Oct. 10, 1967 E. P. HAITSCH 3,346,135

DUAL FUNCTION STOPPER

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FIG. 1

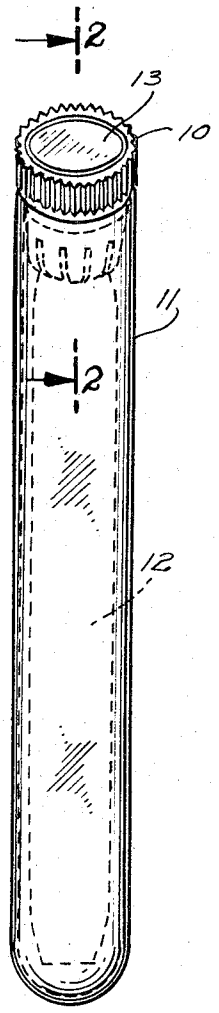

FIG. 2

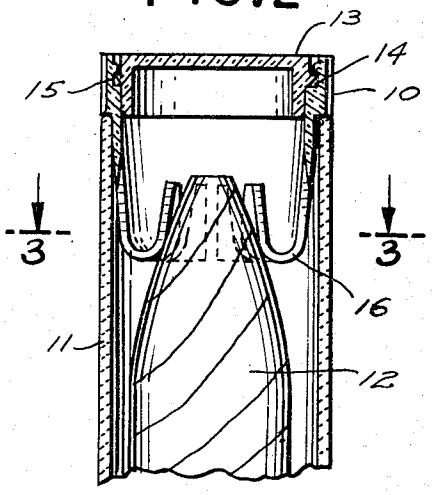

FIG. 3

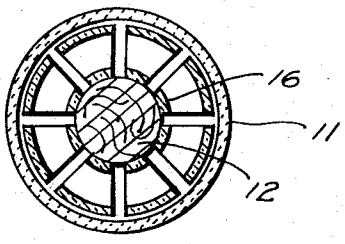

FIG. 4

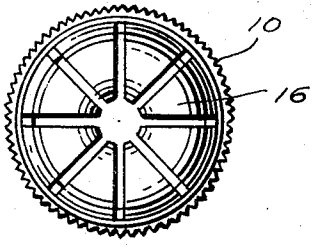

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FIG. 5

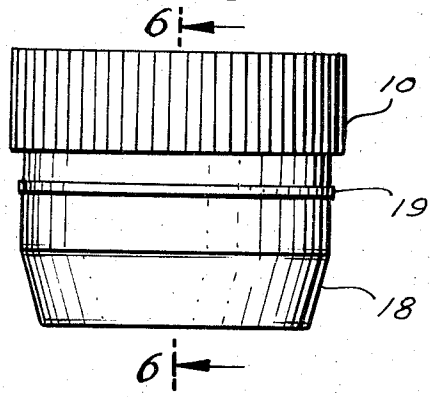


FIG. 6

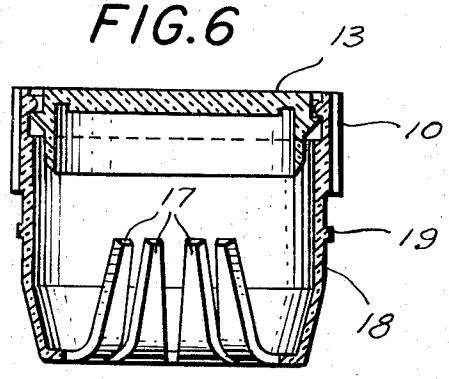
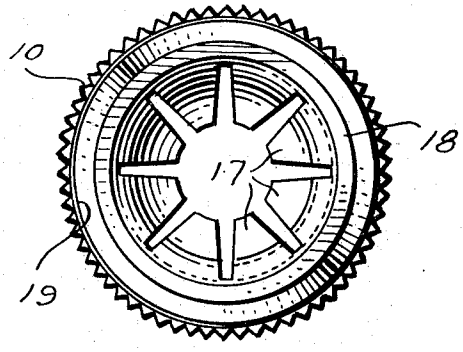


FIG. 7



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DUAL FUNCTION STOPPER

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3 Claims. (Cl. 215—48)

This invention relates to a stopper and, more particularly, to a stopper which has the dual function of sealing a container and holding a commodity within the container in place.

It is often desirable to provide means within a container to prevent commodities therein from moving about during shipment and handling so that they do not become damaged as a result of their movement within the container. For instance, wads of cotton are placed in bottles containing medicinal tablets to hold them in place to prevent dusting and undue breakage. Loose packing of various kinds is often used to hold other items in place within containers. These methods of preventing movement of the article within the container require additional material and added steps in the assembly line and are generally considered to be undesirable. Some items do not lend themselves to such types of protection for esthetic or other reasons.

The stopper of the present invention is particularly adapted to provide protection for such items as cigars and other similarly shaped fragile objects. Cigars are often sold in glass tubes which are sealed with stoppers of conventional types. However, there is a certain amount of looseness of the cigar within the tube which enables it to move laterally and longitudinally and often the delicate outer wrapping of the cigar is damaged by rough handling of the package. The additional step of inserting a protective device within the container is avoided. The completed package is neat and attractive.

The present invention provides a simple, inexpensive stopper which can be injection molded on a two-piece male-female mold from thermoplastic materials. The finished stopper serves the dual function of providing a tight moisture-proof closure which also gently cradles fragile items within the container and prevents their moving about during handling.

In order that the nature of the invention may be more clearly understood, reference is made to the accompanying drawings in which:

FIGURE 1 is a perspective view showing an embodiment of the stopper of the present invention inserted in a tube holding a cigar;

FIGURE 2 is a sectional elevation taken along the line 2—2 of FIGURE 1;

FIGURE 3 is a cross-sectional plan view taken along the line 3—3 of FIGURE 2;

FIGURE 4 is a bottom plan view;

FIGURE 5 is an elevational view of a different embodiment of the stopper;

FIGURE 6 is a vertical cross sectional view taken along line 6—6 of FIGURE 5; and

FIGURE 7 is a bottom plan view of the stopper of FIGURE 5.

Referring again to FIGURE 1, a species **10** of the novel stopper of the present invention is shown inserted in the open end of a tube **11** which contains a cigar **12**. In the embodiment shown, the stopper **10**, FIGURE 2, is of two-piece construction having a cap portion **13** which is held in place by one or more beads **14** which fit into complementary grooves **15** in the inner wall of the body of the stopper. This particular construction is not necessarily a part of the present invention, it being described and claimed in United States Patent 2,549,404 issued Apr. 17, 1951, to H. W. Williams. This construction, however,

makes it possible to mold the main body of the stopper of the present invention in one operation with a single pair of injection molds. The cap portion **13** may be molded in a separate operation with another set of molds. Since the body **10** of the stopper is of a resilient material, the insert is easily snapped into place and is firmly held in position. Because of this construction, it is possible to make the cap insert **13** of a different material or color and have various decorative and informative material thereon. As will be seen, it is unnecessary to have more than one mold for stoppers of a single diameter, yet the inserted cap may provide a large variety of designs.

The essentially novel features of the stopper of the present invention reside in the structure which provides a plurality of, at least three, fingers **16** which extend from the side walls of the body of the stopper inwardly and upwardly into the hollow interior of the stopper as is shown in FIGURE 2. These independent fingers are of relatively thin construction and since the body of the stopper is molded of a resilient thermoplastic material, they are readily deformed to accommodate various shapes. FIGURE 4 shows a structure of eight such fingers, but as will be obvious, more or less than this number can be provided and the stopper will perform its intended function of holding the cigar or other item firmly in the axis of the container, so that it cannot move about and be damaged.

The embodiment shown in FIGURES 5, 6, and 7 provides a more rigid structure. The upwardly turned fingers **17** are shorter and hence stiffer. When made of resilient material, they will yield to conform to the shape of irregular objects just as in the embodiment first described but will tend to hold the object more firmly in place. In addition, the side walls **18** are longer, are not cut up with the fingers, are stiffer, and the stopper will hold better in the neck of a container.

A small bead **19** may be molded on the outer periphery of the tubular member if desired. This provides a better seal and also makes it possible to determine on inspection that the closure is complete when the stopper is inserted in the neck of a clear bottle, owing to an optical shadow effect that is produced. Of course, if desired, the stopper may have several small beads.

It will be obvious from the drawings that the structure shown will accommodate cigars which vary a little in length. As might be expected, cigars of the same design are subject to dimensional variations both in thickness and length and the resilient fingers readily accommodate themselves to such variations.

Various injectable thermoplastic materials may be used in molding the stopper of the present invention. Among these are polyethylene of various densities, polypropylene, nylon, cellulose esters such as cellulose propionate, high impact polystyrenes, methyl methacrylate polymers, synthetic rubbers, and various other synthetic plastic materials which are characterized by having a relatively high degree of resilience. The plastic material should, however, have sufficient rigidity so that the cradling fingers may serve the function of holding the packaged item in place. Any of the synthetic polymers mentioned above will be satisfactory.

Although the invention has been described in connection with a stopper particularly adapted to hold cigars in a glass tube, it will be obvious that the stopper will also be useful in holding other fragile items such as electronic tubes, vials containing biologicals, and other items which are likely to break if allowed to move about in the container in which they are shipped.

What is claimed is:

1. A two-piece stopper of molded resilient thermoplastic material comprising a tubular section adapted to be pressed into the neck of a bottle, said tubular section hav-

ing a top section of greater diameter providing a shoulder to engage the edge of a neck of a bottle into which the lower end of the tubular section may be inserted, said top section having on its inner surface an annular groove, a cap portion inserted in the tubular top section closing the same, said cap having a circumferential bead fitted into the annular groove of the said top section, the lower tubular section of said stopper having a plurality of thin resilient fingers extending downwardly, then curving inwardly and upwardly into the tubular section of the stopper providing means for holding an object.

2. A two-piece stopper of molded resilient thermoplastic material adapted to close a container having a circular opening and holding an object within said container from moving about during handling which comprises a hollow tubular body section having an inset cap member forming the top of the stopper and a plurality of thin resilient fingers extending downwardly from the tubular body of the stopper for a short distance, then curving inwardly and upwardly into the hollow tubular section of the stopper providing means for holding an object.

3. A two-piece stopper of molded resilient thermoplastic material adapted to close a container having a circular opening and holding an object within said container from moving about during handling which comprises a hollow tubular body section having an inset cap member forming the top of the stopper and a plurality of thin resilient fingers extending from the lower section of the tubular body inwardly and upwardly into the hollow tubular section providing means for holding an object.

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