July 30, 1963 K. RUETZ 3,099,361

CONTAINER WITH CLOSING DEVICE

Filed Nov. 28, 1960

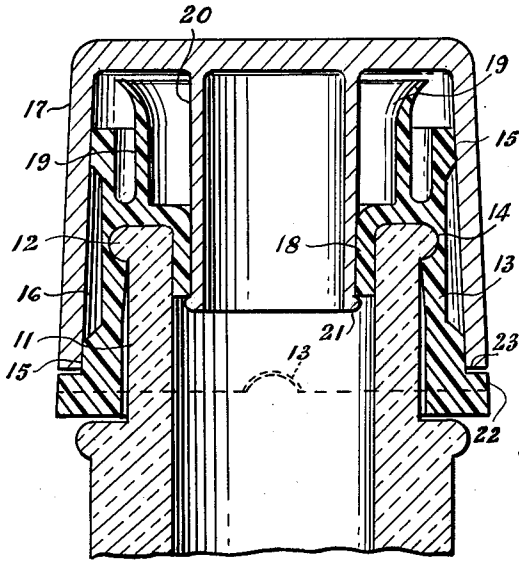


Fig. 3.

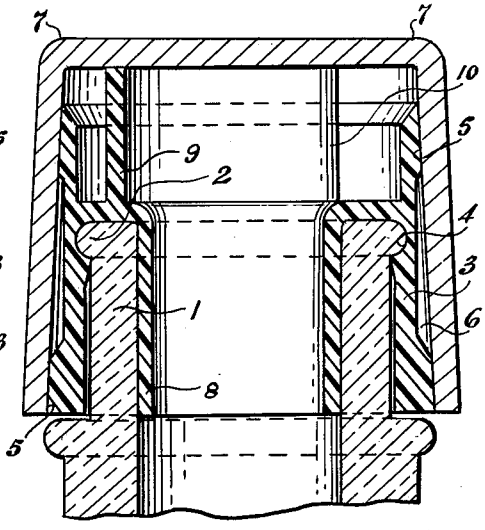


Fig. 1.

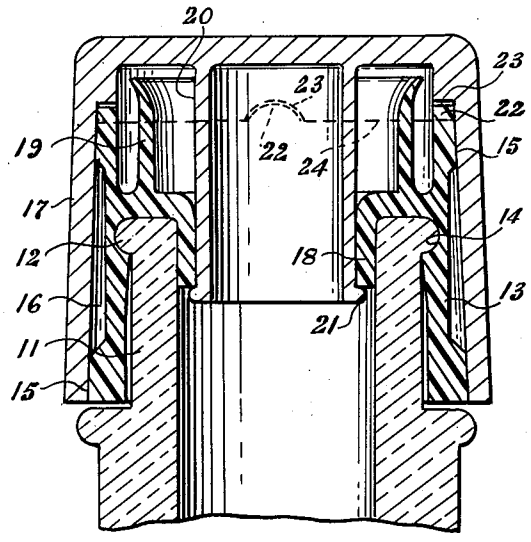


Fig. 4.

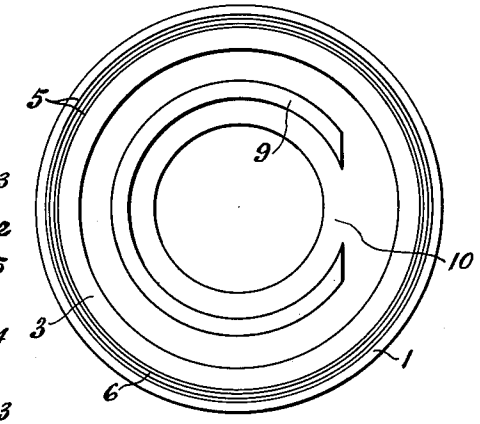


Fig. 2.

INVENTOR.
KARL RUETZ
BY
ATTORNEY.

United States Patent Office 3,099,361 Patented July 30, 1963

3,099,361

CONTAINER WITH CLOSING DEVICE

Karl Ruetz, Bergstrasse 132, Zurich 7/32, Canton of Zurich, Switzerland

Filed Nov. 28, 1960, Ser. No. 72,039
Claims priority, application Switzerland Nov. 28, 1959
4 Claims. (Cl. 215—73)

The present invention relates to a container with closing device.

According to the invention, the container has a branch surrounding a pouring opening and having a torus on the free end directed radially outwards, and the closing device has a socket with a groove on its inner side for taking the torus, as well as two annular surfaces which are separated from each other by a depression, surround the outer side of the socket above and below the groove, and lie flexibly sealing on the inner wall of a closing cap that can be pushed over the socket.

In order to secure the closing cap on the socket in such a closing device, the closing cap can be provided with an inwardly-directed hollow prolongation surrounded by a torus, which lies behind the lower edge or in a groove in a branch insertable into the pouring opening of the container, and the lower or the upper edge of the socket is provided with axially-directed, arcuate depressions, in which lie axially-directed, arcuate projections on the lower edge or on an inner shoulder of the closing cap.

Three examples of execution of the container with closing device according to the invention are shown in the accompanying drawing, in which:

FIG. 1 shows the first example of execution in an axial section through the pouring branch of the container and the closing device placed thereon,

FIG. 2 a view looking down on FIG. 1 with the closing cap removed,

FIG. 3 an axial section of the second example, and

FIG. 4 an axial section of the third example of execution.

The pouring branch 1 of the container illustrated in FIGS. 1 and 2, consisting in the present case of a glass bottle, has a torus 2 directed outwards and surrounding the pouring opening of the branch 1 at its free end.

The closing device consists of a socket 3 of elastically mouldable material, for instance soft plastics, with a groove 4 on its inner side for taking the torus 2 on the branch 1, which are constructed fitting tight on each other.

Above and below the torus, the socket 3 has on its outer side annular surfaces 5, surrounding the socket and separated from each other by a depression 6. Onto these annular surfaces 5 a closing cap 7 is pushed, which consists of a material harder than the socket 3, for instance hard plastics, Bakelite or metal. The inner wall rests sealing on the annular surfaces 5, whereby the socket 3 is pressed with its groove 4 resiliently onto the torus 2 and at the same time also the annular surfaces 5 onto the inner wall of the closing cap 7.

Running parallel to itself, the socket 3 carries a wall 8 by means of which it rests sealing on the inner wall of the pouring branch 1 of the container, and a collar 9 directed upwards which with the lateral opening 10 forms a pouring outlet, thus allowing the contents of the container to flow back again out of the annular space between socket and collar 9 when the container is set upright after the pouring.

The collar 9 might be omitted, the sharpened upper edge of the socket 3 being then used as pouring outlet.

According to the drawing, the peripheral wall of the closing cap 7 is tapered; it could, however, also be cylindrical.

The closing device, consisting of the socket 3 and closing cap, may be slipped as a whole—i.e. with the closing cap 7 pushed onto the annular surfaces 5—onto the branch 1 of the container, whereby the torus 2 springs into the groove 4 and thus connects the socket 3 to the branch 1 of the container. For opening the closure of the container, only the closing cap 7 can be withdrawn from the socket 3 and/or its annular surfaces 5. When the cap 7 is pushed onto the annular surfaces, the container is again closed tight. The elastic material of the socket 3 allows resilient yielding of the wall parts of the socket with the annular surfaces 5 and causes the latter to lie sealing on the inner side of the cap 7, thus always giving tight closure.

The pouring branch 11 of the container illustrated in FIG. 3, consisting in the present case of a glass bottle, has a torus 12 directed outwards and surrounding the pouring opening of the branch 11 at its free end.

The closing device consists of a socket 13 of elastically mouldable material, for instance soft plastics, with a groove 14 on its inner side for taking the torus 12 on the branch 11, which are constructed fitted tight on each other.

Above and below the torus, the socket 13 has on its outer side annular surfaces 15, surrounding the socket and separated from each other by a depression 16. Onto these annular surfaces 15 a closing cap 17 is pushed, which consists of a material harder than the socket 13, for instance hard plastics, Bakelite or metal. The inner wall rests sealing on the annular surfaces 15, whereby the socket 13 is pressed with its groove 14 resiliently onto the torus 12 and at the same time also the annular surfaces 15 onto the inner wall of the closing cap 17.

Running parallel to itself, the socket 13 carries a wall 18 by means of which it rests sealing on the inner wall of the pouring branch 11 of the container, and a collar 19 that forms a pouring outlet.

The closing cap 17 carries a hollow, inwardly directed extension 20 with a torus 21 at its lower end. This torus 21 lies under the lower end of the wall 18 and thus secures the cap 17 against unintentional loosening from the socket 13.

The torus could also lie in a groove in the wall 18, whereby the extension 20 is kept correspondingly shorter, or the torus could be arranged above the lower end of this extension 20.

For withdrawing the closing cap 17 from the socket 13—an operation rendered more difficult by this torus—on the lower, radially widened edge of the socket 18 as shown in FIG. 3 axially-directed, arcuate projections 22 are provided, which lie in axially directed, arcuate depressions 23 at the lower edge of the closing cap.

When the closing cap 17 is turned as is usually done when loosening a closing cap, the lower edge of the closing cap 17 runs up between the depressions 23 onto the projections 22, whereby the closing cap is axially displaced. Thus the torus 21 is brought out of engagement with the lower edge of the extension 20 or with the groove in its wall, so that the closing cap 17 can easily be withdrawn from the socket 13.

In the case of the example of execution shown in FIG. 4, in which the same parts as in FIG. 3 are given the same reference numbers, on the inner side of the cap 17 there is a shoulder 24, in which the axially directed depressions 23 are provided. The axially directed projections 22 are then arranged at the upper edge of the socket 13.

What I claim is:

1. The combination of a container including a neck having a pouring opening with an external, annular bead extending around said pouring opening; a socket of resilient plastic material including an annular wall fitting onto said neck and having an internal anular groove

intermediate the opposite ends of said wall and receiving said bead, the portion of said annular wall below said internal groove being spaced radially from said neck below said bead, said annular wall having a frusto-conical outer surface with upper and lower annular sealing surface portions disposed respectively above and below said groove and with an annular, outwardly opening recess between said sealing surface portions, said recess being opposite said groove and extending above and below the same; and a closing cap removably fitting over said socket and including an annular side wall having a frusto-conical inner surface engaging said sealing surface portions of the socket to urge said wall of the latter radially inward above and below said groove for ensuring sealing engagement of the latter with said bead.

2. The combination as in claim 1; wherein said socket has an inner tubular wall fitting into said neck of the container, and said closing cap has an inner tubular wall extending concentrically within said inner tubular wall of the socket and pressing the last mentioned tubular wall radially outward against said neck; and wherein said inner tubular wall of the cap has an external annular bead at its lower end engageable below the lower edge of said inner tubular wall of the socket for releasably retaining said cap on said socket.

3. The combination as in claim 1; wherein said annular wall of the socket has axially directed arcuate projections adjacent an end thereof, and said side wall of the cap has corresponding axially opening arcuate recesses adapted to receive said projections so that said cap is axially displaced upwardly relative to said socket in response to turning of said cap on said socket.

4. The combination as in claim 3; wherein said socket has an inner tubular wall fitting into said neck of the container, and said closing cap has an inner tubular wall extending concentrically within said inner tubular wall of the socket and pressing the last mentioned tubular wall radially outward against said neck; and wherein said inner tubular wall of the cap has an external annular bead at its lower end engageable below the lower edge of said inner tubular wall of the socket when said arcuate projections register with said arcuate recesses for releasably retaining said cap on said socket.

References Cited in the file of this patent

UNITED STATES PATENTS

2,056,170	Deschner	Oct. 6, 1936
2,443,086	Turenne	June 8, 1948
2,476,155	McKelvy	July 12, 1949
2,601,039	Livingstone	June 17, 1952
2,978,134	Caine et al.	Apr. 4, 1961

FOREIGN PATENTS

812,783	France	Feb. 8, 1937
510,567	Great Britain	Aug. 3, 1939