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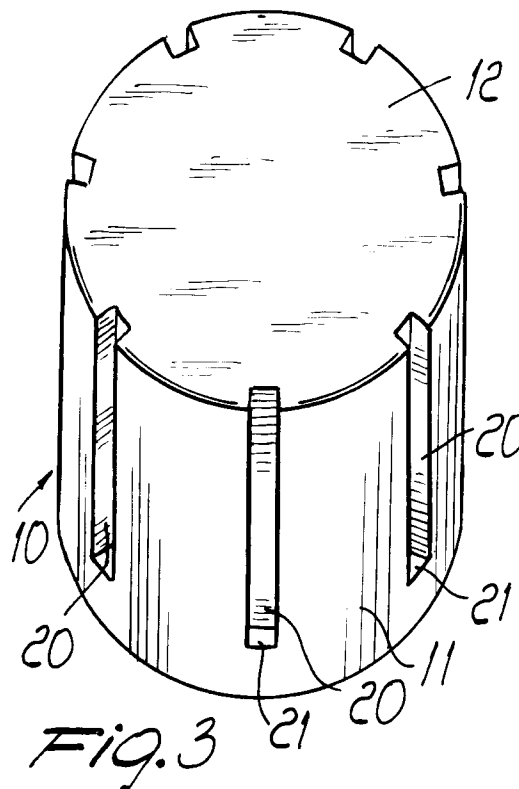
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I-20123 Milano (IT)**(54) **Cap particularly for spray cans.**

(57) The cap particularly for spray cans comprises a body (10) having a cylindrical skirt (11) which is connected to an end wall (12) at an axial end and has, at its other axial end, means (13) for snap-together coupling to a spray can. The particularity of the cap resides in the fact that it comprises, on the cylindrical skirt, recesses (20) which extend axially and affect at least the perimetric region of the end wall of the cap.

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The present invention relates to a cap particularly for spray cans.

As it is known, substantially cylindrical caps applied in a snap-together manner in order to close dispenser cans, commonly termed spray cans, have long been in widespread use.

These caps are substantially constituted by a body with a cylindrical skirt which is closed by an end wall at its upper end and has, at its other end, elements which protrude proximate to the inner edge and allow coupling to the spray can collar.

These caps must be sized so as to withstand the stacking of multiple cans, during storage and packaging, and until recently they were produced using a relatively thick layer of plastic material.

The current trend is to reduce the amount of plastic material being used, so that the thickness of the walls of the cap-like body has been reduced significantly; furthermore, in order to withstand the axial load sustained during packaging and storage, as shown in figures 1 and 2, ridges 1 are provided on the inner surface of the cylindrical skirt 2. The ridges 1 extend axially inside the cap and end at the end wall of said cap.

The ridges have, in transverse cross-section, a rectangular shape with a limited protrusion in a radial direction.

This solution allows to withstand the axial pressure bearing on the cap mounted on the can, but does not allow to keep a stable shape for the cap.

According to current production steps, the caps are in practice placed directly in the packaging cartons immediately after leaving the molding machine, so that the cap, which has not yet cooled completely, is often subject to deformations in a radial direction due to the weight of, and its proximity to, the other caps inserted in the same carton.

Consequently, since the cap does not have sufficient strength in a radial direction, it can ovalize and, by cooling completely in a deformed position, it becomes troublesome if not impossible to use it in the automatic machines used to apply caps to cans, consequently leading to a large number of rejects.

Furthermore, the problem of ovalization is avoided in caps provided, in correspondence with the coupling edge, with a step extending externally, since such step acts as a stiffening ridge.

Another drawback which can be ascribed to the solution described above resides in the fact that the presence of the internal ridges on the skirt of the cap causes an external surface shrinkage that creates a visible element which is not always accepted by the user.

A principal aim of the present invention is to solve the above described problem by providing a cap particularly for spray cans which, despite being obtained with walls having a limited thickness and

having a completely cylindrical shape of constant radius, allows to have good mechanical strength in a radial direction as well, preventing its ovalization.

A particular object of the invention is to provide a cap in which there are no visible surface markings produced by shrinkage of the plastic material during cooling.

Another object of the present invention is to provide a cap for spray cans which, despite ensuring a significantly improved mechanical performance with respect to caps of the known art, can be obtained with a substantially equivalent amount of material.

Another object of the present invention is to provide a cap which, by virtue of its particular constructive characteristics, is capable of giving the greatest assurances of reliability and safety in use.

With this aim and these and other objects in view, there is provided, according to the present invention, a cap particularly for spray cans, comprising a body having a cylindrical skirt which is connected to an end wall at an axial end and has, at its other axial end, means for snap-together coupling to a spray can, characterized in that it comprises, on said cylindrical skirt, recesses which extend axially and affect at least the perimetric region of said end wall.

Further characteristics and advantages of the cap according to the present invention will become apparent from the following detailed description of some preferred but not exclusive embodiments thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a bottom plan view of a cap according to the known art;
figure 2 is a sectional view, taken along the plane II-II of figure 1;
figure 3 is a top perspective view of a first embodiment of the cap according to the invention;
figure 4 is a bottom perspective view of the cap according to the invention;
figure 5 is a diametrical sectional view;
figures 6 and 7 are respectively a top plan view and a bottom plan view of different possible configurations of the recesses that can be formed on the cap;
figure 8 is a bottom plan view of a different embodiment of the cap according to the invention;
figure 9 is a sectional view, taken along the plane IX-IX of figure 8;
figure 10 is a bottom plan view of a further embodiment of the cap according to the invention;
figure 11 is a sectional view, taken along the plane XI-XI of figure 10;

figure 12 is a bottom plan view of a different embodiment of the cap according to the invention; and

figure 13 is a sectional view, taken along the plane XIII-XIII of figure 12.

With reference to the above figures and in particular to figures 3 to 5, the cap particularly for spray cans, according to the invention, comprises a body, generally designated by the reference numeral 10, having a cylindrical skirt 11 connected to an end wall 12.

Proximate to the internal surface of the free edge of the skirt 11 there are means for snap-together coupling to a dispensing can which are constituted by conventional protrusions 13 distributed circumferentially.

The particularity of the present invention resides in the fact that recesses 20 are distributed uniformly on the outer surface of the cylindrical skirt 11, said recesses extending axially and in practice leading onto the peripheral region of the end wall 12.

As illustrated in figures 3 to 5, the recesses 20 have a substantially square or rectangular shape in transverse cross-section and form a connecting wall 21 at the end directed toward the protrusions 13.

The recesses 20, which in practice entail the use of an amount of material substantially equal or only slightly greater than that used in the known art, perform the extremely important role of constituting an element for stiffening the cap body in a radial direction, so that the cap does not undergo the ovalization deformations which are instead typical of known caps.

Furthermore, since the cap is substantially produced with a constant thickness because the walls of the recesses are formed with the same thickness as the cylindrical skirt, the unaesthetic shrinkages typical of the solution of the known art do not form on the cap body.

The shape of the recesses 20 in transverse cross-section can be altered in any manner, and merely by way of example figures 6 and 7 illustrate various other shapes of the recesses, designated by the reference numeral 20a for the T-shaped recess, 20b for the circular recess, 20c for the trapezoidal recess with the longer parallel side directed outward, 20d for the triangular recess, 20e for the trapezoidal recess with the shorter parallel side directed outward, 20f for the widened recess and 20g for the recess shaped substantially like a half moon; as already previously mentioned, the shape of the recess may be changed in any way without altering the concept that stiffening in a radial direction is obtained by creating surface shapes produced without changing the thickness of the cap.

The same effects of stiffening the cap in a radial direction can be obtained with other solutions; thus, for example, as shown in figures 8 and 9, it is possible to provide, inside the cylindrical skirt, a ribbing 30 which extends axially, widens in a radial direction and forms, proximate to the end wall, an L-shaped widened region 31 affecting said end wall.

According to figures 10 and 11, there are ribbings, now designated by the reference numeral 40, which are substantially trapezoidal with the longer parallel side arranged radially on the inner surface of the end wall 12.

According to figures 12 and 13, there are axial ribbings 50 which, at the end toward the end wall, join radial ribbings 51 which in practice form a spoke-like arrangement on the inner surface of the end wall.

These embodiments, too, solve the problem of stiffening the cap body radially, but can have the drawback of forming shrinkages on the outer surface of the cap.

From what has been described above it can thus be seen that the invention achieves the intended aim and objects, and in particular the fact is stressed that extremely simple solutions solve a problem strongly felt in the art, namely the problem related to the deformation by ovalization undergone by caps for spray cans produced with reduced thicknesses of plastic material when they are inserted in packaging cartons directly after leaving the molding machine.

The invention thus conceived is susceptible to numerous modifications and variations, all of which are within the scope of the inventive concept.

All the details may furthermore be any according to the requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. Cap particularly for spray cans, according to the invention, comprising a body (10) having a cylindrical skirt (11) which is connected to an end wall (12) at an axial end and has, at its other axial end, means (13) for snap-together coupling to a spray can, characterized in that it comprises, on said cylindrical skirt, recesses (20) which extend axially and affect at least the perimetric region of said end wall.

2. Cap according to claim 1, characterized in that said recesses have a thickness of material which is substantially constant throughout.

3. Cap according to the preceding claims, characterized in that said recesses are open toward said end wall. 5

4. Cap according to one or more of the preceding claims, characterized in that said recesses, at the end directed toward the free end of said cylindrical skirt, join said cylindrical skirt by means of a connecting wall (21). 10

5. Cap according to one or more of the preceding claims, characterized in that said recesses are uniformly distributed circumferentially. 15

6. Cap particularly for spray cans, comprising a body (10) having a cylindrical skirt (11) which is connected to an end wall (12) at an axial end and has, at its other axial end, means (13) for snap-together coupling to a spray can, characterized in that it comprises, on the inner surface of said cylindrical skirt, ribbings (30) that extend axially and join a triangular widened portion (31) arranged radially on the inner surface of said end wall. 20 25

7. Cap particularly for spray cans, comprising a body (10) having a cylindrical skirt (11) which is connected to an end wall (12) at an axial end and has, at its other axial end, means (13) for snap-together coupling to a spray can, characterized in that it comprises, on the inner surface of said cylindrical skirt, ribbings (40) having a substantially trapezoidal shape with the longer parallel side arranged radially on the inner surface of said end wall. 30 35 40

8. Cap particularly for spray cans, comprising a body (10) having a cylindrical skirt (11) which is connected to an end wall (12) at an axial end and has, at its other axial end, means (13) for snap-together coupling to a spray can, characterized in that it comprises, on the inner surface of said cylindrical skirt, ribbings (50) which extend axially and are connected to radial ribbings (51) uniformly distributed on the inner surface of said end wall. 45 50

9. Cap according to one or more of the preceding claims, characterized in that the cylindrical skirt is of constant radius from its upper end connected to the end wall to its lower end at the coupling border. 55

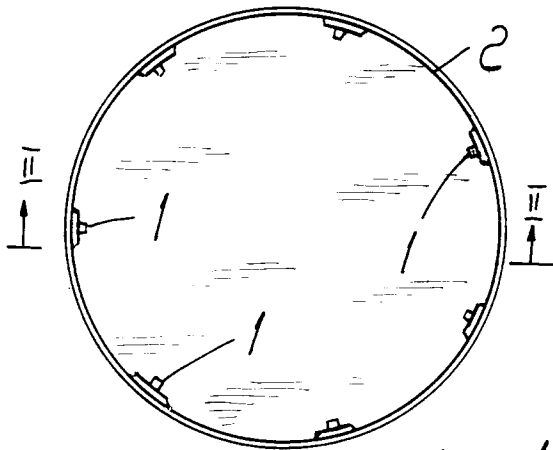


FIG. 1 (PRIOR ART)

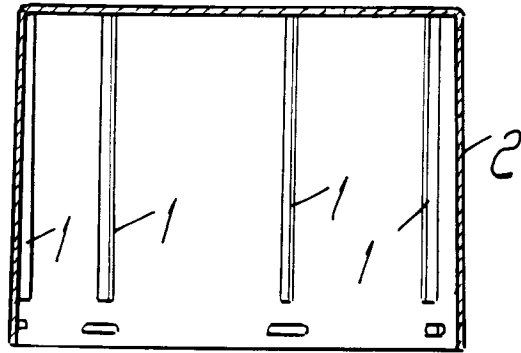


FIG. 2 (PRIOR ART)

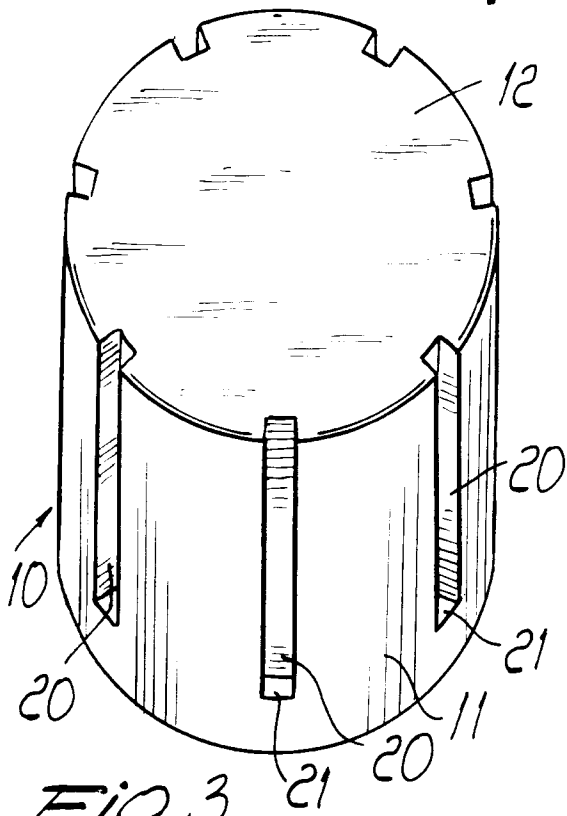


FIG. 3

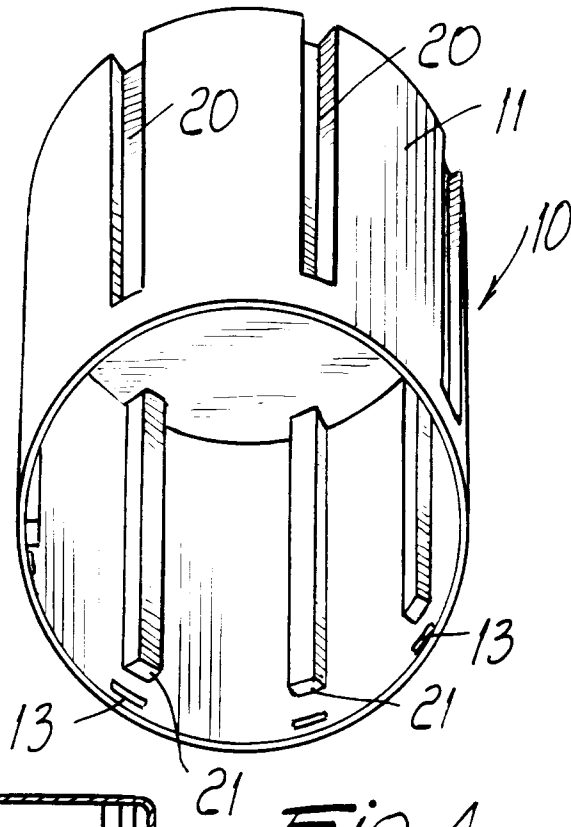


FIG. 4

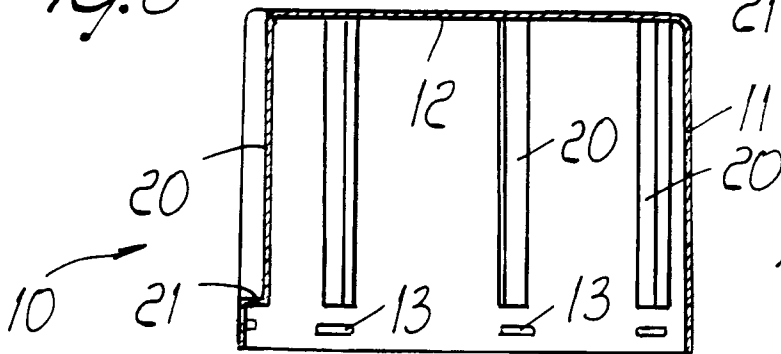
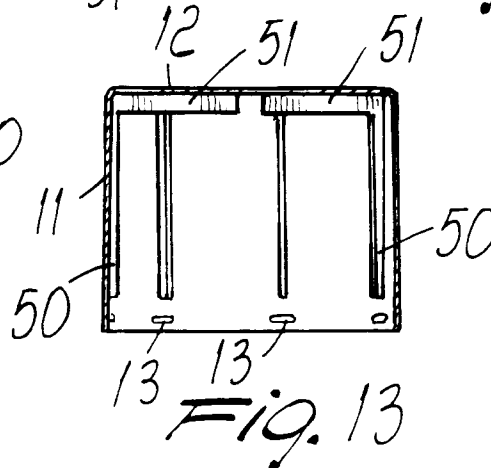
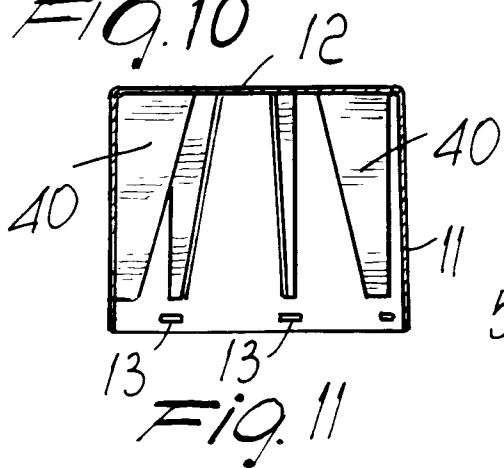
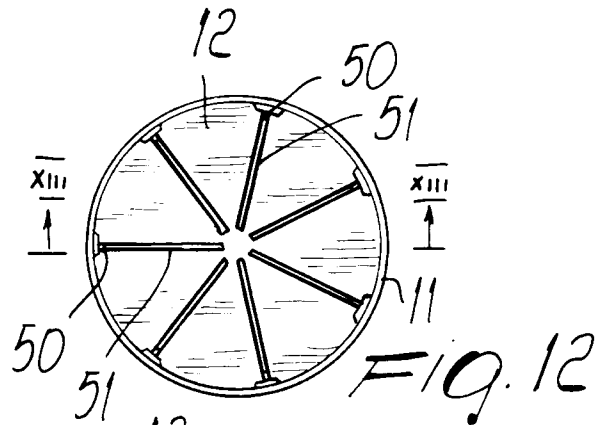
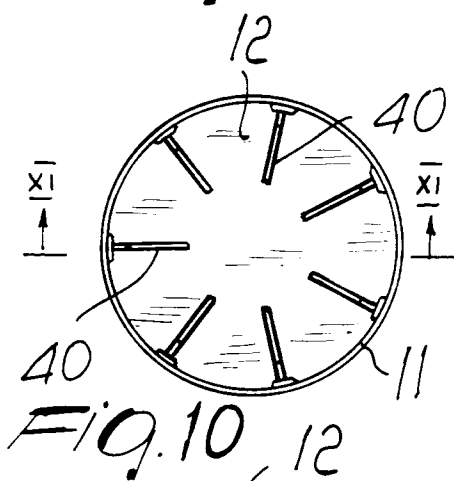
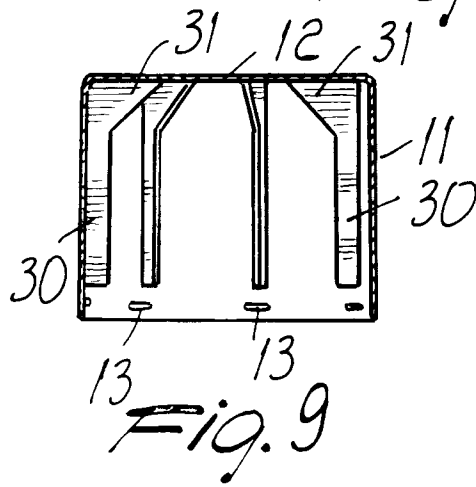
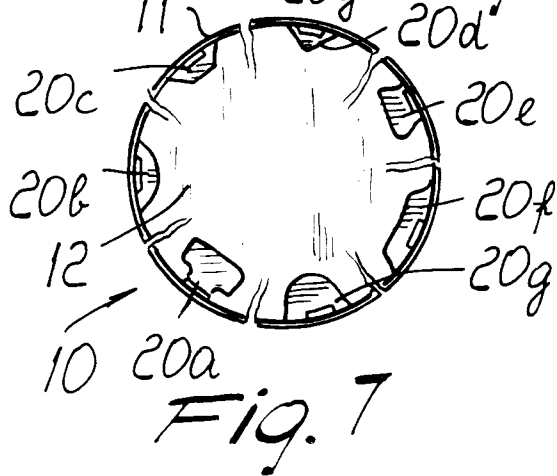
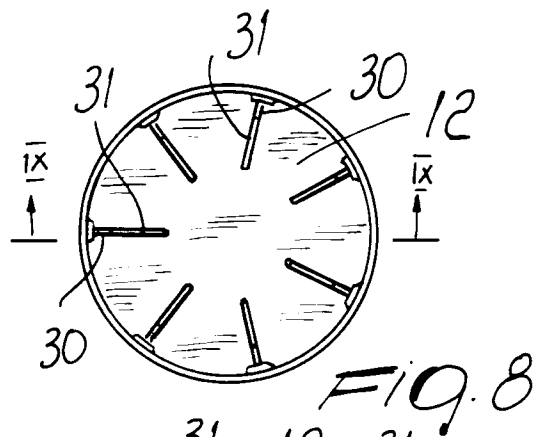
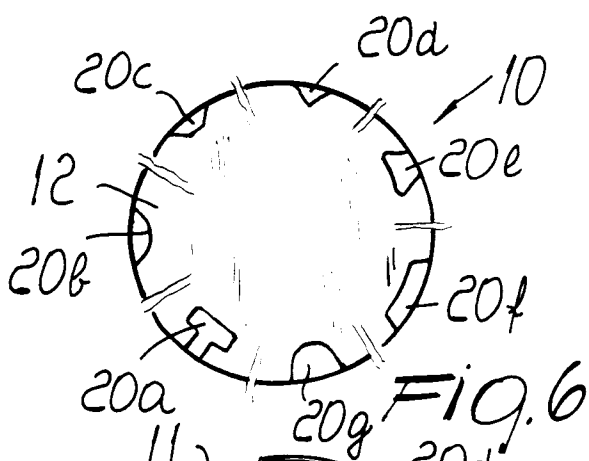


FIG. 5





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EUROPEAN SEARCH REPORT

Application Number
EP 94 10 3515

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
X A	NL-A-8 800 797 (PLASTICUM) * page 2, line 12 - line 36; figures 1-4 * ---	1-4 6-8	B65D83/14
A	US-A-4 141 445 (KORICH) * figures 1,2,3,7 * ---	1,6-8	
A	US-A-3 128 004 (SOFFER) ---		
A	US-A-4 775 062 (CARLE) -----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			B65D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 9 June 1994	Examiner Bessy, M
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