July 7, 1942. E. HART 2,289,263

COLORING APPARATUS

Filed Oct. 10, 1940

FIG. 1

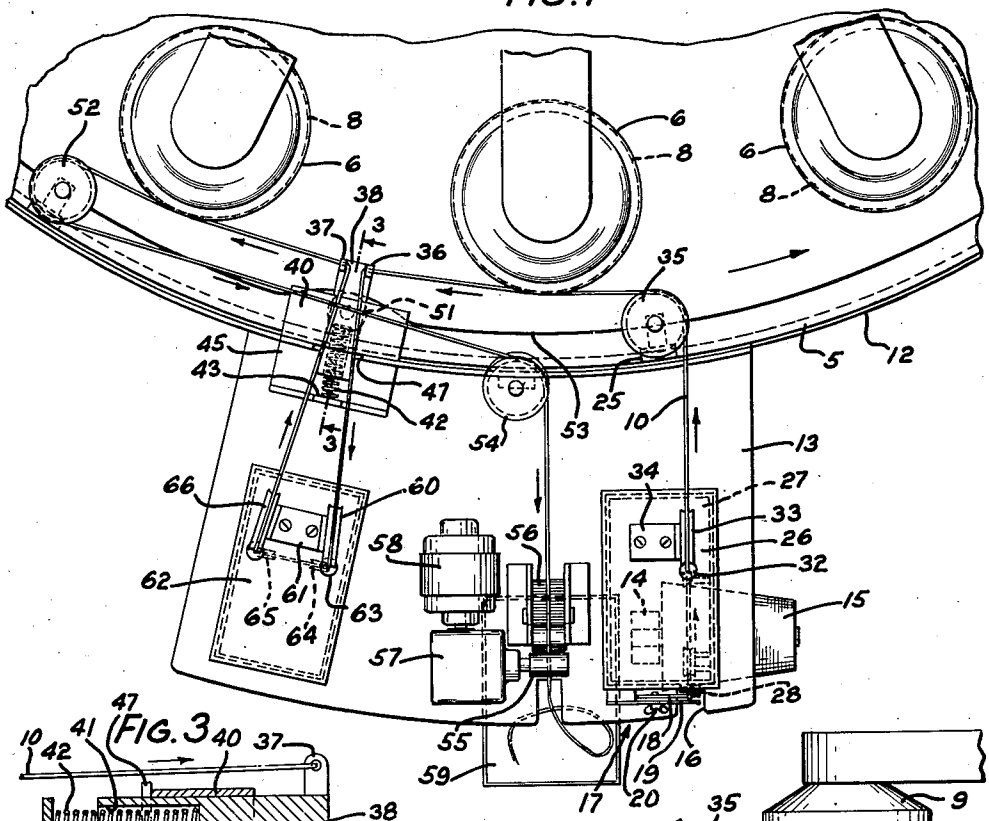


FIG. 3

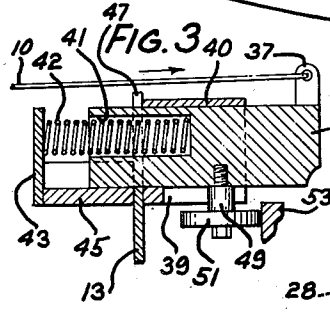
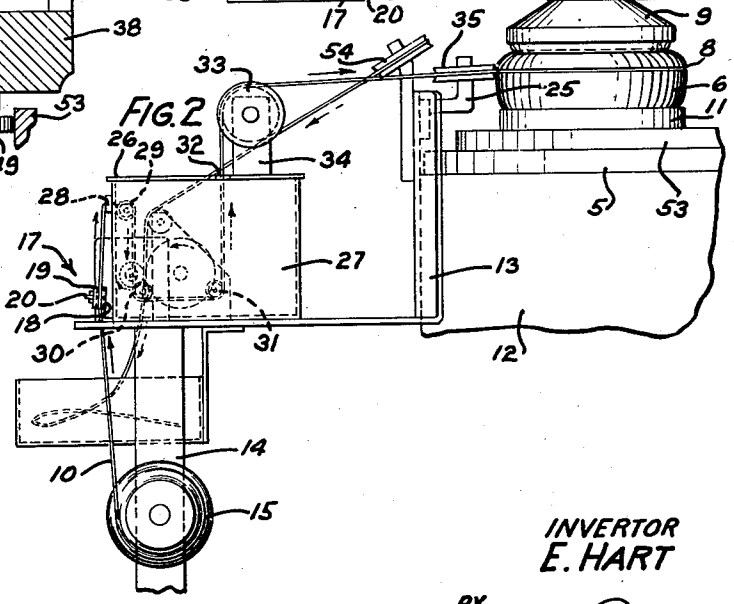


FIG. 2



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COLORING APPARATUS

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7 Claims. (Cl. 91—12)

This invention relates to coloring apparatus and more particularly to an apparatus for applying coloring composition to grooves in circular articles.

In the manufacture of some circular articles by molding processes, the articles, as formed, have a molding fin extending from them at the point where the two parts of the mold come together and it has proven advantageous to remove this fin by forming a groove in the article at that area, if possible. This process is followed in the manufacture of caps on telephone transmitters and receivers and adds to the appearance of the articles. However, when the molding fin is removed in this manner, the color and finish of the surface of the article in the groove is different from the remainder of the article. This difference detracts from the appearance of the articles and it is, therefore, desirable to color the grooves to the approximate coloring on the molded surfaces. The use of air brushes and stationary wicks or wipers has proven uneconomical since, with the particular type of coating used and the portion of the article to be coated, it is difficult to prevent the applicators from drying or clogging and thereby applying an uneven flow of stain to the portion of the article to be stained.

An object of the present invention is to provide a simple apparatus for quickly applying coloring composition to portions of articles.

In accordance with one embodiment, the present invention is designed particularly to provide means for economically applying stain to a groove formed in telephone handset transmitter and receiver caps. This is accomplished by drawing twine from a cop, through tanks containing stain, and directing it into the grooves in two transmitter or receiver caps while the caps are being rotated on a grooving machine turntable, which is operative to cut grooves in two caps at one time and then index two positions to carry two new caps into association with the grooving apparatus. A cam formed on the turntable controls part of the guiding mechanism for the stain applying twine and moves that portion of the guiding mechanism into position where the twine, guided thereby, will engage in the grooves in the caps during their rotation. The cam is effective to move the guiding means out of the path of the caps being stained upon indexing motion of the turntable which supports them.

A better understanding of the invention will be had by reference to the following detailed description when considered in conjunction with the accompanying drawing, wherein

Fig. 1 is a plan view of a portion of a milling or grinding machine for rotating transmitter or receiver caps to remove the molding flash from them, to which machine there has been attached mechanism embodying a preferred form of the present invention;

Fig. 2 is a side elevational view of the preferred form of means for applying stain to the grooves in receiver and transmitter caps, and

Fig. 3 is a vertical sectional view taken along line 3—3 of Fig. 1 in the direction of the arrows showing details of the mechanism for shifting the movable guides.

Referring to the drawing, wherein like reference characters designate the same parts throughout the several views, a turntable 5 is shown for carrying receiver caps 6 past a milling station (not shown) and into a staining station, as shown in the drawing. The turntable 5 is indexed by mechanism (not shown) to carry two receiver caps 6 into engagement with two grooving mechanisms (not shown), where the parts are rotated while the groove is formed in them by a grooving tool. Driving mechanism mounted within a housing 12 is provided for rotating the receiver cap 6 held on the turntable 5 between a clamping idler 9 and a cap driving member 11. Each of the receiver caps 6 has a groove 8 formed in it by a suitable grinding or milling operation in a portion of the machine (not shown), and it is this groove that the present apparatus is designed to stain.

The circular housing 12 has fixed to it a bracket 13, which supports the stain applying apparatus. Mounted on the undersurface of the bracket 13 is an arm 14, on which there is rotatably supported a cop 15 of ordinary cotton twine. In preparing the apparatus for operation, the twine 10 is led from the cop 15 through a slot 16 formed in the bracket 13 and through a spring brake 17 composed of a relatively stiff plate 18 and a spring 19, which is attached to the plate 18 by a bolt and thumb nut assembly 20, whereby the pressure of the spring 19 on the twine 10 may be adjusted to place a drag on the twine 10. A container 27, in which there may be placed a suitable supply of staining composition, is mounted on the bracket 13 and has an aperture 28 formed in its front side. Within the container 27, there are suitably positioned three guide rollers 29, 30 and 31, which direct the twine 10 through the staining composition in the container 27. The twine is directed upwardly from the guide roller 31 through an aperture 32 formed in the top 26 of the container 27 to a guide roller

33 mounted on a bracket 34, which is, in turn, fixed to the top 26 of the container 27. The twine 10 is then directed to a guide roller 35, rotatable on an arm 25, mounted on the bracket 13, and thence to a guide member 36.

The guide member 36 and a second guide member 37 are formed on the upper surface of a plunger 38 slidable between a block 39, fixed to the bracket 13, and a plate 40. The plunger 38 has a pocket 41 formed in it to receive one end of a coiled spring 42, which urges the plunger toward the axis of the turntable 5, being interposed between the end of the pocket 41 and a plate 43. A block 45, fixed to the bracket 13, supports the plate 43 and is mounted below a notch 47 cut in the bracket 13 to permit movement of the plunger 38 almost into engagement with the plate 43.

Extending downwardly from the plunger 38 is a post 49, on which is rotatably mounted a cam roller 51, designed to ride on a cam 53 mounted on and coaxial with the turntable 5. The cam 53 is so formed that the cam roller 51 will move radially toward the center of the turntable 5, between alternate caps 6, upon rotation of said turntable.

When the plunger 38 moves to the position shown, the twine 10 will be stretched and will be held between the guide roller 35 and guide member 36 in position to enter the groove 8 in one of the caps 6 while the cap is being rotated by its driving member 11. From the guide member 36, the twine 10 is directed to a guide roller 60 supported on a bracket 61, which is, in turn, mounted on the top of a second container 62. The guide roller 60 serves to direct the twine 10 downwardly through an aperture 63 in the top of the container 62 to guide rollers 64 and 65 suitably supported in the container 62 below the level of the coating or staining composition. Also mounted upon the bracket 61 is a second guide roller 66, which directs the twine 10 to the guide member 37 and thence around a guide roller 52 and a guide roller 54 to a knurled driving member 55, which cooperates with a knurled idler 56 that is suitably pressed against the driving member 55. Power is supplied to the driving member 55 through a speed reducer 57 from a driving motor 58 to draw the twine 10 over the various rollers and guides through the two containers 27 and 62 and direct the twine 10 into a suitable receptacle 59, from which it may be periodically removed and discarded.

It should be noted that the guide rollers 35 and 52 and the guide members 36 and 37 are so positioned that the twine in the area between them will bear tightly in the grooves 8 in the caps 6 at two positions, when the plunger 38 is in the forward position, as shown, thereby to apply stain from the containers to the grooves in the caps during the rotation of the caps by the driving members 11. When the turntable 5 is indexed about its axis, the cam roller 51 will move the plunger 38 outwardly to carry the plunger and guide members 36 and 37 out of the path of the caps 6, and when the turntable has moved two positions, the cam roller 51, following the contour of cam 53, will return the guide members 36 and 37 to the position shown.

Although a specific embodiment of the invention has been described hereinbefore, it will be understood that modifications thereof may be made without departing from the scope of the appended claims.

What is claimed is:

1. In apparatus for coloring a groove in an article, means for rotating the article, a support for said means bodily movable to carry the rotating means in a predetermined path, means for moving said support intermittently, a container for a coloring composition, a supply of twine for transferring coloring composition from the container to the article, means for drawing twine from said supply through the container, and means for holding the twine in the groove of the article, said last mentioned means including a twine guide reciprocable in timed relation to movements of the means for moving the support for moving the twine guide out of the path of the article when the rotating means is moved with said support.

2. In apparatus for coloring a groove in an article, means for rotating the article, a support for said means bodily movable to carry the rotating means in a predetermined path, a container for a coloring composition, a supply of twine for transferring coloring composition from the container to the article, means for drawing twine from said supply through the container, and means for holding the twine in the groove of the article, said last mentioned means including a twine guide, a plunger for supporting the twine guide, means for urging said plunger toward the articles, and cam means for periodically moving the plunger away from the articles.

3. In apparatus for coloring a groove in an article, means for rotating the article, a support for said means bodily movable to carry the rotating means in a predetermined path, means for moving said support, a container for a coloring composition, a supply of twine for transferring coloring composition from the container to the article, means for drawing twine from said supply through the container, and means for holding the twine in the groove of the article, said last mentioned means including fixed and movable twine guiding means, said movable twine guiding means being interposed between the fixed twine guiding means and being movable in timed relation to movements of the support for causing the twine to engage the article during rotation of the article and for removing the twine from contact with the article during bodily movement of the article.

4. In apparatus for coloring a groove in an article, means for rotating the article, a support for said means bodily movable to carry the rotating means in a predetermined path, means for moving said support, a container for a coloring composition, a supply of twine for transferring coloring composition from the container to the article, means for drawing twine from said supply through the container, and means for holding the twine in the groove of the article, said last mentioned means including fixed twine guiding means, movable twine guiding means, and means interposed between the fixed twine guiding means to carry the twine into engagement with adjacent articles on the support during the rotation of the articles operable in timed relation to the operation of the support for the rotating means for moving the movable twine guiding means out of the path of movement of the article when the support is moved.

5. In an apparatus for coloring a portion of an article, means for supplying an ever-changing length of strand, a rotating support for an article to have color applied thereto, means for rotating said support means for drawing the length of strand past an article carried by the rotating support, means for applying a coloring composi-

tion to the strand before it reaches the article, and guides for directing the strand into engagement with the portion of the article to be colored, whereby a fresh supply of strand carries the coloring composition to the article.

6. In an apparatus for coloring a groove in an article, means for rotating the article, a support for said means bodily movable to carry the rotating means in a predetermined path, means for imparting rotation to said support, a container for coloring composition, a supply of twine for transferring coloring composition from the container to the article, means for drawing twine from said supply through the container, and means for holding the twine in the groove of the article while the article is being rotated and not being moved bodily, said last mentioned means including means movable into the path of bodily movement of the article to carry the twine into the groove in the article and movable out of the path of the articles bodily movable with the support.

7. An apparatus for simultaneously applying a coloring composition to grooves in two adjacent rotating articles comprising a twin supply, means for drawing twine from said supply, a pair of containers for the coloring composition, a movable support for the rotating articles, means for moving said support to carry the articles past the twine, a guiding means for guiding twine from the supply through the containers against the grooves in the article and thence to the drawing means including stationary guiding rollers, movable guiding members, and means for moving the guiding members under control of the movable support to carry the twine into engagement with the grooves in the articles in the interval between movements of the support.

EARL HART.

CERTIFICATE OF CORRECTION.

Patent No. 2,289,263. July 7, 1942.

EARL HART.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, second column, line 60, claim 4, strike out the comma and words ", and means" and insert the same before "operable" in line 64, same claim; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 22nd day of September, A. D. 1942.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)