Oct. 6, 1953 J. K. O'HARE 2,654,313

MACHINE FOR DECORATING ARTICLES SUCH AS CUPS, PITCHERS, BOWLS, AND THE LIKE

Filed Sept. 24, 1949 3 Sheets-Sheet 1

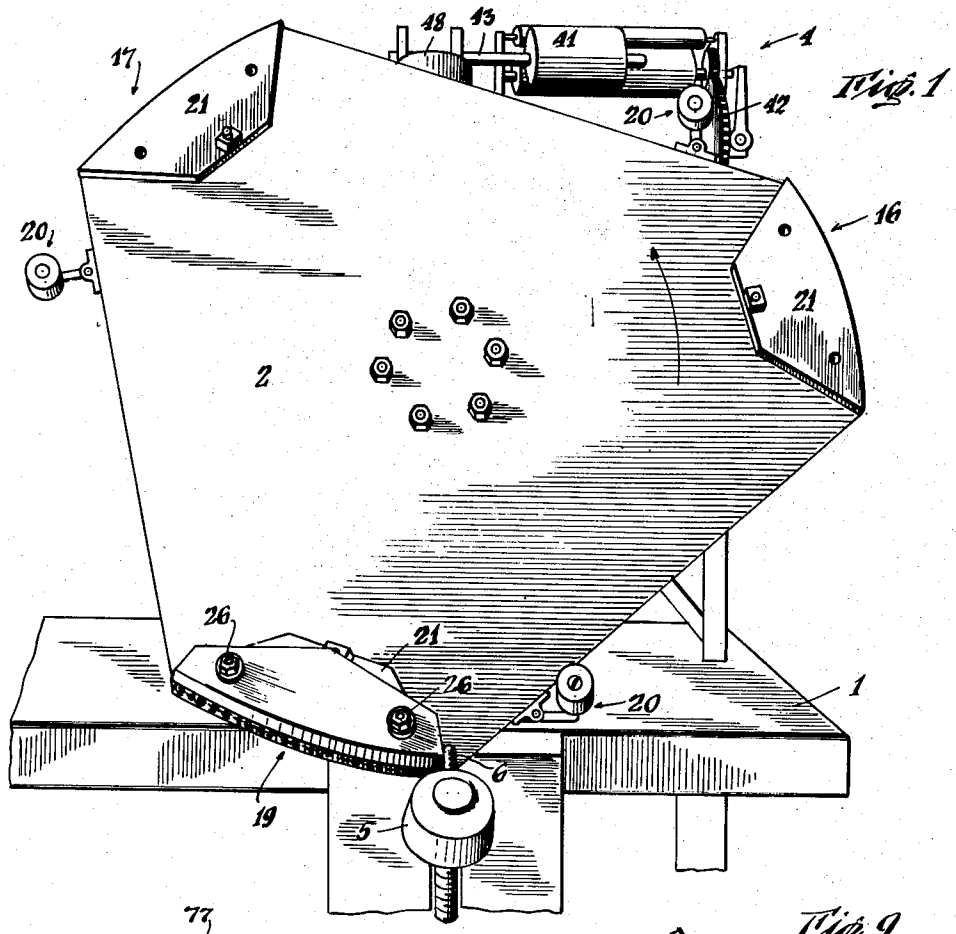


Fig. 1

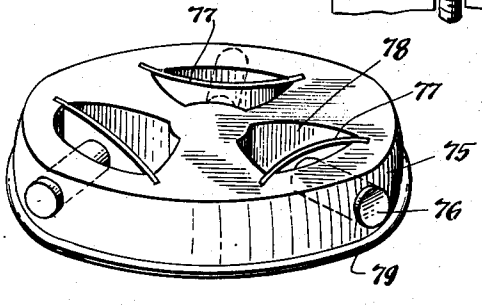


Fig. 8

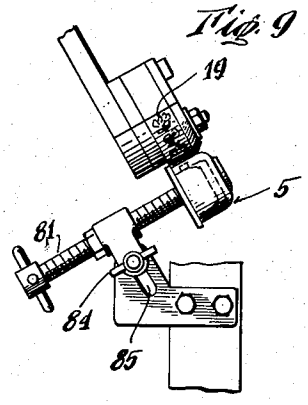


Fig. 9

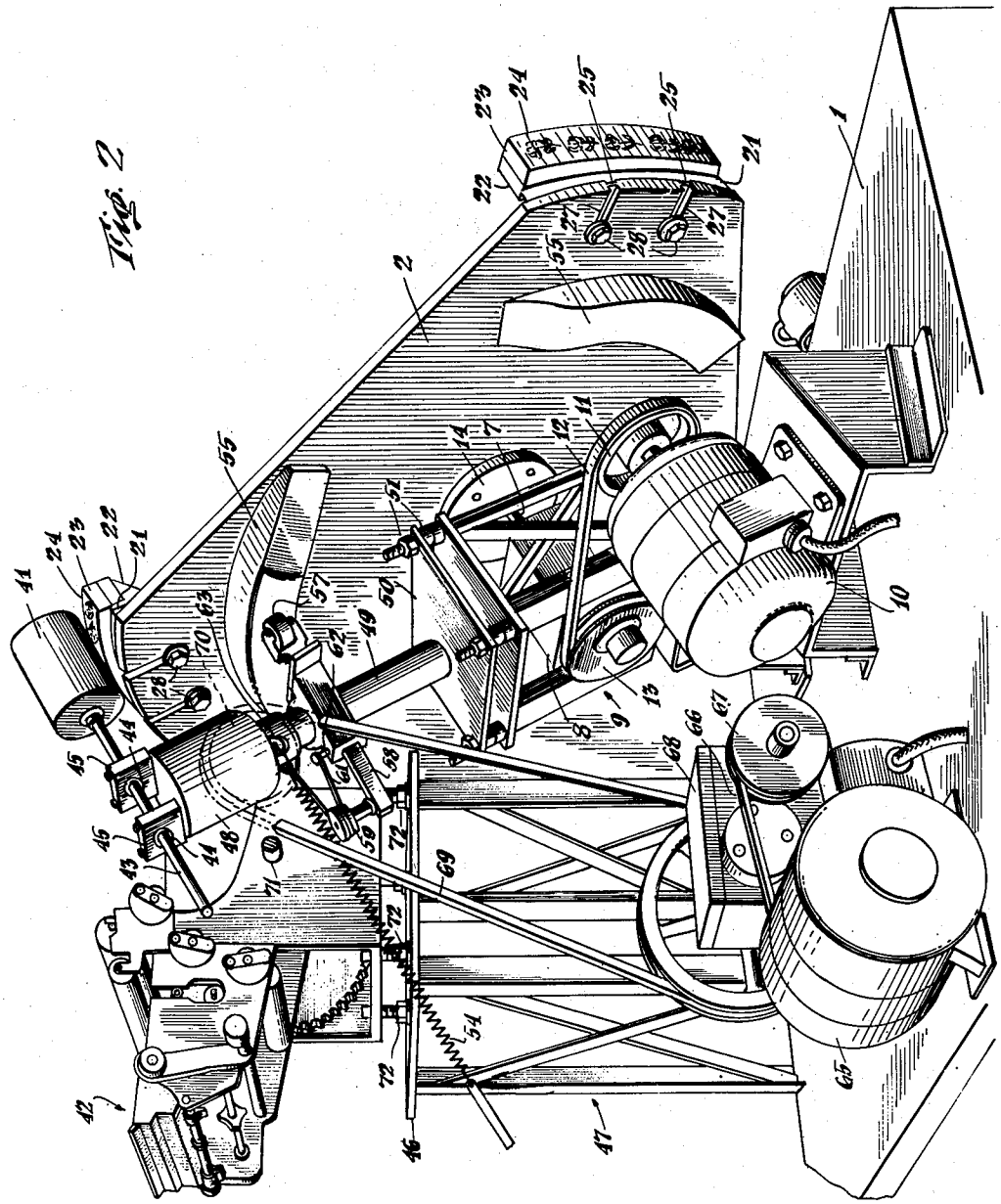
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Fig. 2



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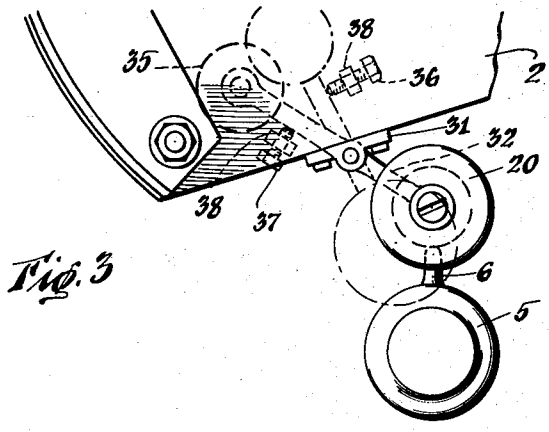


Fig. 3

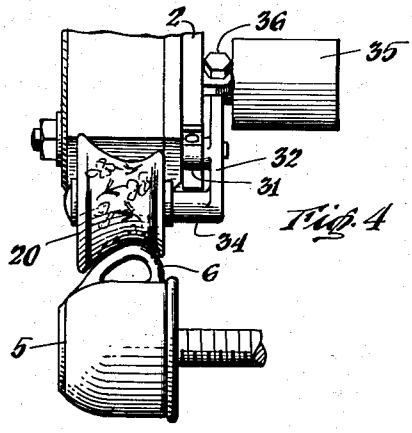


Fig. 4

Fig. 6

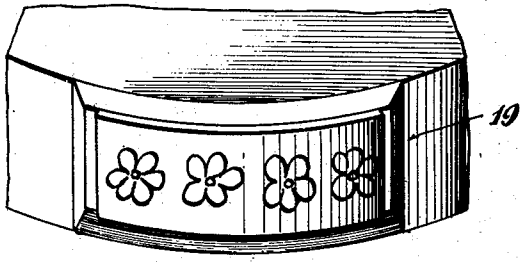


Fig. 5

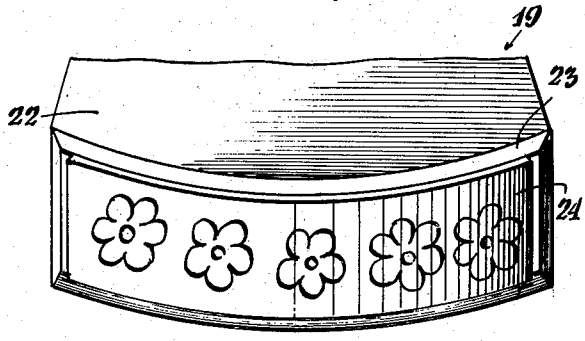
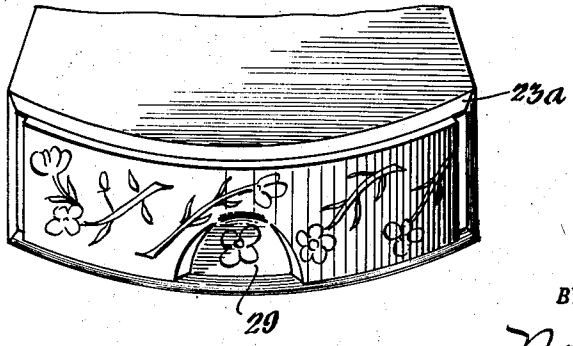


Fig. 7



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MACHINE FOR DECORATING ARTICLES SUCH AS CUPS, PITCHERS, BOWLS, AND THE LIKE

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Application September 24, 1949, Serial No. 117,611

10 Claims. (Cl. 101—38)

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The present invention relates generally to decorating machines and more particularly to a machine for applying decorations to either the body or handle portions, or to both the handle or body portions of articles such as cups, pitchers, bowls, and the like.

The appearance of table ware is greatly enhanced by providing it with decorations or designs of different color than that of the underlying article. For example, a normally plain white or cream colored surface of an article may be greatly improved by decorating it with a blue, green, or other colored floral design. Applying such decorations by hand or manually is slow and tedious and necessitates that the ware be sold at prohibitive prices. In spite of this various hand stamping operations and the like have been utilized extensively in applying colored designs or decorations to curved, bulged, or cylindrical articles such as cups, soup bowls, pitchers, sugar bowls. While various machines have been devised in attempting to produce greater quantities of the latter mentioned types of decorated ware many of them have, for various reasons, never gone into general commercial use. Some previous machines have been too complicated and expensive to construct and maintain, others have not printed a sufficiently clear or well defined design on an article, others have decorated only a small part of the article at a time, and with still others the rate of production of clearly imprinted or decorated ware has not been sufficiently great.

In view of the fact that such articles are sold in a high competitive market the cost of decorating them must be kept as low as possible. The present invention aims to provide a relatively simple and inexpensive machine adapted to form clearly defined colored decorations or designs on articles at a rapid rate. The machine is adapted for use in decorating both handle and body portions of handled articles or either of those portions alone. The invention contemplates the provision of improved means for holding the article to be decorated, new and improved mechanism and means for decorating various surface portions of the held articles, and improved means for getting a coloring material or ink from a supply to the decorating means.

An object of the present invention is to provide a relatively simple, inexpensive and improved decorating machine.

Another object of the invention is to provide a decorating machine which includes new and improved means for placing ink or coloring materials on a decorating stamp of the machine.

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Another object of the invention is to provide a decorating machine embodying an improved article holding means.

Another object is to provide new and improved means for decorating handle portions of articles such as cups, pitchers, bowls, etc.

Another object is to provide a machine for decorating articles which requires minimum preliminary skill or training on the part of an operator.

Still another object is to provide a machine for decorating the exterior surfaces of curved articles which is foolproof in operation.

A still further object of the invention is to provide a machine for more rapidly and efficiently decorating hollow articles having curved, inclined, or bulged exterior surfaces.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

A preferred embodiment of the invention has been chosen for purposes of illustration and description and is shown in the accompanying drawings, forming a part of the specification, wherein:

Fig. 1 is a perspective view showing the front of the present machine;

Fig. 2 is a perspective view showing the rear of the machine illustrated in Fig. 1;

Fig. 3 is a fragmentary view illustrating more particularly a handle decorating portion of the present machine;

Fig. 4 is a side view of the handle decorating portion of the machine illustrated in Fig. 3;

Fig. 5 is a perspective view showing a decorating stamp adapted to form a decoration or designs on articles having a single handle portion;

Fig. 6 is a perspective view of a stamp adapted to apply a decoration to the surfaces of articles having two handle portions;

Fig. 7 is a perspective view of a stamp adapted to print a decoration on an article such as a pitcher having a projecting handle and a projecting spout;

Fig. 8 is a perspective view showing an article holding means of the present machine; and

Fig. 9 is a fragmentary side elevational view showing one form of means for adjustably supporting the article holding means illustrated in Fig. 8.

Described generally the present invention in-

cludes (Figs. 1 and 2) a supporting table 1 upon which is mounted a rotatable stamp supporting means or "disc" 2 that carries a plurality of decorating stamps or sets of decorating stamps at spaced intervals. As the stamp support means 2 rotates, the stamps or sets of stamps move successively toward and past a device or mechanism 4 which supplies suitable coloring or inking material to the design forming surfaces of the stamps. After being thus inked or colored the stamps are carried toward an article 5 retained by the holding means shown adjacent the lower part of the stamp supporting means or disc 2. The stamps are so positioned on the support means 2, with respect to an article 5, that when the exterior body portion of the article is to be decorated the decoration-applying portions of the stamps come into contact with the surface of the article and rotate it on its holder or spindle concurrently with movement of the stamp.

As shown in Fig. 1 the projecting handle portion of a cup is disposed so as to be contacted by a leading edge of a body stamp 19 carried by the stamp supporting member 2. The lengths of the body stamps 19 are such as to form a decoration over an appropriate length of the cup or other article held on the supporting spindle. As the body stamp 19 moves past an article 5 it simultaneously rotates the article on its supporting holder or spindle at the same speed of movement as the stamp and as a result a decoration is applied in the straight line about the exterior surface of the article. After a stamp has thus decorated the exterior surface of an article the article may be lifted from its holder and replaced by another prior to the next succeeding stamp reaching the article holder. In this manner each stamp or set of stamps decorates a single article, a fresh or undecorated article being placed on the holder during non-decorating intervals. The flattened or cut away portions of the supporting "disc" 2 intermediate the decorating stamps facilitate application of articles to and their removal from the holder or spindle during the non-decorating intervals.

For purposes of convenience the members which form the colored design or impressions on the articles are broadly referred to herein as "stamps" and any imprint or impression made by them is referred to as a design or decoration. While a cup having a single projecting handle is illustrated it will be understood that the invention is applicable to the decoration of numerous other articles, several examples of which have been mentioned; a cup with only a single handle is chosen for illustration since it is a well known article in every day use. While the articles to be decorated are usually composed of some ceramic material the present machine is adapted to form designs on articles composed of any material, for example, glass, wood, plastic, etc., these designs being applied prior to glazing of the article or over the glaze, as may be desired.

In Fig. 2 the stamp supporting means 2 is shown bolted to an attaching disc 14 which in turn connects with and is turned by a rotatable shaft 7 connected therewith, the shaft 7 projects from a speed reducer 8 which is supported on a suitable framework 9 in turn bolted, welded or otherwise secured to the surface of the supporting table 1. The stamp supporting means 2 may be rotated in counterclockwise direction by an electric drive motor 10, through the intermediation of pulley 11, belt or chain 12, pulley

13, speed reducer 8 and the shaft 7 which projects from the speed reducer and is connected by the fastening disc 14 with the stamp supporting means 2. The stamp supporting means 2 preferably has its plane inclined somewhere in the neighborhood of 60° to 45° with respect to the horizontal since this greatly facilitates placing articles in correct position on the article holding means, facilitates the application and removal of decorating stamps and provides optimum observation of the machine during its operation, as will be further clarified hereinafter.

While the stamp supporting means 2 is shown adapted to carry imprinting stamps at three spaced locations it will be clear that a greater or lesser number of stamps may be carried. Three stamp locations is very satisfactory since it gives ample time for removal of a decorated article 5 from an article holding means and the placing of a fresh article thereon for receiving decoration from an approaching or succeeding stamp. In Fig. 1 two of the stamp locations 16 and 17 are shown without a body stamp 19 or a handle stamp 20 but in normal operation each location will carry one or both of the stamps shown at the lower portion of the stamp supporting means 2.

The body stamp 19 is applied to form a decoration on the exterior body portion of an article 5 and the handle decorating stamp 20 is adapted to decorate surfaces of the outwardly projecting handle portion 6 of the article 5. The body stamp 19 preferably comprises a base portion 22, which may be of wood, metal, plastic or any other suitable material, to which is applied by adhesive or otherwise a layer or a thickness of sponge rubber 23 and an outermost semi-hard layer of design rubber 24, upon which is embossed or formed the design or decoration to be placed on the body of an article. The sponge rubber layer 23 is preferably in the neighborhood of one-half inch thick and the adhered design rubber layer 24 may be about one-sixteenth inch in thickness. The sponge rubber layer 23 provides for appropriate yieldability during inking of the design layer 24 and also during contact of the latter with the article being decorated. As shown, each of the base portions 22 of a body decorating stamp rests upon a mounting member 21 and is secured thereto by bolts 26. The mounting members 21 are provided at their undersides with spaced projecting guides 25 that fit into and are guided by complementary spaced recesses or slots 27 in the stamp supporting means 2. This construction provides for adjustment of the stamps toward and away from their center of rotation and facilitates positioning them equidistantly from the center of rotation so that they are in correct position for applying designs on the articles. A desired position of adjustment may be held by retaining bolts and washers 28 which extend through the spaced slots 27 and into the mounting members 21.

The body decorating stamp 19 shown more particularly in Figs. 1, 2 and 5 is generally used for applying a design or decoration to an article having a single outwardly projecting handle portion 6. The stamp is adapted to come into contact with the exterior body of the article at one side of a projecting handle 6 (Fig. 1) and to rotate or drive the article 5 on its supporting spindle until the "trailing" edge of the stamp reaches a position close to the opposite side of the projecting handle 6. This results in the formation of a suitable design entirely around

the exterior of the article 5. Where the article is, for example, a soup bowl having no handle portion, the arcuate length of the stamp 19 may be such as to form an "endless" design entirely around the exterior surface of the article.

The stamp shown in Fig. 6 may be utilized where it is desired to form a design on a cup having two diametrically opposed handle portions. One of these stamps may be carried at each of the stations on the stamp supporting disc 2, one of them forming a design around the curved body portion at one side of the article between the two projecting handle portions and the next succeeding stamp decorating the opposite side of the article between the two handles.

Where the article to be decorated is a pitcher having both a handle and a spout the body decorating stamp of Fig. 7 may be used, in which the recessed or cut away portion 29 is adapted to accommodate the outwardly projecting spout portion. Preferably the sponge rubber backing layer 23a of this latter stamp is augmented and softened at the points of impingement of the spout by the addition of a sponge rubber layer about three-fourths of an inch thick, this serving to allow the printing stamp to better follow the semi-cylindrical surface without undue distortion.

The means for decorating handle portions of articles is shown more particularly in Figs. 1, 3 and 4. It comprises a bracket 31, bolted to the stamp supporting means 2, which rotatably supports an arm 32. The outwardly projecting portion of the arm 32 carries on a lateral extension 34 thereof, the handle decorating stamp 20 previously referred to. This handle decorating stamp 20 is preferably of arcuate or curved shape at its outward face so as to conform generally to the curvature of a handle portion to be decorated. The stamp 20 may comprise a plurality of thicknesses of sponge rubber to the outer surface of which is adhered a semi-hard design forming rubber. The inwardly projecting portion of the rotatable arm 32 preferably carries a counterweight 35 and the extent of rotation or movement of the arm 32 is limited by adjustment screws 36, 37 threaded into lugs 38 carried at the underside of the stamp supporting means 2.

When a handle decorating stamp has been carried by the rotatable stamp support means 2 to a position adjacent the inking or coloring mechanism 4 the counterweight 35 at the inner end of the rotatable arm 32 turns the arm about its axis of rotation and moves the stamp 20 to its most outwardly disposed position. The extent of this outward movement may be regulated by suitably positioning the adjustment stop bolt 36 against which the inner end of the arm 32 comes to rest. In this outwardly disposed position the handle decorating stamp 20 is adapted to receive coloring material from the mechanism 4 at about the same time that a body decorating stamp 19 receives coloring material. As the stamp supporting means 2 continues to rotate, the handle decorating and body decorating stamps 19 and 20 move away from the coloring device 4 and approach an article positioned adjacent the lower portion of the carrying disc 2. As this occurs the counterweight 35 rotates the arm 32 about its axis of rotation until the inwardly extending part of the arm comes to rest against the adjustment stop 37, in which relationship the handle decorating stamp 20 is in an inwardly disposed relationship. In this latter relationship an outwardly disposed surface of the handle decorating stamp 20 is adapted to contact a

handle 6 and transfer coloring material to it. The handle decorating stamp 20 contacts the handle 6 firmly since the adjustment stop 37 prevents undue movement of the stamp away from the handle 6.

Where both the body and handle portions of articles are to be decorated, each station on the stamp carrying means 2 will be provided with both a body decorating stamp 19 and a handle decorating stamp 20. The handle decorating stamp 20 may be removed or omitted from the machine in those instances where it is desired to decorate only the body portions of articles.

The portion of the machine 4 which applies ink or coloring material to the stamp applies the material simultaneously with movement of the stamp. As the stamp carrying means 2 rotates, the stamps supported thereon are carried past a freely rotatable brayer or roller 41 that receives ink or coloring material from a "fountain" 42 and then moves to a position for contacting the stamp or stamps and transferring material thereto.

As shown in Fig. 2 the brayer or roller 41 is carried by a shaft 43 which is freely rotatable in roller bearings 44 carried by spaced bearing blocks 45. The bearing blocks are secured to an oscillatable member or cap 48 carried at the upper part of a supporting column 49. The cap 48 may freely rotate or oscillate to and fro between a color-receiving position adjacent the ink fountain 42 and the upper portion of the stamp carrying means 2, as will be further described. The supporting column 49 is welded or otherwise secured to a plate member 50, which is in turn carried by the supporting framework 9 through the intermediation of adjusting or leveling bolts and nuts 51. The adjusting means 51 permits shifting of the color roller 41 with respect to the stamps to thereby provide optimum inking of the stamps.

A spring 54 connected with the oscillatable cap 48 at one side thereof normally urges it, together with the rotatable shaft 43 and color roller 41 carried thereby, toward the color fountain 42. When the color roller 41 is in such position it picks up or receives color from transfer rollers for subsequent transfer to the decorating stamps.

Movement of the roller or brayer 41 toward stamps on the stamp carrying means 2 is achieved by cams 55 secured to the underside of the stamp supporting means 2. As the stamp supporting means 2 rotates together with the stamps and the cams 55, the cams come into contact with and move outwardly a cam roller 57, reciprocable rod 58 that carries the cam roller and a roller 59 carried adjacent the opposite end of the reciprocable shaft 58. As the latter roller 59 moves in a direction away from the stamp supporting means 2 it pulls against a cable 61 which is connected at one end with a fixed pin 62 and at its other end with a lug 63 carried by the oscillatable cap 48. Thus rotation of the stamp support 2 and cams 55 serves to rotate or oscillate the cap 48 and swing the brayer shaft and brayer 41 away from color-applying rollers of the fountain 42 in opposition to the effect of the spring 54. Preferably the coloring roller 41 oscillates through about a 90° arc.

The effective length of a cam 55 determines the time during which the coloring roller 41 is in position to contact a decorating stamp or set of stamps and also determines the time during which the spring 54 may hold the coloring roller in position to receive ink or coloring ma-

terial from the fountain 42. Preferably a single cam is provided adjacent each of the different stamps or sets of decorating stamps so that the coloring roller 41 may be moved into color-applying position as each stamp moves into color receiving position.

The fountain 42 which supplies coloring or inking materials to the coloring roller 41 may be of any known and suitable type. In Fig. 1 it is shown supported upon a platform 46 carried by a framework 47. The fountain may be driven by an electric motor 65 through the intermediation of belt 66, pulley 67, speed reducer 68, belt 69, pulley 70 and shaft 71. Leveling or adjustment of the inking fountain 42 may be achieved by suitable adjustment bolts, nuts and washers 72.

Articles to be decorated are preferably supported adjacent a lower portion of the stamp supporting means 2 by the holder or spindle of the type illustrated more particularly in Figs. 8 and 9. This holder or chuck includes a head portion 75 provided with substantialy radially extending openings through which project retaining fingers or pins 76, each finger being connected adjacent its inner end with a resilient or spring-like strip 77 contained within an opening 78 of the head 75. The exterior dimension of the head 75 is preferably slightly smaller than the inside diameter of an object to be decorated so that an article 5 may be fitted downwardly over the exterior surface of the head until an edge rests against a projecting ledge 79 of the head. The spring loaded fingers 76 are pressed inwardly as the article is fitted down over the head 75 and their individual spring strips 77 accommodate any inequalities which may exist at the interior of the ware. The outer ends of the fingers may be curved or tapered so that an article may be more readily fitted downwardly over them.

The head 75 and fingers just described may be carried by a supporting shaft 81 which is longitudinally adjustable so as to vary the "height" of the head of an article carried thereby with respect to a decorating stamp 19 (Fig. 9), which is laterally adjustable along a slot 85 so as to vary the spacing of the head and an article carried thereby with respect to a stamp 19, and is also adjustable in inclination by means of the clamping handle 84 so as to vary the inclination of the exterior surface of an article with respect to a stamp 19. While this latter feature is shown provided in Fig. 9 by a sort of clamp screw 84 it may be provided by any other suitable means, for example, by a hinge in the member which supports the head or chuck 75. Adjustment of the inclination of the head with respect to the stamp is particularly desirable in instances where the ware is not truly cylindrical or straight sided; in such instances the adjustment facilitates "aiming" the stamp at the bulge of an untrue surface so that the resiliency of the stamp may allow the stamp to fit around the bulge and give a good decoration impression on the ware. Where this provision for changing the inclination of the article is not provided, it is necessary to angle or hollow out the stamps to make them match a bulge, curve or angle of ware to be decorated; this alternative is undesirable due to the trouble and expense included.

Particular coloring or inking materials which may be used to form the actual decorations on the ware have not been referred to in detail herein as the present machine is equally useful with any suitable inks or coloring materials.

It will be seen that the present invention provides a new and improved machine for forming decorations on the surfaces of articles, particularly articles such as cups, bowls, pitchers and the like. The machine may be used to apply decorations to only the body portions of articles or to both body and handle portions thereof. The various stamps disclosed herein and others of suitable nature are readily interchangeable. Improved means is provided for applying coloring materials or inks to the stamps, a coloring roller normally remaining in contact with ink transferring rollers of an inking fountain and moving quickly and accurately into position for application of coloring material to decorating stamps as the stamps approach their color receiving position. The improved inking mechanism may apply the ink or colors to the body decorating stamps above or to both body decorating and handle decorating stamps.

The handle decorating stamp moves automatically into an outwardly disposed color-receiving position for the application of coloring materials to the handle portions of articles. The inclination of the stamp supporting means facilitates the automatic operation of the handle decorating stamp and facilitates the application and removal of articles as well as the operation of the entire machine. The article holding means provides for ready and rapid application and removal of articles and the correct spacing, elevation and inclination of the articles with respect to the decorating stamps. The present machine is of relatively simple construction and is practically foolproof in operation; these features are highly desirable and cooperate to require a minimum amount of skill or training on the part of an operator. With the present machine a single operator may produce as high as fifty dozen pieces of decorated ware for each hour of operation.

As various changes may be made in the form, construction and arrangement of the parts herein without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

1. A machine for applying decorations to the exterior surfaces of articles, comprising the combination of means for supporting an article to be decorated, a rotatable structure having a plurality of angularly spaced stamp-supporting portions each located a greater radial distance from the axis of rotation of the structure than intermediate portions of the structure, a plurality of stamps on said stamp-supporting portions and movable successively into contact with articles on said article support, color supplying means spaced from said stamp-supporting portions, color-transfer means, and means for oscillating said color-transfer means between a color receiving position adjacent said color supplying means and behind the plane of said supporting means and a color-transferring position adjacent said stamp supporting portions.

2. In a machine for applying decorations to the exterior surfaces of articles, the combination of rotatable stamp support means having its plane of rotation inclined with respect to the horizontal, a body decorating stamp on said support and a handle decorating stamp rotatably mounted on said support at a location spaced from said body

decorating stamp, both stamps being movable with said support between a color-applying location and a decoration-applying location, color supplying means adjacent said color-applying location, and color transferring means oscillatable between said color supplying means and said stamps.

3. A machine for applying decorations to the exterior surfaces of articles, comprising the combination of means for rotatably supporting an article to be decorated, a rotatable stamp supporting table, a plurality of stamps on said table movable successively into contact with the surfaces of articles on said article support, color supplying means including a roller spaced from and disposed generally parallel to the plane of said table, color-transferring means including an additional roller oscillatable between a color-receiving position against the first roller and a color-transferring position wherein its axis of oscillation is disposed generally parallel to the plane of said table, and means for oscillating said color-transferring means including a plurality of cams carried by and projecting from said table.

4. In a machine for decorating body and handle portions of articles of the class described, the combination of rotatable stamp supporting means, a body decorating stamp carried by and rotatable with said supporting means, and a handle decorating stamp carried by and rotatable with said supporting means and swingably mounted on said supporting means at a location spaced from said body decorating stamp.

5. In a machine for decorating body and handle portions of articles of the class described, the combination of rotatable stamp supporting means, a body decorating stamp carried by said supporting means, an arm rotatably carried by said supporting means at a location spaced from said body decorating stamp and movable in a plane generally parallel to that in which said stamp supporting means is rotatable, and a handle decorating stamp carried by said arm adjacent one end thereof.

6. In a machine for decorating body and handle portions of articles of the class described, the combination of rotatable stamp supporting means, a body decorating stamp on said supporting means, an arm rotatably mounted on said supporting means at a location spaced from said body decorating stamp and rotatable about an axis generally perpendicular to the plane of rotation of said supporting means, a handle decorating stamp carried by said arm adjacent one end theerof, and a counterweight carried by said arm adjacent an opposite end thereof.

7. In a machine for decorating body and handle portions of articles of the class described, the combination of rotatable stamp supporting means, a body decorating stamp on said supporting means, an arm rotatably mounted on said supporting means at a location spaced from said body decorating stamp and movable with the supporting means through a closed path, a handle decorating stamp carried by said arm adjacent one end thereof, and adjustable means carried by said supporting means for limiting the extent of rotation of said arm.

8. A machine as claimed in claim 3, in which said cams project from the rear of the table and project axially thereof to move the additional roller in one direction, and a spring is operatively connected with said roller for moving it in an opposite direction.

9. A machine for decorating the surfaces of articles, comprising the combination of means for supporting an article to be decorated, means rotatably supporting a decoration stamp, color supplying means spaced from said article supporting means and out of the plane of rotation of said decorating stamp, color transferring means, and means for moving said color-transferring means through an angle of about ninety degrees between said color supplying means and a position in the plane and path of movement of said decorating stamp.

10. A machine as claimed in claim 1 in which said rotatable structure has its plane of rotation inclined with respect to the horizontal.

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