

March 23, 1937.

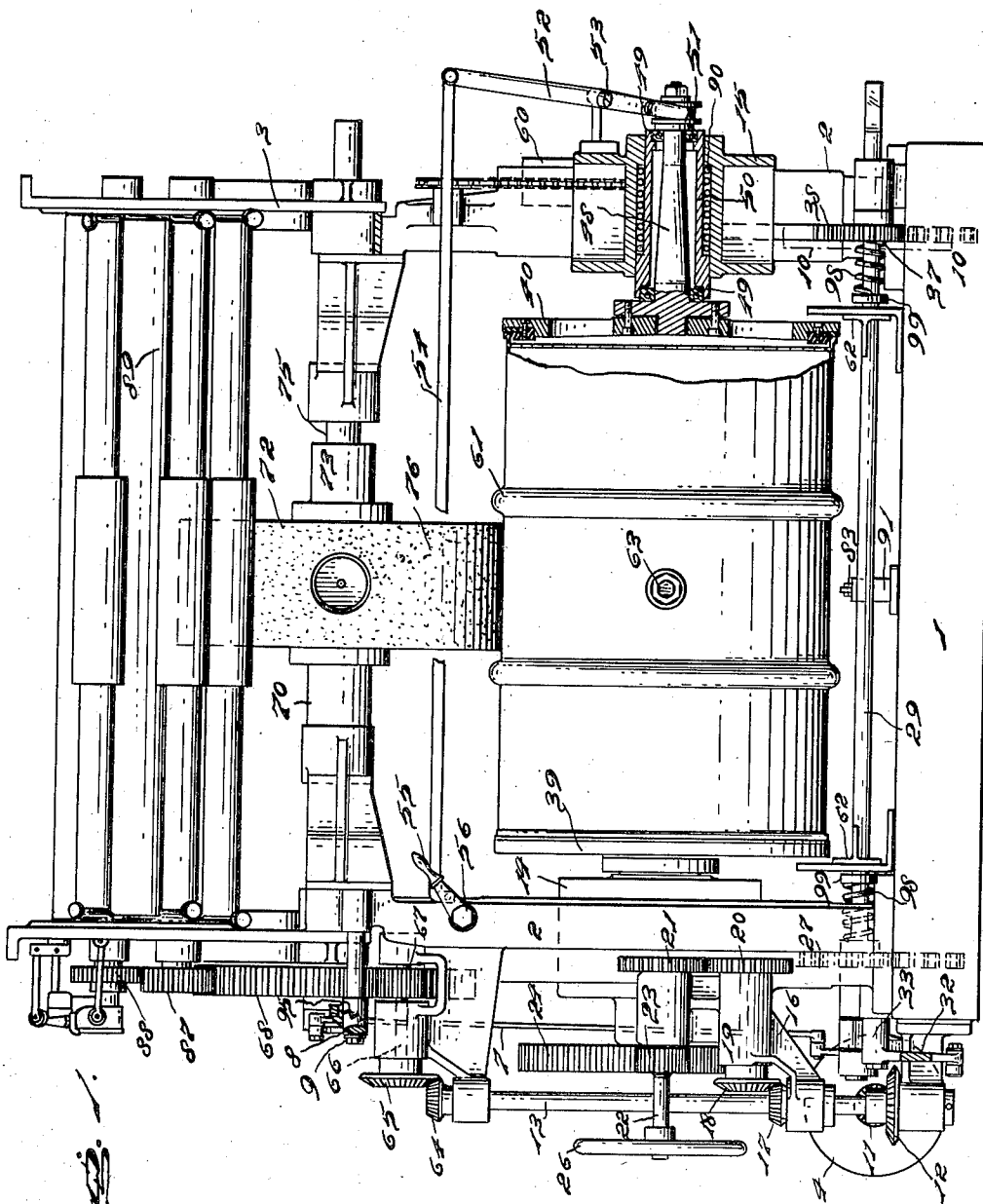
E. J. ROLLINGS

2,074,432

BARREL PAINTING MACHINE

Filed May 15, 1934

3 Sheets-Sheet 1



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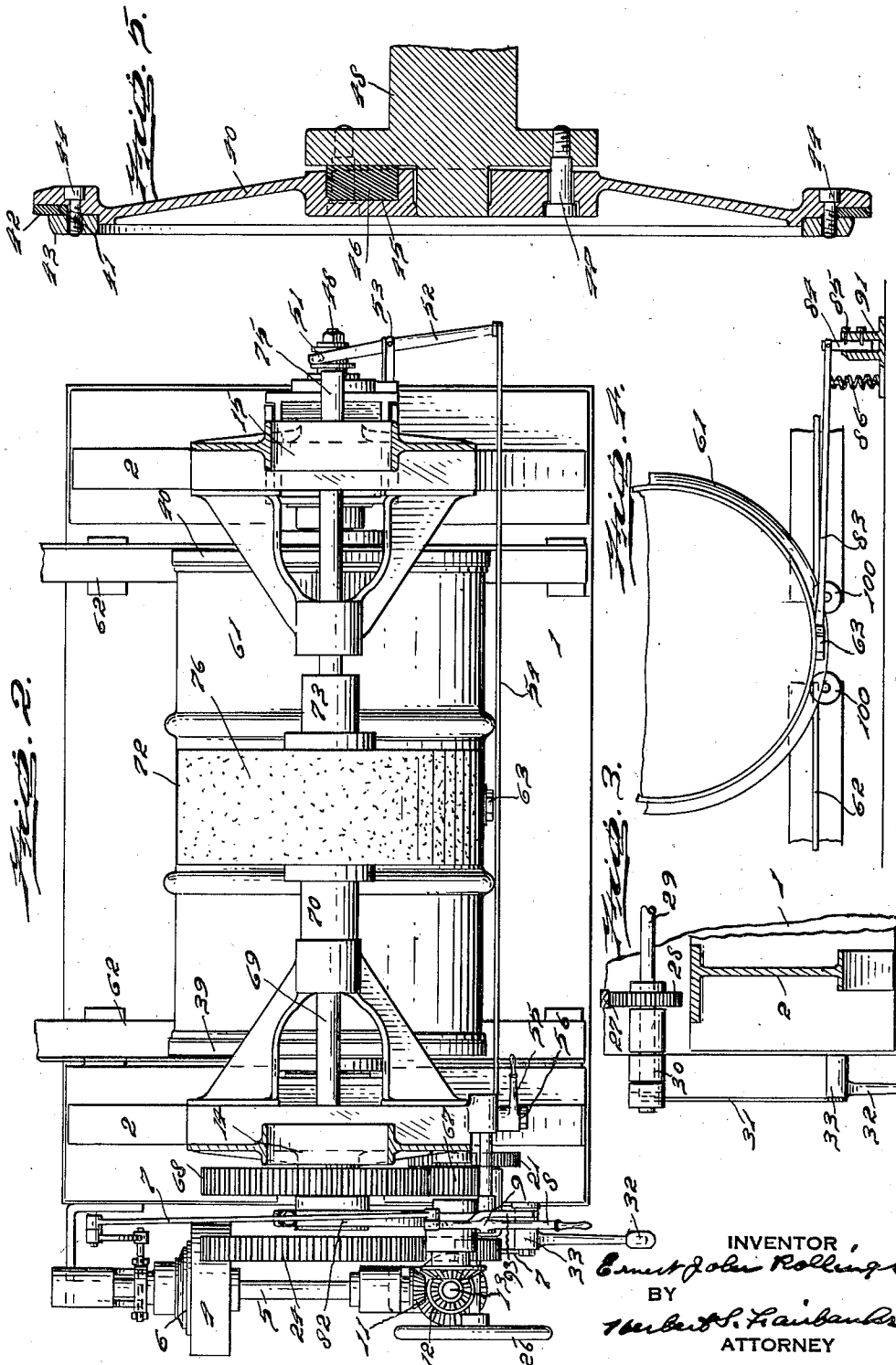
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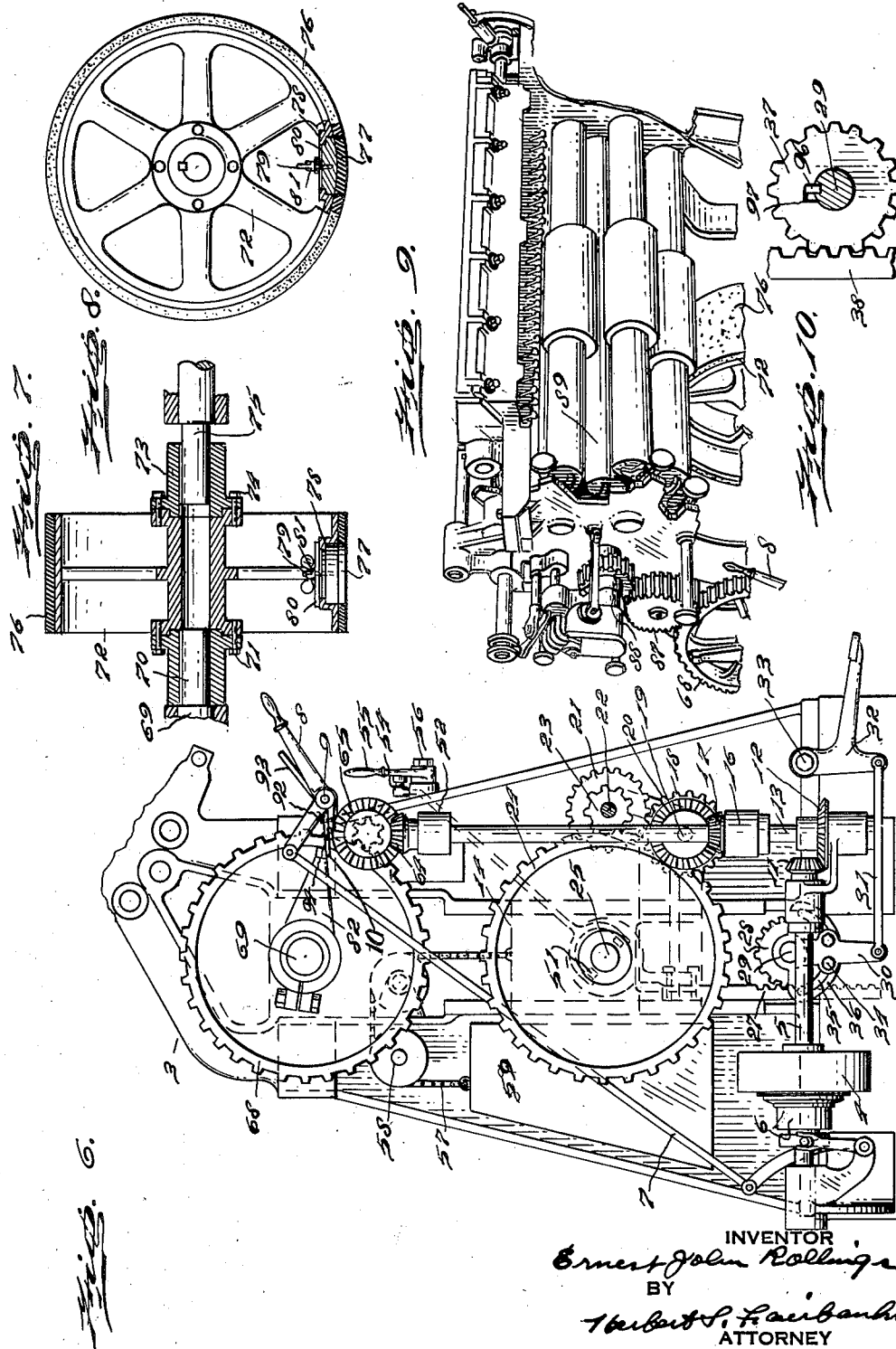
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UNITED STATES PATENT OFFICE

2,074,432

BARREL PAINTING MACHINE

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phia, Pa., a company of Pennsylvania

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8 Claims. (Cl. 91—50)

The object of this invention is to devise a novel machine for painting barrels and similar articles of manufacture.

In the painting of metallic drums, such as oil, alcohol and other types of cylindrical containers, it is now customary to paint the central portion with a color different from that used to paint the other cylindrical portions.

The paint is applied by the spray method and it has been found difficult to provide a sharp dividing line between the contrasting colors, and to uniformly apply the paint around the bung located at the central portion of the barrel.

Furthermore, where the spray method is employed, it has been deemed necessary to apply adhesive strips around the barrel after one color has been applied, and these strips must afterwards be removed. These features of operation render the painting operation slow and expensive.

The object of my present invention is to decrease the time and expense involved in applying a color strip to a barrel or cylindrical container.

A further object is to devise novel aligning means for the barrels, novel clamping means, novel means for applying color, novel means for moving a clamped barrel into cooperation with the color applying means, and novel controlling mechanism.

With the above and other novel objects in view as will hereinafter more clearly appear, my invention comprehends a novel barrel painting machine.

It further comprehends novel barrel aligning means, novel barrel clamping means, novel means for applying color including a novel roller, novel means for moving a clamped barrel into cooperation with said roller, and novel means under the control of the operator to occasion the cyclical operations.

Other novel features of construction and advantage will hereinafter more clearly appear in the detailed description and the appended claims.

For the purpose of illustrating the invention I have shown in the accompanying drawings a typical embodiment of it, which, in practice, will give satisfactory and reliable results. It is, however, to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized, and my invention is not limited to the exact arrangement and organization of these instrumentalities as herein set forth.

Figure 1 is a front elevation, partly broken away, of a barrel painting machine embodying my invention.

Figure 2 is a sectional plan view of the machine.

Figure 3 is a sectional detail.

Figure 4 is an end elevation, of a barrel and its aligning means.

Figure 5 is a sectional view of one of the clamping members, on an enlarged scale.

Figure 6 is an end elevation of the machine, with a portion of the color applying means.

Figure 7 is a sectional elevation of the color applying roll.

Figure 8 is a side elevation of the color applying roll.

Figure 9 is a perspective view of the upper portion of the machine showing more particularly the inking or color feed mechanism for the color applying roll.

Figure 10 is a section on line 10—10 of Figure 1.

Similar numerals indicate corresponding parts.

Referring to the drawings:—

1 designates the base of a barrel painting machine, embodying my invention. The base has end standards 2 secured thereto by suitable fastening devices, and the end standards at their upper ends are connected to the frame of a color applying mechanism 3. The color applying mechanism includes inking mechanism which is conventional and purchased in the open market. I have illustrated it and will describe it with only sufficient detail to enable one to clearly understand the cycle of the operation.

A pulley 4 driven by any desired source of power is mounted on a shaft 5 having a clutch 6, to which is operatively connected one end of a link 7, the other end of which is connected to an arm of a controlling lever 8 fulcrumed at 9 on the machine frame. The lever 8 has an arm 10 the purpose of which will hereinafter appear.

The clutch shaft 5 has a gear 11 which meshes with a gear 12 on a shaft 13 journaled in an end standard. 14 and 15 designate carrier heads slidably mounted in the standards for vertical movement. The head 14 has a bracket 16 through which the shaft 13 passes and this bracket carries a gear 17 splined to the shaft 13 and meshing with a gear 18 fixed to a shaft 19 journaled in its carrier head 14. The shaft 19 has fixed to it a gear 20 which meshes with a gear 21 on a shaft 22 journaled in the carrier head 14. The shaft 22 is provided with a gear 23 which meshes with a gear 24 fixed to a shaft 25 journaled in the carrier head 15. The shaft 22 is provided with a hand wheel 26.

The carrier heads 14 and 15 are raised and lowered to bring a barrel into and out of its painting position.

The carrier head 14 has a rack 27 fixed to it and meshing with a gear 28 on a shaft 29 mounted in the machine frame. The shaft 29 has fixed to it an arm 30 to which is connected one end of a link 31, the other end of which is connected to a foot treadle 32 fulcrumed at 33 on the machine frame. The arm 30 is clamped by bolts 34 which extend through curved slots 35 in a bracket 36. The shaft 29 extends across the machine above its base and is provided with a gear 37 which meshes with a rack 38 fixed to the carrier head 15. It will thus be clear that the carrier heads 14 and 15 can be simultaneously raised or lowered.

The shaft 25 has fixed to it a barrel clamping member 39 recessed to receive an end of the barrel. The carrier head 15 has adjustably mounted on it a clamping member 40, the detailed description of which will be best understood by reference to Figure 5. This clamping member 40 is in the form of a disc having on its inner face at its outer periphery an annular recess 41 to receive a rubber ring 42 and a steel ring 43 which holds the ring 42 in position and is secured in position by fastening devices 44. The steel ring 43 extends beyond the side face of the clamping member 40 and has its outer edge inwardly bevelled or inclined. The hub portion of the member 40 has circumferentially spaced pockets 45 opening through its outer face and containing resilient cushions 46 such as rubber extending beyond the outer face of the member. Fastening devices 47 pass through the hub portion of the clamping member 40, and engage the flanged hub of a spindle 48 mounted on antifriction bearings 49 in a longitudinally adjustable sleeve bearing 50 movably carried by the carrier head 15. The sleeve bearing 50 is acted upon by a spring 90, one end of which bears against a shoulder on the carrier head 15 and the other end of which bears against a shoulder on the sleeve bearing, thus tending to move the clamping head 40 inwardly.

The outer face of the hub of a clamping member is flared outwardly to provide clearance and it also has a clearance on the spindle, so that the barrel will be properly centered during the clamping operation. The object of this design of chuck is to compensate for barrel heads which are not parallel so that the shell can revolve properly without wobbling due to wobbling heads in barrel.

The spindle 48 has a collar 51 which receives the end studs of a lever 52 fulcrumed at 53 on the carrier head 15. The lever 52 is connected by a link 54 with a lever 55 fulcrumed at 53 on the carrier head 15. The lever 52 is connected by a link 54 with a lever 55 fulcrumed at 56 on the machine frame. Each of the carrier heads is provided with a counterweight. The carrier head 14 has fixed to it a chain 57 which passes over pulleys 58 and is connected with a counterweight 59. In a similar manner the carrier head 15 is provided with a counterweight 60.

The barrel 61 rolls into the machine on tracks 62, and may or may not be provided with a centrally disposed bung 63. The shaft 13 has at its upper end, see Figures 1 and 6, a gear 64 which meshes with a gear 65 on a shaft 66 journaled on the frame of the color applying mechanism 3. The shaft 66 has fixed to it a gear 67 which meshes with a gear 68 on a roll drive shaft 69 journaled in the frame of the color applying mechanism, see also Figure 9. The shaft 69 has a reduced extension to which is keyed a

flanged sleeve 70 secured by fastening devices 71 to the flanged hub of a color applying roll 72. A flanged sleeve 73 is secured to the opposite end of the hub of the color applying roll by fastening devices 74 and is keyed to a shaft 75 journaled in the frame of the color applying mechanism. The color applying roll 72 has a resilient outer face 76, preferably of rubber. In order to adapt the color applying roll to receive a bung so that the barrel will be uniformly painted around the bung, the roll is provided with a removable section 77 which bears against an inner flange 78 of the roll and has a threaded rod 79 passing through a bearing strip 80 and provided with a wing nut 81.

In order to adapt the machine for more than one revolution of the roll 72, the arm 10 has pivoted to it at 92 a stop lever 93 which is normally held against a stop 94 by a spring 95. The free end of the lever 93 is in the path of the clutch throw out arm 82 fixed to the shaft 69.

If the barrel to be painted has a central bung it is necessary to align the barrel before clamping it in position. For this purpose, I provide an aligning member 83 in the form of a lever fulcrumed at one end to a post 84 vertically adjustable in a casing 91 secured to the base of the machine and fixed in adjusted position by fastening devices 85.

A spring 86 tends to retain the free end of the aligning member in its raised position.

For the purpose of applying the desired color to the color applying roll 72, I employ the conventional inking mechanism of a printing machine which is driven by the gear 68, see Figure 1. The gear 68 meshes with a gear 87 which drives a gear 88 fixed to the shaft of the ink applying roll 89, which latter contacts with the color applying roll 72. The rolls for feeding color from the ink fountain and applying it to the inking roll 89 are conventional and correspond substantially to the disclosure in the trade catalogue of the Hoover Press of Glendarm, Maryland.

In some cases the central portion of the barrel or drum is not truly cylindrical and I therefore provide novel means for causing a uniform contact of the color applying roll 72 with the barrel. The pinions 37 are not fixedly connected with the shaft 29 since the keys 96 are in slots 97 of greater dimensions than the keys. Springs 98 are connected with the hubs of the pinions 37 and with set collars 99 on the shaft 29. When the foot treadle is pressed to raise the clamped barrel, the barrel will be brought into uniform contact with the color applying roll so that the color will be uniformly applied to the barrel, even if the portion being painted is deformed. The clearance between the keys 96 and slots 97 permits the automatic alignment and the springs 98 tend to move the keys against the forward wall of their slots.

The roll 72 is preferably of the same diameter as the barrel, and the roll and the barrel are intergeared to maintain the correct relative positions.

The operation of my novel barrel painting machine will now be apparent to those skilled in this art and is as follows:—

A barrel rolls into the machine on the tracks 62, and is received on the small rollers 100, the tracks being interrupted at this location. The operator turns the barrel on the rollers, if it has a central bung, until the bung contacts with the end of the aligning member 83. He then actu-

ates the handle lever 55 to cause the clamping member 40 to move inwardly, the barrel aligning itself on the rubber rings of the clamping members 39 and 40 which are of the same construction as to their resilient mountings.

The operator next pushes the foot treadle downwardly to cause the carrier heads to move upwardly and thus bring the barrel into engagement with the color applying roll 72.

10 The lever 8 is actuated to throw in the clutch, the barrel is revolved one revolution and the clutch throw out arm 82 strikes the arm 10 and moves the clutch 6 into its declutched position.

In some cases, it is desirable to have the barrel and roll make more than one revolution, which can be readily accomplished by moving the stop lever 93 to bring its free end out of the path of the clutch throw out arm 82. When the stop lever is released, its free end will return into the path of the clutch throw out arm and the machine will automatically stop on the completion of a determined number of revolutions.

The clamping members are identical in construction and are mounted in the same manner, each of them having the hub opening provided with a clearance towards the outer end of the hub and the outer side wall of the hub flared to provide clearance between it and the juxtaposed wall of its spindle or shaft. Each of the clamping members is thus self centering and if the ends of the barrel are not paralleled, the barrel will be properly aligned in the clamping members.

The color is thus uniformly applied to the central portion of the periphery of the barrel with clean cut dividing lines between the contrasting colors.

The painting operation is now completed. The barrel is unclamped and rolled from the machine. A new barrel is clamped in position and the cycle of the operation repeated.

The color such as paint or ink is fed to the color applying roll as needed from the fountain of the inking mechanism.

45 It will now be apparent that I have devised a new and useful barrel painting machine, which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description, and while I have, in the present instance, shown and described a preferred embodiment thereof which will give in practice satisfactory and reliable results, it is to be understood that this embodiment is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

60 1. In a barrel painting machine, a color applying roll having a removable portion in its periphery to provide clearance for the bung of the barrel, means to feed a desired color to said roll, clamping mechanism for the barrels, means to raise said clamping mechanism to bring a clamped barrel into cooperation with said roller, said raising means including devices to cause the periphery of the barrel to automatically align with the periphery of the color applying roll, and means to revolve said roll and said clamping mechanism.

2. In a barrel painting machine, a color ap-

plying roll, means to feed color thereto, carrier heads, clamping members revolubly mounted in said heads and having resilient means to engage the ends of a barrel, means controllable at the will of the operator to actuate said clamping members, means to automatically effect relative adjustment of said carrier heads and roll when a clamped barrel comes into contact with said roll, and means to revolve said roll and clamping members.

3. In a barrel painting machine, a color applying roll, means to feed color thereto, carrier heads, barrel clamping members carried by said carrier heads, means to effect relative movement of said clamping members to clamp and unclamp a barrel, means to vertically raise said carrier heads to bring a barrel into painting position, a clutch controlling the revolution of said roll and said clamping members, and means to automatically cause the declutching of said clutch on a revolution of a clamped barrel and the release of said clamping members.

4. In a barrel painting machine, a color applying roll having an opening forming a clearance for the bung of a barrel, barrel clamping mechanism, means cooperating with the bung to align the barrel so that the bung will be received in said opening, means to move said barrel clamping mechanism to bring a clamped barrel into cooperation with said roll, means to feed color to said roll, and means to revolve said roll and said barrel clamping means.

5. In a barrel painting machine, a color applying roll, means to feed color thereto, carrier heads, counter-weights for said heads, a clamping member revolubly mounted in one of said carrier heads, a sleeve bearing longitudinally movable in the other carrier head, a tapered spindle in said sleeve bearing, a clamping member yieldingly connected with said spindle, manually actuated means to move said spindle, its bearing and its clamping member to clamp a barrel between said clamping members, means to move said carrier heads to bring a clamped barrel into cooperation with said roll, and means to revolve said roll and clamping members.

6. In a barrel painting machine, a base, end standards thereon, a carrier head slidably mounted in one of said end standards, a clamping member having a shaft journaled in said carrier head, gearing carried by said carrier head, means to drive said gearing, a second carrier head slidably mounted in the other end standard, a clamping member mounted in said second head, a rock shaft having rack and pinion engagement with said carrier heads to raise them, a color applying roll, means to supply color to said roll, and means to revolve said roll.

7. In a barrel painting machine, a color applying roll having an opening to provide clearance for the bung of a barrel, a removable closure for said opening, means to intergear said roll with a barrel to be painted, and means to revolve said roll and barrel.

8. In a barrel painting machine, a color applying roll having its periphery resilient and having a portion of its periphery removable to provide clearance for the bung of a barrel and means to clamp the removable portion in position.

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