

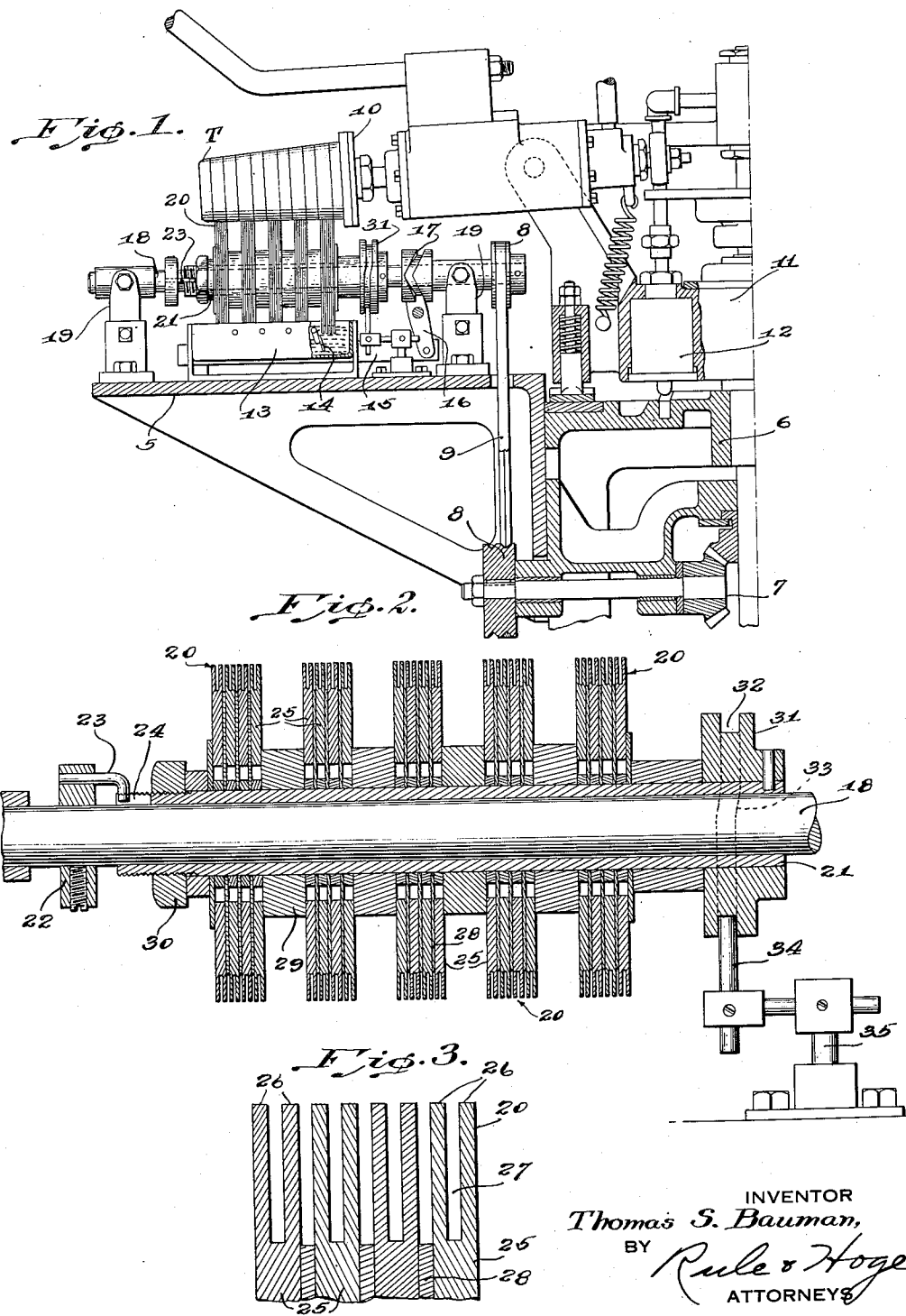
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APPARATUS FOR BANDING ARTICLES

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APPARATUS FOR BANDING ARTICLES

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The present invention relates to improvements in apparatus for banding articles and more particularly is concerned with the provision of novel means for applying wide colored bands to glass tumblers, bottles, and like articles.

An object of my invention is the provision of novel means whereby colored bands of paint or like coloring material may be applied in a uniformly thick film to tumblers and like articles, such application being effected in a manner to insure uniform width as well as thickness or depth.

A further object is the provision in an apparatus of the above character of means for axially reciprocating a paint applying disk while rotating in contact with an article to be banded, such reciprocation functioning to complete a band and at least in part predetermining the width of the applied colored band or bands.

Other objects will be in part apparent and in part pointed out hereinafter.

In the drawing:

Fig. 1 is a fragmentary side elevational view with parts in section showing my invention embodied in a conventional banding machine.

Fig. 2 is a detail vertical sectional view of the paint applying devices and mechanism employed in reciprocating them.

Fig. 3 is a fragmentary sectional view of one of the paint applying devices illustrated in Fig. 2.

My invention, which is substantially completely shown in Figs. 2 and 3, is intended for embodiment in a banding machine of the type illustrated in Schutz Patent #2,134,739 dated Nov. 1, 1938, and Schutz Patent #2,215,981 issued Sept. 24, 1940; both of which patents disclose wholly or in part a machine in conjunction with which my banding apparatus has been and is being used commercially. Briefly, this conventional machine includes a stationary table 5 supported upon a stationary central framework 6, the latter also supporting driving mechanism 7, which, through a pair of pulleys 8 and a belt 9 trained thereover, imparts rotary motion to the paint applying devices as will be described in detail hereinafter. A conventional vacuum chuck 10 for supporting tumblers T, or other glass articles which are to be banded, is rockably mounted upon a rotary table 11 which is positioned directly over the aforementioned framework 6. A cam actuated vacuum valve 12 regulably controls the application of vacuum to said chuck whereby the latter alternately releases and holds the tumblers.

Each band applying unit, the number of which

is determined entirely by the type of decoration and number of colors constituting the complete decoration, includes a paint reservoir 13 attached to the table 5. Paint agitating devices 14 are immersed in the supply body of paint and are moved back and forth at regular intervals by mechanism including a link 15 which is connected to all of the agitators and a rocker arm 16 which is connected at one end to said link and at its other end carries a cam roll (not shown) running in a closed rotary cam 17. This cam is mounted upon a horizontal shaft 18 which in turn is journaled in bearings 19 and supports the upper of the aforementioned pair of pulleys 8. All of the structure just described is conventional and more fully disclosed in the above identified patents, to which reference may be had for additional details.

My invention, as shown in Figs. 2 and 3, includes several groups of paint applying devices 20 which are mounted upon a tubular rotary shaft 21, the latter being loosely carried by and shiftable axially upon the aforementioned horizontal rotary shaft 18. Driving connection between the tubular shaft 21 and rotary inner shaft 18 is obtained by means of a collar 22 which is locked to the inner rotary shaft 18 and carries a finger 23 which projects into a longitudinal slot 24 at one end of the tubular shaft 21. This particular structure provides for rotation of the two shafts as a unit and additionally allows independent reciprocation of the tubular shaft 21 whereby the paint applying devices may be moved axially during their rotation in contact with the tumbler or other article being banded.

Each of the paint applying devices 20 may well consist of one or more disks 25 (Fig. 3) the periphery of each disk being circumferentially channeled or grooved to thereby provide a pair of paint carrying surfaces 26 and a space 27 therebetween. Preferably the two surfaces 26 and said space 27 are of equal width for a purpose which will become apparent presently. The number of such disks is determined entirely by the desired width of the band that is to be applied to the article. In the accompanying drawing I have shown several groups of paint applying devices spaced apart uniformly along the shaft and each group consisting of four disks. Where several disks make up a single group, the spaced relationship between the disks must correspond to the space between the paint applying surfaces 26. Accordingly, the spacers 28 are of the same thickness or width as the spaces 27 which separate the paint applying surfaces 26. The groups

of paint applying devices are held in spaced relation to each other by means of collars 29 or spacers, the width of which very obviously is determined by the desired spacing between the bands making up the decoration for the article. A lock nut 30 threaded upon the slotted end of the tubular shaft 21, secures the parts assembled upon said shaft.

Reciprocation of the tubular shaft and therefore the groups of paint applying devices 20 during rotation of the latter in contact with an article to be decorated, is obtained by means of a closed cam 31 which is pinned to the tubular shaft 21. The groove 32 or guideway in the periphery of the cam 31 includes two diametrically opposed angular sections 33 which effect reciprocation of the paint applying devices. A stationary finger 34 supported on a bracket 35 projects into said groove 32. As a consequence the tubular shaft 21 and paint applying devices supported thereon are reciprocated once for each complete revolution of said devices.

In operation, the paint applying devices are rotated continuously and operate to transfer liquid paint or like material to the desired areas of the tumbler T. As explained heretofore, only the surfaces 26 (Fig. 3) actually carry paint from the reservoir to the article. Accordingly, in the absence of reciprocation of the paint applying devices, the decoration would consist merely of a longitudinal series of relatively narrow stripes. However, immediately upon completion of a group of such stripes incident to the completion of one-half revolution of the paint applying devices, the latter are shifted axially by the cam 31 and finger 34 a distance corresponding to the width of such paint carrying surfaces 26 with the result that the next succeeding half revolution effects a filling-in of the spaces between the narrow stripes and the completion of a wide band.

Modifications may be resorted to within the spirit and scope of the appended claims.

I claim:

1. In a machine for applying a colored band to an article, a rotating disk-like paint applying device having its periphery provided with alternate circumferentially extending paint carrying surfaces and open spaces, said surfaces and spaces being of approximately equal width, a paint reservoir for supplying paint to said surfaces, and means for reciprocating the device axially during application of paint to the article a distance approximately equal to the width of one of the paint carrying surfaces.

2. In a machine for applying a colored band to an article, a rotating disk-like paint applying device having its periphery provided with alternate circumferentially extending paint carrying surfaces and open spaces, said surfaces and spaces being of approximately equal width, a paint reservoir for supplying paint to said surfaces, means for supporting the article in a recumbent position and in rolling contact with the periphery of said device, and means for reciprocating the device axially during application of paint to the article a distance approximately equal to the width of one of the paint carrying surfaces.

3. In a machine for applying a colored band to an article, a rotating disk-like paint applying device having its periphery provided with alternate circumferentially extending paint carrying surfaces and open spaces, said surfaces and spaces being of approximately equal width, a paint reservoir for supplying paint to said surfaces, means for supporting the article in a recumbent posi-

tion and in rolling contact with the periphery of said device, means for reciprocating the device axially during application of paint to the article a distance approximately equal to the width of one of the paint carrying surfaces, and means whereby the article and devices may be moved vertically relative to each other to thereby make and break contact therebetween.

4. In a machine for applying a colored band to a rotating cylindrical article, a rotary paint applying disk for transferring paint from a paint reservoir to the article, said disk having its periphery provided with alternate flat circumferentially extending paint carrying surfaces and open spaces, and means for effecting axial reciprocation of the disk at regular time intervals a distance approximately equal to the width of one of the paint carrying surfaces.

5. In a machine for applying a colored band to a rotating cylindrical article, means for supporting the article in a recumbent position, a rotary paint applying device mounted for rotation about an axis substantially parallel to the axis of the article, said device having alternate circumferentially extending paint carrying surfaces and open spaces in its periphery, a paint reservoir for supplying paint to the device, means for making and breaking contact between the article and device, and means for effecting relative axial movement between the article and device a distance approximately equal to the width of one of the paint carrying surfaces.

6. In a machine for applying a colored band to a rotating cylindrical article, means for supporting the article in a recumbent position, a rotary paint applying device mounted for rotation about an axis substantially parallel to the axis of the article, said device having alternate circumferentially extending paint carrying surfaces and open spaces in its periphery, a paint reservoir for supplying paint to the device, means for making and breaking contact between the article and device, and means for effecting relative axial movement between the article and device a distance approximately equal to the width of one of the paint carrying surfaces, said last named means including a horizontal rotary shaft supporting the paint applying device, means for rotating said shaft, and means for reciprocating the shaft at regular time intervals.

7. In a machine for applying a colored band to a rotating cylindrical article, means for supporting the article in a recumbent position, a rotary paint applying device mounted for rotation about an axis substantially parallel to the axis of the article, said device having alternate circumferentially extending paint carrying surfaces and open spaces in its periphery, a paint reservoir for supplying paint to the device, means for making and breaking contact between the article and device, and means for effecting relative axial movement between the article and device a distance approximately equal to the width of one of the paint carrying surfaces, said last named means including a horizontal rotary shaft supporting the paint applying device, means for rotating said shaft, and cam means in part carried by the shaft for reciprocating the latter at regular time intervals.

8. In a machine for applying colored bands to articles, a horizontal rotating shaft, a group of uniformly spaced paint applying disks mounted upon the shaft, a paint reservoir for supplying paint to said disks, means for bringing an article to be banded into contact with the periphery of said disks, and means for shifting the group of

disks axially a distance substantially equal to the width of a single disk during rotation thereof whereby to produce a solid band upon the article substantially equal in width to the total width of the disks and spaces therebetween.

9. In a machine for applying a colored band to a rotating cylindrical article, means for supporting the article in a recumbent position, a rotary paint applying device mounted for rotation about an axis substantially parallel to the axis of the article, said device having alternate circumferentially extending paint carrying surfaces and open spaces in its periphery, a paint reservoir for supplying paint to the device, means for making and breaking contact between the article and device, and means for effecting relative axial movement between the article and device a distance approximately equal to the width of one of the paint carrying surfaces, said last named means including a horizontal rotary shaft, a tubular shaft supporting the paint applying device and mounted for axial reciprocation upon said rotary shaft, means for securing the two shafts against relative rotation but permitting relative reciprocation, means for rotating the shafts, and means for effecting relative reciprocation of the shafts at regular time intervals.

10. In a machine for applying a colored band to a rotating cylindrical article, means for supporting the article in a recumbent position, a rotary paint applying device mounted for rotation about an axis substantially parallel to the axis of the article, said device having alternate circumferentially extending paint carrying surfaces and open spaces in its periphery, a paint reservoir for supplying paint to the device, means for making and breaking contact between the article and device, and means for effecting relative axial movement between the article and device a distance approximately equal to the width of one of the paint carrying surfaces, said last named means including a horizontal rotary shaft, a tubular shaft supporting the paint applying device and mounted for axial reciprocation upon said rotary shaft, means for securing the two shafts against relative rotation but permitting relative reciprocation, means for rotating the shafts, and cam means in part carried by the tubular shaft for reciprocating the latter at regular time intervals.

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