Feb. 8, 1938. F. B. McQUISTON 2,107,491

DECORATING APPARATUS

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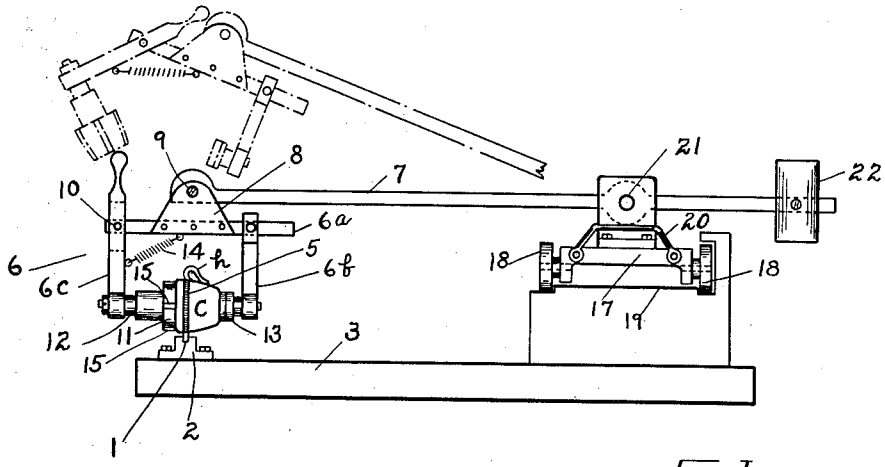


Fig. I.

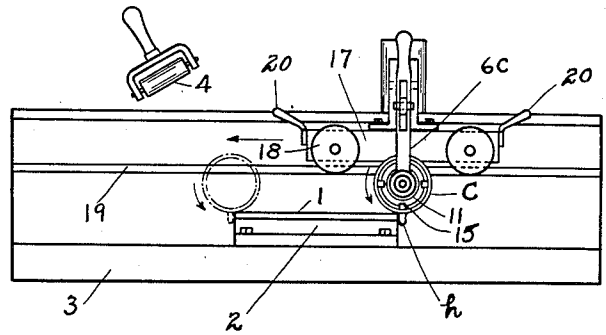


Fig. II.

Fig. III.

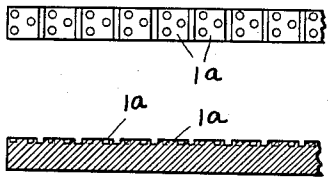


Fig. IV.

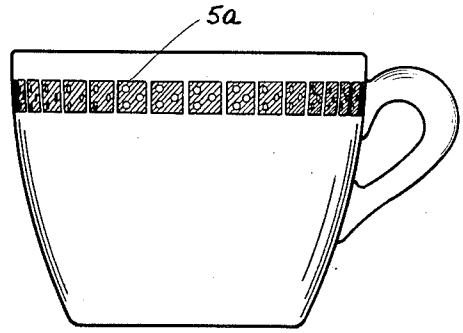


Fig. V.

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DECORATING APPARATUS

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Application November 24, 1936, Serial No. 112,546

2 Claims. (Cl. 91—12)

My invention relates to apparatus for applying surface decoration to round objects, such as bottles, jars, tumblers, cups and the like.

More specifically the decoration consists in an application of vitrifiable material upon articles of glassware or clay. The applied material is adapted by firing to be integrated with the underlying vitreous body of the article, and to provide the desired ornamental design thereon. The invention is particularly although not exclusively adapted for applying ornamental bands upon cups and other round objects having handles, or other protuberances, extending from their side surfaces, and in exemplary way I shall describe the invention as I have practiced it in the decoration of such objects.

In the accompanying drawing Fig. I is a view in end elevation of apparatus embodying the invention, and certain parts of the apparatus are in dotted lines illustrated in alternate positions of service; Fig. II is a view in front elevation of the apparatus; Figs. III and IV are fragmentary views, showing in plan and in vertical section, respectively, and to larger scale, a particular printing bar embodied in the apparatus; and Fig. V is a view to larger scale of a cup decorated in the apparatus.

The apparatus includes one or more bars, formed conveniently of metal or rubber, adapted to receive and carry a film of the decorative material to be applied. The article—a cup in this case—to which application is to be made is rolled in contact with the film-bearing surfaces of the bars, and as it so rolls the material is transferred and lies in bands around the circumference of the article. Firing follows, the bands of decoration are vitrified and integrated with the underlying ceramic body of the article, and the article on cooling carries the desired ornament.

In the apparatus as shown in Figs. I and II, one such bar 1 is shown, mounted in a supporting block 2 on a horizontal bed 3. In known way, a hand roller 4 (Fig. II), coated with moist decorating material, is rolled over the surface of the bar and a film of decorating material applied. The cup to be decorated is indicated at C; in Fig. II it is shown in full lines in position to be rolled in right-to-left direction upon the bar; and in its right-to-left progress a band 5 (Fig. I) of decorating material is picked up from the bar and gradually laid around the circumference of the cup.

In its travel upon the bar 1, the cup is mounted in a rotary work-holder 6, and the work-holder is adapted to travel longitudinally of the bar, with the side of the cup held in rolling contact with the film-bearing face of the bar. The work-holder is carried by an arm 7 extending from a carriage 17. Intermediate its opposite ends the arm 7 is pivotally mounted, at 21, on the carriage. A weight 22 is secured on the arm, partially to counterbalance weight of the work-holder, and to insure that the cup shall engage the bar with the proper pressure of contact. The carriage 17 is mounted on wheels 18 for travel in a horizontal way 19 that extends in parallelism with the printing bar 1. In this case the travel of the carriage (and the corresponding travel of the arm 7 and work-holder 6) is manually effected, handles 20 being provided on the carriage for such purpose.

More specifically, the work-holder consists in a frame of inverted U-shape, in which the base 6a of the U is by a plate 8 and screw 9 secured to the arm 7. The leg 6b of the U is rigid, while the opposite leg 6c is adapted to swing, on a pivot 10, about the base of the U. A conical block 11 is mounted on a spindle 12 in the foot of leg 6c, and anti-friction bearings (not shown) are in known way employed to insure that the block shall be delicately sensitive to rotative stress. In like manner a rubber-faced knob 13 is mounted in the foot of leg 6b. In installing a cup to be decorated in the apparatus, the arm 7 is swung in a plane extending transversely to the film-bearing surface of bar 1, in vertical plane in this case, into the position indicated in dotted lines in Fig. I, and the leg 6c of the U-frame is swung outward. Then the cup is seated upon the conical block 11, and the leg 6c is swung inward, bringing the bottom of the cup into abutment with the knob 13. A spring 14, effective between leg 6c and the base 6a of the U-frame, serves to hold the cup against the knob. The axes of the block 11 and knob 13 extend in alignment, and, manifestly, the supported cup is readily responsive to rotative stress. It may be remarked that a plurality of rubber strips 15 are embodied in the conical block 11, with the presented edges of the strips lying an interval from the face of the block. These strips, rather than the side surface of the block, engage the inner surface of the installed cup, whereby the wall of the cup is engaged on lines, rather than on an extended area, of contact. In such manner the tendency for the cup to become too tightly wedged upon the block is eliminated.

When the cup has been thus installed, the arm 7 is swung downward into full line position (Fig. I), and the carriage 17 is shifted into such po-

sition longitudinally of way 19 that the supported cup is brought to the position shown in full lines in Fig. II, with the downwardly extending handle *h* of the cup laterally abutting the end of the printing bar 1. Then the carriage is moved in right-to-left direction along the way 19, the cup rolls on its side upon the printing bar, from full-line position to dotted line position, and the decorating material is picked up from the bar and gradually laid around the side surface of the cup, providing a band extending circumferentially of the cup from one side of the handle *h* to the other. When the cup has thus horizontally traversed the bar 1, the arm 7 is swung vertically upward, and the decorated cup removed.

It is important to note that the right-hand end of the printing bar 1 comprises an abutment against which the handle *h* of the cup is positioned, preparatory to its traversal of the bar. As the carriage is initially set in motion, the engagement of the end of the bar with the cup handle is instrumental in imparting positive rotative stress to the cup, with the consequence and effect that, in overcoming inertia as the cup is initially set in rotation, there is no slipping between the cup and the bar. It will further be perceived in Fig. II that the effective length of the printing bar 1 is unequal to the circumference of the cup to which the band of decoration is to be applied. In length the bar equals the circumference of the cup from one side of the handle *h* to the other, that is to say, equals the linear value of the circumference minus the breadth of the handle *h*. By virtue of these structural refinements, there is no difficulty in properly setting cup in rotation, nor in judging the required distance of travel of the cup along the bar.

In Figs. III and IV, I show the printing bar in elaborated form. Type 1*a* of any desired pattern may be cut in the face of the bar, and the applied band of decoration will, accordingly, be of the more highly ornamental order illustrated at 5*a* in Fig. V. Indeed, it is contemplated that the printing device itself may be a line of individual type blocks assembled in the holder 2, or that other known devices may be used for applying the vitreous color material to the cups, or to other round objects provided with handles or other protuberances.

It is obviously within the skill of the mechanic to provide means for automatically reciprocating the carriage 17 horizontally and the work-holder 6 vertically. Additionally, it is merely a matter of engineering to mount the film-applying roller 4 on the carriage 17, or on some other carrier, in such manner that the roller will traverse the printing device and apply a film of decorating material in advance of the object being decorated. And still other elaborations and modifications will occur to the engineer and artisan without departing from the essence of the invention defined in the appended claims.

I claim as my invention:

1. Apparatus for decorating a round object having a handle on its side, the combination of a printing device including a surface bearing a film of decorating material, the length of said film-bearing surface being substantially equal to the circumference of the object to be decorated less the breadth of said handle, a carriage, rotary means borne by said carriage for supporting said object, said rotary means being movable in transverse plane with respect to the film-bearing surface of said printing device, into work-receiving position, and said carriage being movable in a direction extending angularly to such plane, whereby the supported object is rolled upon said film-bearing surface and decorating material applied in predetermined pattern to the surface of said object from one side of said handle to the other.

2. In apparatus for applying decoration upon round objects, the combination of a narrow and relatively elongate printing device adapted to receive a film of decorating material, a carriage, an arm pivotally mounted upon and extending from said carriage, means carried by the extending portion of said arm for the rotary support of an object to be decorated, said arm being movable to bring the supported object into contact with the film-bearing face of said printing device, and said carriage being movable in a path extending in parallelism with and longitudinally of said printing device, whereby the object supported in contact with the printing device is rolled upon the film-bearing face thereof and decorating material applied to the surface of said object in predetermined pattern.

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