Aug. 3, 1948. P. J. JENSEN 2,446,422

CONTAINER

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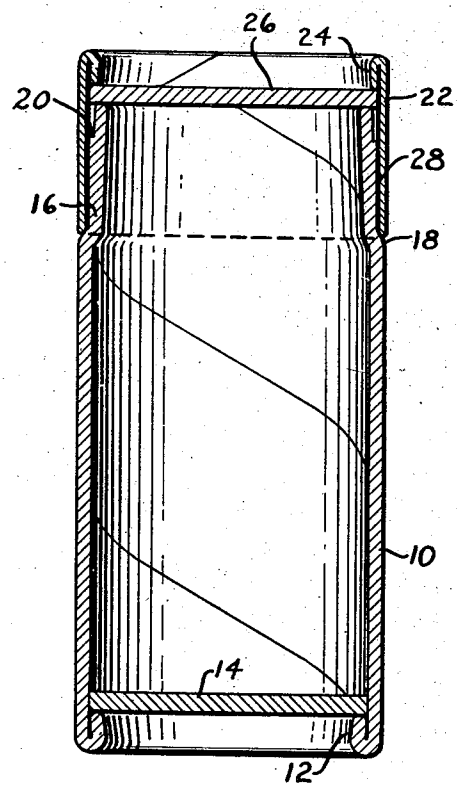



FIG. 1.

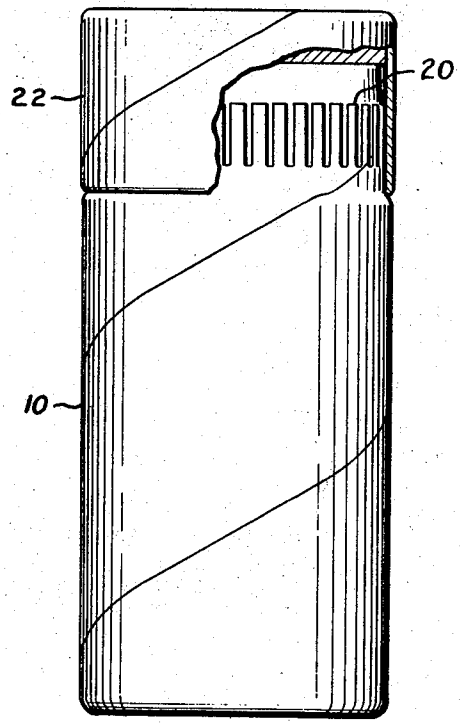



FIG. 2.

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## CONTAINER

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1 Claim. (Cl. 229—5.5)

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This invention relates to tubular containers. More particularly, it relates to a tubular container wherein the cap is adhesively secured at spaced intervals to the neck of the container.

The nature and objects of the invention will become clear from the following description, appended claim, and accompanying drawings forming a part of this specification and wherein:

Figure 1 is a longitudinal enlarged section of one embodiment of the capped tubular container constituting the invention; and

Figure 2 is an enlarged front elevation of the container, with the cap partly broken away.

Referring now to the drawings wherein like reference numerals designate like parts, the reference numeral 10 designates a tubular body member which, at the bottom end thereof, is turned inwardly to form a peripheral bead 12. A disc 14, press-fitted in the body member 10 and seated on the bead 12, constitutes the bottom closure of the container. Adjacent the top, the body member 10 is formed with a neck 16 of reduced diameter and, at the line of junction between the body member 10 and the neck 16, there is a shoulder 18.

The neck 16 is formed with corrugations 20 and, in the preferred form as shown in the drawings, such corrugations extend axially (longitudinally) of the neck and terminate in spaced relationship with respect to the top and bottom of the neck. For reasons which will become apparent hereinafter, the tops of the corrugations extend beyond the surfaces of the uncorrugated portions of the neck. In the preferred form, the neck 16 is slightly tapered (decreases in diameter in the direction from the bottom toward the top) and the corrugations are similarly tapered, as shown in Figure 1.

The cap which constitutes the top closure of the container comprises a tubular member 22 which is turned inwardly at the top thereof to form a peripheral bead 24. A disc 26, press-fitted into the tubular member 22 and seated on the peripheral bead 24, constitutes the top closure of the cap, and the portion of the tubular member extending below said top closure constitutes a depending skirt. The tubular member 22 is provided on its inner peripheral wall with a dry coating 28 of a water-sensitive adhesive.

The cap is so proportioned and of such dimensions that, when it is applied in position on the container, the lower peripheral edge of the skirt will be seated on the shoulder 18, the disc 26 will be seated on the top of the neck, and the adhesive coating 28 will form line contact with the tops

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of the corrugations. Prior to the positioning of the cap in place, the adhesive coating is energized (rendered tacky) by the application of moisture, such as water. It is to be noted that when the cap is in position, the exposed peripheral wall thereof is in alignment with the outer exposed peripheral wall of the body member.

After the cap has been positioned on the container, as previously described, it will be adhesively secured at spaced intervals to the neck since the bonding is effected between the tops of the corrugations and the adhesive coating of the cap. The adhesive bond between the cap and the neck is sufficiently strong to resist the removal of the cap from the container during normal use and provide a sealed container. When the cap is desired to be removed so that access can be had to the contents, the cap and container are manually gripped and force is applied to either the cap or the container so as to rotate one relative to the other or in opposite direction. Due to the fact that the adhesion between the cap and the neck is at spaced intervals along the lines formed by the tops of the corrugations and the adhesive coating, the adhesion is broken and the cap can be removed whereby access can be had to the contents packaged in the container. The container can be re-used and the cap re-applied thereto in the manner previously described.

The disc 14, which constitutes the bottom closure of the container, is, as previously mentioned, press-fitted into the body member 10. As a consequence, the disc 14 is held and secured in position by friction. For reasons which will become apparent hereinafter, upon the application of pressure to the outer surface of the disc 26, the latter can be moved upwardly and axially of the container.

The uncorrugated portion adjacent the top of the neck is of a diameter smaller than the diameter of the bottom of the skirt of the cap. As a consequence, no difficulty is encountered in applying the cap to the neck.

In the preferred embodiment of the invention, the body member 10 is formed of spirally wound kraft fiber paper and may consist of any number of plies thereof. To produce such a body member, the kraft paper is spirally wound on a mandrel of a predetermined size in the usual manner of making spirally wound tubes. The resultant tube is then cut into sections (which are to constitute the body members) of predetermined lengths. The end of each section which is to be provided with the corrugated neck is then re-

duced in diameter and corrugated. The disc constituting the bottom closure is introduced in the section through the opposite end, and thereafter said opposite end is curled inwardly to form the bead. The disc is then press-fitted on such bead.

In one embodiment of making the neck, a mandrel having a shape complemental to that desired is introduced into the tube section and the portion thereof which is to constitute the neck molded between heated dies. The original moisture content of the kraft paper renders it sufficiently plastic to permit the molding operation. The dies are preferably also provided with corrugations whereby, during the molding operation, the section is simultaneously reduced in diameter to form the neck and corrugations are formed in the neck.

The number and spacing between the corrugations are selected so that a sufficient number of line contacts between the tops of the corrugations and the adhesive coating will be obtained to provide the desired or necessary adhesive bonding of the cap to the neck. In general, the corrugations are equidistantly spaced about the peripheral wall of the neck.

As is apparent from the foregoing, the tubular member and neck are integral and formed from a single integral tubular section.

The cap, in the preferred embodiment of the invention, is also formed of kraft paper of the same type which constitutes the body member **10**. In general, the wall thickness of the member **22** is such that when the cap is in position the peripheral wall thereof will be in alignment with the peripheral wall of the body member **10**. The tubular member **22** of the cap is formed by spirally winding the kraft paper in the manner usually employed in the production of tubular members. After such tube has been made, it is cut into sections of desired size and the upper end turned inwardly to form the peripheral bead **24**. Thereafter, the disc **26** is press-fitted into position.

The container and cap, in the previously referred to embodiment, are described as being formed of kraft paper. However, it is to be understood that such elements can be formed of any paper which is used in paper or paper-board tubes.

The adhesive coating **28** can be applied to the inner wall of the cap after the cap has been formed. Preferably, however, the adhesive coating is applied to the surface of the kraft paper which is to constitute the inner surface of the tube prior to the spiral winding thereof to form the tube. Such procedure, though it coats the entire inner surface of the paper, is more economical and lends itself to more practical commercial operation than do other procedures of applying the adhesive coating.

The adhesive coating is obtained by spraying, roll coating, etc., the selected adhesive composition and thereafter drying the coated material. The thickness of the adhesive coating is not critical. In general, it is sufficiently thick to provide the necessary bonding.

Though in the preferred embodiment of the invention dextrin-glue constitutes the dry water-sensitive adhesive coating, it is to be understood that the invention is not restricted thereto and that, in general, a coating of any water-sensitive adhesive can be used. Such water-sensitive adhesives are well-known in the art and, since the invention is not restricted to any precise adhesive, further description of the adhesive is deemed unnecessary.



Herein the term "water-sensitive adhesive" is intended to define an adhesive which, upon the application of moisture such as water, is energized, i. e. rendered tacky.

The outer wall of the container can be decorated, as by printing, stencilling, etc. Alternatively, labels carrying the desired indicia or decorations can be adhesively affixed thereto. Optionally, the exposed surfaces of the discs can also be decorated.

The container is admirably suitable for the packaging of a roll of photographic film which is sold to the general public. When a roll of photographic film is to be packaged in the container hereinbefore described, the container is of a length such that when the roll of film is disposed therein, the top of the roll will be flush with and preferably slightly below the top peripheral edge of the neck. When the cap is applied and secured in position as previously described, there will result a roll of photographic film packaged in a sealed container.

When it is desired to remove the roll of film from the container, the adhesive bond between the cap and neck is broken and the cap removed as previously described. After the cap has been removed, the roll of film can be removed by inverting the container or, if friction tends to prevent the removal of the roll of film by gravity, then by exerting pressure on the outside of the disc **14** in the proper direction the roll of film can be slid from the container.

After the roll of film has been exposed in a camera in the usual manner, the roll of exposed film can be reinserted in the container and the cap, after energizing the adhesive coating, can be again applied and secured in position. This will again produce a roll of photographic film in a sealed container, in which condition it will be protected from the deleterious effects of light and also can be sent to the developer, who will remove the roll of film by the procedure hereinbefore mentioned.

Though the invention is particularly suitable and preferred for packaging of a roll of photographic film, it is to be understood that the invention is not restricted thereto. In general, the container can be used for the packaging of any article.

The number of times the container and cap can be reused depends in part on whether the breaking of the adhesive bond between the cap and neck destroys the surface, i. e. tops of the corrugations to which the adhesive adheres, or strips the adhesive coating from the cap.

Though in the preferred form the cap is adhesively secured to the corrugations as herein described, the adhesive may be omitted and the cap, when applied in position on the neck, will be retained thereon by the friction between the tops of the corrugations and the inner wall surface of the cap.

The instant invention provides a strong, rugged, and attractive container in which the cap thereof is adhesively secured at spaced intervals to the neck and the adhesive bond can be broken by providing relative rotatory movement between the cap and neck. The container and cap can be produced by automatic machinery, with the result that it will be relatively inexpensive.

Since it is obvious that various changes and modifications can be made in the above descrip-

tion without departing from the nature or spirit thereof, this invention is not restricted thereto except as set forth in the appended claim.

I claim:

A container comprising a tubular body member having a closure at the bottom thereof, a neck adjacent the top thereof having longitudinal corrugations terminating in spaced relationship with respect to the top and bottom of said neck to form smooth bands at the top and bottom of said neck, the tops of said corrugations extending outwardly beyond the surface of said smooth bands, said neck being of reduced diameter to form a shoulder at the bottom thereof, and a cap having a depending skirt the lower peripheral edge of which is adapted to be seated on said shoulder, said skirt being provided on the portion of its inner peripheral wall in registration with said corrugations only with a coating of a water-sensitive adhesive, said cap being so proportioned that said adhesive coating contacts



with the respective tops of said corrugations to adhesively secure said cap to said neck at spaced intervals around its periphery to form a sealed package wherein, upon relative rotation of said cap the adhesive bond will be broken and the cap can be removed, the lower edge of said cap forming a temporary seal with said shoulder when the cap is replaced.

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REFERENCES CITED

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

UNITED STATES PATENTS

| Number | Name | Date |
|---|---|---|
| 1,211,873 | Peterson | Jan. 9, 1917 |
| 1,308,317 | Wright | July 1, 1919 |
| 1,443,564 | Dolan | Jan. 30, 1923 |
| 1,615,254 | Barker | Jan. 25, 1927 |
| 2,391,337 | O'Neil | Dec. 18, 1945 |