Feb. 26, 1952 C. A. MUREAU 2,587,198

COMBINED BRUSH APPLICATOR MOUNTING AND CLOSURE SEALING MEANS

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Fig. 1.

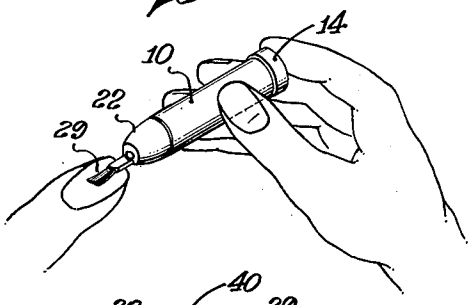


Fig. 3.

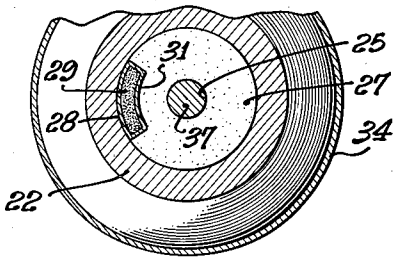


Fig. 2.

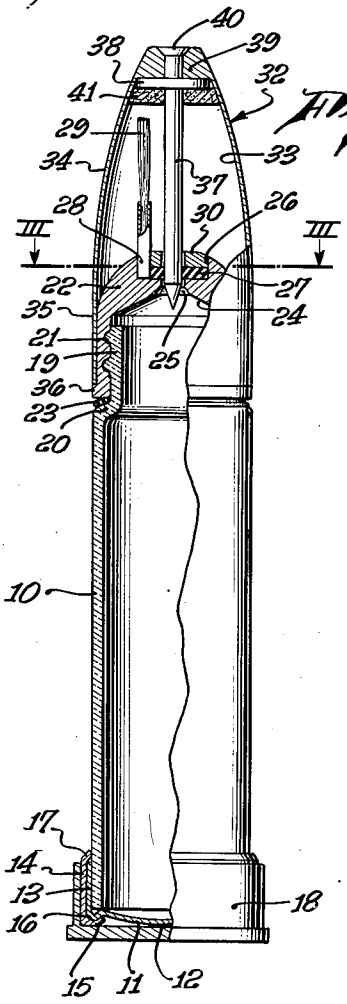
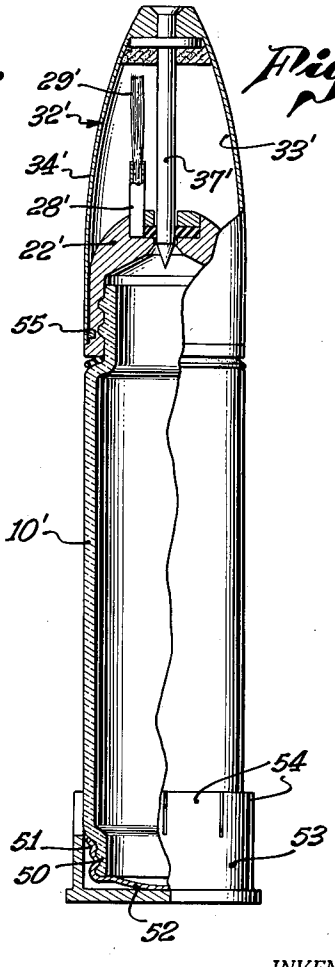


Fig. 4.



INVENTOR.
CHARLES A. MUREAU,
BY
ATTORNEY.

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COMBINED BRUSH APPLICATOR MOUNTING AND CLOSURE SEALING MEANS

Charles Allen Mureau, Sherman Oaks, Calif.

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11 Claims. (Cl. 15—136)

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This invention relates to an improved container and applicator for small quantities of paints or lacquers and is especially adapted for containing a colored lacquer and for applying the lacquer to a fingernail.

Heretofore, fingernail lacquers and polishes were sold and distributed in containers and a separable device or element was used to brush or apply the lacquer onto the nails. The present invention relates to a combined container and applicator whereby all of the necessary elements are present.

Some prior proposed nail polish containers and applicators comprised a small bottle having a closure in the form of a cap provided with a brush which extended downwardly into the lacquer and which was immersed therein when not in use. The stem or shaft of such brushes was either too short to reach the bottom of the container, or when long enough to reach the bottom, excessive quantities of lacquer adhered to the stem and dripped therefrom when the brush was in use. The bristles of such a brush applicator usually become sticky and gummy from immersion in the lacquer and from repeated exposure to the air when the lacquer is being applied to a fingernail; the re-introduction of the brush into the container thereby contaminating and deleteriously changing the quality and characteristics of the lacquer. It was practically impossible to maintain a smooth, uninterrupted flow of lacquer on a fingernail with brushes of such prior applicators.

The primary object of this invention is to design and provide a combination nail lacquer container and applicator which will obviate the above disadvantages and which will provide a more efficient and effective nail lacquer applicator and container.

An object of this invention is to provide a combined container and applicator for use with paints or nail lacquers wherein the color of the lacquer may be readily seen so that a desired color may be easily selected.

Another object of this invention is to design and provide an improved lacquer container and applicator wherein the brush of the applicator is maintained in an atmosphere of solvent vapors when not in use and excessive amounts of lacquer are not unnecessarily exposed to the air.

A further object of this invention is to provide an improved container and applicator for use with paints or nail lacquers wherein means is provided for ejecting as required small quantities of lacquer from the container and in such a manner that the lacquer flows upon the brush of the applicator.

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This invention also contemplates a container and applicator as above described, wherein closure means are provided for sealing the container when not in use. The closure means also includes a hollow sealed chamber enclosing the applicator brush and a solvent absorbing means for maintaining a solvent atmosphere around the bristles of the brush.

Still another object of the invention is to design and provide an improved container and applicator wherein the applicator brush is cooperatively related with the discharge port of the container and is provided with a cupped brush holder for guiding the ejected lacquer onto the bristles of the brush.

Other objects and advantages of this invention will be readily apparent from the following description of the drawings.

In the drawings:

Fig. 1 is a perspective view showing the manner in which the container and applicator embodying this invention may be utilized for applying nail lacquer onto a fingernail.

Fig. 2 is a side elevation of the device shown in Fig. 1 partly in section, the section being taken in a transverse plane passing through the axis of the device.

Fig. 3 is a transverse sectional view taken in the plane indicated by the line III—III of Fig. 2.

Fig. 4 is a side elevation of a modification of the structure shown in Fig. 2, the view being partly in section.

Referring particularly to Fig. 2, the combination container and applicator for nail lacquer comprises a cylindrical, open-ended, hollow container 10, preferably made of a transparent material such as glass, to permit the user of the lacquer to select the exact shade of nail lacquer desired. Nail lacquers normally contain cellulosic derivatives or transparent resins and suitable dyes disposed or dissolved in volatile solvents.

The bottom open end of the container 10 may be provided with a thin, resilient metallic diaphragm 11 having a circular, outwardly curved and sprung portion 12 covering the open end of the container and acting as a snap-acting pump for ejecting lacquer contained within the container 10. The diaphragm 11 may be provided with an annular flange 13 sleeved on the adjacent end portion of the container 10.

Means for securing the diaphragm 11 may be provided by an annular retaining ring 14 having an inwardly directed lip 15 overlying a peripheral bead 16 formed on the diaphragm 11. The other end of the retaining ring 14 may be

swedged over as at 17 to grasp the outer surfaces of the container 10.

When not in use and to prevent the diaphragm 11 from being accidentally actuated, a bottom cap 18 is provided for covering the diaphragm 11. The bottom cap provides a flat surfaced base for standing the container in an upright position.

The other end 19 of the container is formed with a reduced diameter providing an annular shoulder 20 and may be provided with external threads 21 engaging internal threads on a container cap 22. When the cap 22 is tightly threaded on the end 19, the bottom annular edge of the cap presses a washer 23 of any suitable material against the shoulder 20 for affording a tight seal.

The container cap 22 may be provided with an internal frustoconical wall surface 24 leading to a central axially disposed outlet port 25. Surrounding the port 25 and formed in the outer surface of the cap 22 may be a circular recess 26 for accommodating a circular sealing ring 27 of any suitable material and the lower end of a ferrule or holder 28 for containing and securing the bristles of an applicator brush 29. Superimposed above the sealing ring 27 may be a metallic locking ring 30 provided with an axial port in alignment with the port 25 in the container cap and press-fitted in recess 26 for securing the ferrule and the sealing ring. The inner annular portions of ring 27 extend slightly into the outlet port 25.

It should be noted that the ferrule or holder 28 for securing the bristles of brush 29 is formed with a concave side 31 facing the port 25 and adapted to receive flow of nail lacquer therethrough.

Means for sealing the port 25 in the container cap and for affording a closed chamber for the brush 29 are provided by a cover 32. The cover 32 affords a hollow chamber 33 defined by a skirt portion 34, the lower end of which embraces the outer circumferential surfaces of the container cap 22 as at 35 and the lower edge of which may be seated against an annular shoulder 36 formed adjacent the bottom edge of cap 22. The cover 32 may be of generally paraboloid form and is provided with an elongated axially extending sealing rod 37 extending through the port 25 and afforded sealing engagement with the sealing ring 27. The end of the sealing rod may be pointed for permitting easy insertion of the rod into the port 25. The rod may be secured in any convenient manner to the closed end of the cover as by means fo a suitable transversely disposed integral circular locking plate 38 in abutment with the thickened wall 39 at the end of the cover, while the outer end of the rod 37 may be provided with an outwardly flared, riveted head 40 received within a counterbore in the wall 39.

Spaced from the tip of the brush 29 and surrounding the sealing rod 37 may be provided a porous, absorbing element or pad 41 which is adapted to be saturated in a suitable solvent, such as acetone, alcohol, etc., for creating and maintaining within the chamber 33 an atmosphere of solvent vapors about the brush 29 for the purpose of maintaining the brush in a soft, flexible, pliable condition.

It will be readily apparent from Fig. 1 that when this novel container and applicator is used for the purpose of applying nail lacquers after the cover 32 and the bottom cap 18 have been removed, lacquer contained in container 10 may be readily and controllably ejected by snap action of the diaphragm pump by a finger of one hand through port 25 and onto the concave side of the ferrule for guiding the lacquer onto brush 29. After the desired quantity has been ejected from the container, the lacquer may be readily applied by the brush to the fingernail, as indicated in Fig. 1. As more lacquer is required, diaphragm 11 may be actuated for ejection of additional lacquer through the port 25.

After use, placing of the cover 32 over the container cap 22 will seal the container by cooperation of the axial sealing rod and sealing ring 27 within port 25. The engagement of the skirt portion of the cover with the sides of the container cap will substantially seal chamber 33 so that the bristles of the brush 29 are kept in a solvent atmosphere by reason of the absorbing element 41. Replacement of the bottom cap 18 will prevent accidental actuation of the diaphragm pump 11.

In the modification shown in Fig. 4, the combination container and applicator differs from the previous embodiment in the mounting of the diaphragm pump and the engagement of cover 32 with the container cap 22.

In this modification, a container 10' may be provided with a bottom end 50 of reduced diameter and provided with external threads for engagement with a complementary threaded flange 51 of a thin resilient diaphragm 52. The diaphragm 52 is provided with an outwardly-curved, sprung, circular portion, as in the previous modification, for providing a snap acting pump for ejection of fluid from the container 10' as required.

The bottom cap 53 covers and protects the diaphragm 52 and may be provided with a plurality of circumferentially spaced, resilient fingers 54 for grasping outer circumferential surfaces of container 10' adjacent the reduced end portion 50.

In this modification, the chamber 33' is effectively sealed against loss of solvent vapors by means of an O-ring 55 carried in an annular groove formed in the container cap 22' adjacent its lower edge. It will be readily apparent that the skirt portion 34' sealably engages the O-ring 55 adjacent its lower circumferential edge and thus affords a complete annular seal for the chamber 33' within the hollow cover 32'.

The remaining structure of the combined container and applicator illustrated in Fig. 4 is substantially identical with that shown in Fig. 2. The upper reduced threaded end of container 10 may be slightly narrower than the end portion shown in Fig. 2 in order to provide a sufficient thickness of metal in the threaded portion of container cap 22' in order to permit the provision of an O-ring carrying groove around its circumference.

The combination container and applicator described above provides a transparent container for the lacquer for facilitating selection of an exact shade of lacquer which will best harmonize with the wearer's attire. In addition, the transparent container permits convenient re-purchase of an exact preselected shade of lacquer without difficulty.

The specific relationship of the brush with the discharge port of the container is important because it permits the lacquer to flow from the container, without spilling, upon the bristles of the applicator brush for smooth, regulatable, virtual-

ly continuous flow onto a nail being lacquered. Thus, there is always an ample quantity of lacquer on the brush for completing a nail. In prior applicators, when the brush was dipped into the lacquer container, extreme care was necessary in order to insure that just enough lacquer was on the brush for completing a nail. If too little lacquer was carried by the brush, application of the lacquer to the nail would be irregular and blotchy. Also, the insertion of the brush into the small opening in existing containers required careful manipulation of the brush in order to avoid upsetting the bottle.

The brush in the combined container and applicator described is soft, pliable, and always ready for use by reason of its being maintained in an atmosphere of solvent vapors within the enclosed chamber in the cover for the applicator.

Obviously, other modifications and changes may be made in the combination container and applicator and it is contemplated that it may be used for fluids other than nail lacquer, such as paints. All changes and modifications coming within the scope of the appended claims are embraced thereby.

I claim:

1. A combined container and applicator for nail lacquer and the like, comprising: a transparent, cylindrical, open-ended and hollow container portion; a thin, resilient, snap-action, metallic diaphragm connected to the bottom end of the container portion; a bottom cap removably carried by the bottom end of the container portion and over said diaphragm; a container cap carried by the top end of the container portion, said container cap being provided with a central port in communication with the interior of the container, and an outwardly extending applicator brush carried by the container cap adjacent the central port, a circular recess on the outer surface of the cap and surrounding the port, an annular resilient sealing ring in the recess, the applicator brush having its end within the recess, a ported lock ring holding said sealing ring and brush in position; and a cover provided with a skirt portion slidable over the container cap to enclose the applicator brush and simultaneously seal the port in the container cap, said cover being provided with an axial sealing rod arranged to extend into the central port of the container cap and into resilient contact with the sealing ring when in position on the container cap, and a porous, solvent absorbing element in the cover to maintain an atmosphere of solvent vapors about said brush.

2. A combined container and applicator for nail lacquer and the like, comprising: a transparent, cylindrical, open-ended and hollow container portion; a thin, resilient, snap-action, metallic diaphragm connected to the bottom end of the container portion; a bottom cap removably carried by the bottom end of the container portion and over said diaphragm; a container cap carried by the top end of the container portion, said container cap being provided with a central port in communication with the interior of the container, an outwardly extending applicator brush carried by the container cap adjacent the central port, a circular recess on the outer surface of the cap and surrounding the port, an annular resilient sealing ring in the recess, the applicator brush having its end within the recess, a ported lock ring holding said sealing ring and brush in postion; and a cover provided with a skirt portion slidable over the container cap to enclose the applicator brush and simultaneously seal the port in the container cap, said cover being provided with an axial sealing rod arranged to extend into the central port of the container cap.

3. A combined container and applicator for nail lacquer and the like, comprising: a transparent, cylindrical, open-ended and hollow container portion; a thin, resilient, snap-action, metallic diaphragm connected to the bottom end of the container portion; a container cap carried by the top end of the container portion, said container cap being provided with a central port in communication with the interior of the container, and an outwardly extending applicator brush carried by the container cap adjacent the central port, a circular recess on the outer surface of the cap and surrounding the port, an annular resilient sealing ring in the recess, the applicator brush having its end within the recess, a ported lock ring holding said sealing ring and brush in position; and a cover provided with a skirt portion slidable over the container cap to enclose the applicator brush and simultaneously seal the port in the container cap, said cover being provided with an axial sealing rod arranged to extend into the central port of the container cap.

4. A device of the character described in claim 3, wherein the applicator brush is provided with a curved holder grasped by the lock ring, the holder holding brush bristles in gutter form with concave side facing the port in the cap.

5. A combined container and applicator comprising: a tubular, open-ended, transparent container; a snap action, resilient diaphragm bottom for said container; a cap for said container, said cap being provided with an axial port and an outwardly directed fixed brush adjacent said port; means, including a sealing ring, carried by said cap and encircling the axial port; and a cover removably attachable over said cap, said cover carrying a sealing rod arranged to extend into the port in cooperative engagement with the sealing ring in said cap when the cover is in position.

6. A device of the character described in claim 5, wherein said brush is provided with a holder held by said port encircling means and having a concave surface facing said port for guiding flow of fluid from said port to said brush.

7. A device of the character described in claim 5, wherein said cover affords an enclosed sealed chamber for said brush, and a solvent absorbing element carried within said chamber for maintaining an atmosphere of solvent vapor around said brush.

8. A device of the character described in claim 5, wherein said cover cooperates with said cap for providing a sealed chamber for said brush, and a porous solvent absorbing pad carried by said cover within said chamber.

9. A combined container and applicator for nail lacquer and the like comprising: an open-ended, rigid, hollow container portion; a resilient diaphragm connected to the bottom end of the container portion; a container cap carried by the top end of the container portion, said cap being provided with a port in communication with the interior of the container portion; an applicator brush carried by the cap adjacent to the port; a recess surrounding the port on the outer surface of the cap; a resilient sealing ring in the recess; the applicator brush having one end within the recess; a lock ring holding said sealing

ring and brush in position; and a cover cooperable with the container cap to enclose the brush and to simultaneously seal the port in the container cap, said cover being provided with a sealing rod arranged to extend into said port.

10. A combined container and applicator for nail lacquer and the like comprising: an open-ended, rigid, hollow container portion; a resilient diaphragm connected to the bottom end of the container portion; a container cap carried by the top end of the container portion, said cap being provided with a port in communication with the interior of the container portion; an applicator brush carried by the cap adjacent to the port; a recess surrounding the port on the outer surface of the cap; a sealing ring in the recess; a ported lock ring holding said sealing ring; and a cover for the cap to enclose the brush and including a sealing rod cooperable with the sealing ring for sealing the port.

11. A combined container and applicator for nail lacquer and the like comprising: an open-ended, rigid, hollow container portion; a resilient diaphragm connected to the bottom end of the container portion; a container cap carried by the top end of the container portion, said cap being provided with a port in communication with the interior of the container portion; an applicator brush carried by the cap adjacent to the port; means, including a sealing ring, surrounding the port and securing said brush; and a cover for the cap to enclose the brush and including a sealing rod cooperable with the sealing ring for sealing the port.

CHARLES ALLEN MUREAU.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
905,986	Cole	Dec. 8, 1908
954,133	Reed	Apr. 5, 1910
1,155,420	Johnson	Oct. 5, 1915
1,362,431	Machles	Dec. 14, 1920
2,025,286	Hutchinson et al.	Dec. 24, 1935
2,190,975	Brown	Feb. 20, 1940
2,253,779	Guiterrez	Aug. 26, 1941

FOREIGN PATENTS

Number	Country	Date
2,467	Great Britain	of 1883
118,931	Switzerland	Feb. 16, 1927
440,881	Germany	Feb. 18, 1927