

[54] **INTERCHANGEABLE CARTRIDGE FOR FOUNTAIN PAINT ROLLERS**

[76] Inventor: **Ragnvald G. Leland**, P. O. Box 4174, Palm Springs, Calif. 92262

[22] Filed: **May 11, 1973**

[21] Appl. No.: **359,604**

Related U.S. Application Data

[63] Continuation of Ser. No. 238,874, March 28, 1972, abandoned.

[52] U.S. Cl. **401/197**

[51] Int. Cl. **B44d 3/28**

[58] Field of Search **401/197, 194**

[56] **References Cited**

UNITED STATES PATENTS

2,708,763	5/1955	Jacoby	401/197 X
3,099,034	7/1963	Leland	401/197
3,224,031	12/1965	Leland	401/197

FOREIGN PATENTS OR APPLICATIONS

800,540	10/1950	Germany	401/197
---------	---------	---------------	---------

783,095	9/1957	United Kingdom.....	401/197
101,014	10/1962	Norway.....	401/197

Primary Examiner—Lawrence Charles
Attorney, Agent, or Firm—Berman, Bishoff & Platt

[57]

ABSTRACT

An interchangeable cartridge for rapid replacement of a paint supply for fountain type rollers is described. The cartridge comprises an outer and an inner cylinder having mating longitudinal rows of apertures. End sealing means are provided, one of which includes means for rotating the inner cylinder with respect to the outer cylinder about its longitudinal axis, thus aligning the two sets of apertures. When the apertures are aligned, paint contained in the inner cylinder will flow outwardly to an applicator pad. When the apertures are out of alignment, the paint flow will be cut off. A handle is attached to the end sealing means by spring-loaded extensions, which also serve to secure one of the end sealing means, while at the same time permitting the inner cylinder to rotate.

10 Claims, 14 Drawing Figures

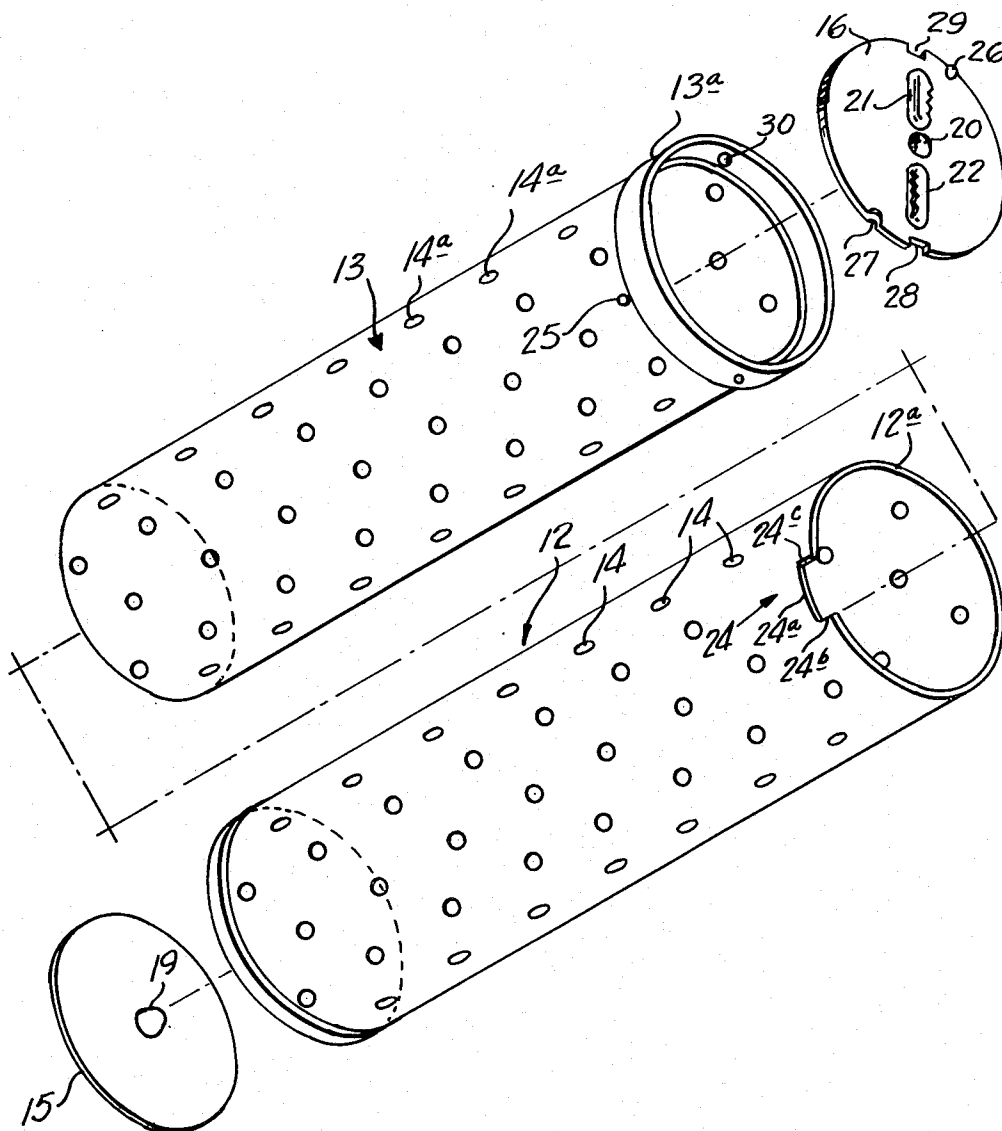


FIG. 5.

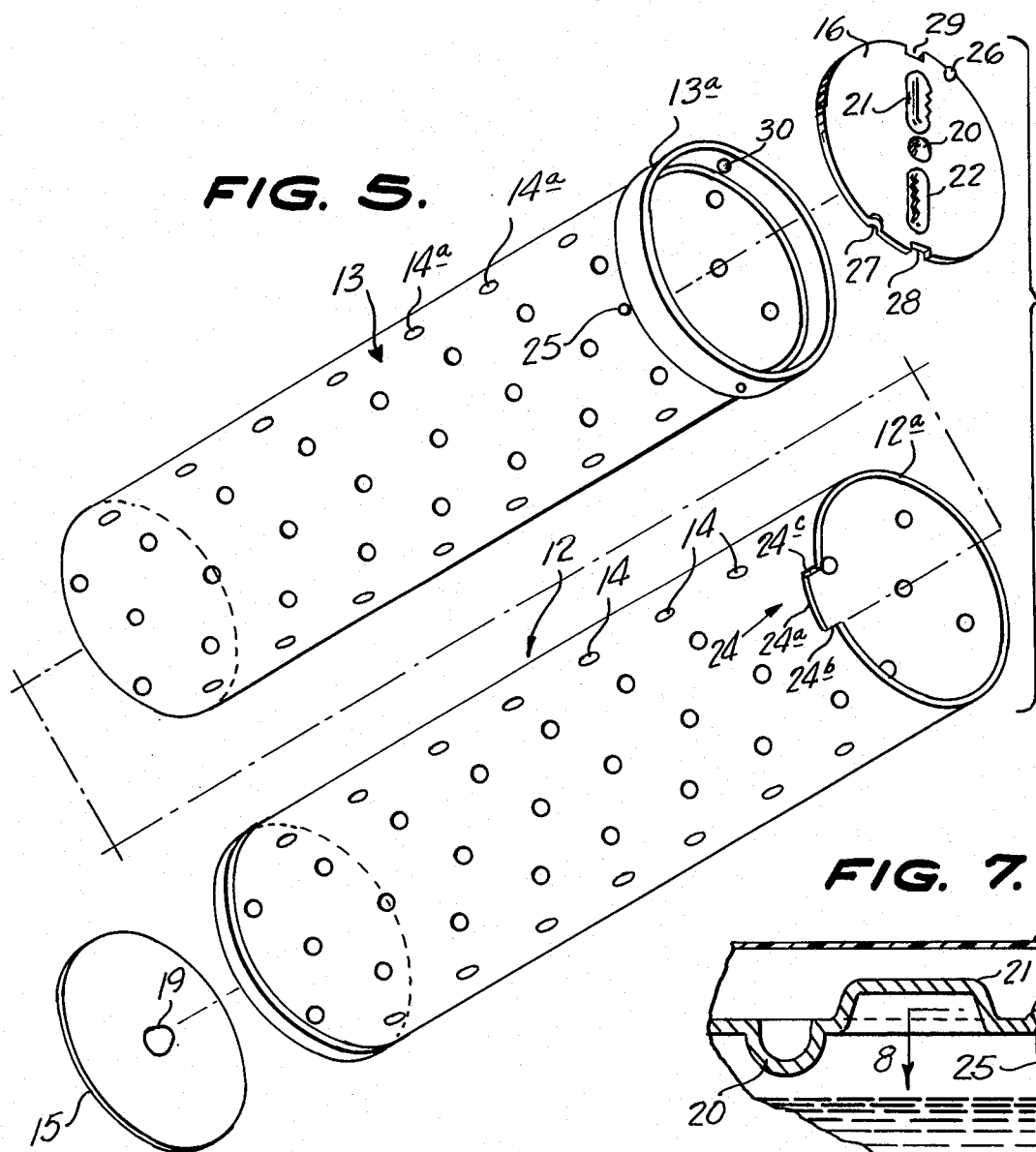


FIG. 6.

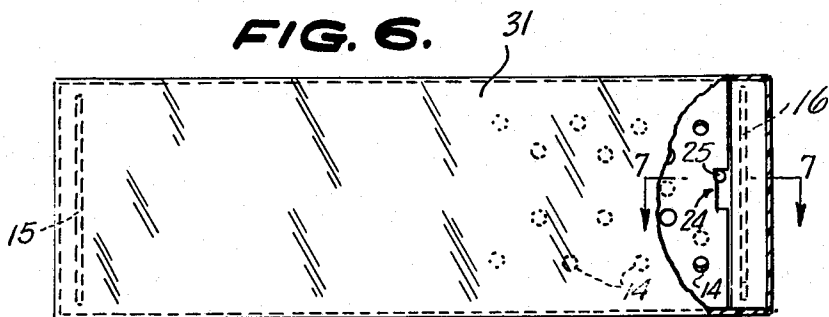


FIG. 7.

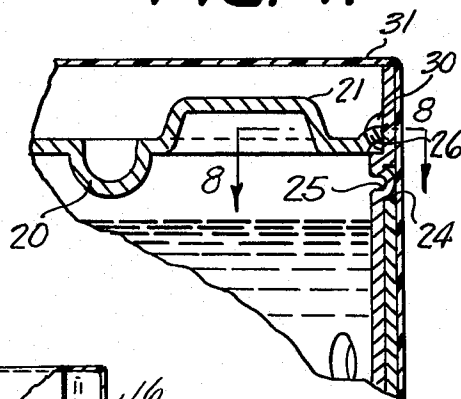
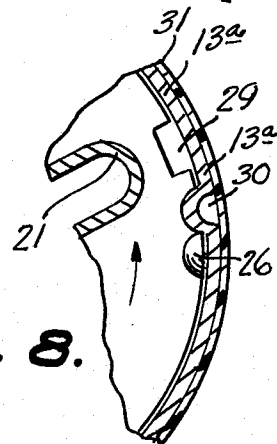


FIG. 8.



SHEET 3 OF 4

FIG. 9.

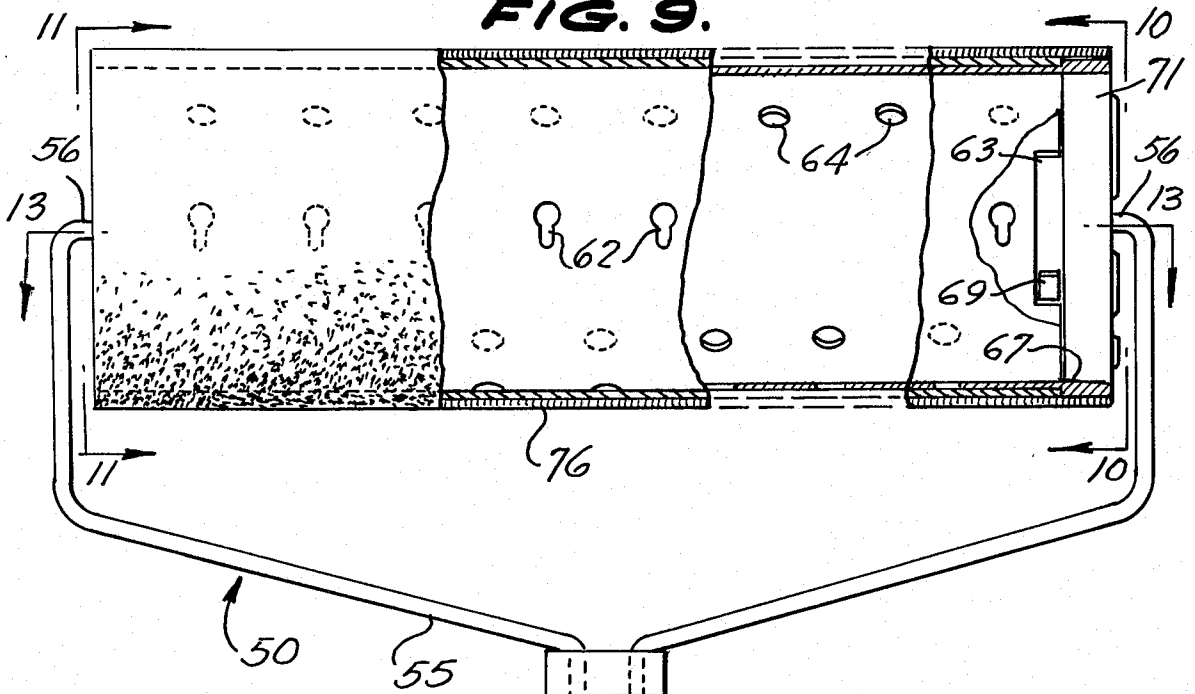


FIG. 10.

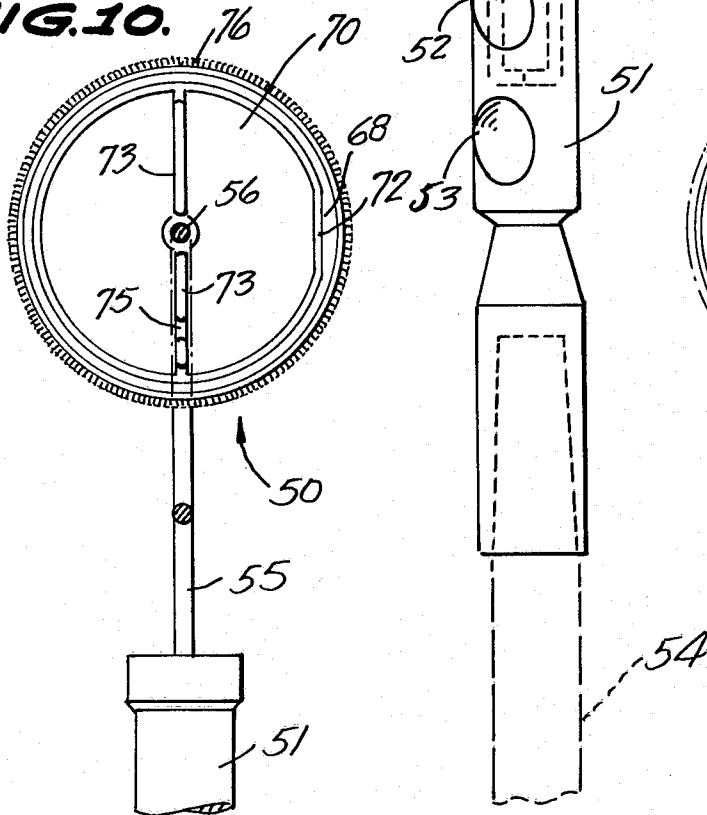
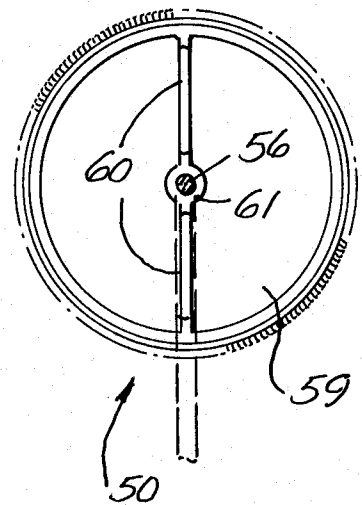
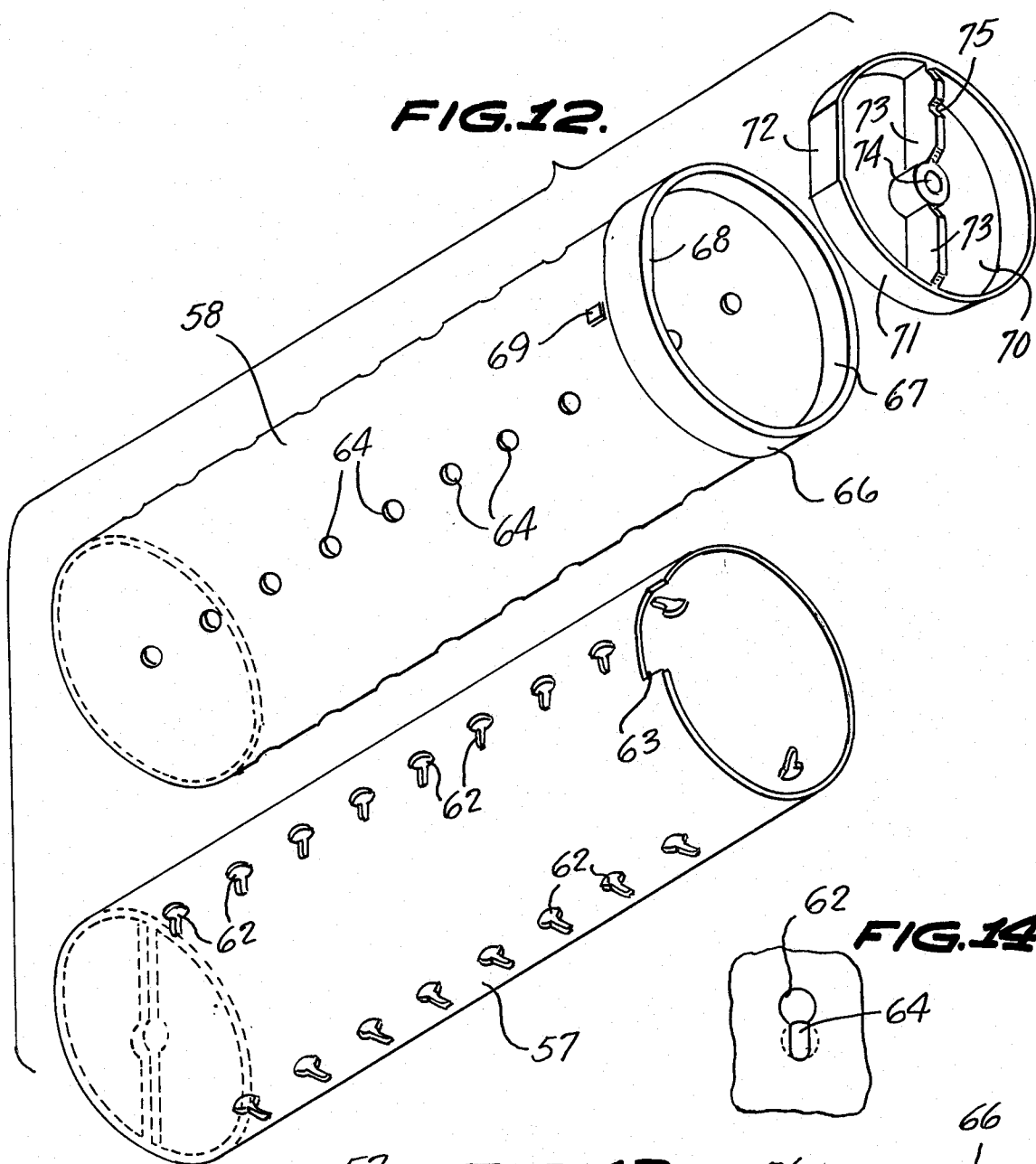
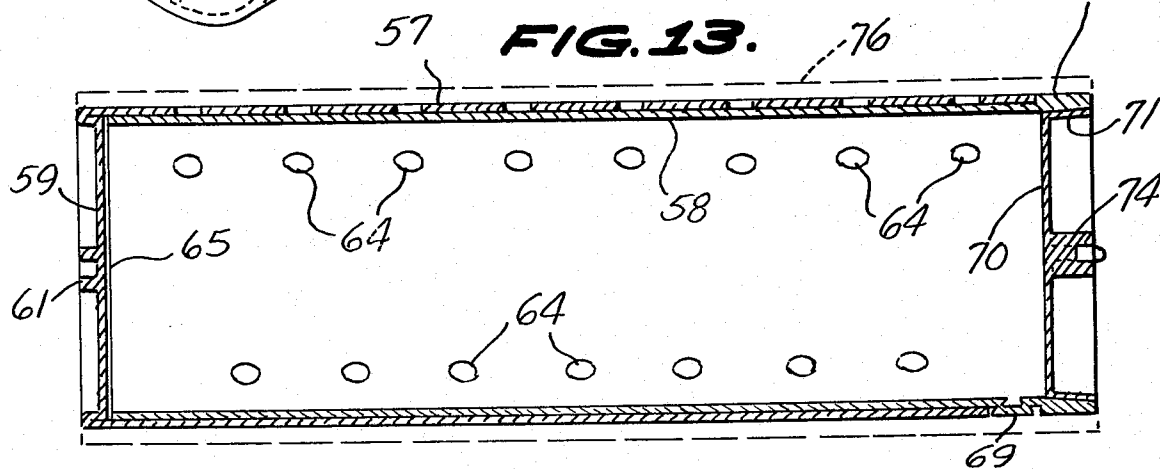
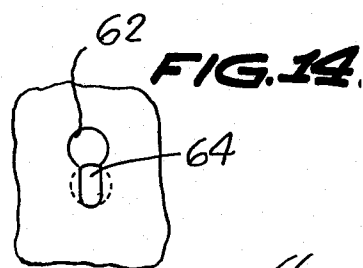


FIG. 11.





INTERCHANGEABLE CARTRIDGE FOR FOUNTAIN PAINT ROLLERS

This application is a continuation of application Ser. No. 238,874, filed Mar. 28, 1972, and entitled INTERCHANGEABLE CARTRIDGE FOR FOUNTAIN PAINT ROLLERS now abandoned.

This invention relates to a novel fountain paint roller and more particularly relates to an interchangeable cartridge for use with such a roller.

While various types of fountain paint rollers have been known in the past, all of these have suffered from one or more disadvantages. Chief among the disadvantages have been the relatively cumbersome apparatus involved, the difficulty in refilling the roller and the lack of efficiency in the painting operation.

Accordingly, a primary object of the present invention is to provide a new and improved interchangeable cartridge for fountain type rollers which will eliminate the above-described disadvantages of the prior art.

Another and more specific object of the present invention is to provide a new and improved interchangeable cartridge for fountain type rollers wherein inner and outer cylinders are provided which are adapted to fit closely together, each cylinder having a plurality of apertures in the surface thereof so that when the apertures in the two cylinders are aligned, paint flow will be permitted to an applicator pad.

Still another object of the present invention is to provide an improved interchangeable cartridge for fountain type paint rollers having improved means for turning the paint flow on and off in a positive manner, said improved means being simple of construction and comprising relatively few moving parts.

Still a further object of the present invention is to provide an improved handle means for use with an interchangeable cartridge for fountain type paint rollers.

A further object of the present invention is to provide improved end closure means for cylinders comprising an interchangeable cartridge for fountain type rollers, which end closure means cooperate with the handle so as to provide a bearing for rotation the roller during the painting operation as well as retaining the end closure means in place.

Other objects, advantages and features of the present invention will become apparent from consideration of the detailed description set forth below when considered in connection with the accompanying drawings in which:

FIG. 1 is an elevational view of the assembled interchangeable cartridge, handle and applicator roller pad of the present invention;

FIG. 2 is a partially broken away end view as seen from the left in FIG. 1;

FIG. 3 is a partially broken away end view as seen from the right in FIG. 1;

FIG. 4 is a section taken on line 4—4 in FIG. 1;

FIG. 5 is an exploded perspective view of the interchangeable cartridge of the present invention;

FIG. 6 is a partially broken away plan view of the assembled cartridge of the present invention with a removable sealing cover;

FIG. 7 is an enlarged fragmentary section taken on line 7—7 in FIG. 6;

FIG. 8 is a section taken on line 8—8 in FIG. 7;

FIG. 9 is a front elevation of a modified form of the invention shown partially broken away and in section for convenience of illustration;

FIG. 10 is a fragmentary vertical sectional view taken along the line 10—10 of FIG. 9, looking in the direction of the arrows;

FIG. 11 is a fragmentary vertical sectional view taken along the line 11—11 of FIG. 9, looking in the direction of the arrows;

FIG. 12 is an exploded perspective view of the invention illustrated in FIG. 9;

FIG. 13 is a longitudinal sectional view taken along the line 13—13 of FIG. 9, looking in the direction of the arrows; and

FIG. 14 is a fragmentary elevational view illustrating the relationship of the apertures in the rollers.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings in detail wherein like reference numerals indicate like parts throughout the several figures and referring initially to FIGS. 1 through 8, an interchangeable cartridge for fountain paint rollers constructed in accordance with the invention is indicated generally at 10. The roller 10 includes a relatively thin gauged elongated cylinder 12, within which is disposed a similar cylinder 13. Outer cylinder 12 includes a plurality of longitudinally disposed rows of circular apertures 14, while inner cylinder 13 comprises identical rows of circular apertures 14a. The two sets of apertures 14 and 14a may or may not be in alignment, as will be more fully explained hereinbelow, but as shown in FIG. 4, the two sets of apertures are in alignment.

Disposed about the outer surface of cylinder 12, is applicator pad 11 which is formed of porous material and is held in place by clips 23. The clips 23 may be formed, for example, of tin wire covered with paper, but it should be realized that other fastening means, such as elastic bands, may also be used.

The left end of outer cylinder 12, as viewed in FIG. 1, is closed by end plate 15 which is permanently cemented or otherwise fixed at the end inner wall of cylinder 12. Disposed at the right end of inner cylinder 13 is end plate 16, whose function and construction will be more fully explained in connection with FIGS. 5 through 8. End plate 16 includes struck-out finger grips 21 and 22, substantially square cut-outs 28 and 29 diametrically opposed from each other and located near the periphery of end plate 16 and struck-up buttons 26 and 27, which are diametrically opposed and displaced by a small angle from cut-outs 28 and 29. Located in the exact center of end plate 16 is hemispherical depression 20, which is aligned with similar hemispherical depression 19 in end plate 15, along the longitudinal axis of the cylinder assembly.

Hollow handle 18, having neck-ring 18a, is adapted to receive spring-like extensions 17a and 17b which engage respectively with indentations 19 and 20 in end plates 15 and 16. The other ends of extensions 17a and 17b are inserted in handle 18 and allowed to expand against neck-ring 18a so that the resultant spring force serves to keep end plate 16 in place and at the same time this construction permits the roller assembly to pivot about the longitudinal axis of the cylinders for effecting the painting operation.

Referring now to FIG. 5, the manner in which the inner and outer cylinders 12 and 13 and end plates 15 and 16 are assembled can be more readily appreciated. Inner cylinder 13 is adapted to slide within outer cylinder 12 in close fitting relationship thereto so that button 25 on the outer surface of cylinder 13 abuts against circumferential surface 24a of cut-out 24 in cylinder 12. When the cylinders are in this position, with button 25 in contact with upper longitudinal surface 24c, as shown for example in the broken away portion of FIG. 6, the two sets of circular apertures 14 and 14a are not aligned, so that paint contained within inner cylinder 13 will not flow through apertures 14 in outer cylinder 12. The cylinders are so dimensioned that when inner cylinder 13 is placed within outer cylinder 12, collar 13a will abut edge 12a.

As stated above, end plate 15 is permanently cemented or otherwise secured to the lower inner surface of outer cylinder 12. Each plate 16 is removably secured to the inner periphery of collar 13a of inner cylinder 13 by placing substantially square cut-outs 28 and 29 over buttons 30 and 32 (see also FIG. 3). Finger grips 21 and 22 are then utilized to rotate end plate 16 until button 26 abuts against button 30 and similarly, button 27 abuts against button 32. Continued rotation of end plate 16 by means of finger grips 21 and 22 will then cause the entire inner cylinder 13 to rotate until button 25 reaches the lower longitudinal surface 24b of cut-out 24. At this point, apertures 14 will be aligned with apertures 14a, the paint contained within the interior of inner cylinder 13 will flow freely through apertures 14a and 14 and be evenly distributed on applicator pad 11. This latter described relationship of cut-out 24, button 25 and apertures 14 and 14a is shown in FIG. 4.

FIG. 6 illustrates the entire replaceable cartridge of the present invention in assembled condition before it is ready for use. Protective sealer is disposed over the outer periphery of outer cylinder 12 to prevent any accidental leakage of paint contained within interior cylinder 13 during handling or shipping. Protective sealer 31 can be made of any inexpensive disposable plastic or the like, and would be removed prior to use.

Referring now to FIGS. 7 and 8, there is shown in detail the structure of end plate 16 when it is rotated into position to commence operation of the paint roller. As can be seen, particularly in FIG. 8, button 26 is abutting against button 30 so that continued rotation of end plate 16 by means of finger grips 21 and 22 will result in rotation of inner cylinder 13 until button 25 reaches the lower circumferential surface 24b of cut-out 24.

In operation, protective seal 31 is removed from the interchangeable cartridge which contains paint of the desired type in its interior. Applicator pad 11 is then attached by means of spring clips 23, as shown in FIG. 4, and handle 18 is attached to end plates 15 and 16 at indentations 19 and 20, as explained above with respect to FIG. 1. Finger grips 21 and 22 will then be grasped by the user and rotated in the direction of the arrows, as shown in FIGS. 3 and 8, until button 25 reaches the lower circumferential surface 24b of cut-out 24. At this point, as explained above, apertures 14a and 14 will be aligned so that paint within the interior of inner cylinder 13 will be transferred to porous applicator pad 11, uniformly over its surface, and painting may commence.

When the paint supply has been exhausted, spring extensions 17a and 17b may be released from end plates 15 and 16 and a new cartridge attached thereto. Thus, the painter may have at hand a supply of cartridges containing paint sufficient to accomplish the job on which he is working and no time will be lost in refilling the cartridges. Of course, in preparation for the next job, the painter may refill any or all of the replaceable cartridges by removing end plate 16 after first rotating inner cylinder 13 until apertures 14a are no longer in alignment with apertures 14. Inner cylinder 13 may then be refilled with paint and end plate 16 replaced in the manner described above.

In FIGS. 9 through 14 a modified fountain paint roller is indicated generally at 50. The paint roller 50 includes a handle 51 having finger grips 52, 53 formed therealong for large and small hands. The handle 51 may have an extension pole 54 attached thereto when desired. A wire yoke 55 is mounted on the handle 51 and is provided with axially aligned pivots 56 on opposite ends thereof.

The paint roller 50 includes an outer tube 57 and an inner tube 58. The outer tube 57 is closed at one end by an end wall 59 and is provided with finger grips 60 extending radially outwardly from the center of the end wall 59. A bearing 61 is formed in the axial center of the end wall 59 to receive the pivot 56 and the yoke 55.

The outer tube 57 is provided with a plurality of lines of elongate apertures 62 for reasons to be assigned. The apertures 62 are spaced well within the opposite ends of the outer tube 57. A rectangular notch 63 is formed in the end of the tube 57 opposite the end wall 59 as can be best seen in FIG. 12.

The inner tube 58 has a plurality of rows of circular apertures 64 formed therein for cooperation with the apertures 62. The inner tube 58 has an open end 65 which is positioned closely adjacent the end wall 59 when the tubes 57 and 58 are assembled ready for use.

The inner tube 58 is provided with an annular collar 66 integrally formed at one end thereof and having a tapered opening 67 formed therein. The collar 66 has a flattened portion 68 on its interior surface for reasons to be assigned.

The inner tube 58 has an angularly undercut button 69 formed therein and projecting radially outwardly therefrom to engage in the generally rectangular notch 63.

A generally cylindrical end cap 70 has a tapered annular flange 71 formed integrally thereabout and having a flattened portion 72 formed therein. The cap 70 is adapted to fit into the collar 66 and make sealing contact therewith. Finger grips 73 are integrally formed on the end wall 70 and has an axial socket 74 formed thereon to receive the pivot 56 of the yoke 55. One of the finger grips 73 has a notch 75 formed therein to establish the identity of the finger grip 73 so that its position with respect to open and closed can be easily determined.

The inner tube 58 is telescoped into the outer tube 57 until the open end of the outer tube 57 engages against the collar 66 as can be seen in FIG. 13. The button 69 is then positioned in the notch 63 to limit the turning movement of the inner tube 58 with respect to the outer tube 57. A conventional paint application sleeve 76 is engaged over the outer tube 57 and the collar 66 for use in a conventional manner. The end wall 70 is removed from the collar 66 so that paint can be

poured into the interior of the inner tube 58. The tubes 57 and 58 at this point are in a position with the apertures 62 out of registry with the apertures 64. The end wall 70 is replaced with the tapered flange 71 sealing against the tapered collar 67 and the flattened area 72 engaged against the flattened area 68. The pivots 56 of the yoke 55 are then engaged in the sockets 61 and 74, respectively to complete the assembly of the device. The finger grips 60 are then gripped with one hand, the finger grips 73 with the other, and the end wall 70 is turned along with the inner tube 58 until the desired registry of the apertures 62 occur with the apertures 64. Obviously, the more viscous the paint the larger hole will be required to permit its flow. The roller 50 is then used to paint in a conventional manner until all of the paint is used whereupon the filling procedure described above is repeated.

Having thus described the preferred embodiments of the invention, it should be understood that numerous structural modifications and adaptations may be resorted to without departing from the spirit of the invention.

What is claimed is:

1. In a fountain paint roller, an interchangeable cartridge comprising:

- a. an outer cylinder having a first set of apertures therein;
- b. an inner cylinder having a second set of apertures therein;
- c. said inner cylinder being disposed within said outer cylinder and being rotatable therewithin between a first position wherein said first and second sets of apertures are not aligned and a second position wherein said sets of apertures are aligned;
- d. guide means for constraining the rotation of said inner cylinder between said first and second positions;
- e. end closure means for said inner cylinder comprising means for rotating said inner cylinder between said first and second positions;
- f. a tapered annular flange on said end closure means;

and

g. a collar on said inner cylinder having a tapered inner surface for sealingly receiving said flange.

2. The interchangeable cartridge set forth in claim 1 wherein said guide means comprises means disposed on the surface of said inner cylinder for interengagement with cooperating means on the surface of said outer cylinder.

3. The interchangeable cartridge set forth in claim 2 wherein said means disposed on the outer surface of said inner cylinder comprises a first button means and the means disposed on the surface of said outer cylinder comprises a cut-out.

4. The interchangeable cartridge set forth in claim 3 wherein said means for rotating said inner cylinder comprises finger gripping means.

5. The interchangeable cartridge set forth in claim 1 further including end closure disc means for said outer cylinder permanently secured to the inner surface thereof.

6. The interchangeable cartridge set forth in claim 5 further including indentations in the center of each of said disc means for rotatably mounting a handle on said cartridge.

7. The combination set forth in claim 6 further including means having spring-like extensions for engaging said indentations, thus serving to retain in place said end closure means for the inner cylinder.

8. A device as claimed in claim 1 wherein one of said sets of apertures are circular and the other of said set of apertures are elongate to provide means for infinitely varying the effective size of said apertures when in partially aligned relation.

9. A device as claimed in claim 1 wherein said collar and said flange have cooperating flattened surfaces which interengage to prevent rotation of said end closure means in said collar.

10. A device as claimed in claim 9 wherein said outer cylinder engages against said collar on said inner cylinder with said cylinders completely assembled.

* * * * *

45

50

55

60

65