shortcoming is that the known machines can not be operated fast enough to justify their taking the place of hand labor.

It is among the objects of this invention to provide dinnerware lining apparatus which has high capacity, which satisfactorily lines ware that is out of round or of irregular shape, which uses an applicator having a long life, which lines with either metallic or nonmetallic colors, which is automatic, and which is relatively simple in construction and operation.

In accordance with this invention a plurality of chucks with a color applicator adjacent each one are mounted on means by which they are continuously carried in an endless path. The chucks and applicators preferably are mounted in circumferentially spaced relation on a continuously revolving table. Each applicator is movable from inoperative to operative position in which it engages ware supported by the adjacent chucks, means being provided for moving the applicator from one position to the other. Each applicator preferably moves into operative position by force of gravity, but is removed therefrom by positive means such as a stationary cam

that is periodically engaged as the table rotates. Means for supplying color to the applicator is mounted on the table and may likewise be controlled by a cam in the same general way. While an applicator is engaging ware, relative movement is effected between the applicator and ware circumferentially of the latter, such as by rotating the supporting chuck. When the applicator is retracted, a decorated piece of ware is removed from the chuck and an unlined piece is placed therein.

Broadly, the applicator is in the form of a color-permeable supporting member engaged by color-absorbent material that has a color-applying surface considerably wider than the edge portion of the ware it engages during decorating so that the edge of non-circular ware will stay engaged without the applicator having to be moved radially of the ware. For applying color material in which the pigment is in solution or apparently so, the supporting member preferably is a hollow roll of copper or bronze gauze to one end of which the color is fed by the pump. In one form of applicator the material that forms the color-applying side surface of the applicator is fabric that is wrapped around the gauze roll, while a body of color-absorbent material at the free end of the roll can be used as a brush for applying a line to ware at a location spaced inwardly from its edge. For edge and verge lining the side of the applicator is used by projecting the applicator substantially radially across the edge of the ware. In another type of applicator a strip of fabric is pressed against the ware by means of a supporting member that extends across the strip. Suitable means, such as rollers, are provided for drawing the strip across the supporting member in order to renew the applying surface of the strip so that it will not wear through. The supporting member may be a stationary roll of color-permeable material to one end of which color is fed, or it may be another roller having a color-permeable surface on which the color is dropped. The last form is especially desirable when colors are used from which the pigments might be filtered by a roll of material that the colors must soak through.

The invention is illustrated in the accompanying drawings in which Fig. 1 is a side view of my decorating machine showing only two of the decorating devices and chucks so as to make the drawing clearer; Fig. 2 is a view that is half in plan and half in horizontal section taken on the line II—II of Fig. 1; Fig. 3 is an enlarged side view of one of the decorating devices; Fig. 4 is

a side view of one form of applicator; Fig. 5 is a transverse section taken on the line V—V of Fig. 4; Figs. 6, 7, and 8 are plan, side, and end views, respectively, of another form of applicator; Fig. 9 is a side view of an applicator raised from the ware; Fig. 10 is a side view, mostly in section, of a further type of applicator painting a line near the bottom of a plate; Fig. 11 is a side view of the same applicator painting an edge line; and Fig. 12 is a plan view of the applicator applying an edge line to ware having a scalloped edge.

Referring to Figs. 1 and 2 of the drawings, a vertical center post 1 is rigidly mounted on top of a bed plate 2 that may be provided with casters 3 so that it can readily be moved from one location to another. Rotatably mounted on the central portion of the post is a hollow shaft 4 to the lower end of which a worm gear 5 is rigidly connected. This gear is driven by a worm 6 on a horizontal shaft 7 journaled in the offset sides of an oil pan 8 encircling the gear. The pan is supported above the bed plate by legs 9 attached to both. Shaft 7 is driven by belts 11 and speed-reducing pulleys 12 from an electric motor 13 mounted on one end of the bed plate.

The center post is encircled by a large circular table 15 that is rigidly mounted on the upper end of the rotating hollow shaft. The table is provided at circumferentially spaced intervals near its periphery with vertical openings in which spindles 16 are journaled. The upper ends of the spindles carry recessed heads 17 in which chucks 18 of different sizes and shapes can be removably mounted for supporting pieces of dinnerware 19. The lower ends of the spindles carry pulleys 21 engaged by an endless belt 22 that extends around the table and then radially inwardly between two of the pulleys to form a loop around a stationary sheave 23 encircling hollow shaft 4 but spaced therefrom. This sheave is mounted on the upper end of some legs 24 connected at their lower ends to the oil pan. The belt is maintained tight by an idler pulley 26 that presses against one side of its radial loop, the pulley being pivotally connected to a lever 27 the inner end of which is pivoted to the bottom of the table at point 28. The outer end of the lever is connected by a coil spring 29 to a bracket 30 also mounted on the bottom of the table at the other side of the belt loop. It will thus be seen that as the table is rotated by motor 13, the swinging of the radial belt loop around the stationary sheave will tend to continuously shorten one side of the loop and lengthen the other side so that the belt is pulled across the small pulleys 21 which it thereby slowly rotates, thus rotating the spindles and the chucks above the table.

Mounted on the table between each head 17 and the center post is a decorating device that operates only on ware resting in the adjacent chuck. The base of each of these devices is a plate 33 that is adjustable radially of the table between guide bars 34 attached thereto. The plate is clamped in position by a thumb screw 35 threaded in a cross bar 36 that is attached at its ends to bars 34. Extending upwardly from the outer end of the plate is a post 37 on which a clamp 38 is adjustably mounted, as shown in Fig. 3. One side of this clamp is provided with a laterally projecting rod 39 (Figs. 3 and 9) extending through an opening in the lower end of a split clamp 40 that is oscillatable on the rod. The split upper end of the clamp is adapted to detachably grip the applicator 41 which will be described later.

Secured to the lower end of clamp 40 and projecting inwardly over base plate 33 is an L-shape rod 42 that is held up against the bottom of the outer end of a lever 43 by the weight of the applicator. This lever is pivoted to the top of a short post 44 mounted on the base plate, and the inner end of the lever carries a roller 45 (Figs. 1 and 2). The roller periodically engages and is lifted by an arcuate cam 47 supported above the table by means of horizontal braces 48 that connect it to a collar 49 rigidly mounted on the center post. When the inner end of the lever is raised in this manner by the cam, its outer end presses down upon the L-shape rod 42 and thus tilts the applicator up away from the adjacent chuck. When roller 45 runs off the end of the cam, the applicator swings down into engagement with the edge of a piece of ware resting on the chuck. The pressure with which the applicator engages the ware is limited by a stop screw 50 threaded in a bracket 51 in position to be struck by the rising outer end of the lever.

Also mounted on base plate 33 is a metering device, such as a small pump 53 the outlet of which is connected by a flexible hose 54 to the applicator. Bracket 51 is supported by this pump. The pump inlet is connected by a pipe 55 to the bottom of a threaded cup 56 that is adapted to receive the threaded neck of an inverted bottle 57 of ceramic color. Projecting from the top of the pump is a vertically reciprocable rod 58 that operates the pump piston, and this rod is actuated by a lever 59 pivoted on a short post 60 on the base plate. The outer end of this lever is bifurcated and straddles the pump rod which is provided with a collar 62 that the lever presses against to depress the rod. Above this collar the rod is threaded and provided with vertically adjustable jam-nuts 63 that the lever engages to raise the rod. These nuts permit the stroke of the rod, and consequently its output, to be varied. The inner end of pump lever 59 carries a roller 64 that is raised when it rolls along the cam 47. As the roller starts to leave the cam it is forced down by a fixed depressing cam 65 (Fig. 1) that is mounted above the exit end of the main cam. As is obvious from Fig. 1 of the drawings, the inclination of cam 65 and the exit end of cam 47 is such that roller 45 is gradually moved downwardly as it leaves the cams, whereby the movement of the applicator toward the ware is controlled so that it will first engage the ware lightly and then gradually increase its pressure against the ware, instead of suddenly striking it with force and thus smearing the decoration. If desired, separate cams may be provided for the two levers 43 and 59, and the applicator cam may be formed to raise and lower the applicator so that a broken line will be painted by it.

Three different applicators are illustrated in the drawings, all being formed for attachment to the decorating device just described. The first form, shown in Figs. 1 to 5, is intended primarily for lining with gold and silver paint. The applicator includes a pair of triangular end plates 66 that are held in spaced parallel relation by spacing members 67, and by a metal tube 68 at their bottoms. This tube extends through one of the plates and beyond it far enough to be gripped in clamp 40 of the decorating device by which the applicator is thus supported. Journaled in the upper portions of the end plates is a pair of laterally spaced rollers 69 that are spaced from the outer plate by coil springs 70 encircling their shafts to urge the rollers against the inner plate

so that they will not turn too easily. The projecting outer ends of the roller shafts are provided with knobs 71 for turning the rollers by hand when desired. A strip 72 of color-absorbent material, preferably a lintless fabric like nylon, is wound on the two rollers with its intermediate portion passing under supporting tube 68. As shown in Figs. 4 and 5, a stiff hollow roll 73 of color-permeable material, such as copper or bronze gauze, is housed in the tube the lower portion of which is cut away so that the gauze is exposed and engages the fabric strip. Color from pump 53 is supplied to the hollow roll through a small tube 74 connected to flexible hose 54 and extending into tube 68 and the wire roll. The small tube is sealed into the inner end of tube 68 in any suitable manner. An operator of the decorating machine periodically turns one of the knobs 71 in order to wind the fabric strip from one roller to the other so as to renew the surface that is presented to the ware being lined. Or, this may be done automatically in some such manner as will be described in connection with the next embodiment of the invention.

The form of applicator shown in Figs. 6 to 9 can be used for lining with colors the pigments of which might be filtered out by the gauze roll 73 of Fig. 4. In the present embodiment, a pair of triangular end plates 77 are held in spaced parallel relation by a spacing member 78. Projecting outwardly from the bottom of one of the plates is a short rod or tube 79 that is adapted to be held in clamp 40 of the decorating device, as shown in Fig. 9. A pair of laterally spaced rollers 80 are journaled in the upper portions of the end plates and have projecting shafts encircled by springs 81 compressed between the adjoining end plate and knobs 82 on the shafts for restraining rotation of the rollers. Journaled in the bottoms of the two plates between the upper rollers is a third roller 83 that is covered with a layer 84 of fabric or other suitable color-permeable material. A color-absorbent strip 85 is wound on the two upper rollers with its intermediate portion passing under the lower roller in order to receive color therefrom and to apply it to the ware. The color is applied to the lower roller in drops from the end of a small tube 86 mounted in the inner end plate and extending from the flexible tube 54 of the pump to a point over the center of the lower roller. Although the upper rollers may be periodically rotated manually by turning knobs 82, in order to wind strip 85 from one of them to the other, it is preferred to do it by a ratchet wheel 87 rigidly mounted on the projecting inner end of a shaft of one of the upper rollers. This wheel is turned by a dog 88 pivotally mounted on the free end of a lever 89 that is oscillatably mounted on the projecting shaft of the other upper roller. The lever is normally held in raised position by a coil spring 90 suspended from a bracket 91 attached to the end plate. The lever is swung downwardly, to cause the dog to engage and turn the ratchet wheel, by any suitable means, such as by a finger 92 (Fig. 9) projecting laterally from post 37 and engaged by the free end of the lever every time the applicator is tilted upwardly by lever 43.

The third type of applicator, shown in Figs. 10, 11, and 12, is less complicated as it is more in the form of a pencil or brush. It consists of a hollow roll of wire gauze 94 or the like wrapped in several layers of a suitable fabric 95 and inserted tightly at one end in a rigid tube 96 that can be

fastened in the split clamp 40 of the decorating device. The fabric covering projects beyond the outer end of the wire roll to form a cup in which a fabric roll or plug 97 is mounted. Color is supplied to this applicator by a small tube 98 extending from the inside of the hollow roll out through supporting tube 96 to the flexible hose 54 connected to the pump. The advantage of this particular applicator is that the edge of its outer end can be used for painting continuous or discontinuous lines on ware in positions where they could not be painted by the side of the applicator. Thus, as shown in Fig. 10, a line can be applied near the center of a plate by using the end of the applicator. In Fig. 11 the side of the applicator is used for painting an edge line in the same manner as the other two applicators. It will be observed that in every case the applicator is disposed substantially radially of the ware.

An advantage of all of my applicators is that they paint lines in the right places even though the ware may unintentionally be out of round, intentionally oval, or have irregular or scalloped edges as shown in Fig. 12. The line will follow the edge of the ware in such cases because the color-applying surfaces of the applicators are considerably wider than the narrow portion of the ware being lined. Therefore, the edge of the ware may move back and forth along the stationary applicator without leaving it or changing the width of the line it is painting. This is illustrated in Fig. 12 where the applicator paints a wavy line 99 that follows the scalloped edge of the ware 100.

Summarizing the operation of the machine disclosed herein, chucks 18 of the kind necessary to support the ware that is to be decorated are placed in the heads 17. Bottles containing the desired color are connected to the cups 56 of the decorating devices, the latter are adjusted radially of the table, and clamps 38 and 40 are adjusted to correctly position the applicators for lining. Stop screws 50 also are adjusted so that the applicators will bear against the ware with just the right amount of pressure. However, if some ware happens to be a little high or uneven, the applicators are free to rise with the ware because they are held in operative position only by gravity. Pump levers 59 are operated a few times by hand, or the table is rotated a few times without any ware on it, in order to start pumping color from the bottles 57 to the applicators.

Motor 13 is then started in operation and the table is thereby set in motion. As cam follower rollers 45 travel along cam 47 they cause levers 43 to swing the applicators up away from the chucks, and it is at that time that a piece of ware is placed in each successive chuck. When any given decorating device leaves the cam, its applicator swings down into contact with the piece of ware mounted on the constantly rotating associated chuck. The rotating ware in rubbing against the adjoining applicator receives a line of color around its edge or verge. By providing a cam with vertical waves the applicator will be periodically lifted from the ware and a broken line thus produced. By the time the table has returned the ware to the cam the ware is lined satisfactorily and is removed by the operator from its chuck and its place filled by an unlined piece. The drawings show a machine having only one cam 47, but it will be understood that with a sufficient number of heads the production of the machine can be doubled by placing another cam

diametrically opposite to the one shown, and loading and unloading at both cams. The lining will then taken place between the cams.

The high capacity of this machine is due in part to the continuous rotation of the table, rather than step by step movement thereof, and this in turn is due to the decorating devices being carried along by the table with a separate applicator for each head.

According to the provisions of the patent statutes, I have explained the principle and operation of my invention and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

1. Apparatus for decorating the edges of dinnerware, comprising a movable applicator in the form of color-absorbent material having a color-applying surface, and a supporting member engaging said material for pressing said color-applying surface against the edge of ware being decorated, said color-applying surface being considerably wider than the edge portion of the ware it engages during decorating, said supporting member being provided with means for distributing color on said material, means connected to said supporting member for moving the applicator out of contact with the ware, a pump for supplying color to said distributing means for distribution thereby on said material, means for operating the pump, and means for adjusting the stroke of the pump.

2. A device for painting a line on the edge of an article of dinnerware, said device comprising an applicator in the form of a strip of color-applying material and means extending across the strip for pressing it against the edge of said article, means supplying color to the applicator, means for effecting relative movement between the applicator and ware circumferentially of the latter, and means for drawing the strip across said pressing means.

3. A device for painting a line on the edge of a rotating article of dinnerware, said device comprising a strip of fabric, color-permeable means extending across the strip for pressing it against the edge of said article, means supplying color to said first-mentioned means, means for rotating said article, and means for periodically drawing the strip across said color-permeable means.

4. A device for painting a line on the edge of a rotating article of dinnerware, said device comprising a strip of fabric, rotatable color-permeable means extending across the strip for pressing it against the edge of said article, means for moving said strip and color-permeable means as a unit away from the ware, means for supplying color to said rotatable means, and automatically actuated means operative when said unit is separated from the ware for drawing the strip across said rotatable means.

5. A device for painting a line on the edge of an article of dinnerware, said device comprising an applicator in the form of a strip of fabric wound on a pair of laterally spaced rollers with a supporting member extending across said strip between the rollers for pressing it against the edge of said article, means for supplying color to the applicator, means for effecting relative movement between the applicator and the ware circumferentially of the latter, and means for

rotating said rollers to draw the strip across said supporting member.

6. A device for painting a line on the edge of an article of dinnerware, said device comprising an applicator in the form of a strip of fabric wound on a pair of laterally spaced rollers with a third roller extending across the intermediate portion of said strip for pressing it against the edge of said article, means for supplying color to the applicator, means for effecting relative movement between the applicator and ware circumferentially of the latter, and means for rotating said pair of rollers to draw the strip across said third roller.

7. A device for painting a line on the edge of an article of dinnerware, said device comprising an applicator in the form of a strip of color-applying material and means extending across the strip for pressing it against the edge of said article, means supplying color to the applicator, means for effecting relative movement between the applicator and ware circumferentially of the latter, means for retracting the applicator from the ware, and means in the path of the retracting applicator and operatively connected to said strip for drawing the strip across said pressing means as the applicator moves away from the ware.

8. A lining machine for dinnerware, comprising a plurality of ware-receiving chucks, a color applicator mounted adjacent each chuck and movable from inoperative position to operative position against ware supported by said chuck, said applicator also being movable from operative to inoperative position, means for moving each applicator away from the ware from operative to inoperative position, means for effecting relative movement between each applicator and adjacent chuck supported ware circumferentially of the latter to decorate said ware, and supporting means for continuously moving said chucks and applicators in an endless path.

9. A lining machine for dinnerware, comprising a plurality of ware-receiving chucks, a color applicator mounted adjacent each chuck and movable from inoperative position to operative position against ware supported by said chuck, said applicator also being movable from operative to inoperative position, means for effecting relative movement between each applicator and adjacent chuck supported ware circumferentially of the latter to decorate said ware, supporting means for continuously moving said chucks and applicators in an endless path, and mechanism controlled by the movement of said supporting means for moving each applicator away from the ware.

10. A lining machine for dinnerware, comprising a plurality of ware-receiving chucks, a color applicator mounted adjacent each chuck and movable from inoperative position to operative position against ware supported by said chuck, said applicator also being movable from operative to inoperative position, means for effecting relative movement between each applicator and adjacent chuck supported ware circumferentially of the latter to decorate said ware, supporting means for continuously moving said chucks and applicators in an endless path, a stationary cam, and mechanism operatively connected to said applicators and adapted to be periodically actuated by said cam for moving each applicator away from the ware.

11. A lining machine for dinnerware, comprising a plurality of ware-receiving chucks, a color applicator mounted adjacent each chuck and

movable from inoperative position to operative position against ware supported by said chuck, said applicator also being movable from operative to inoperative position, supporting means for continuously moving said chucks and applicators in an endless path, means for effecting relative movement between each applicator and adjacent chuck supported ware circumferentially of the latter to decorate said ware, means controlled by the movement of said supporting means for supplying color to the applicators, and mechanism controlled by the movement of said supporting means for moving each applicator away from the ware.

12. A lining machine for dinnerware, comprising a plurality of ware-receiving chucks, a color applicator mounted adjacent each chuck and movable from inoperative position to operative position against ware supported by said chuck, said applicator also being movable from operative to inoperative position, supporting means for continuously moving said chucks and applicators in an endless path, means for effecting relative movement between each applicator and adjacent chuck supported ware circumferentially of the latter to decorate said ware, mechanism controlled by the movement of said supporting means for moving each applicator away from the ware, a pump for supplying color to said applicators, a stationary cam, and means operatively connected to the pump and adapted to be periodically actuated by said cam for operating the pump.

13. A lining machine for dinnerware, comprising a plurality of ware-receiving chucks, a color applicator mounted adjacent each chuck and movable from inoperative position to operative position against ware supported by said chuck, supporting means for continuously moving said chucks and applicators in an endless path, means for effecting relative movement between each applicator and adjacent chuck supported ware circumferentially of the latter to decorate said ware, said applicators being movable by gravity into contact with ware supported by said chucks, and means for removing the applicators from said ware.

14. A lining machine for dinnerware, comprising a rotatable horizontal support, means for continuously rotating said support, a plurality of circumferentially spaced ware-receiving chucks mounted on the support, a color applicator mounted on the support adjacent each chuck, means for effecting relative movement between each applicator and adjacent chuck supported ware circumferentially of the latter, a stationary cam adjacent said support, and means operatively connected to said applicators and adapted to engage and be actuated by said cam during each revolution of said support for moving the applicators out of contact with ware supported by said chucks.

15. A lining machine for dinnerware, comprising a vertical post, a table rotatably mounted thereon, means for continuously rotating the table, a plurality of circumferentially spaced ware-receiving chucks rotatably mounted on the table, a pulley operatively connected to each chuck for rotating it, a sheave encircling said post and rigidly mounted in fixed position, an endless belt engaging all of the pulleys and having a loop extending inwardly between two of them and around said sheave, a color applicator mounted on the table beside each chuck and movable from inoperative position to operative

position against ware supported by the chuck, said applicator also being movable from operative to inoperative position, and mechanism for moving each applicator away from the ware.

16. A lining device for decorating the edges of dinnerware, said device comprising an applicator in the form of color-absorbent material having a color-applying surface, and a supporting member engaging said material for pressing said color-applying surface against the edge of ware being decorated, said color-applying surface being considerably wider than the edge portion of the ware it engages during decorating, whereby the edge of non-circular ware will stay engaged without the applicator having to be moved radially of the ware, said supporting member being provided with means for distributing color on said material, means for effecting relative movement between the applicator and said engaged ware circumferentially of the latter, and means supplying color to said distributing means for distribution thereby on said material.

17. A lining device for decorating the edges of dinnerware, said device comprising a color-receiving supporting member provided at its side with means for distributing color, color-absorbent fabric engaging said means at the side of said member to receive color therefrom and to produce a color-applying surface adapted to be pressed by said member against an article of dinnerware, means for effecting relative movement between said member and said article circumferentially of the latter, and means for supplying color to said member.

18. A lining device suitable for decorating dinnerware, said device comprising an elongated color-permeable hollow supporting member provided around its outer surface with color-distributing means, color-absorbent material wrapped around said member in engagement with said means to form a color-applying side surface adapted to be pressed by said member against an article of dinnerware, means for effecting relative movement between said member and said article circumferentially of the latter, means for supplying color to one end of said member, and a body of color-absorbent material connected to the opposite end of said member to form a color-applying end.

19. A lining device suitable for decorating dinnerware, said device comprising an elongated color-permeable hollow supporting member provided around its outer surface with color-distributing means, color-absorbent material wrapped around said member in engagement with said means to form a color-applying side surface adapted to be pressed by said member against an article of dinnerware, means for effecting relative movement between said member and said article circumferentially of the latter, means for supplying color to one end of said member, said material at the opposite end of said member projecting beyond it to form a cup, and a plug of color-absorbent material disposed in said cup, whereby a color-applying end surface is formed.

20. A lining device for painting lines on dinnerware, said device comprising a stiff roll of wire gauze, means for supplying color to one end of the roll, color-absorbent material wrapped around said roll to form a color-applying surface adapted to be pressed against the edge of an article of dinnerware, and means for effecting relative movement between said roll and said article circumferentially of the latter to line its edge.

21. A lining device for painting edge and verge

lines on an article of dinnerware, said device comprising a stiff hollow roll of wire gauze, a color-supplying tube projecting into said hollow roll, fabric wrapped around the roll for absorbing said color and forming a color-applying surface adapted to be pressed against the edge of an article of dinnerware, and means for effecting relative movement between said roll and said article circumferentially of the latter.

22. A lining device for painting edge and verge lines on dinnerware, said device comprising a stiff roll of wire gauze, fabric wrapped around said roll and projecting beyond one end of it to form a cup, a fabric plug mounted in said cup, means for supplying color to the opposite end of the roll for lining ware engaged by said fabric, and means for effecting relative movement between said roll and said engaged ware circumferentially of the latter.

23. A device for painting a line on the edge of an article of dinnerware, said device comprising a pair of laterally spaced rollers, a strip of fabric wound on said rollers, a roll of wire gauze extending across the strip between the rollers for pressing it against the edge of said article, means for feeding color to one end of said roll, means for effecting relative movement between said roll and said article circumferentially of the latter for lining said edge, and means for rotating said rollers to draw the strip across said roll.

24. A device for painting a line on the edge of an article of dinnerware, said device comprising a pair of laterally spaced rollers, a strip of fabric wound on said rollers, a tube extending across the strip between the rollers and provided with an opening in the side facing the strip, a roll of color-permeable material in said tube engaging said strip through said opening and adapted to press the strip against the edge of an article of dinnerware, means for effecting relative movement between said tube and said article circumferentially of the latter, means for supplying color to one end of said tube, and means for rotating said rollers to draw the strip across said roll.

25. A lining machine for dinnerware comprising a horizontal table, means for rotating the table continuously, a plurality of circumferentially spaced ware-receiving chucks rotatably mounted on the table, means for rotating the chucks, a base member mounted on the table beside each chuck and being slidable radially of the table, a color applicator mounted on each base member and movable relative thereto into contact with ware supported by the adjacent chuck, means mounted on each base member for supplying color to the applicator on the same base member, and means for moving each applicator relative to its base member in a direction away from said ware.

26. A lining machine for dinnerware comprising a horizontal table, means for rotating the table continuously, a plurality of circumferentially spaced ware-receiving chucks rotatably mounted on the table, means for rotating the chucks, a color applicator above each chuck and biased downwardly toward ware on the chuck, and a cam for lifting the applicator from the ware and for controlling the initial pressure of the applicator against the ware.

27. A lining machine for dinnerware, comprising a rotatable horizontal support, means for continuously rotating said support, a plurality of circumferentially spaced ware-receiving chucks mounted on the support, a color applicator mounted on the support adjacent each chuck, means

for effecting relative movement between each applicator and adjacent chuck-supported ware circumferentially of the latter, actuating means adjacent said support, and means operatively connected to said applicators and adapted to be actuated by said actuating means during each revolution of said support for moving the applicators out of contact with ware supported by said chucks.

28. A lining machine for dinnerware, comprising a vertical post, a table rotatably mounted thereon, means for continuously rotating the table, a plurality of circumferentially spaced ware-receiving chucks rotatably mounted on the table, means for rotating the chucks, a stationary arcuate cam supported by said post above the table and extending part way around the post, a color applicator mounted on the table beside each chuck and movable into contact with ware supported by the chuck, means mounted on the table beside each chuck for supplying color to the adjacent applicator, an operating lever operatively connected to each color-supplying means and adapted to periodically engage said cam, and a lever operatively connected to each applicator and adapted to periodically engage said cam for removing the applicator from ware it has lined.

29. A lining machine for dinnerware, comprising a vertical post, a table rotatably mounted thereon, means for continuously rotating the table, a plurality of circumferentially spaced ware-receiving chucks rotatably mounted on the table, a pulley operatively connected to each chuck for rotating it, a sheave encircling said post and rigidly mounted in fixed position, an endless belt engaging all of the pulleys and having a loop extending inwardly between two of them and around said sheave, a color applicator mounted on the table beside each chuck and movable from inoperative position to operative position against ware supported by the chuck, and cam-operated means for moving each applicator from operative position to inoperative position after lining each piece of ware.

30. A dinnerware decorating machine comprising a continuously rotating table, a plurality of ware-supporting rotating chucks mounted thereon, a movable color applicator mounted on the table adjacent each chuck for engaging the edge of ware on the chuck, means on the table for feeding color to said applicator, and mechanism for actuating the applicators and color-feeding means while the table is rotating, whereby to feed color to the applicators and to remove each applicator from the adjoining ware as soon as decoration of the latter has been completed.

31. A dinnerware decorating machine comprising a continuously rotating table, a plurality of ware-supporting rotating chucks mounted thereon, a movable color applicator mounted on the table adjacent each chuck for engaging the edge of ware on the chuck, actuating means connected to the applicators, pumps on the table for feeding color to the applicators, actuating means connected to the pumps, and stationary cam means adapted to be engaged by said actuating means for operating them.

32. Apparatus for decorating the edges of dinnerware, comprising a plurality of color-applicators, means for supplying color to the applicators, means adjacent each applicator for rotatably supporting a piece of ware, said applicators being movable into and out of contact with ware on said supporting means, means for controlling the length of time each applicator is in contact

with the ware, the ware-engaging surface of each applicator being materially wider than the portion of the ware engaged thereby, carrier means for supporting said applicators and ware-supporting means, and means for continuously driving said carrier means for moving said applicators and ware-supporting means in an endless path.

33. Apparatus for decorating the edges of dinnerware, comprising a plurality of supports for pieces of ware, means for rotating each support on its own axis, a color-applicator above each support and biased downwardly toward ware thereon, means for supplying color to the applicators, the ware engaging surface of each applicator being materially wider than the decoration made thereby, automatic means for successively lifting each applicator from the ware after engagement therewith for a predetermined interval, carrier means for supporting said applicators and ware-supporting means, and means for continuously driving said carrier means for moving said ware supports and applicators in an endless path.

34. A lining machine for dinnerware, comprising a plurality of ware-receiving chucks, a color-

applicator mounted adjacent each chuck and movable into and out of engagement with ware carried thereby, means for rotating the chucks to rub the ware mounted thereon against the applicators to decorate the ware, and supporting means for said chucks and applicators for continuously moving them in an endless path.

35. Apparatus for painting lines on the edges of dinnerware comprising means for carrying and rotating a piece of ware, a support adjacent said means, an applicator movably and adjustably mounted on said support and having a color-applying surface for engaging the edge portion of the rotating ware, means for supplying color to said surface, said surface being considerably wider than the line it paints on the ware whereby non-circular and off-center ware will stay engaged by said surface, and the applicator being biased against the ware and freely movable toward and away from said ware-carrying means to insure proper engagement with a rising and falling edge portion of the ware, and means for periodically separating said applicator from the ware.

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