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By Eskin & Avery
Attys.

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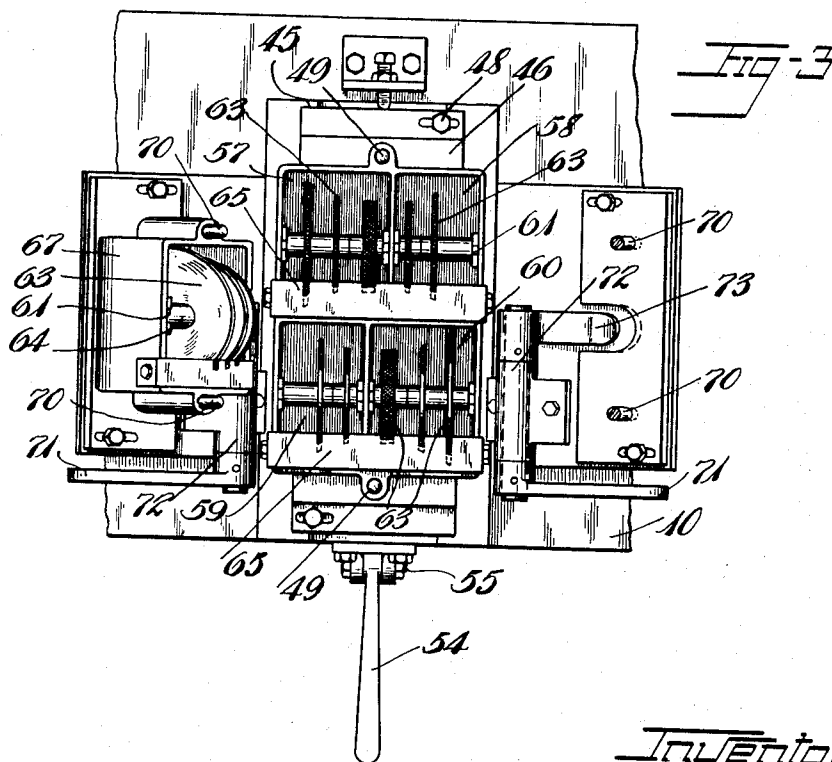
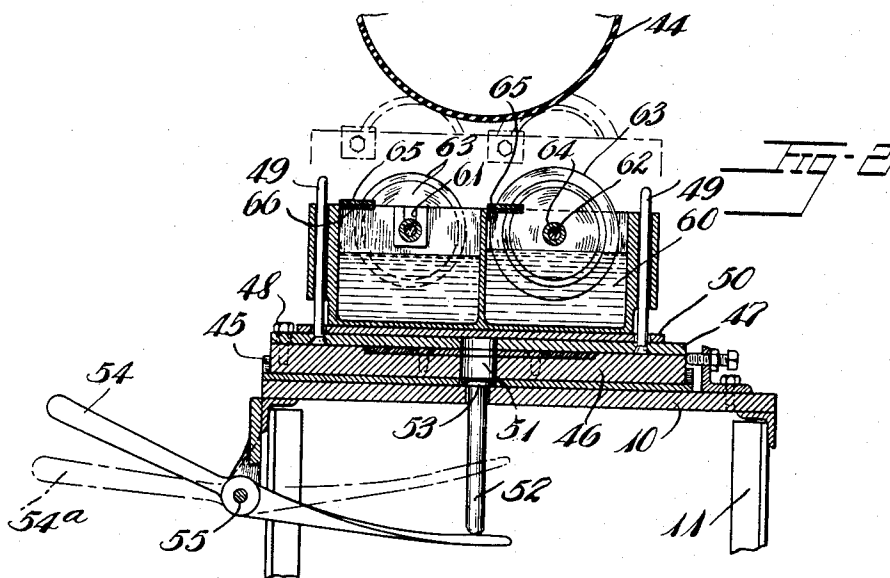
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MACHINE FOR STRIPING

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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

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MACHINE FOR STRIPING

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The invention relates to a method of and machine for striping and is especially useful in the manufacture of toy balls made of rubber.

Heretofore the striping of balls and other objects commonly has been done with special brushes manipulated by hand and the operators have been required to have considerable skill.

The objects of the present invention are to provide a novel method of procedure and a novel machine for automatically spacing the stripes which can be operated by unskilled labor at a reduced cost and will provide more uniform results.

In the drawings:

Fig. 1 is a front elevation of the device with a ball in striping position, part of the striping mechanism being shown in section.

Fig. 2 is a sectional elevation of a part of the device taken on line 2—2 of Fig. 1.

Fig. 3 is a plan view taken on line 3—3 of Fig. 1, parts of the device being broken away.

Referring to the drawings, the numeral 10 designates a table supported by legs 11 on which are rigidly mounted a head-stock 12 and tail stock 13. In the head-stock is mounted a live spindle 14 and is provided with a pulley 15 and cup-center 16 mounted thereon. The tail-stock 13 is provided with a spindle 17 journaled and slideably mounted therein and aligned with the live spindle 14. This spindle also carries a cup-center 18 facing the cup-center 16 and a grooved shifter-collar 19 at its opposite end.

A counter-shaft 20 is rotatably supported in brackets 21 and 22 beneath the table 10 and is prevented from moving endwise by collars 23 and 24 pinned thereto. Between the collars are rotatably mounted loose-pulleys 25 and 26 and a clutch disc 27. A spring 28, encircling the shaft and impinging against collar 24 and clutch disc 27, normally holds pulleys 25 and 26 in frictional driving engagement.

A shifter fork 29, pivoted at 30 on bracket 21, engages the disc 27 in a groove 31 and is adapted to compress spring 28 and release pulley 26 from driving engagement with pulley 25. For this purpose a horizontal arm 32,

integral with the shifter fork 31 is connected by a link 33 to a pedal 34 pivoted at 35 to the floor.

A shifter fork 36, pivoted at 37 to the tail-stock 13, engages the shifter collar 19 and is adapted to be actuated by a wire 38 connected to a lever 39, integral with arm 32, against a tension coil spring 40 anchored between form 36 and tail-stock 13.

Depression of pedal 34 retracts the tail-stock spindle 17 and disconnects the head-stock spindle 14 from the source of power to enable the operator to place and remove the balls. A shaft 40, below the table, is driven from a suitable source of power, not shown, and carries a pulley 41 which is connected to the pulley 25 by a belt 42. A belt 43 connects the pulley 26 to the pulley 15.

The cup centers 16 and 18 are provided with serrated ball-engaging edges to firmly engage the ball 44 and, where the balls are provided with beaded rings molded thereon, the cups are made of such size as to engage the ball surface adjacent one of these rings in order to perfectly center such beaded rings with the axis of rotation.

To apply the striping to the equatorial region of the ball the striping mechanism includes a dove-tailed guideway 45 mounted on the table, and a correspondingly dove-tailed slide 46 on which the striping devices are carried. A swivel plate 47 is adjustably secured upon slide 46 by screws 48 mounted in slots in the swivel plate and threaded into the slide. A pair of vertical guide rods 49 are mounted on the plate 47. A loose plate 50 is provided with guide openings larger than the rods, through which the rods project. A central opening 51 extends through the table 10, guideway 45, slide 46, and swivel plate 47 and in the opening a depending plunger 52 is retained by a shoulder 53 against downward movement beyond the position in which it is shown in Fig. 2 but may be raised to lift plate 50. A hand lever 54 pivoted at 55 on the table 10 extends beneath the plunger 52 and may be raised to the dot and dash position by depressing the handle to the position 54—A.

The paint for producing the stripes is stored in a paint pot 56 which is divided by partitions to provide a plurality of paint cells 57, 58, 59, 60, for the reception of paints of different colors. Each cell is provided with notch bearings 61 for supporting spindles 62 on which paint wheels 63 and spacer bushings 64 are mounted to rotate independently of each other. The paint wheels are of different diameters, so arranged as to contact with the spherical object to be striped, and are provided with knurled peripheral margins. Scraper bars 65 are located at one side of each cell and are notched (Fig. 3) to accommodate the margins of the paint wheels. Felt swabs 66 located on their lower sides remove excess paint from the wheels at the side of the wheels leaving the cell.

With the ball 44 in position and rotating the paint pot 56 is raised by the lever 54 until the paint wheels contact with the ball. In this position the high parts of the knurled surfaces contact with the ball with sufficient frictional force to turn the paint wheels. The paint lodged in the recesses in the knurled surfaces is brought into contact with and deposited on the ball. As the paint wheel leaves the ball surface the partial vacuum formed between the contact points and the ball surface draws the surrounding paint deposits toward each other and this, assisted by the wetting of the article by the paint solvent, causes the paint to merge in a uniform stripe.

Paint pot 56 has its partitions so arranged that cells 57 and 60 are larger than cells 58 and 59, and the respective paint wheels are so arranged that stripes alternating in color may be applied to a single ball at a single operation or four colors may be so applied that they alternate two colors in one hemisphere and two other colors in the other hemisphere.

In order to stripe the polar regions of the ball paint pots 67 and 68 are provided. These are of similar construction and are angularly supported on a plate 69 mounted on slide 46. Guide rods 70 are provided which extend loosely through apertured ears on the paint pots. A hand lever 71 pivoted at 72 on plate 69 has an arm 73 engaging under the paint pot 68 for raising it toward

the ball. Paint pot 67 is similarly provided with independent lifting mechanism.

In order to produce solid stripes it is advisable to use a paint of good-flowing and rather slow-drying properties, so that the isolated deposits may unite in a solid stripe before the paint becomes set. By so controlling the drying of the striping material a perfect merging of the isolated deposits into a solid stripe can be accomplished before the paint is set. This is preferably accomplished by allowing the articles to stand in a warm room.

What is claimed is:

1. Apparatus for striping surfaces of spherical articles, said apparatus comprising means for positively rotating the article, a paint pot, a plurality of freely rotatable striping wheels rotatable independently of each other in said pot and arranged simultaneously to contact with the spherical surface of the article, and means for advancing the paint pot toward the article to bring the striping wheels into engagement therewith.

2. Apparatus for striping surfaces of spherical articles, said apparatus comprising means for positively rotating the article, a plurality of paint pots, freely rotatable striping wheels in said paint pots arranged simultaneously to contact with the spherical surface of the article, and means for collectively moving said paint pots toward the article to bring said wheels into engagement therewith, the striping wheels being so arranged as to simultaneously apply alternate stripes of different colors.

3. Apparatus for striping spherical articles, said apparatus comprising means for positively rotating the article on a single axis, freely rotatable means comprising a plurality of striping wheels of different diameters, independently rotatable on axes parallel to the axis of rotation of the article for simultaneously applying a plurality of stripes to the equatorial portion thereof, and independent means rotatable and adjustable at an angle to the axis of the article for applying stripes to a polar region thereof.

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