

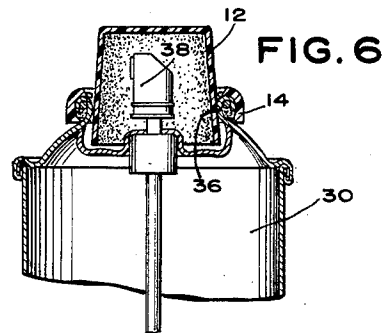
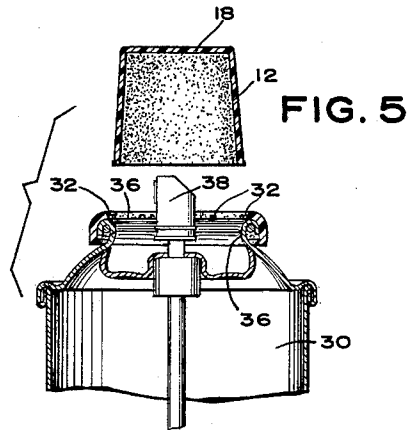
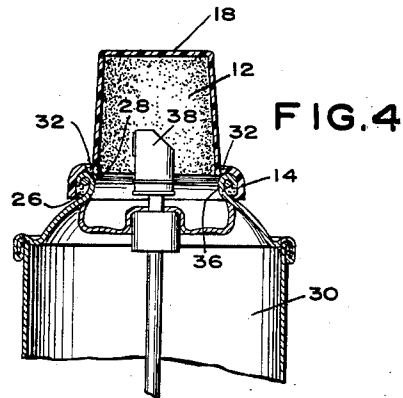
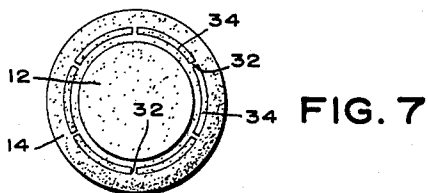
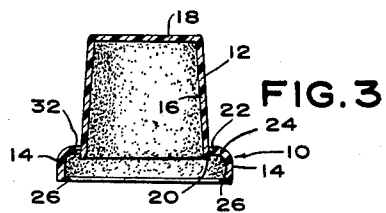
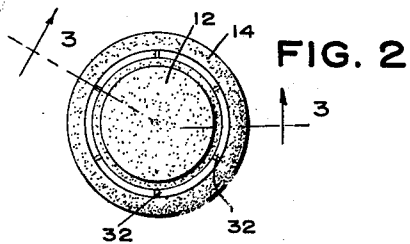
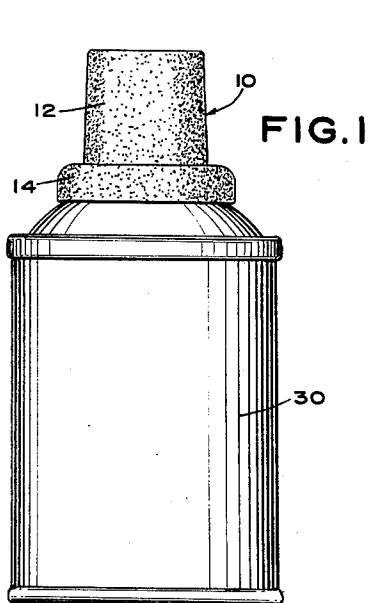
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J. W. PARKER

3,081,899

CLOSURE

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INVENTOR

JOSEPH W. PARKER

BY *Raymond Wholton*
ATTORNEY

1

3,081,899
CLOSURE

Joseph W. Parker, Baltimore, Md., assignor to Pharma
Plastics Incorporated, a corporation of Maryland
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This invention relates to a closure and particularly to a tamper proof closure.

It is frequently desirable to know whether or not the contents of a package has remained undisturbed. The growing popularity of materials packaged in aerosol containers has intensified the need for a closure which is readily applicable to the container, requires mutilation in order to afford access to the contents and is capable of continued use as a closure subsequent to mutilation.

The present invention has satisfied these needs and has at the same time contributed to the attractiveness of the containers with which they are used.

It is among the objects of this invention to provide a moldable plastic resilient closure comprising a tubular body member and a skirt member integral therewith, the body member having a radial wall closing one end and an end adjacent to which the skirt member is joined, the skirt member having an open end terminating in a yieldable inturned flange, the members being separably joined by an integral connecting section more frangible than adjacent portions of the members. The connecting section may assume the form of a membrane affording a continuous bridge between the body member and skirt member or it may comprise mutually spaced radial elements, or these two constructions may be combined. In any event, there are preferably more than two such mutually spaced radial elements. The frangible connecting section may be spaced from the ends of the body member. The skirt member preferably has an inturned flange at its upper edge adjacent the body member supporting the connecting section.

A more complete understanding of the invention will follow from a description of the accompanying drawings wherein

FIG. 1 is an elevation depicting a closure in accordance with the present invention applied to an aerosol container;

FIG. 2 is a plan view of the closure of FIG. 1;

FIG. 3 is a sectional elevation taken along line 3—3 of FIG. 2;

FIG. 4 is a fragmentary sectional elevation depicting the closure prior to mutilation applied to an aerosol container;

FIG. 5 is a fragmentary sectional elevation similar to FIG. 4 depicting the body member as removed from the skirt member;

FIG. 6 is a fragmentary sectional elevation similar to FIG. 4 depicting the body member serving as a closure subsequent to mutilation; and

FIG. 7 is a plan view similar to FIG. 2 depicting a modified form of closure.

As best shown in FIG. 3, the closure 10 constituting the present invention comprises a body member 12 and a skirt member 14. Whereas the body member may assume a variety of shapes, the one illustrated for purposes of example has a tubular frusto-conical wall 16 closed at its upper end by a radial wall 18 and having adjacent its lower end 20, a connecting section 22 integral with an inturned flange 24 formed at the upper edge of the skirt member. The lower end of the skirt member 14 terminates in an inturned flange 26 for locking engagement with a bead 28 formed at the upper end of the container 30.

As depicted in FIG. 2, the connecting section is defined by a plurality of mutually spaced bridges 32 integral with

2

the body and skirt members, providing a weakened connection between the two so as to be more frangible than either. After the connecting bridges are broken, their remnants will be retained by the skirt member or the body member, preferably the former for esthetic reasons, thus providing surfaces for frictional engagement between the members when the body member is reinserted through the skirt member for reuse as a closure as depicted in FIG. 6.

Whereas the arcuate portions of the closure lying between the radial bridges 32 is depicted as open in FIG. 2, a relatively thin membrane 34 can be provided intermediate the bridges as depicted in FIG. 7, or in lieu thereof, so that the closure can provide a seal for the contents prior to separation of the body member from the skirt member.

It will be clear from FIG. 4 of the drawings that when the closure is initially applied over the bead 28 of the container for which it is intended, due to the flexibility of the inturned flange 26 at the open end of the skirt member 14, it will stretch until it snaps over the bead 28, whereupon the inherent resiliency of the plastic material from which the closure is composed will cause the inturned flange 26 to serve as an anchor preventing removal of the closure as an entirety without fracturing the bridges 32 so as to serve the tamper proof function. When the body member 12 has been torn from the skirt member as depicted in FIG. 5, assuming the bridges 32 remain attached to the inturned flange, their free ends will frictionally engage the lower end of the peripheral wall of the body member when it is reapplied as a cover for the container as depicted in FIG. 6. When the body member 12 is telescoped with respect to the skirt member 14 to the degree shown in FIG. 6, then of course, the bridges will no longer engage the outer peripheral wall due to its taper. In the example depicted in FIG. 6 however, the container wall 36 defining the inside of the cup for the valve activator 38 provides frictional engagement with the outer peripheral surface of the body member so as to retain it in position as a closure after mutilation of the original structure. It will follow from this disclosure that the peripheral wall of the body member 12 can be almost cylindrical, in which event the broken bridges retained by the skirt member will provide frictional engagement regardless of the degree to which the separated body member is telescoped with respect to the skirt member.

The closure is preferably composed of a plastic material having a high degree of chemical inertness, and sufficient deformability and resilience to assure interlocking engagement with the container. Polyolefins such as polyethylene and polypropylene are eminently satisfactory for the purpose.

Whereas the disclosed embodiments of the invention have been limited to serve as an illustration of the invention, the invention is subject to wide variation as will be suggested to those skilled in the art and included within the scope of the appended claims.

I claim:

1. In combination with a container having a discharge port surrounded by a cupped portion terminating in a flange, a resilient moldable plastic closure comprising a tubular body member and a skirt member integral therewith, said body member having a radial wall closing one end and an end smaller than and telescopically receivable within said cupped portion adjacent to which said skirt member is joined, said skirt member having an open end terminating in a yieldable inturned flange in interlocked engagement with said rim, said members being separably joined in radially spaced relationship by an integral connecting section more frangible than adjacent portions of said members, said skirt member supporting

3

said body member radially and axially spaced from said container permitting said members to telescope after fracture of said connecting section.

2. A unitary moldable plastic resilient closure according to claim 1 wherein said connecting section comprises mutually spaced radial elements.

3. A unitary moldable plastic resilient closure according to claim 1 wherein said connecting section is spaced from the ends of said body member.

4. A unitary moldable plastic resilient closure according to claim 1 wherein said connecting section comprises more than two mutually spaced radial elements.

5. A unitary moldable plastic resilient closure according to claim 1 wherein said skirt member has an inturned flange adjacent said body member.

6. A unitary moldable plastic resilient closure accord-

4

ing to claim 1 wherein said skirt member has an inturned flange supporting said connecting section adjacent said body member.

7. A unitary moldable plastic resilient closure according to claim 1 wherein said skirt member has an inner peripheral portion exceeding the adjacent outer peripheral dimension of said body member.

References Cited in the file of this patent

UNITED STATES PATENTS

2,162,712	Hamberger	June 20, 1939
2,367,317	Thomas	Jan. 16, 1945
2,765,960	Soffer et al.	Oct. 9, 1956
2,961,119	Leach	Nov. 22, 1960
3,025,988	Williams	Mar. 20, 1962