April 17, 1956 J. LINATSAS 2,741,857

CLEANING DEVICE FOR ROTARY PAINT APPLICATORS

Filed Dec. 16, 1952

FIG. 1

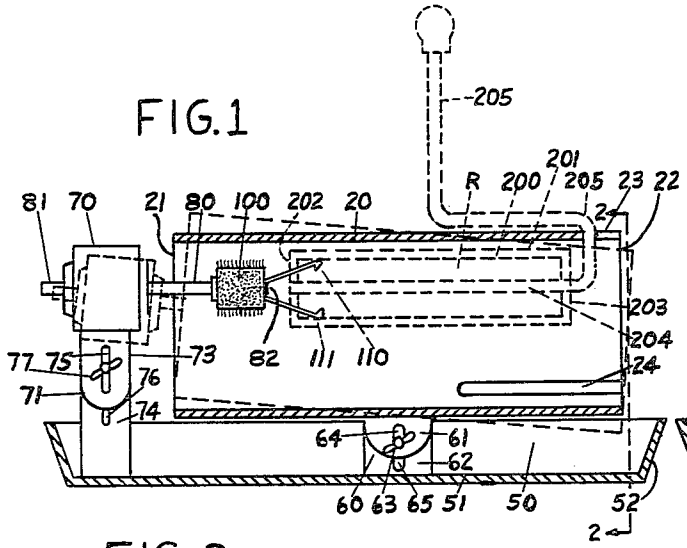


FIG. 2

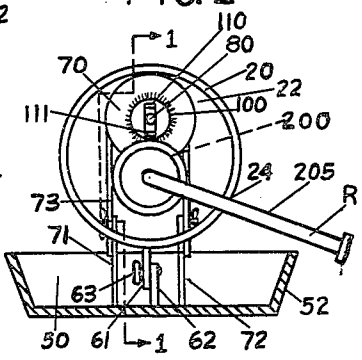


FIG. 3

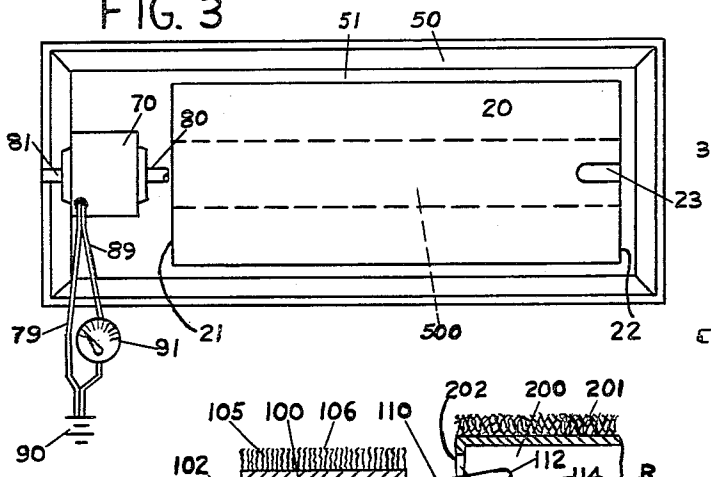


FIG. 4

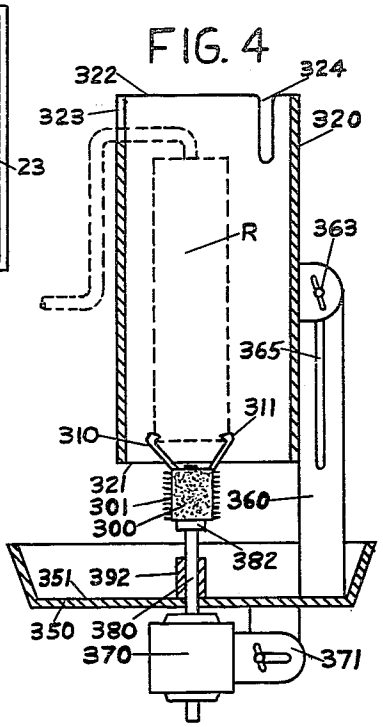


FIG. 5

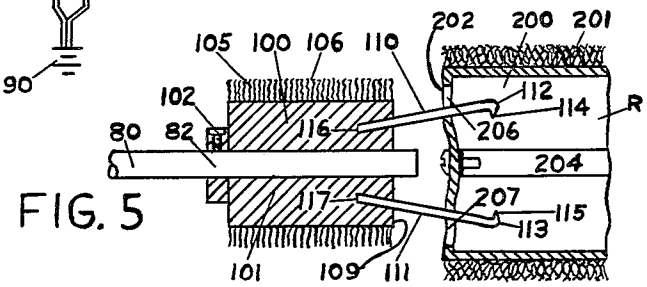


FIG. 6

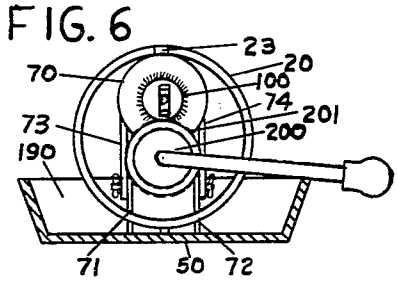
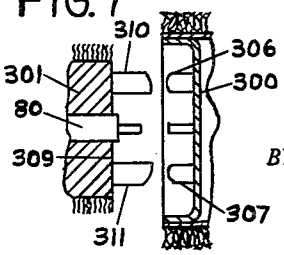


FIG. 7



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CLEANING DEVICE FOR ROTARY PAINT APPLICATORS

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11 Claims. (Cl. 34—58)

This invention relates to a device for removing paint and paint solvent from the surface of paint rollers by centrifugal force.

Rotary paint applicators are now much in use for applying a wide strip of paint to wall surfaces by means of roll coating. Such paint applicators include a cylindrical roll, covered with lamb's wool, or the like, and mounted to revolve freely on an axially extending shaft. One end of the roller is usually free while the shaft at the other end is bent at right angles, then bent back upon itself and then bent away from the centre of the roll to form a handle. Instead of the long straight bristles of a hand paint brush, the surface of such paint rollers is made up of fine short fibres, each slightly curled and intermingled with other fibres to form a soft resilient surface.

It has heretofore been customary to clean hand paint brushes and paint rollers manually by immersing the same in liquid paint solvent for a considerable time and after the paint is diluted and loosened, to then seek to remove it. Various methods such as manually squeezing, slapping, kneading etc. have been proposed to remove the paint from hand brushes and usually immersion in successive baths of solvent over a considerable period of time have been required to properly eliminate all traces of the particular color of paint.

Various methods of automatically cleaning hand paint brushes have also been proposed, for example, as disclosed in U. S. Patent No. 2,519,259, issued August 15, 1950, to A. J. Liebman entitled, "Brush Cleaning Apparatus" wherein a number of hand brushes are first attached to a rack, the rack inserted in an enclosed tank containing liquid paint solvent and the rack then revolved at low speed to cause the brushes to slap against abutments and pass through the solvent. A separate drying tank is disclosed in the Liebman patent wherein the brushes which have been cleaned are revolved at high speed to dry the same centrifugally.

The principal object of this invention is to provide a device capable of removing paint and solvent from the painting surface of a paint roller by centrifugal force and at high speed and without requiring the removal of any jacket from the roller of the applicator.

Another object of the invention is to provide a device into which an ordinary paint roller can be directly inserted and immediately revolved at high speed on its applicator shaft without the need of any carrying racks, tank doors or similar structures usually accompanying an enclosed cleaning chamber.

A further object of the invention is to provide means for engaging and revolving a freely revolving paint roller which means will accommodate a wide range in size and dimensions of paint rollers and is easily arranged to engage and disengage the same.

A still further object of the invention is to provide a cleaning device for paint rollers which is usable to revolve the roller at slow speed through a bath of paint solevnt and at high speed to centrifugally remove the paint and solvent, without requiring separate shields for each operation.

In the drawing, Fig. 1 is a side elevation in section on line 1—1 of Fig. 2 of the preferred form of the invention.

Fig. 2 is an end elevation, in section, on line 2—2 of Fig. 1.

Fig. 3 is a plan view of the preferred form of the invention shown in Figs. 1 and 2 with parts broken away.

Fig. 4 is a side elevation, in section, of a modified form of the invention.

Fig. 5 is an enlarged fragmentary view of the motor shaft mounted means for revolving the paint roller of the invention.

Fig. 6 is a view similar to Fig. 2 of another position of the invention, and

Fig. 7 is a fragmentary view, similar to Fig. 5, of another form of means for revolving the paint roller.

The preferred form of the invention is shown in Figs. 1, 2, 3 and 6 and includes an elongated tubular shield 20, of circular cross section, the opposite ends 21 and 22 of the shield being open. A typical rotary paint applicator R is illustrated in dotted lines in the various figures, the paint roller 200 having a curved surface covering or jacket 201, of lamb's wool or the like, roller ends 202 and 203, a shaft 204 and a handle portion 205.

A short slot 23 is preferably provided in the shield 20 to accommodate the handle portion 205 of applicator R to hold it in the position shown in Fig. 1. A longer slot 24 is also preferably provided in the shield 20 to accommodate the portion 205 of applicator R and hold it in the position shown in Figs. 2 and 6.

A paint and solvent collection receptacle 50 is provided which extends horizontally below shield 20, the receptacle having a bottom 51 and side walls such as 52 and being positioned to catch drippings from the open ends 21 and 22 of shield 20. A brace 60 is provided for supporting shield 20 above receptacle 50, the brace being formed by a part 61 fixed to, and depending downwardly from sheld 20 and a part 62 fixed to and upstanding from the bottom 51 of receptacle 50. The parts 61 and 62 overlap and preferably are connected by a tightening wing bolt 63 slidable in slots 64 and 65 in the brace. Thus the shield 20 may be tilted as shown in dotted lines in Fig. 1 to lower an end such as 22 to a lower plane than that of end 21 for better drainage or the entire shield may be lowered as indicated in Fig. 6.

An electric motor 70 is mounted opposite one of the open ends such as 21 of shield 20 and is preferably supported on legs such as 71 and 72 fixed to the bottom 51 of receptacle 50. Each leg such as 71 is formed in two overlapping sections 73 and 74, each having a longitudinal slot 75 or 76 for a wing bolt 77. The motor may thus be tilted, raised or lowered to align its motor shaft 80 with the longitudinal axis of shield 20 as indicated in dotted lines in Fig. 1.

Motor shaft 80 is provided with a free terminal portion 81 by which it may be manually revolved to position the roller engaging means 100 and a free terminal portion 82 at the opposite end which as shown extends within the shield 20. Wires 79 and 89 connect motor 70 with a source of electro motive force 90 and with a rheostat 91 whereby the motor may be rotated at low or high speed or gradually accelerated during the cleaning of a paint roller such as 200.

The roller engaging and rotating means of the invention is designated 100 and best shown in Fig. 5. As shown, a cylindrical roll 101 is connected to the free terminal portion 82 of shaft 80 by a set screw 102 whereby the roll 101 will revolve with shaft 80. Elongated elements, such as stiff bristles, 105, protrude from the curved surface 106 of roll 101 and when the applicator is in the position

shown in Figs. 2 and 6 with surface covering **201** in rolling contact with bristles **105**, the revolving bristles rotate the roller **200**. As shown in Fig. 2, the shaft **80** may be revolved at high speed to also rotate roller **200** at high speed and remove the paint and solvent from surface **201** by centrifugal force, the paint and solvent being thrown against the inside of shield **20** and thence dropping into receptacle **50**.

It should be noted that the roller engaging and rotating means of the invention, in all of the forms illustrated in the drawings includes at least one, and preferably two or more elongated elements, each having a free terminal end portion radially spaced from the axis of rotation of its carrier or support such as the roll **101**. Such elements may be in the form of radial bristles on a cylindrical brush, resilient fingers or rigid fingers extending somewhat axially or a combination of both, so long as they engage a roller at a spaced radial distance from the roller shaft and thereby impart rotation to the roller around its shaft.

If desired, shield **20** and motor **70** may be lowered to the position shown in Fig. 6 and the receptacle **50** filled with paint solvent **190** so that the lower portion of roller **200** is immersed in the solvent. Rheostat **91** may then be adjusted to revolve motor **80** at low speed and thereby cause roll **101** to rotate roller **200** slowly through the solvent while the paint on surface **201** is loosened and diluted.

Elongated elements, such as a pair of male elements **110** and **111**, protrude from the free end surface of cylindrical roll **101** and are arranged to grip the roll **200** upon contact with the same by each entering an opening **206** and **207** in the end **202** of the roll **200**. The elements **110** and **111** are spaced on opposite sides of the longitudinal centre line of roll **101** and extend axially from the end **109** thereof but diverge from each other as indicated.

Preferably elements **110** and **111** are formed of resilient material, such as spring metal, and are provided with heads **112** and **113** which are turned inwardly toward each other and terminate in sharp points **114** and **115**. By inserting the thumb between elements **110** and **111**, the operator may spread the elements to enable the points **114** and **115** to enter and grip the matted fibrous surface **201** of roller **200** as indicated in Fig. 4. The opposite ends of elements **110** and **111** at **117** and **116** are imbedded in roll **100** or otherwise suitably held therein.

As shown in Fig. 4 the device may be vertical rather than horizontal. In Fig. 4 a shield **320** is positioned with its axis vertical and held above a horizontally positioned receptacle **350** by a brace **360**. The open end **321** of shield **320** is thus on a lower plane than the open end **322** and the entire shield **320** can be lowered by means of slot **365** and bolt **363** when roll **301** is to be used for rotating a paint roller. As mentioned above, the male elements **310** and **311** of roller engaging means **300** are usable to clamp the surface of a paint roller or to enter female elements in the end of a paint roller. Motor **370** is adjustably mounted by legs **371** and **372** to the under surface of receptacle **350** and motor shaft **380** projects through a sleeve **392** upstanding from bottom **351** of receptacle **350** whereby its free terminal portion **382** is within shield **320**. Slots **323** and **324** are also provided in shield **320** to accommodate and support the paint applicator R.

In operation, the paint applicator R may be inserted in slots such as **324** or **24** to bring the paint roller **201** in rolling contact with the revolving roll **101** to accomplish slow speed rotation as in Fig. 6 or high speed rotation as in Fig. 2. Applicator R may be inserted in slots **23** or **323** and the thumb applied to spring jaws **110** and **111** or **310** and **311** to spread the same and permit the points such as **114** and **115** to grip the surface covering of paint roller **200** as shown in Fig. 4. Where a paint roller has female elements such as the openings **206** and **207** in the end **202** of roller **200**, the male elements may be inserted therein with a wedging resilient engagement as shown in Fig. 1 to cause the roller **201** to revolve with motor shaft **80**, at high speed.

As shown in dotted lines in Fig. 3, a section **500** of the shield, such as **20**, may be slidable to permit easy access to the interior thereof if desired.

As shown in Fig. 7 the elongated elements of the device may also be in the form of one or more protruding teeth **310**, **311** extending axially from the ends **309** of a roll such as **301** and arranged to mesh with corresponding teeth **206** and **307** in the end of a paint roller **300**.

I claim:

1. A paint roller cleaner comprising the combination of an elongated tubular shield of circular cross section, said shield being substantially co-extensive with a paint roller and having both opposite ends open; a paint and solvent collection receptacle extending horizontally below and separate from said shield; a brace upstanding from said receptacle and having pivot means at its upper end for supporting said shield above said receptacle; an electric motor mounted opposite one of the open ends of said shield on means supported by said receptacle; a motor shaft aligned with the longitudinal axis of said shield, and having a free terminal portion extending within said shield through an end opening thereof, and paint roller revolving means on the free terminal portion of said motor shaft for slidably engaging and revolving a paint roller when said roller on its roller shaft is positioned longitudinally within said shield.

2. A combination as specified in claim 1 wherein said paint roller revolving means comprises a cylindrical roll mounted to revolve with said shaft and having elongated elements protruding therefrom with free terminal ends adapted to grip said roller upon contact therewith.

3. A combination as specified in claim 2 wherein said elongated elements comprise stiff bristles positioned radially on the curved surface of said cylindrical roll.

4. A combination as specified in claim 2 wherein said elongated elements comprise a pair of male elements each spaced on an opposite side of the longitudinal centre line of said roll and having free terminal ends adapted to enter corresponding female elements in said roller.

5. A combination as specified in claim 2 wherein said elongated elements of resilient material comprise a pair of male elements each spaced on an opposite side of the longitudinal centre line of said roll, each said element having free terminal ends forming spring jaws.

6. A combination as specified in claim 2 wherein said shield is vertically positioned above said receptacle, said motor is positioned below said shield and receptacle and said motor shaft extends vertically up through said receptacle into an open end of said shield.

7. A cleaning device for the painting surface of a roller paint applicator, said cleaning device comprising an elongated, hollow, tubular shield substantially co-extensive with a paint roller but of substantially greater cross sectional area than a paint roller and having both opposite ends open; a paint and solvent collection receptacle, separate from, and extending generally horizontally below the plane of said shield; a brace for supporting said shield in a plane above the plane of the bottom of said receptacle; a power shaft having a free terminal end aligned longitudinally with said shield proximate one open end thereof and extending to a source of power outside said shield and a cylindrical brush within said shield mounted on the free terminal end of said power shaft, said brush having stiff, radial bristles, adapted to frictionally engage the curved, exterior painting face of an applicator roller to revolve the roller by surface contact while frictionally dislodging paint thereon when said roller is introduced longitudinally into said shield through the other open end thereof while still on said applicator.

8. A cleaning device for the painting surface of a roller paint applicator, said device comprising an elongated

shield of imperforate material, said shield being of greater length than the length of, and of substantially greater cross sectional area than the cross sectional area of a paint roller; an elongated, cylindrical brush extending axially along the inside of said shield and mounted to rotate on an axis of rotation parallel to the axis of said shield, said brush being of less cross sectional area than that of said shield to provide a roller receiving space within said shield at least partially co-extensive with said brush; a roller receiving end opening in said shield for admitting the paint roller of an applicator entirely into said shield and into circumferential contact with said brush and means for revolving said brush at high speed for causing the bristles thereof to frictionally dislodge paint on the curved exterior face of a roller while said bristles revolve said roller by surface contact to dislodge paint by centrifugal force.

9. A cleaning device for the painting surface of a roller paint applicator, said device comprising an elongated hollow, tubular, substantially imperforate shield at least co-extensive axially with a paint roller but of substantially greater cross sectional area than a paint roller, said shield having at least one open end; a rotatable cylindrical brush of less cross sectional area than said shield and having an axis of rotation parallel to the axis of said shield, said brush having radial, stiff bristles adapted to engage the exterior curved painting surface of an applicator roller inserted axially through the open end of said shield and to rotate said roller on its stationary roller shaft at the surface speed of the tips of said bristles and driving means outside said shield and operably connected with said brush for rotating the same at high speed to cause centrifugal force and friction to dislodge the paint on said roller.

10. A cleaning device as specified in claim 9 plus at least one longitudinally extending slot extending inwardly from an open end of said shield for receiving and guiding a handle portion of an applicator when the roller of the applicator is introduced longitudinally within said shell.

11. A cleaning device for the painting surface of a roller paint applicator, said device comprising an elongated, hollow, tubular shield of imperforate material of greater length and greater cross sectional area than a paint roller, said shield having an opening at each opposite end; an electric motor opposite, and outside one end of said shield; a shaft, rotatably connected to said motor and extending axially into said shield through one of said end openings; a cylindrical brush of substantially less cross sectional area than the cross sectional area of said shield, said brush extending axially of the shield and operably connected to said shaft to revolve on an axis of rotation parallel to the longitudinal axis of the shield and angularly adjustable supporting means for said motor and shield, said supporting means including braces for said motor and shield, each having adjustable means for regulating the height thereof whereby said motor, shaft and shield may be tilted at various angles to the horizontal.

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