March 6, 1962 H. BRANDEIS 3,023,443

PAINT ROLLER

Filed Dec. 21, 1959

Fig. 1.

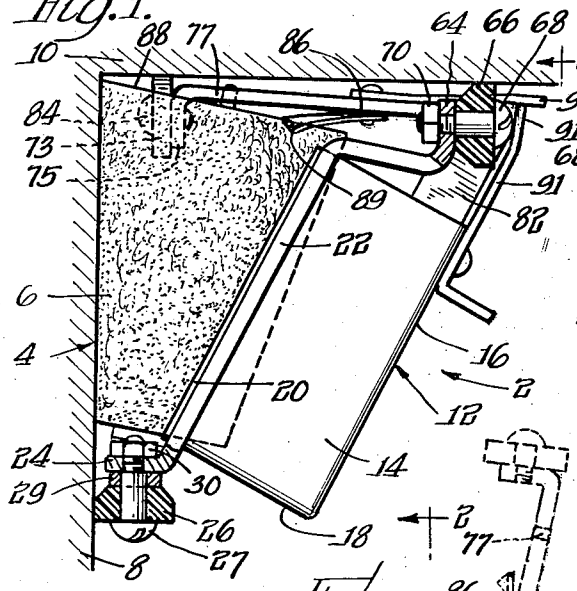


Fig. 2.

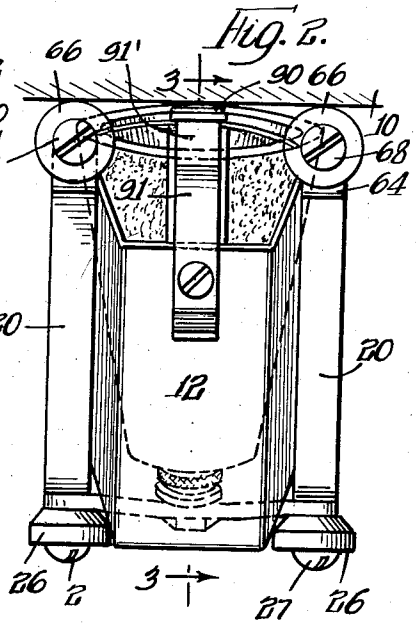


Fig. 3.

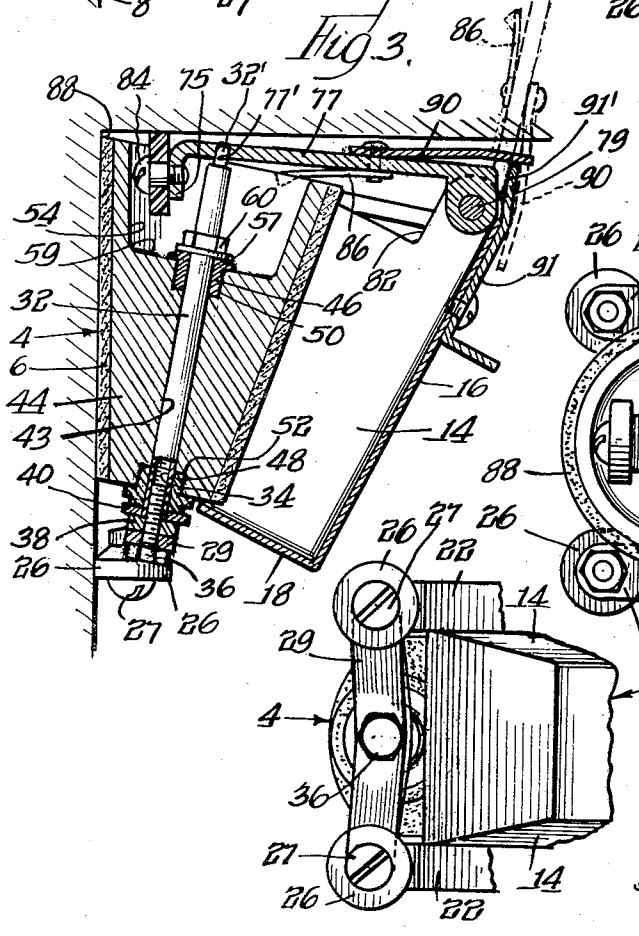


Fig. 4

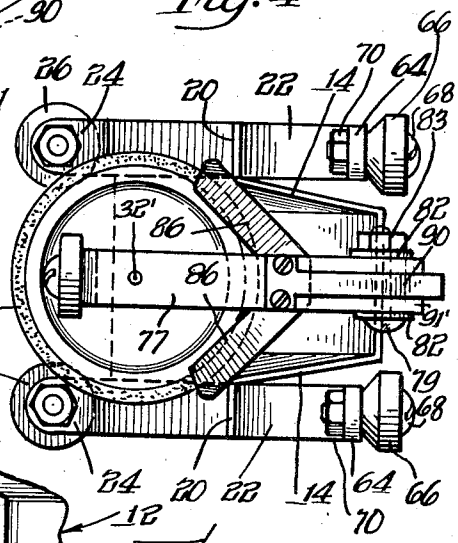


Fig. 5.

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3,023,443
PAINT ROLLER

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This invention relates to a paint roller for painting a wall surface contiguous to another wall surface at right angles thereto without transferring paint to the latter wall surface. The invention has particular utility for painting the vertical walls of a room next to the ceiling. Numerous paint rollers have been developed for this purpose, but they are unsatisfactory from many standpoints. Most of them include a spacer means slightly above the upper end of the paint roller, which spacer means engages the ceiling or the line of intersection between the ceiling and the vertical wall being painted, and thus keeps the roller from touching the ceiling and also, to a certain extent, helps to guide the roller along a straight line. However, they cannot be handled and guided in a straight line readily by persons unskilled in the painting art. More importantly, the paint on the roller often builds up on the spacer means and finally is transferred to the ceiling.

It is, accordingly, an object of the invention to provide a paint roller usable by skilled and unskilled persons alike, which enables the user to paint a vertical wall next to the ceiling along a straight line without staining the ceiling with paint. More specifically, it is an object of the invention to provide a paint roller designed to be supported in a proper, stable, paint-applying position next to but spaced a slight distance from the ceiling of a room and then moved with ease in a straight line next to the ceiling without transferring any paint to the ceiling.

Another object of the invention is to provide a paint roller as just described which includes a spacer means at the upper end of the roller which spacer means makes contact with the ceiling near its line of intersection with the vertical wall to be painted, and wherein means are provided for preventing the transfer of paint to the spacer means and then to the ceiling.

A further object of the invention is to provide a paint roller as described which may be comfortably held by the user as it is moved along the wall.

A still further object of the invention is to provide a paint roller as described which is of simple, rugged and economical construction.

In the preferred form of the invention, the paint roller is supported for rotation upon a frame which carries guide roller means which engage the vertical wall and the ceiling at points remote from the line of intersection between the ceiling and the vertical wall. The guide roller means which engage the ceiling and vertical wall each preferably comprises a pair of spaced rollers whose axes of rotation straddle the axis of rotation of the paint roller so that there are at least four well spaced points of support for the paint roller which enable the user readily to hold the paint roller steady during the movement thereof along the wall. One of the pairs of rollers is located below the paint roller and the other pair which engages the ceiling is located slightly above and laterally outwardly of the paint roller.

In accordance with another aspect of the invention, an auxiliary spacer roller is mounted for rotation within a

recess at the upper end of the paint roller contiguous to the side thereof which makes contact with the vertical wall to be painted, the spacer roller projecting a small distance above the top of the paint roller where it engages the ceiling and ensures the spacing of the paint roller from the ceiling.

In accordance with still another aspect of the present invention, means are provided for automatically scraping the upper rim of the paint roller as it is rolled along the wall to prevent build-up of paint on the upper rim of the paint roller and the consequent transfer thereof to the aforesaid spacer roller.

In accordance with another aspect of the invention, part of the frame of the paint roller is shaped to form a channel-shaped receptacle or pan which receives paint wiped from the upper rim of the paint roller. Also, the sides of the paint-receiving pan are preferably spaced a small distance apart and sized to be gripped comfortably in the user's hand while the paint roller is held above the user's head in a paint-applying position adjacent to the ceiling.

Other objects, advantages and features of the invention will become apparent upon making reference to the specification to follow, the claims and the drawings wherein:

FIG. 1 is a side elevational view of a preferred form of paint roller unit constructed in accordance with the present invention, the paint roller being in a painting position next to the ceiling of the room;

FIG. 2 is an end view of the paint roller unit of FIG. 1, as seen in the viewing plane 2—2 thereof;

FIG. 3 is a vertical longitudinal sectional view of the paint roller unit, taken along section line 3—3 in FIG. 2;

FIG. 4 is a top plan view of the paint roller unit; and

FIG. 5 is a fragmentary bottom view of the paint roller unit.

Referring now to the drawings, the paint roller unit shown therein comprises a frame generally indicated by reference numeral 2 and a paint roller generally indicated by reference numeral 4 which is supported on the frame for free rotation along its longitudinal axis. The paint roller 4 is preferably of a frusto-conical shape and has the usual paint absorbent outer surface 6 which transfers paint readily to a vertical wall 8 of the room. As previously indicated, the present invention deals with the provision of various rollers or guide means on the frame 2 which enables the paint roller 4 to be positioned in a proper paint-applying position against the wall 8 adjacent a ceiling 10 and then moved in a straight line parallel to the line of intersection between the ceiling and the vertical wall 8 without requiring any particular skill on the part of the operator and without the transfer of any paint to the ceiling 10.

In the detailed description of the parts of the paint roller unit to follow, the relationship of the various parts of the paint roller unit will be described considering the paint roller unit in its normal paint-applying position against the vertical wall as shown in the drawings.

In the preferred form of the invention, the frame 2 has a body portion 12 which forms an upwardly and outwardly inclined paint-receiving pan which closely underlies and extends parallel to the outer inclined side of the paint roller 4. The pan has a pair of rectangular vertical side walls 14—14 which are spaced fairly close

together so that they may be comfortably grasped in the hands of the user. For example, the side walls are preferably spaced apart in the neighborhood of from 1¼ to 4 inches. The pan 12 further has an upwardly and outwardly inclining rectangular bottom wall 16 extending between the lower longitudinal margins of the side walls 14—14, and a bottom end wall 18 bridging the adjacent margins of the side walls 14—14 and the bottom wall 16 to close off the lower end of the pan. The pan is open along the upper longitudinal margins of the side walls 14—14 and also along the upper transverse or end margins of the side walls. The paint roller 4 preferably extends a short distance into the open top of the pan 12.

The upper longitudinal margins of the pan side walls 14—14 are bent transversely outwardly to form wings or shoulders 20—20 to which are secured a pair of strap members 22—22. The bottom ends of the strap members 22—22 have bent up end portions 24—24 extending in a common horizontal plane. A pair of rollers 26—26 having cylindrical outer roller surfaces are similarly journalled in the strap end portions 24—24 for rotation about horizontal spaced vertical axes located in a vertical plane which is parallel to the vertical room wall 8. The inner margins of the rollers 26—26 are in a vertical plane including the inner margin of the paint roller 4 which is supported on the frame 2 with its wide end at the top of the frame and its longitudinal axis inclining upwardly and outwardly. The means for mounting each of the rollers 26—26 on the strap ends 24—24 may include a headed pivot bolt 27 passing through the associated roller 26 and through aligned openings in the associated strap and a cross member 29 bridging the strap ends. The pivot bolt is held in place by a nut 30 threaded over the projecting upper threaded end of the pivot bolt. The rollers 26—26 are thus positioned at the same elevation beneath the paint roller 4 to make rolling contact with the wall 8 and are spaced relatively widely apart on opposite sides of the axis of the paint roller 4.

The paint roller 4 is rotatably mounted upon the center of the cross arm 29 by any suitable means. In the illustrated embodiment of the invention, this means includes a cylindrical axle or rod 32 extending longitudinally of the paint roller. The axle 32 may comprise a cylindrical member having an internally threaded opening 34 at its bottom end which threads over the threaded shank of a bolt 36 extending into the cross arm 29 and projecting thereabove. A nut 38 threaded around the bolt 36 between the cross arm 29 and the axle 32 anchors the bolt to the cross arm 29, and a washer 40 is positioned around the shank of the bolt 36 between the nut 38 and the end of the axle 32. The axle 32 passes through a frusto-conical core 44 forming the center of the paint roller 4. A paint absorbent layer of material is adhesively or otherwise secured around the frusto-conical core 44 to form the outer paint absorbent surface of the paint roller 4. Upper and lower bearings 46 and 48 are respectively anchored within upper and lower recesses 50 and 52 in the core 44. The upper recess 50 in the core 44 opens onto a much larger recess 54 which extends almost to the perimeter of the core 44.

The axle 32 has an outwardly extending flange 57 just above the inner defining wall 59 of the recess 54 in the paint roller core 44. The flange 57 has a hexagonal upper portion 60 for receiving a tool for unscrewing the axle from the bolt 36 to enable the paint roller 4 to be removed from the frame for cleaning or replacement.

The upper end portions of the aforesaid straps 22—22 are bent slightly downwardly and then upwardly to form vertically extending end portions 64—64 upon which cylindrical rollers 66—66 are rotatably mounted. The rollers 66—66 may be fixed to the upper end portion 64—64 of the straps 22—22 by any suitable means, such as by pivot-forming bolts 68—68 passing through openings in the rollers and the strap ends. The bolts are anchored to the strap ends by nuts 70—70. The rollers 66—66 are thus mounted for rotation about spaced horizontal axes extending transversely of the vertical wall 8 to be painted, the horizontal axes being in a common horizontal plane and spaced apart in the direction of movement of the paint roller along the wall 8. When the paint roller is in its paint-applying position as shown most clearly in FIG. 1, the rollers 66—66 make rolling contact with the ceiling 10 and aid in spacing the inner upper corner of the frusto-conical shaped paint roller 4 from the ceiling 10 by a small distance.

The bottom and upper pairs of rollers 26—26 and 66—66 thus provide four widely spaced points of support for the paint roller unit along the wall 8 and ceiling 10 and so form a stable rolling support for the paint roller unit which enables it to be readily moved in a straight line along the upper perimeter of the vertical wall 8. This arrangement of rollers also permits the user readily to guide and position the paint roller unit initially into a stable paint-applying position without the paint roller 4 touching the ceiling and to keep it in this position as it is moved along the wall. However, to further ensure the spacing of the upper end of the paint roller from the ceiling 10, particularly when the unit is being initially moved into position, a spacer roller 73 is provided which contacts the ceiling 10 at a point contiguous to the inner side of the roller.

The spacer roller 73 is pivotally mounted upon the depending end portion 75 of a generally horizontally extending spring-urged pivot arm 77 which end portion extends into the recess 54 at the top of the paint roller core. The pivot arm 77 is pivoted upon the shank of a pivot bolt 79. The pivot bolt 79 extends through a pair of mounting ears 82—82 projecting upwardly from the upper margin of the inclined bottom wall 16 of the paint-receiving pan 12 and is held thereon by a bolt 83. The spacer roller 73 on the end of the arm 77 is mounted for rotation about a horizontal axis extending transversely of the vertical wall 8 by any suitable means, such as by a pivot screw 84 passing through the roller and threading into the depending end portion 75 of the arm 77. Most of the spacer roller 73 and the arm end portion 75 are located within the enlarged recess 54 at the end of the paint roller core 44. The top of the spacer roller 73 is in a common horizontal plane with the upper pair of rollers 66—66. The upper end of the roller 73, therefore, projects a small distance beyond the upper end of the paint roller 4 so as to space the same a small distance from the ceiling 10. The main reason why the paint roller is frusto-conical in shape is to provide clearance for the pivot arm 77. In accordance with a broad aspect of the invention, the arm 77 and even the roller 73 could be omitted, thus making it practical to use a cylindrical paint roller.

In addition to forming a support for the spacer roller 73, pivot arm 77 also supports a pair of paint scraper arms 86—86 which diverge inwardly and outwardly to make engagement with the rim 88 of the paint roller. The ends of the paint scraper arms 86 are preferably provided with downwardly extending corners 89 which ride along the outer surface 6 of the paint roller. It is apparent that the ends of the scraper arms 86 scrape away any paint that might be present on the rim of the paint roller to thereby prevent the build-up of paint thereon and the consequent transfer of the paint to the spacer roller 73 and then to the ceiling, or directly to the ceiling 10. The paint which is scraped from the roller by the scraper arms 86—86 drips upon the outer surface of the paint roller 4 or therebeneath into the paint-receiving pan 12.

Means are provided for urging the pivot arm 77 between two extreme stable positions, one of which is the horizontal position shown in FIG. 1, where the arm bears upon the upper end of the paint roller axle 32. The up-

per end of the axle 43 may be provided with a reduced end portion 32' which fits into an opening 77' in the arm 77. The arm 77 is thus urged against the shoulder provided by the reduced end portion 32'. The means for urging the arm into this position may include a leaf spring 90 projecting longitudinally from the pivoted end of the arm 77. The leaf spring 90 in the horizontal position of the arm 77 bears against the upper end portion 91' of an upwardly extending member 91 anchored to and projecting from the bottom wall 16 of the pan 12. When the arm 77 is pivoted to an upwardly extending position (dashed lines in FIG. 3), the leaf spring 90 is cammed over the upper end portion 91' of the member 91 and ends up in a position where it is closely nested against the outer face of the member 91, the upper end portion 91' thereof then being between the leaf spring 90 and the inner end of the arm 77. The leaf spring 90 thus maintains the arm 77 in an upward stable position where the axle 32 and the paint roller 4 may be removed from the frame.

It is apparent that the present invention provides a paint roller unit of exceedingly simple, compact and economical construction, which enables the skilled and unskilled alike to readily paint a vertical wall near its juncture with the ceiling and without staining the ceiling with paint.

It should be understood that numerous modifications may be made of the preferred form of the invention described above without deviating from the broader aspects of the invention.

What I claim as new and desire to protect by Letters Patent of the United States:

1. A paint roller unit for applying paint to a first wall surface contiguous to another wall surface intersecting the same at right angles thereto, said paint roller unit comprising: a frame, a paint roller mounted on a frame for rotation about a central longitudinal axis, spacer means at the end of the paint roller nearest said line of intersection and near the perimeter of the roller on the side of the paint roller which engages said first wall surface, said spacer means extending a short distance beyond the end of the paint roller to engage said second wall surface and space the paint roller therefrom, paint wiping means on said frame at the latter end of the paint roller which engages the adjacent end of the paint roller to wipe paint therefrom as it is rolled along the wall surfaces to be painted, and means for catching the paint as it is scraped from the latter end of the paint roller.

2. A paint roller unit for applying paint to a first wall surface contiguous to another wall surface intersecting the same at right angles thereto, said paint roller unit comprising: a frame, a paint roller having a frusto-conical outer paint-applying surface and mounted on a frame for rotation about a central longitudinal axis, roller means on said frame opposite one end of the paint roller for making rolling contact with one of said wall surfaces at a point spaced from the line of intersection of said wall surfaces, spacer means at the end of the paint roller nearest said line of intersection and near the perimeter of the roller on the side of the paint roller which engages said first wall surface, said spacer means extending a short distance beyond the end of the paint roller to engage said second wall surface and space the paint roller therefrom, paint wiping means on said frame at the latter end of the paint roller which engages the adjacent end of the paint roller to wipe paint therefrom as it is rolled along the wall surfaces to be painted, and means for catching the paint as it is scraped from the latter end of the paint roller, said latter means being a pan contiguous to and extending closely along and parallel to the side of said paint roller remote from the side to engage the wall surface to be painted, said pan having closely spaced side walls forming finger grip surfaces for holding the paint roller during its movement along the wall surface to be painted.

3. A paint roller unit for applying paint to a first wall surface contiguous to another wall surface intersecting the same at right angles thereto, said paint roller unit comprising: a frame, a paint roller mounted on a frame for rotation about a central longitudinal axis, said frame carrying roller means at one end of the paint roller which is to be located remote from the line of intersection of said wall surfaces for making rolling contact with said first wall surface outside of the area thereof engaged by said paint roller as the paint roller is rolled along said first wall surface in a direction parallel to said line of intersection, roller means on said frame at the other end of the paint roller for making rolling contact with said second wall surface at a point radially outwardly of the paint roller, spacer means within the latter end of the paint roller and near the perimeter of the roller on the side of the paint roller which engages said first wall surface, said spacer means extending a short distance beyond the end of the paint roller to engage said second wall surface and space the paint roller therefrom, paint wiping means on said frame at the latter end of the paint roller which engages the adjacent end of the paint roller to wipe paint therefrom as it is rolled along the wall surfaces to be painted, and means for catching the paint as it is scraped from the latter end of the paint roller.

4. A paint roller unit for applying paint to a first wall surface contiguous to another wall surface intersecting the same at right angles thereto, said paint roller unit comprising a frame, a paint roller having a frusto-conical outer paint-applying surface and mounted on a frame for rotation about a central longitudinal axis, roller means on said frame opposite one end of the paint roller for making rolling contact with one of said wall surfaces at a point spaced from the line of intersection of said wall surfaces, spacer means at the wide end of the paint roller and near the perimeter of the roller on the side of the paint roller which engages said first wall surface, said spacer means extending a short distance beyond the end of the paint roller to engage said second wall surface and space the paint roller therefrom, paint wiping means on said frame at the latter end of the paint roller which engages the adjacent end of the paint roller to wipe paint therefrom as it is rolled along the wall surfaces to be painted, and means for catching the paint as it is scraped from the latter end of the paint roller, said latter means comprising a pan contiguous to and extending closely along and parallel to the side of said paint roller remote from the side to engage the wall surface to be painted.

5. A paint roller unit for applying paint to a first wall surface contiguous to another wall surface intersecting the same at right angles thereto, said paint roller unit comprising: a frame, a paint roller having a frusto-conical outer paint-applying surface and mounted on a frame for rotation about a central longitudinal axis, said frame carrying roller means at the narrow end of the paint roller which is to be located remote from the line of intersection of said wall surfaces for making rolling contact with said first wall surface outside of the area thereof engaged by said paint roller as the paint roller is rolled along said first wall surface in a direction parallel to said line of intersection, roller means on said frame at the other end of the paint roller for making rolling contact with said second wall surface at a point radially outwardly of the paint roller, spacer means at the wide end of the paint roller and near the perimeter of the roller on the side of the paint roller which engages said first wall surface, said spacer means extending a short distance beyond the end of the paint roller to engage said second wall surface and space the paint roller therefrom, paint wiping means on said frame at the latter end of the paint roller which engages the adjacent end of the paint roller to wipe paint therefrom as it is rolled along the wall surfaces to be painted, and means for catching the paint as it is scraped from the latter end

of the paint roller, said latter means comprising a pan contiguous to and extending closely along and parallel to the side of said paint roller remote from the side to engage the wall surface to be painted, said pan having closely spaced side walls forming relatively finger grip surfaces for holding the paint roller during its movement along the wall surface to be painted.

6. A paint roller unit for applying paint to a vertical wall contiguous to a ceiling at right angles thereto, said paint roller unit comprising a frame including an open-top paint-receiving pan, said frame having at one end first roller means adapted to make rolling contact with one of said ceiling and wall at a point spaced from the line of intersection between said wall and ceiling, a paint roller having a frusto-conical outer paint-applying surface supported from said frame for rotation about an axis inclined upwardly and outwardly so that the innermost surface of the paint roller extends in a vertical plane to make contact with said vertical wall when said first roller means makes contact therewith, said frame having an arm which lies contiguous to the top of the paint roller and is positioned to be located in the space between the ceiling and the paint roller when the latter is positioned to paint the vertical wall adjacent the ceiling, and spacer roller means supported for rotation upon said arm and projecting a relatively small distance above the uppermost portions of the paint roller to make rolling engagement with the ceiling to prevent the paint roller from touching the ceiling, and said arm carrying wiper means which engages the upper end of the paint roller to wipe the paint therefrom, said paint-receiving pan underlying the outerside of the paint roller and positioned to catch the paint dripping from the wiped upper end thereof.

7. A paint roller unit for applying paint to a vertical wall contiguous to a ceiling at right angles thereto, said paint roller unit comprising a frame having at one end first roller means adapted to make rolling contact with one of said ceiling and wall at a point spaced from the line of intersection between said wall and ceiling, a paint roller having a frusto-conical outer paint-applying surface supported from said frame for rotation about an axis inclined upwardly and outwardly so that the innermost surface of the paint roller extends in a vertical plane to make contact with said vertical wall when said first roller means makes contact therewith, said paint roller having a recess at the upper end, and said frame having an arm pivotally mounted to the outer upper end of the frame for movement between a stable upwardly extending position and a stable inwardly and horizontally extending position where the arm lies contiguous to the top of the paint roller and is positioned to be located in the space between the ceiling and the paint roller when the latter is positioned to paint the vertical wall adjacent the ceiling, said arm in said horizontally extending position having a depending end portion extending into said recess in the upper end of the paint roller at a point contiguous to the side of the paint roller which engages the vertical wall, and spacer roller means supported for rotation upon said depending end portion of said arm and projecting a relatively small distance above the uppermost portions of the paint roller to make rolling engagement with the ceiling to prevent the paint roller from touching the ceiling.

8. A paint roller unit for applying paint to a vertical wall contiguous to a ceiling at right angles thereto, said paint roller unit comprising a frame including an open-top paint-receiving pan, said frame having at its bottom end first roller means adapted to make rolling contact with said wall at a point spaced from the line of intersection between said wall and ceiling, a paint roller having a frusto-conical outer paint-applying surface supported from said frame for rotation about an axis inclined upwardly and outwardly so that the innermost surface of the paint roller extends in a vertical plane to make contact with said vertical wall when said first roller means makes contact therewith, said paint roller having a recess at the upper end, said frame carrying at its upper and outer end second roller means positioned to make rolling engagement with the ceiling when the paint roller is positioned contiguous to the line of intersection between the vertical wall ceiling where the paint roller and said first roller means are in rolling contact with said vertical wall, and said frame having an arm pivotally mounted to the outer upper end of the frame for movement between a stable upwardly extending position and a stable inwardly and horizontally extending position where the arm extends contiguous to the top of the paint roller and is positioned to be located in the space between the ceiling and the paint roller when the latter is positioned to paint the vertical wall adjacent the ceiling, said arm in said horizontally extending position having a depending end portion extending into said recess in the upper end of the paint roller at a point contiguous to the side of the paint roller which engages the vertical wall, and spacer roller means supported for rotation upon said depending end portion of said arm and projecting a relatively small distance above the uppermost portions of the paint roller to make rolling engagement with the ceiling to prevent the paint roller from touching the ceiling, and said arm carrying wiper means which engages the upper end of the paint roller to wipe the paint therefrom, said paint-receiving pan underlying the outer side of the paint roller and positioned to catch the paint dripping from the wiped under end thereof.

9. A paint roller unit for applying paint to a vertical wall contiguous to a ceiling at right angles thereto, said paint roller unit comprising a frame including an open-top paint-receiving pan having closely spaced upstanding side walls adapted to be grasped by the hands of the user, an inclined bottom wall extending between the lower ends of said side walls and a bottom end wall extending between said side walls and closing off the bottom end of the paint-receiving pan, said frame having at the inner lower end thereof a first pair of rollers mounted for rotation about spaced vertical axes parallel to said vertical wall and adapted to make rolling contact with said vertical wall at a point spaced from the line of intersection between said wall and ceiling, a paint roller having a frusto-conical outer paint-applying surface supported from said frame for rotation about an axis located between said first-mentioned pair of rollers and inclined upwardly and outwardly so that the innermost surface of the paint roller extends in a vertical plane to make contact with said vertical wall when said first pair of rollers makes contact therewith, said paint roller having a recess at the upper end, said frame carrying at its upper and outer end a second pair of rollers mounted for rotation about spaced horizontal axes straddling said paint roller axis of rotation and extending transversely of said vertical wall and positioned to make rolling engagement with the ceiling when the paint roller is positioned contiguous to the line of intersection between the wall and ceiling where the paint roller and said first pair of rollers are in rolling contact with said vertical wall, and said frame having an arm pivotally mounted to the outer upper end of the frame for movement between a stable upwardly extending position and a stable inwardly and horizontally extending position where the arm lies contiguous to the top of the paint roller and is positioned to be located in the space between the ceiling and the paint roller when the latter is positioned to paint the vertical wall adjacent the ceiling, said arm in said horizontally extending position having a depending end portion extending into said recess in the upper end of the paint roller at a point contiguous to the side of the paint roller which engages the vertical wall, spacer roller means supported for rotation upon said depending end portion

of said arm positioned about a horizontal axis extending transversely to said vertical wall and projecting a relatively small distance above the uppermost portions of the paint roller to make rolling engagement with the ceiling to prevent the paint roller from touching the ceiling, and said arm carrying wiper means which engages the upper end of the paint roller to wipe the paint therefrom, said paint-receiving pan underlying the outer side of the paint roller and positioned to catch the paint dripping from the wiped upper end thereof.

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