June 2, 1964 E. E. RASMUSSEN 3,135,000

PAINT ROLLER COATING APPARATUS

Filed June 2, 1961

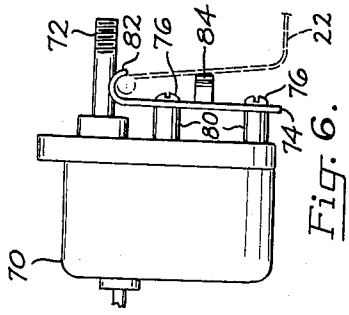


Fig. 6.

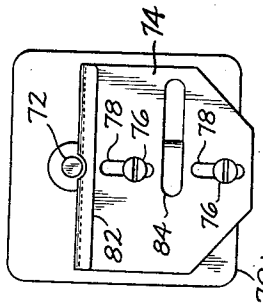


Fig. 7.

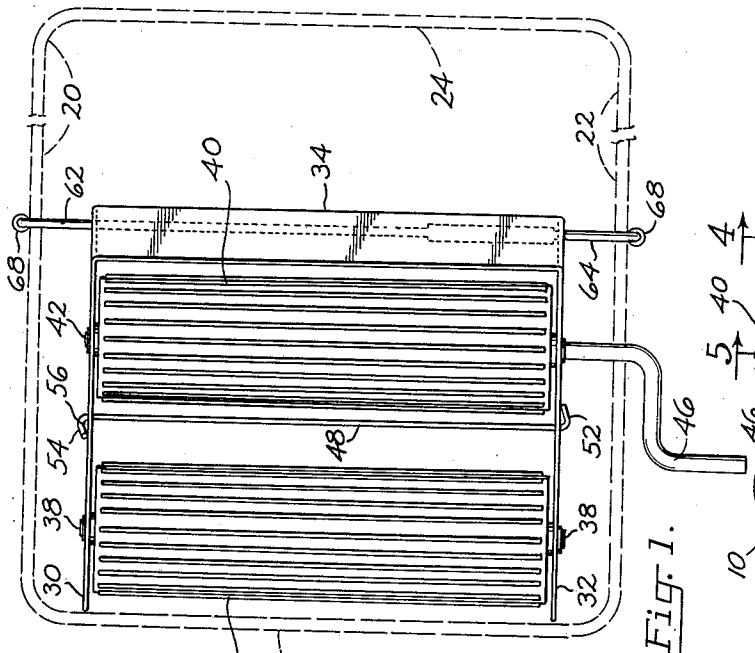


Fig. 1.

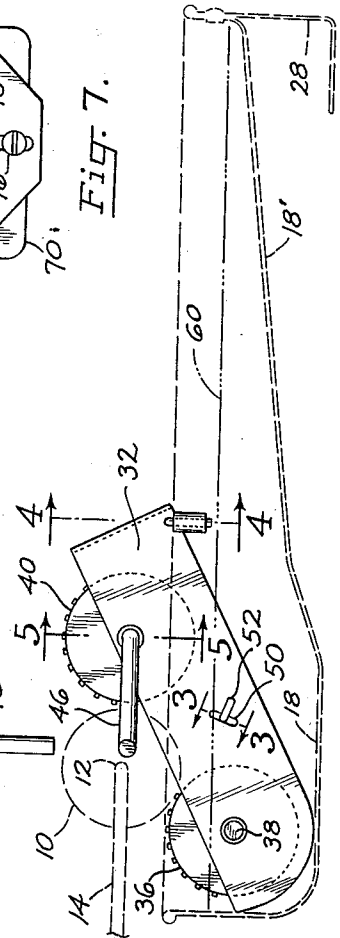


Fig. 2.

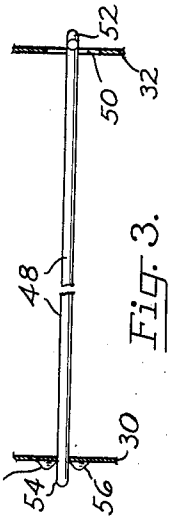


Fig. 3.

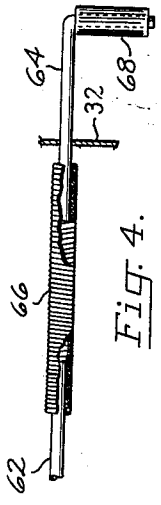


Fig. 4.

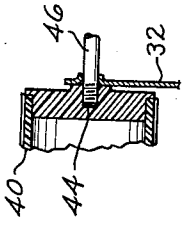


Fig. 5.

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PAINT ROLLER COATING APPARATUS

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This invention relates to paint applicators, and more particularly to apparatus for applying a uniform coating of paint to a paint applicator of the roller type.

The substitution of paint rollers for paint brushes in the application of paint to walls and other surfaces, is being made in ever increasing numbers as paint formulations progressively improve. The general mode of operation of such paint rollers involves the dipping of the roller into a quantity of paint contained in a paint tray, and then rotating the roller over an inclined surface of the tray, above the level of paint, to distribute the paint about the circumference of the roller. This procedure is not completely satisfactory, since it does not effect uniform coating of the paint roller with a quantity of paint, and thus the irregularity of such coating is transferred to the surface being painted.

It is a principal object of the present invention to provide a novel and simplified apparatus by which to achieve uniform coating of a paint roller with a quantity of paint, thereby achieving uniform transfer of paint to the surface being painted.

Another important object of this invention is the provision of a paint roller coating apparatus which is readily adapted for use with a conventional paint roller tray.

Still another important object of the present invention is the provision of a paint roller coating apparatus which includes a minimum number of parts all of which are readily accessible for cleaning.

A further important object of this invention is to provide a paint roller coating apparatus which is of simplified construction for economical manufacture and which is operable with maximum facility to apply a uniform coating of paint to a paint roller.

The foregoing and other objects and advantages of this invention will appear from the following detailed description, taken in connection with the accompanying drawing in which:

FIG. 1 is a plan view of a paint roller coating apparatus embodying features of this invention, the same being shown in association with a conventional paint tray illustrated by dash lines;

FIG. 2 is a view in side elevation of the assembly shown in FIG. 1, a conventional paint roller being shown in dash lines in operative position;

FIG. 3 is a fragmentary sectional view taken along the lines 3—3 in FIG. 2;

FIG. 4 is a fragmentary sectional view taken along the line 4—4 in FIG. 2;

FIG. 5 is a fragmentary sectional view taken along the line 5—5 in FIG. 2;

FIG. 6 is a fragmentary sectional view showing a modified form of drive assembly for the coating apparatus; and

FIG. 7 is an end view as viewed from the right in FIG. 6.

The conventional form of paint roller illustrated in the drawing includes a fabric covered roller **10** mounted for rotation on the elongated shaft section **12** of a rod which is bent intermediate its ends to provide, in addition to said shaft section, an elongated handle section **14** which projects substantially normal to the shaft section on a line substantially midway the ends of the roller. The terminal end of the handle section is provided with a hand grip **16** to facilitate manipulation of the roller.

The paint roller normally is used in association with a paint tray which includes a bottom **18**, upstanding side walls **20** and **22**, front wall **24** and rear wall **26**. The forward portion **18'** of the bottom slopes upwardly from the rearward portion, the front end of the tray being supported by the depending bracket **28**.

In the normal use of the conventional roller and tray, a quantity of paint is dispensed into the tray so that a major portion of the inclined forward portion **18'** of the bottom is above the paint level. The roller **10** is dipped into the paint and then rolled in a reciprocative motion over the inclined surface of the bottom which is above the paint level, thus tending to distribute the paint more evenly over the surface of the roller. The roller then is transferred to the surface to be painted.

The paint roller coating apparatus of the present invention is used in detachable connection with any form of tray capable of containing a quantity of paint, the particular tray illustrated being shown merely for purposes of description. In the embodiment illustrated the apparatus includes a substantially U-shaped frame member which provides a pair of laterally spaced arms **30**, **32** interconnected by the intermediate section **34**. The arms are arranged to receive between them a pair of rolls. The applicator roll **36** is provided at its ends with stub shafts **38** receivable freely through aligned openings provided in the arms adjacent the ends opposite the connecting section **34**. The arms are sufficiently resilient as to be sprung outwardly to receive the stub shafts in the openings, after which they spring back toward each other to secure the roller rotatably between them.

The leveling roll **40** is provided at one end with a stub shaft **42** which is receivable freely within one of a pair of aligned openings in the laterally spaced arms located adjacent the interconnecting section **34**. The opposite end of the leveling roll is provided with an axial tapped bore **44** (FIG. 5) adapted to receive the threaded end of a hand crank **46**. This threaded end of the crank extends through the other of the aligned openings, and thus serves as an end shaft for supporting the roller for rotation. The handle end of the crank projects outwardly beyond the periphery of the paint tray wall **22**, for hand rotation.

It will be noted from FIG. 5 that the rolls are formed of hollow tubing, preferably of synthetic thermoplastic material, and their ends sealed by the plugs which carry the stub shafts and threaded bore for the handle.

The laterally spaced arms are releasably interconnected intermediate their ends, to prevent accidental spreading and consequent disengagement of the rolls. In the embodiment illustrated, this interconnection is provided by the rod **48** which extends at one end through a restricted opening in the arm **30** and at the opposite end through an elongated slot **50** in the arm **32**. The opposite ends of the rod are bent at right angles with respect to the intermediate length of the rod, and the bent end **52** is proportioned to pass through the elongated slot when aligned therewith. The opposite bent end **54** is adapted to snap into a position between a pair of spaced projections **56** on the arm **30**, when the opposite bent end **52** is misaligned with respect to the slot **50**. In this position of adjustment the laterally spaced arms are held together in roller-supporting position.

On the other hand, when it is desired to remove the rollers for cleaning, the interconnecting rod **48** is rotated to align the bent end section **52** with the slot **50**, whereupon the rod may be disengaged to permit spreading of the frame sections and removal of the rolls.

Means is provided for releasably supporting the frame and roller assembly within a paint tray in such manner that the applicator roll **36** is positioned closely adjacent but spaced from the bottom **18** of the tray and the leveling roll **40** is positioned above the level **60** of paint contained within the tray and with its axis of rotation disposed above the upper rim of the tray (FIG. 2). In the embodiment illustrated, this support is provided by a pair of

elongated rods **62**, **64** which extend freely through aligned openings in the spaced arms and are interconnected at their adjacent inner ends by means of a longitudinally resilient connector. In the embodiment illustrated, this connector is in the form of a length of helical spring **66**, and the adjacent ends of the rods are secured thereto simply by the frictional force exerted by the spring when the ends of the rods are forced into the opposite ends of the spring.

The outer ends of the rods are bent at right angles to overlap the side walls of the paint tray. Each of these bent ends preferably is fitted with a length of resilient tubing **68** which serves to grip the side walls of the paint tray and thus hold the roll and frame assembly securely in position.

The distance between the bent ends, when the interconnecting spring **66** is relaxed, is less than the spacing between the side walls of the paint tray. Thus, as the bent ends are pulled apart sufficiently to overlap the side walls of the paint tray, the contracting force of the spring urges the bent ends into firm gripping contact with the side walls, to further insure positive positioning of the roll assembly within the tray.

The resilient interconnection of the mounting rods also accommodates installation of the assembly upon paint trays of varying widths.

The hand crank **46** may be replaced with a motor drive. Referring to FIGS. 6 and 7, a combination electric motor and gear reduction unit **70** is provided with an output shaft **72** which is threaded for attachment to the leveling roll **40** in place of the hand crank. The drive unit is mounted upon a supporting bracket **74** by means of the vertically spaced screws **76** which extend through vertically aligned slots **78** in the plate for attachment to tapped studs **80** projecting from the drive unit. The upper end of the bracket is bent to form a hook **82** for engagement over the upper edge of the side wall of the paint tray, and an intermediate portion **84** of the bracket is struck outwardly to provide an abutment against the side wall. This portion **84** may be adjusted, by bending, according to the outer contour of the paint tray, to align the output shaft **72** axially with the leveling roll **40**. The slots **78** provide for vertical adjustment of the drive unit, also for aligning the output shaft axially with the leveling roll.

The operation of the apparatus described hereinbefore is as follows: The roll and frame assembly is mounted on a paint tray, preferably with the applicator roll **36** positioned adjacent the rear wall **26** of the paint tray. A quanity of paint then is filled into the tray, and in this regard it is to be noted that a substantially greater quantity can be added since the inclined portion **18'** of the tray is no longer used. In any event, it is important that the upper level **60** of paint in the tray be held below the lower periphery of the leveling roll **40** so that paint is not transferred to the leveling roll except from the paint roller **10**.

With the paint roller **10** positioned in contact with both rolls **36** and **40**, the leveling roll is rotated either by the hand crank **46** or by the drive unit **70**, in the clockwise direction indicated in FIG. 2. This rotation causes simultaneous counterclockwise rotation of the paint roller **10** which, in turn, causes clockwise rotation of the paint applicator roll **36**. Paint thus is picked up by the applicator roll from the supply within the tray and is transferred to the surface of the paint roller. As the latter continues to rotate, its paint carrying surface engages the leveling roll, whereupon the excess paint is removed from the paint roller and returned by gravity to the paint supply within the tray. In this manner there is applied to the surface of the paint roller a uniform coating of paint which then may be transferred to a surface to be painted.

It will be apparent to those skilled in the art that various changes may be made in the structural details described hereinbefore without departing from the spirit of this invention and the scope of the appended claims.

Having now described my invention and the manner in which it may be used, what I claim as new and desire to secure by Letters Patent is:

1. A paint roller coating apparatus for use with a paint tray having a peripheral wall, the apparatus comprising a U-shaped frame having spaced arms, a paint applicator roll and a paint leveling roll mounted releasably between the arms for rotation on substantially parallel axes and spaced to support between them a paint roller to be coated, drive means connected to the leveling roll for rotating the latter, a pair of rods extending laterally through the frame adjacent the leveling roll for engaging the side walls of a paint tray to support the applicator roll within the tray for contact with paint contained within the tray and to support the leveling roll above the paint level in the tray, and resilient means interconnecting the adjacent inner ends of the rods, the applicator roll being rotated by the leveling roll through the interconnecting paint roller.

2. A paint roller coating apparatus for use with a paint tray having a peripheral wall, the apparatus comprising a U-shaped frame having spaced arms, a paint applicator roll and a paint leveling roll mounted releasably between the arms for rotation on substantially parallel axes and spaced to support between them a paint roller to be coated, an electric motor unit having an output shaft adapted for connection to the leveling roll for rotating the latter, bracket means supporting the motor unit, hook means on the bracket means for engaging over the top edge of a side wall of a paint tray, and support means on the frame arranged to engage the side walls of a paint tray to support the applicator roll within the tray for contact with paint contained within the tray and to support the leveling roll above the paint level in the tray, the applicator roll being rotated by the leveling roll through the interconnecting paint roller.

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