Feb. 23, 1937. A. JOHNSON ET AL 2,071,345

STRIPING OR BANDING MACHINE

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Fig. 1.

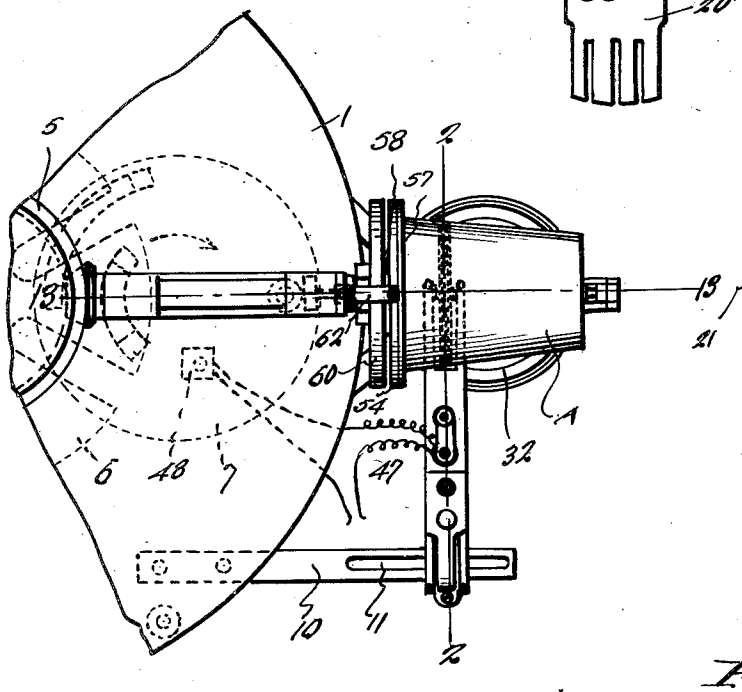


Fig. 11

Fig. 3.

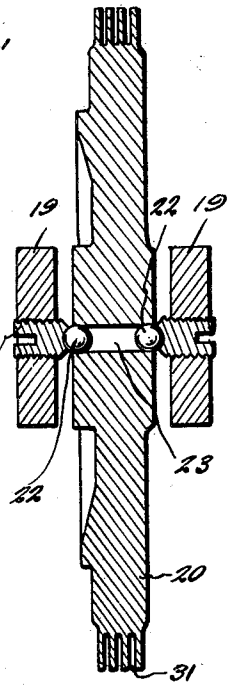


Fig. 12.



Fig. 2.

Fig. 10.

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Fig. 4

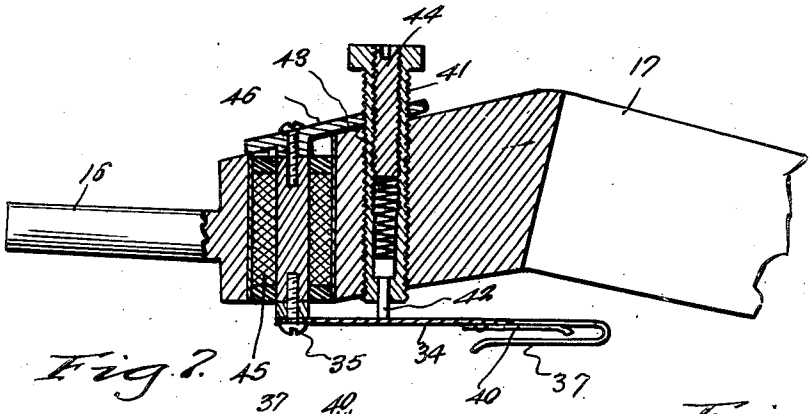


Fig. 7.

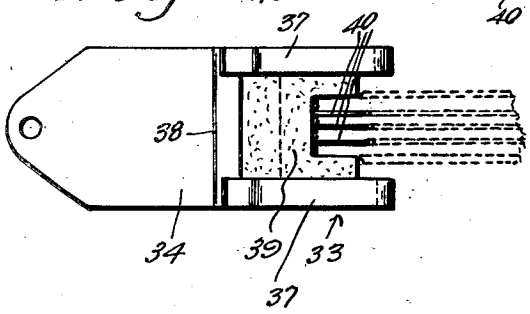


Fig. 9.

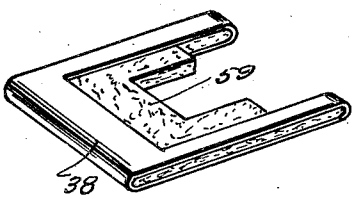


Fig. 8.

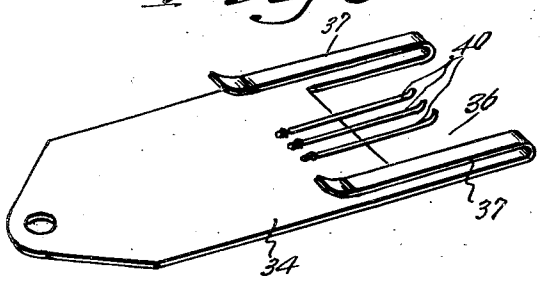


Fig. 5.

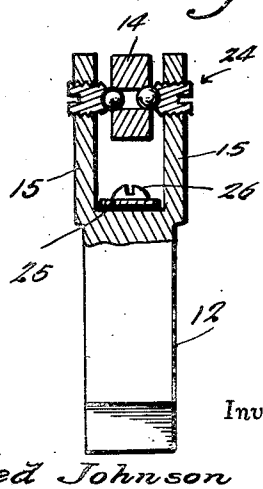
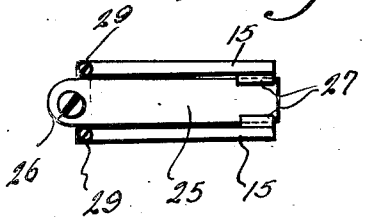


Fig. 6



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STRIPING OR BANDING MACHINE

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Fig. 13

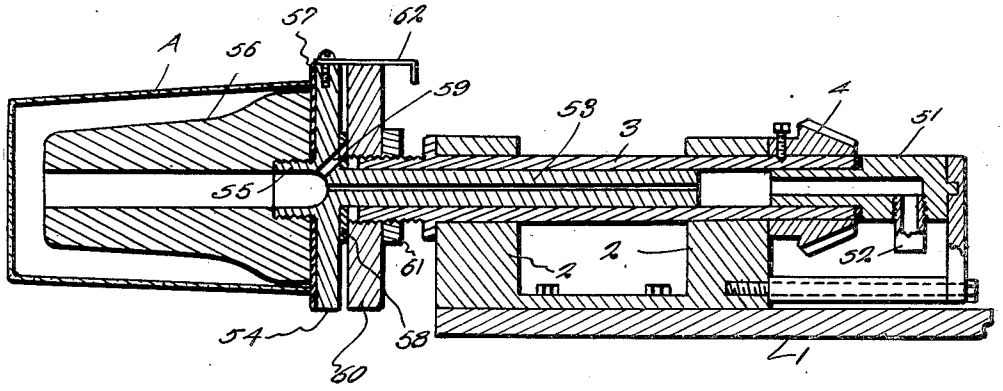


Fig. 14.

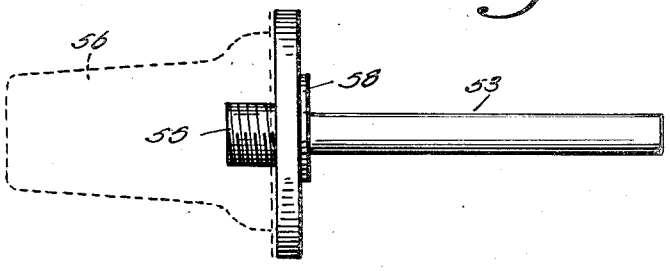


Fig. 15.

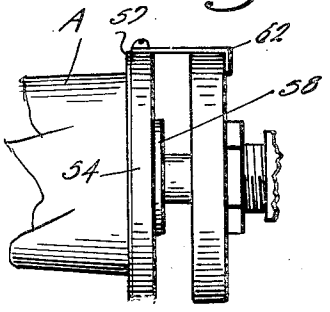
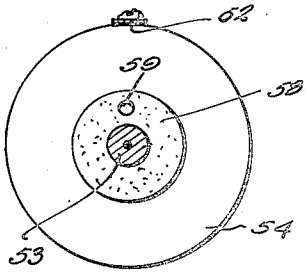


Fig. 16.



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UNITED STATES PATENT OFFICE

2,071,345

STRIPING OR BANDING MACHINE

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Application August 16, 1934, Serial No. 740,201

10 Claims. (Cl. 91—12)

This invention relates to a striping or banding machine, the present application being an improvement over the subject matter of our application Serial No. 707,958 filed January 23, 1934, the improvement increasing the efficiency of the machine.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is a fragmentary top plan view of the machine constructed in accordance with this invention.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is a section on line 3—3 of Figure 2.

Figure 4 is a view partly in section and partly in side view of the wheel carrying member with the parts carried thereby.

Figure 5 is a section on line 5—5 of Figure 2.

Figure 6 is a top plan view of the forked post with which the wheel carrying arm is pivoted, with the arm removed and showing the spring and the stop lugs for limiting upward movement of the spring.

Figure 7 is a view of the scraper or wiper assembly of the wheel.

Figure 8 is a view of the supporting member of said assembly with the cartridge carrying the wiper member removed.

Figure 9 is a view of this cartridge.

Figure 10 is a fragmentary vertical sectional view showing how the switch which controls the circuit to the magnetic means is operated by a cam on a rotary disk.

Figure 11 is a detail view showing a modified form of the applicator wheel.

Figure 12 is a similar view showing another form.

Figure 13 is a vertical sectional view showing the vacuum means for holding a glass in position.

Figure 14 is a view of the mandrel holding shaft.

Figure 15 is a detail view showing the means for limiting outward movement of the mandrel bearing head relative to the head of the rotary outer shaft of the vacuum assembly.

Figure 16 is a section on line 16—16 of Figure 15.

As fully described and illustrated in the above entitled application the apparatus includes a supporting structure supporting a tubular shaft on which is fixed a rotary circular table 1 having bearing members 2 thereon for radial shafts 3, the outer end of which carry the means for supporting the glassware or the like shown at A in Figures 1 and 13. Shaft 3 has a beveled gear 4 on its inner end which mesh with a beveled gear 5 attached to the upper end of a constantly driven shaft, not shown and which has a portion passing through the tubular shaft. This constantly driven shaft rotates the tubular shaft by a Geneva gear shown at 6 in dotted lines in Figure 1 and a disk 7 having a projection thereon engaging the slots of the Geneva gear so that the table 1 is intermittently rotated while the shafts 3 are constantly rotated. As before stated these parts are fully described and illustrated in the above mentioned application. Mounted on the frame is an applicator station and while the drawings show but one station as many of these stations can be provided as desired or in accordance with the number of shafts which rotatably support the glassware. A bar 10 is supported by the frame and has an elongated slot 11 therein which slidingly receives the reduced lower end of a forked member 12 which is secured in adjusted position on the bar by a bolt and washer shown at 13 in Figure 2. A sectional arm 14 has one end pivoted between the prongs 15 at the upper end of the forked member, the other end of this section having a socket therein for receiving the stud 16 of the second section 17 so that the section 17 is rotatably connected with the section 14 and said section 17 is held in adjusted position by a set screw 18 threaded in a hole in the section 14 and engages the stud 16. The outer end of the section 17 is forked to provide the prongs 19 which rotatably support between them the applicator wheel 20. As shown more particularly in Figure 3 the prongs 19 are provided with threaded holes for receiving the set screws 21 having tapered inner ends formed with substantially semi-spherical recesses for receiving the balls 22 which are pressed into the ends of a centrally arranged bore 23 formed in the hub of the wheel 20. These balls 22 are held against rotary movement in the ends of the bore and rotate in the recesses in the screws 21. The same arrangement is used for the bearing means 24 at the outer end of the section 14 of the arm as shown at 24 in Figure 5. The prongs 15 as well as the prongs 19 are slightly resilient so that blows or the like struck the arm or the wheel will cause a slight movement of the prongs and thus prevent damage to the parts and permit the parts

to return to normal position after being struck.

The prongs 15 extend toward the wheel as shown at 15' in Figure 2 and a leaf spring 25 rests partly on the shoulder formed at the junction of the prongs with the part 12 and has one end fastened to the shoulder forming part by a screw 26, the spring tending to move upwardly at its other end but such movement is limited by the stops 27 on the lower portion of the outer parts of the prongs as shown in Figure 6. Each of the prongs 15 and 19 is split as shown at 28, the split extending into the screw receiving opening and the split portions are adjustably connected together by the screws 29.

A screw 30 passes through a threaded hole in the section 14 of the arm and engages the free end of the spring 25, as shown in Figure 2, this screw and spring forming adjustable yieldable means for holding the arm and wheel in a certain position.

As will be understood a plurality of wheels must be furnished with the apparatus, the wheels being interchangeable and of different shapes and sizes. Figures 3, 11 and 12 show wide wheels for the application of wide bands to the articles and in these wide wheels the circumferences are grooved as at 31, these grooves efficiently applying coating material to the article in an even and smooth manner. The wheel shown in Figure 3 has what might be termed a flat peripheral edge while that shown at 20' in Figure 11 has a convexed edge and that shown at 20'' in Figure 12 has a concave edge. It will of course be understood that a certain kind of wheel must be used for certain kinds and shapes of articles.

The wheel picks up the coating material from a pan 32 as in the before mentioned application and a scraper assembly shown at 33 is provided for preventing too much of the coating material being carried to the article by the wheel. This assembly comprises a plate 34 of spring material and having one end reduced and perforated to receive a screw 35 which connects said end with the lower part of the section 17 of the arm. The other end of the plate is cut away at its central portion as shown at 36 and the edges left by this cut away portion are bent into loop form as shown at 37 to provide spring jaws for holding a cartridge or container 38, shown in Figure 9, which is of substantially U-shape and includes upper and lower portions for receiving the U-shaped scraping element 39 as shown in Figure 9. This element may be of felt or the like or of any other suitable material. The cartridge or container 38 fits between the parts 37 as shown in Figure 7 so that it can be readily removed and another one substituted for it. The plate 34 also carries a plurality of spring fingers 40, as shown in Figure 8 for entering the grooves 31 for removing or partly removing coating material from said grooves. The resiliency of the plate 34 tends to move the parts upwardly but the limit of upward movement of the plate can be adjusted through means of the hollow screw 41 shown in Figure 4 passing through a threaded hole in the section 17 of the arm and having a plunger 42 passing through its lower end engaging the plate 34. This plunger is preferably of brass or the like and its enlarged upper end located within the bore of the screw 41 is engaged by a spring 43 the tension of which is adjusted by a screw plug 44 threaded in the bore of the screw 41.

An electromagnet 45 is located in a hole formed in the section 17 of the arm and the screw 35 which connects the plate 34 to the arm enters the core of the magnet and a bridge 46 connects the upper end of the core with the outer part of the screw 41 as shown in Figure 4 so that when the magnet is energized the spring 34 will be attracted and moved upwardly, pushing the plunger 42 upwardly against the action of the spring 43 and then when the circuit to the magnet is broken the spring 43 pushes the plunger 42 downwardly with considerable force and also moves the plate 44 downwardly and this movement will dislodge any coating material from the scraper which has become hardened and which would interfere with the scraping action upon the wheel. The circuit 47 for the magnetic means is controlled by a switch 48 carried by a part of the frame 49, as shown in Figure 10, the switch being closed by a cam 50 on the member 7 of the Geneva movement. As shown in Figure 1 the switch is so arranged that it will be closed by the cam before the article A reaches the application station so that the scraper will be clean when the application of the paint or coating material is being performed.

The invention also embodies vacuum means for holding the articles A in position and as will be seen from Figure 13 the shaft 3 is of hollow construction and has its inner end with which the gear 4 is used rotatably fitting over the reduced part of a bored member 51 carried by the table 1 and the bore of which is connected to a vacuum producing means by a tube 52. A bored shaft 53 has a frictional sliding fit in the shaft 3 and projects therefrom and has a head 54 secured to its outer end. Said head is formed with a threaded nipple 55 to which is threaded a bored mandrel 56, preferably of the shape shown in Figure 13 with its inner end enlarged and of but slightly less diameter than the mouth of the article A as also shown in Figure 13. A gasket 57 is held between the head 54 and the mandrel and projects beyond the inner end of the mandrel to be engaged by the mouth of the article. Thus a vacuum is created in the article which holds the same in place against the gasket, the air from the article being drawn through the bore of the mandrel, the nipple 55, the bore of the shaft 53, a portion of the shaft 3 and the bore of the member 51. A gasket 58 is connected to the inner face of the head 54 and a port 59 passes from the interior of the nipple through the head 54 and this gasket, the outer end of the port being normally closed by a head 60 threaded to the outer end of the shaft 3 and held against movement by a lock nut 61. An L spring member 62 is fastened to the head 54 and engages the head 60 and limits outward movement of the head 54 as shown in Figure 13. The frictional engagement of this member 62 with the head 60 and the frictional engagement of the shaft 53 with the interior of the shaft 3 prevents free outward movement of the head 54 and the parts attached thereto but when the article A is pulled directly outwardly said head 54 and the parts attached thereto will move outwardly, thus opening the port 59 so as to break the vacuum within the article A and to permit it to be easily removed. Thus it is necessary for the article to be pulled directly outwardly before it can be removed from the mandrel.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the combination and arrangement of the several parts provided that such changes fall within the scope of the appended claims.

Having thus described my invention, what I claim as new is:

1. In an ornamenting device of the class described a wheel for applying coating material to an article, an arm carrying the wheel, a post to which the arm is pivoted, said arm being formed of two longitudinally extending sections with the wheel carrying section rotatably supported by the other section for movement about its longitudinal axis and means for holding said wheel carrying section in adjusted position.

2. In an ornamenting machine a wheel for applying coating material to an article, an arm having a forked end between the prongs of which the wheel is rotatably supported, a supporting post having a forked extremity between the prongs of which the opposite end of the arm is pivoted, said pairs of prongs being slightly resilient, each prong of the two pairs of prongs having a threaded hole therein, a screw threaded in each hole and having a concavity in its inner end, the ends of the hub of the wheel and the pivoted end of the arm having recesses therein, balls forced into said recesses and engaging the recesses in the screws.

3. In an ornamenting machine a wheel for applying coating material to an article, an arm rotatably supporting the wheel at one end of the arm, a post to which the other end of the arm is pivoted, a spring carried by the post and a screw passing through the arm and engaging the spring for resiliently holding the arm and wheel against downward movement.

4. In an ornamenting apparatus of the class described, a support, a wheel rotatably mounted on said support for applying a single stripe of material to an article, said wheel having a continuous circumferentially extending groove in its periphery defining spaced material carrying surfaces, the width of said groove being less than the width of each material carrying surface whereby the material after being applied by the surfaces to the article runs together to form a single stripe, a scraper mounted on said support and adjustable relative to the material carrying surfaces for controlling the amount of material carried thereby and consequently the thickness of the stripe of material applied to the article, and a finger carried by said scraper and extending in said groove for controlling the amount of the material in said groove.

5. In an ornamenting apparatus of the class described, a support, a wheel rotatably mounted on said support for applying a single stripe of material to an article, said wheel having a plurality of continuous circumferentially extending grooves in its periphery defining spaced material carrying surfaces, the width of said grooves being less than the width of each of the material carrying surfaces whereby the material after being applied to the article by the material carrying surfaces runs together to form a single stripe, a plate mounted on said support, a felt scraper carried by the free end of said plate, said plate being adjustable with respect to the support to vary the space between the felt scraper and the material carrying surfaces to control the amount of material carried by the surfaces and consequently the thickness of the stripe of material applied to the article, and a plurality of fingers carried by said plate extending into said grooves for controlling the amount of material in said grooves.

6. In an ornamenting apparatus of the class described, a support, a striping wheel rotatably mounted on said support, a plate mounted on said support having a substantially U-shaped recess in the free end thereof disposed in straddling relation to the outer portion of said wheel, the free ends of said plate being bent backwardly for a portion of their length upon themselves defining cartridge receiving grooves, a cartridge removably disposed in said grooves having a felt scraper disposed therein, said felt scraper having a substantially U-shaped recess in the free end portion thereof in straddling relation to the outer portion of said wheel, and means for adjusting the relative position of the bight portion of the recess in the felt washer with respect to the periphery of said wheel.

7. In an ornamenting apparatus of the class described, a support, a striping wheel rotatably mounted on said support having a continuous circumferentially extending groove therein, a plate mounted on said support having a substantially U-shaped recess in the free end thereof disposed in straddling relation to the outer portion of said wheel, a finger secured to said plate and having its free end extending into said groove, a felt scraper secured to the free end of said plate, said felt scraper having a substantially U-shaped recess in the free end portion thereof in straddling relation to the outer portion of said wheel, and means for adjusting said plate to vary the position of the bight portion of said recess in said felt scraper with respect to the periphery of said wheel.

8. In an ornamenting machine, a wheel carrying support, a wheel carried by said support, a scraper for said wheel mounted on said support, magnetic means for periodically urging said scraper in one direction, and a spring actuated plunger for urging said scraper in a direction opposite thereto upon de-energization of said magnetic means to remove the hardened material from said scraper.

9. In an ornamenting machine, a scraper, magnetic means upon energization thereof for periodically urging said scraper in one direction, a spring actuated plunger for urging said scraper in a direction opposite thereto upon de-energization of said magnetic means, and means for adjusting the tension of said spring.

10. In a banding machine of the class described including a support, a table rotatably mounted on the supporting structure, mandrels rotatably mounted on the table for spinning articles, drive means for rotating said table, a striping station including an applicator wheel and a scraper associated therewith, means for automatically jarring the scraper for removing hardened material therefrom prior to the time the mandrels reach the striping station, comprising electromagnetic means for urging said scraper in one direction upon energization thereof, cooperating electrical contacts on the support and table controlling the energization of said electromagnetic means and resiliently actuated means urging said scraper in a direction opposite to the electromagnetic attraction upon de-energization of the electromagnetic means.

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