

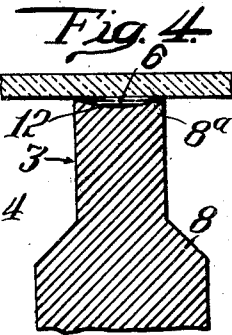
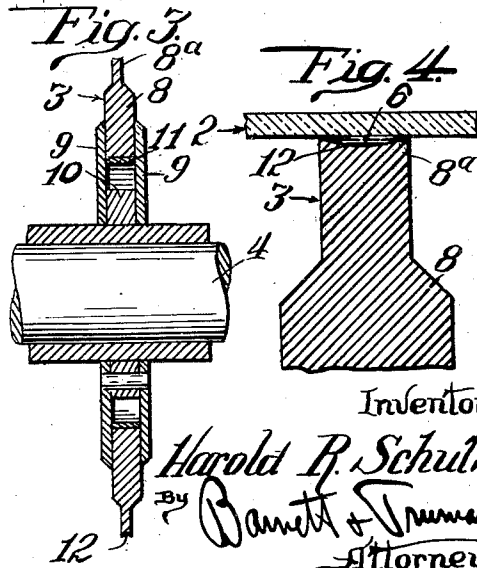
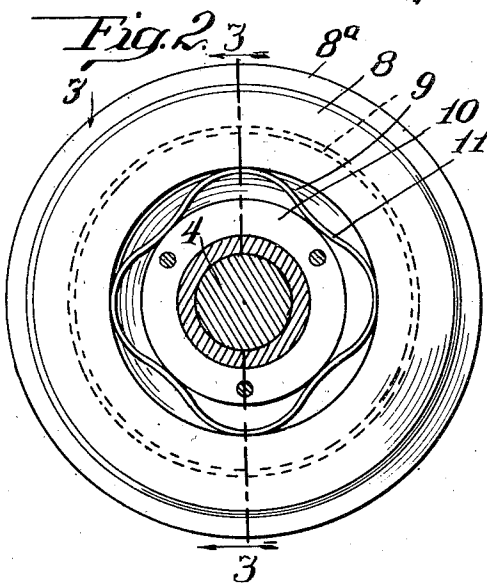
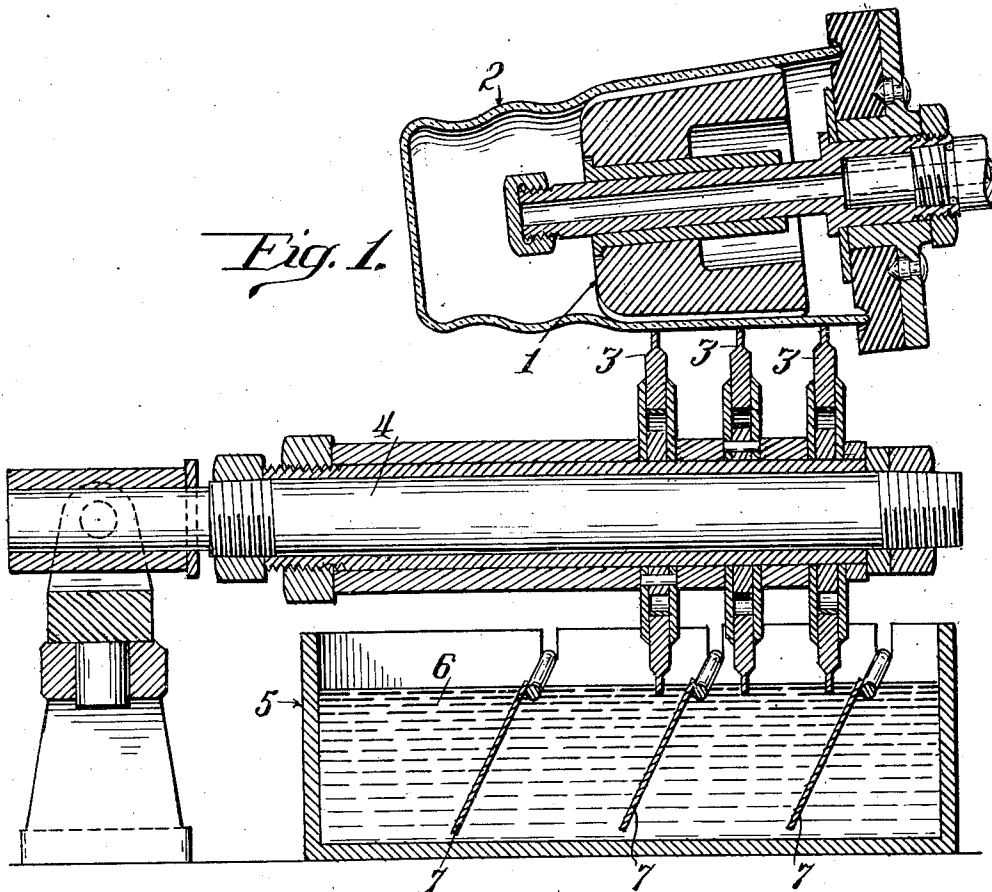
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METHOD OF BANDING ARTICLES

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METHOD OF BANDING ARTICLES

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2 Claims. (Cl. 91-70)

This invention relates to new and useful improvements in method for banding articles.

The primary object of the invention herein described is to provide a method that will effectively and efficiently apply bands or decorations of any desired color to a surface of an article, for example, a drinking tumbler as is shown in the drawing.

Another object is to provide a paint applying disc of specific shape whereby the paint, enamel or other coloring matter is transferred to the article to be banded in such a manner as will result in a sharply defined band of desired thickness and width.

Still another object is to provide a method of heating the articles to be banded whereby the coloring matter is affixed to the outer surface of the article in an even manner without running or cracking thus producing a banded article of attractive appearance.

Other objects and advantages will become apparent upon examination of the drawing and the following detailed description.

In the drawing:

Fig. 1 is a cross-sectional view of a part of a banding machine showing a tumbler on a chuck in banding position in contact with paint applying discs of my improved form.

Fig. 2 is a vertical central sectional view of one of such discs.

Fig. 3 is a sectional view taken along line 3-3 of Fig. 2.

Fig. 4 is an enlarged cross-sectional view of the edge of one disc in contact with the side of the tumbler being banded.

In detail 1 is a chuck of the vacuum type on which is held a tumbler 2. Paint applying discs 3 are mounted on a rotatable shaft 4 and extend into a paint reservoir 5 so as to pass through the coloring matter 6. Agitators 7 oscillate in the paint to keep it thoroughly stirred.

Each paint applying disc 3 comprises a steel ring 8 narrowed at its outer edge to form a paint applying portion 8a, the outer peripheral surface of which has a width corresponding approximately to the width of the band to be painted on the tumbler. The ring 8 is held frictionally between a pair of discs 9 that are secured to a hub 10. Positioned between the hub 10 and the ring 8 is a curved band spring member 11. This construction permits the ring member 8 to yield vertically so as to compensate for any irregularities on the surface of the tumbler and for any unequal wear of the edge of the disc, and permits the discs to

align themselves to the surface of the periphery of the tumbler.

The outer peripheral surface of ring member 8 is slightly concave as indicated at 12 and as clearly shown in Fig. 4 in which the coloring matter 6 is shown held against the outer surface of tumbler 2 and in the concave portion of the disc 3. This provides a slight groove in the edge of the paint applying disc facilitating the carrying of the paint from the reservoir to the surface of the article to be banded and also provides two fine edges on the paint applying disc that contact the surface of the tumbler to definitely maintain the paint within the bounds of the width of the edge of the paint applying member as it is being applied so that the resulting band on the tumbler is sharp, without ragged edges. Furthermore, the centrifugal force is greater at the edges of the concavity than at the center or lower portion so that the coloring matter will contact the surface of the article being banded first at the outer edges of the disc and then through surface tension will flow toward the center where it will meet, forming a complete band with straight and sharp lines on the edges. The thickness of the band of paint applied to the glass is determined or controlled by the depth of the concave edge of the paint applying disc. The greater the depth the greater the thickness of the band. In practice the radius of curvature of the concave portion is about four times the thickness of the paint applying edge 8a of the ring member 8. For example if the thickness of the paint applying edge is one-sixteenth of an inch the radius of curvature of the concave portion is one-fourth of an inch.

In order that the decorating material applied to the tumbler will retain its sharp edges and dry in the form and thickness of the band applied, it is essential to heat the tumblers that are to be decorated before subjecting them to the paint applying operation. This temperature must be such that the operator can handle the glasses without burning his hand and yet be sufficient to accomplish the desired results. It has been found that the temperature of the tumbler when subjected to the banding operation should not be less than 120° F. and not greater than 140° F.

To accomplish this an oven is provided through which the tumblers to be banded are slowly passed on a conveyor of conventional form to the banding machine, which oven is maintained at a top temperature of about 166° F. and a bottom temperature of 158° F. This oven heats the tumblers so that when banded they are at a temperature of from 120° F. to 140° F., depend-

ing upon the lapse of time between the oven and the banding operation.

5 If the tumblers are banded at room temperature the bands will spread and smear and if the temperature is too great the band of paint applied to the tumbler will split down the middle through its entire circumference when it dries.

10 The reasons for the undesirable results obtained unless a proper heating is followed are that at room temperature the rate of evaporation is too low and the enamel will spread and smear before becoming dry. If too high a heat is applied to the tumblers the splitting of the band will result because the evaporation of the vehicle 15 carrying the frit of the coloring matter is too rapid and the frit does not become evenly distributed throughout the band before drying and also the decreased viscosity of the frit carrying vehicle results in a partial segregation of the frit particles exaggerating the lack of distribution so that upon drying the band pulls apart. 20

Thus it is shown that to satisfactorily band a tumbler it is necessary to heat the tumblers to the specified temperatures before banding and to apply the bands to the tumblers while so 25 heated by means of discs whose outer or paint-

carrying edges are concave to the extent indicated.

I claim:

1. The method of applying a band of colored material to an article which comprises heating 5 the article to from 120° F. to 140° F. and while so heated rotatably mounting it and contacting its outer surface with a rotating film of coloring material of the width of the band desired and of diminishing thickness at its outer edges whereby 10 the action of centrifugal force on the rotating film will cause the edges thereof to first contact the article, the film then moving into contact with the article from the edges to the center.

2. The method of applying a band of colored 15 material to an article comprising rotatably mounting the article and contacting its outer surface with a rotating continuous film of coloring material of the width of the band desired and of diminishing thickness at its outer edges 20 whereby the action of centrifugal force on the rotating film will cause the edges thereof to first contact the article, the film then moving into contact with the article from the edges to the center. 25

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