

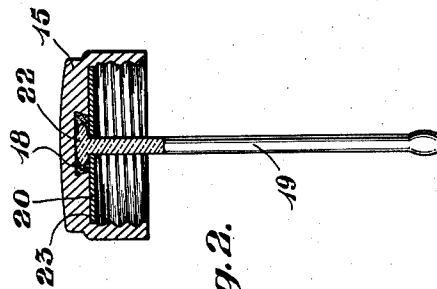
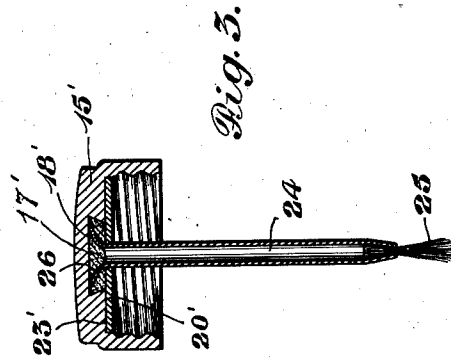
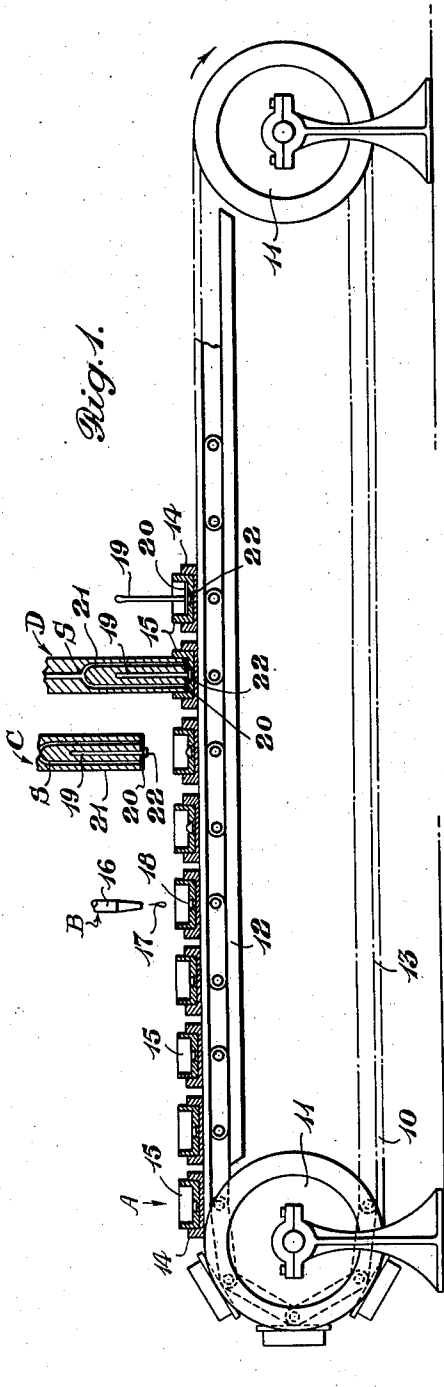
June 27, 1939.

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2,164,244

APPLICATOR

Filed Dec. 21, 1938



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UNITED STATES PATENT OFFICE

2,164,244

APPLICATOR

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Application December 21, 1938, Serial No. 247,117

7 Claims. (Cl. 91-67.4)

This invention relates to combined container caps and applicator tubes and rods and methods of making same and more particularly to combined caps and applicators of cemented construction.

Prior to the instant invention it has been proposed that a projecting tubular portion be formed on the interior of the cap for reception of the applicator tube or rod and that a joint be effected between the cap and the applicator either by friction or fusion. Other prior combined caps and applicator tubes have involved forming the interior of the cap with a projecting portion for coaction with the interior of the applicator tube by friction. In the patent to Conner No. 1,966,581, over which the instant invention is an improvement, the interior of the cap has a depressed portion for the reception of the flanged end of the applicator tube. These prior combined devices have been relatively difficult to manufacture, involving the necessity of special tools and the requirement of a relatively great amount of material and have otherwise been found unsatisfactory.

It is an object of the instant invention to provide a combined cap and applicator of simple construction, of a minimum amount of material and requiring no special tools for its fabrication.

It is a further object of the instant invention to teach a method of making a simple cemented combined cap and applicator involving a minimum of steps and resulting in a finished article of satisfactory characteristics.

Other objects and the nature and advantages of the invention will be apparent from the following description taken in conjunction with the accompanying drawing, wherein:

Fig. 1 is a schematic view of the method of fabricating the combined cap and applicator in accordance with the invention;

Fig. 2 is a vertical section of a combined cap and applicator rod; and,

Fig. 3 is a view similar to Fig. 2 but of a combined cap and applicator tube.

Referring to the drawing, an endless conveyor 10 may be caused to move over the rollers 11 in the direction of the arrows by any suitable means such as an electric motor, not shown. Beneath the upper portion of the conveyor 10 may be located a rigid table 12 to form a base whereby the cementing operation may be better carried out and a superior joint effected. Mounted upon the sections 13 of the conveyor 10 may be a series of bases or cap holders 14, see part A of Fig. 1, which are adapted to hold, in secure posi-

tion, a series of caps 15 which may be of synthetic plastic or other suitable material. These caps may be molded or otherwise formed and placed in the holders 14. Movement of the conveyor passes the caps 15 within the holders 14 successively beneath the cement dispenser 16, see part B of Fig. 1, which is so timed and arranged to cause a metered portion of cement 17 to fall upon the recessed portion 18 of the cap 15 as illustrated in part C of Fig. 1.

The applicator rod 19, which may be of glass or other suitable material depending upon the character of the matter to be dispensed by the applicator, and cap washer 20, which may be of cork or other material or a lamination of cork and other material, are temporarily held to the plunger 21 by suction tubes S and then brought down into engagement with the cap as best illustrated in part D of Fig. 1 by the plunger 21 whereby the metered quantity of cement is caused to fill the entire recess 18, and simultaneously the head portion 22 of the applicator rod 19 and the unexposed side 23 of the washer 20 are cemented to the interior of the cap 15.

Upon drying of the cement a neat relatively strong joint is effected between the rod, washer, and cap making a very satisfactory assembly. The well 18 is undercut whereby when the cement dries it will be locked into place holding within the lock the head 22 of the applicator rod 19. Not only does the cement hold the applicator rod in place within the well 18 of the cap 15, but at the same time, the surface 23 of the washer 20 is also engaged. The amount of undercutting of the sides of the well 18 may vary and yet be within the scope of the invention. However, in practice when the diameter of the upper surface of a cap is approximately one inch, the rod approximately one and one-half inches long and having a head portion of approximately one-fourth inch diameter, that portion of the well 18 adjacent the top of the cap may be approximately .006 inch greater in diameter than that portion remote from the top of the cap.

Not only may applicator rods be secured within bottle or other caps in the manner above described, but applicator tubes may be so applied to effect a finished combined applicator and cap as illustrated in Fig. 3, wherein a tube 24 holding a brush 25 at its lower portion and being formed at its upper end with a flared section 26 is securely locked within cement 17, as illustrated, the cement adhering to the inner portions of the tube as well as the exterior of the flared section, the walls of the depressed section 18' of the cap 15' and

surface 23' of the washer 20' forming an exceptionally strong, relatively rigid, combined cap and applicator assembly.

Not only has the finished product described above been found satisfactory, but its method of manufacture is relatively simple, requiring a minimum of materials and no special tools. In fact the process can be very well carried out by hand with a minimum of effort with certainty of a satisfactory result upon completion. By resorting to a cemented construction, a more uniform result is achieved in mass production than when a friction combination is utilized. In practice, when the latter process is used, a greater number of the assemblies must be rejected for lack of proper desired holding qualities. In those processes which involve a fusion of the applicator with the cap, not only is expensive machinery required involving apparatus effecting thermal changes, but the finished unit assemblies, in mass production, may involve among their number flaws which have to be rejected.

While a flexible conveyor has been illustrated as an apparatus which may be utilized in performing the assembling process described, yet it is to be understood that it is within the scope of the invention to use no conveyor at all, or a rotary turn table, or other suitable machine in the performance of these operations.

It will be obvious to those skilled in the art that various changes may be made in this device without departing from the spirit of the invention and therefore the invention is not limited to what is shown in the drawing and described in the specification but only as indicated in the appended claims.

What is claimed is:

1. A combined cap and applicator comprising a molded cap formed with a recessed portion, an applicator having an enlarged head within said recessed portion, a washer about said applicator and engaging said head, said recessed portion being measurably larger than said head portion, said recessed portion being substantially filled with cement engaging the walls of said recessed portion, the head of said applicator, and at least a portion of the surface of said washer simultaneously to effect a relatively rigid unitary assembly.

2. A combined container cap and applicator rod comprising: a molded cap of synthetic plastic formed with a recessed portion on the inner side of the top portion thereof; an applicator rod having an enlarged head entirely within said recessed portion; a washer concentrically disposed about said applicator and engaging a portion of said head; said recessed portion being measurably larger in one dimension than said head portion; said recessed portion being substantially filled

with cement engaging the walls of said recessed portion, substantially the entire head of said applicator, and at least a portion of the unexposed surface of said washer simultaneously to effect a relatively rigid unitary assembly.

3. A combined container cap and applicator comprising: a molded cap of synthetic material formed with a recessed portion on the inner side of the top portion thereof; an applicator tube having a flared head located entirely within said recessed portion; a washer about said applicator tube and engaging that portion of the applicator adjacent the flared portion; said recessed portion being measurably larger than said flared portion; said recessed portion being substantially filled with cement engaging both sides of the flared portion of the applicator tube, the walls of the recessed portion, and at least a portion of the unexposed surface of said washer simultaneously to effect a relatively rigid unitary assembly.

4. The structure recited in claim 2, and said recessed portion being of greater dimension at its bottom than at its opening to form a lock for the cement.

5. The structure recited in claim 3, and said recessed portion being of greater dimension at its bottom than at its opening to form a lock for the cement.

6. The method of fabricating a combined container cap and applicator assembly comprising: forming a cup-shaped cap having a planular head, generally cylindrical side walls, and a depressed portion in said planular head; applying a metered quantity of cement to said depressed portion; substantially simultaneously inserting an applicator having an enlarged head and a washer within the walls of said cap with the head of the applicator within the depressed portion of the cap and the washer engaging the planular head; the head of the applicator being substantially submerged in the cement causing it to engage the walls of the depressed portion, the head of the applicator, and at least a portion of the washer; permitting the cement to solidify and form a rigid assembly.

7. A combined container cap and applicator comprising a molded cap having a top and side walls, an undercut recessed portion formed in said top, an applicator tube having an obliquely flared head portion within said recessed portion, a washer about said applicator adjacent the flanged head portion, said recessed portion being substantially filled with cement engaging the walls of said recessed portion, both sides of the flanged portion of the applicator, and at least a portion of the surface of said washer simultaneously to effect a relatively rigid unitary assembly.

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