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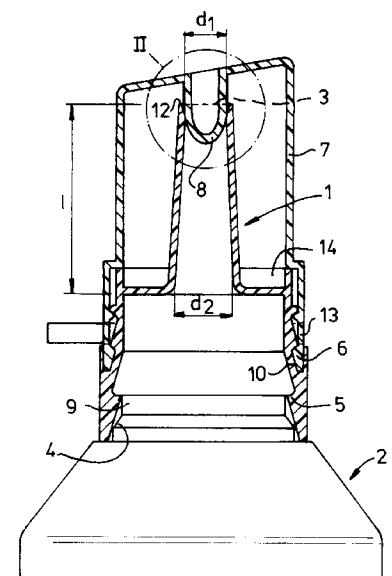
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Spout, spout/cap assembly and container assembly.

The present invention relates to a spout (1) to be fitted on a container (2). In order to enable optimum metering without mess, it is proposed to construct the final section of the pour channel conically widened. With this arrangement, the angle which said conically widening section makes with the longitudinal centre line is preferably about 11°.

fig -1



The present invention relates to a spout to be fitted to a container according to the preamble of Claim 1.

A spout of this type is disclosed in Belgian Patent Publication 427 392. With reference to Fig. 8 in said patent, a cap is described which is to be fitted on rigid containers and is intended for pouring out products of relatively low viscosity, such as salad oil dressings. Pouring out will take place immediately when the container with the cap fitted thereon is turned upside down. An additional return channel is present in the pour opening in order to drain residual material which comes onto the outside of the cap. A spout of this type is unsuitable for metering paste-like masses.

British Patent 1 349 530 discloses a dispensing cap for pouring out whisky. This cap too is unsuitable for handling paste-like masses. In this context, there is always the problem that, on the one hand, accurate metering must be possible, that is to say it must be possible to dispense a sharply delimited, accurately defined amount of mass from the spout, and, on the other hand, that it must be possible to terminate pouring out without residues remaining behind or dripping continuing to take place.

One solution for overcoming these problems which is generally known in the prior art comprises the relatively elongated design of the spout. That is to say, for a diameter of 6 mm or 7 mm, the conically widening channel has a length of more than 60 mm.

Although a solution of this type suffices, it is associated with various disadvantages.

- Firstly, a relatively large amount of material is needed in order to be able to produce the relatively long spout.
- Secondly, an appreciable problem arises in the case of storage and transport.

After all, the long spout constitutes a non-effective volume, which makes it appreciably more difficult to handle the container/spout assembly.

The aim of the present invention is to provide a spout which is more compact, as a result of which the material use can be reduced and the ease of handling is increased, whilst, on the other hand, the outflow characteristics are optimum.

This aim is achieved in the case of a spout as described above by means of the characterising measures of Claim 1.

With this construction it has proved possible appreciably to reduce the length of the spout. For a diameter of, for example, 6 mm, good outflow characteristics have been found for lengths of the tapered channel of between 10 mm and 30 mm. The medium that was metered from the spout had a Brix of between 55 and 85. That is to say, the percentage solids is between 55 and 85. Types of syrup are an example of media of this type. The particularly good outflow characteristics ensure, on the one hand, that, using a spout of this type, it is very readily possible to meter

and cut off a sharply defined sausage of material. That is to say it is easy to "write" using the spout. On the other hand, it has been found that, as a result of the fact that the channel is conically widened, if material is no longer supplied to the spout material will not collect in an undesirable manner at the lip of the spout and lead to residues remaining behind or, possibly, further dripping, at said lip. Consequently, it is possible to hold the cap and container upside down without product issuing therefrom. Product will flow from the spout only when the flexible container is compressed. This is in contrast to the devices according to the prior art which have been described above. On returning to the storage position after metering, that is to say with the spout facing upwards, the material in the spout will be moved backwards as a result of the suction effect generated by the flexible container. The material which flows away via the outside of the spout has never been found at the outer circumferential shape of the spout which has been described above and, therefore, it is not necessary to provide return channels, as in the prior art. Incidentally, such channels would not work in the case of the above-mentioned paste-like products.

Although it is possible for the conical section to be widened at the end in a paraboloid-like manner or in any other way disclosed in the prior art, it is preferred that the conically widening section is constructed with essentially straight lines to the outside.

According to an advantageous embodiment of the invention, the angle α between the widening section and the longitudinal centre line of the spout is approximately 11° .

As indicated above, the length of the channel can be appreciably shortened compared with constructions disclosed in the prior art. Preferably, said length is approximately four times the diameter of the pour opening.

The first section of the pour channel is preferably tapered. In this context the conicity is so chosen that the ratio of the diameter of the spout at the inlet end to the diameter at the pour opening is about 1.5. That is to say, a relatively slim spout is proposed.

The lip of the spout can be rounded or sharp. Preferably, however, it is essentially perpendicular to the longitudinal centre line of the spout. In this way a particularly good cut-off of the stream issuing from the spout is achieved.

The spout can be used in combination with all containers disclosed in the prior art. Fixing to said containers can be effected in any manner disclosed in the prior art, but preference is given to producing this fixing by snap-fitting.

In order to prevent drying out and undesired leakage of the contents, according to a preferred embodiment a cap is provided which can be fitted over the spout if the latter is not in use. With this arrangement, the cap preferably comprises a spike-like protrusion

which protrudes into the pour end of the spout when the cap is placed on the latter and provides an additional closure.

The invention also relates to a container assembly comprising a flexible container provided with the spout described above.

The invention will be explained in more detail below with reference to an illustrative embodiment shown in the drawing. In the drawing:

Fig. 1 shows the spout/cap assembly fitted on a container according to the invention in a cross-sectional side view;

Fig. 2 shows a detail of Fig. 1; and

Fig. 3 shows a perspective view of the spout/cap assembly fitted on a container.

In the figures the spout according to the invention is indicated in its entirety by 1. This spout is fitted on a flexible plastic container 2, part of which is shown. Container 2 is provided with a neck 4 which has a circumferential groove 9 into which a snap-fit edge 5 of spout 1 engages. Spout 1 is provided with a pour opening 3. The diameter in the vicinity of the pour opening is indicated by d_1 , whilst the diameter at the inlet of the pour channel is indicated by d_2 . Spout 1 is also provided with a circumferential edge, indicated by 10, for accommodating snap-edge 6 of cap 7. Cap 7 is provided with a spike 8 sized so as to fit in pour opening 3 of spout 1. The length of the pour channel is indicated by 1.

Fig. 2 shows a detail of pour opening 3.

It can be seen from this figure, on the one hand, that the final section of this opening widens in a conical manner. The angle of the conical widening with respect to the longitudinal centre line 11 is indicated by α . It can also be seen that the lip 12 is essentially perpendicular to longitudinal centre line 11.

Fig. 3 shows the assembly of spout and cap 7 fitted on a container 2, part of which is shown. It can likewise be seen from this figure that cap 7 is provided with a tear strip 13 to discourage tampering. This strip must be removed by tearing before use. As an additional safety feature, spout 1 is provided with a collection area 14 to prevent the container 2 from possibly becoming dirty.

The values for d_1 , d_2 and 1, as well as the angle α , must be chosen depending on the medium to be metered.

The medium to be dispensed can have a Brix of between 55 and 85. Pouring syrup has a Brix of between 79.5 and 80.5. In this case the angle α is about 11° . The diameter d_1 is preferably between 5.5 and 7 mm. The length 1 is at most five times the diameter of the spout. Corresponding changes apply for other Brix values. At lower Brix, the outflow diameter d_1 decreases as do also d_2 and 1.

As can be seen from Figs 1 and 2, the first section of the pour channel is tapered. The ratio between d_2 and d_1 is preferably 1.5, so that d_2 is approximately 9

mm for an outflow diameter of 6 mm.

By selecting the abovementioned values, a spout is obtained with which the stream can be metered in an optimum manner. That is to say, if a sausage of material is metered, this sausage can be cut off in a well controlled manner at any time. Moreover, as a result of the particular design of the lip, drip formation or adhesion of residues is prevented. Consequently, no products which become sugary and block the opening will remain behind. If container 2 is of somewhat flexible construction, the paste-like mass in the spout will automatically move backwards somewhat when the pressure is released.

The results described above were obtained at a temperature of between 20°C and 30°C .

Although the invention has been described above with reference to the metering of a mass having a Brix of between 55 and 85, it will be understood that materials of other consistencies can also be metered using the spout in question. For instance, it is possible to add thickeners, which have a substantial effect on the viscosity. In this case, in order to achieve an optimum result, adjustments are needed which will be obvious to those skilled in the art after reading the above description and the appended claims and which therefore fall within the scope of the present invention.

Claims

1. Spout (1) to be fitted on a container (2) comprising a channel which tapers in the vicinity of the pour opening (3) with, directly adjoining said tapered channel, a final section which widens conically in the vicinity of the pour opening, the conically widening final section extending essentially in a straight line, characterised in that the pour opening comprises the sole connection with the container and in that the angle α between the widening section and the longitudinal centre line of the spout is between 10° and 13° .
2. Spout according to Claim 1, wherein the angle (α) is approximately 11° .
3. Spout according to either of the preceding claims, wherein the length (1) of the channel section is approximately four times the diameter (d_1) of the pour opening.
4. Spout according to one of the preceding claims, wherein the ratio of the diameter (d_1) of the spout at the inlet end to the diameter (d_1) at the pour opening is approximately 1.5.
5. Spout according to one of the preceding claims, wherein the lip of the spout is constructed so that

it is oriented essentially perpendicular to the longitudinal centre line of the spout.

6. Spout according to one of the preceding claims, provided with fixing means for connection to a container. 5
7. Spout according to Claim 6, wherein the fixing means comprise snap-fit means. 10
8. Spout according to one of the preceding claims, provided on the outside with accommodating means (6) for receiving a cap (7). 15
9. Spout/cap assembly comprising a spout according to Claim 8, wherein the cap (7) is provided with spike means (8) for accommodation in the free end of the spout. 20
10. Container assembly comprising a flexible container provided with the spout according to one of the preceding Claims 1 - 8 or the spout/cap assembly according to Claim 9. 25

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fig -1

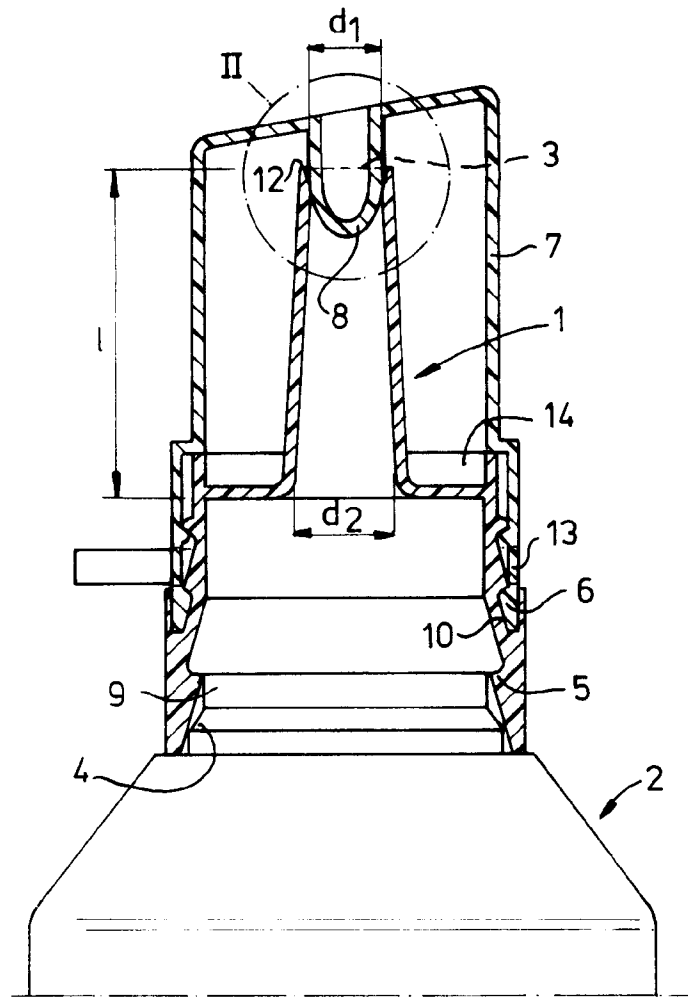


fig-2

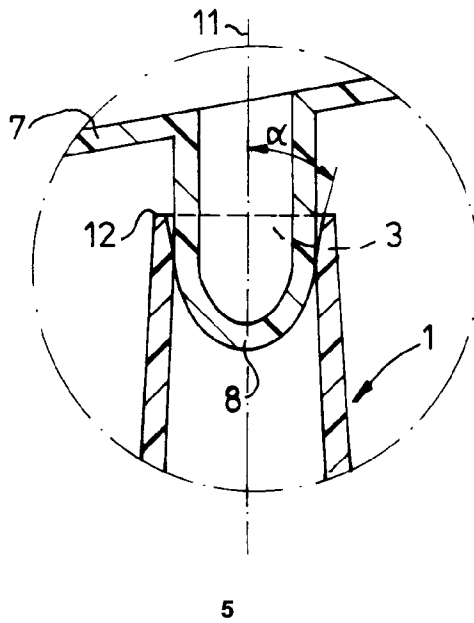
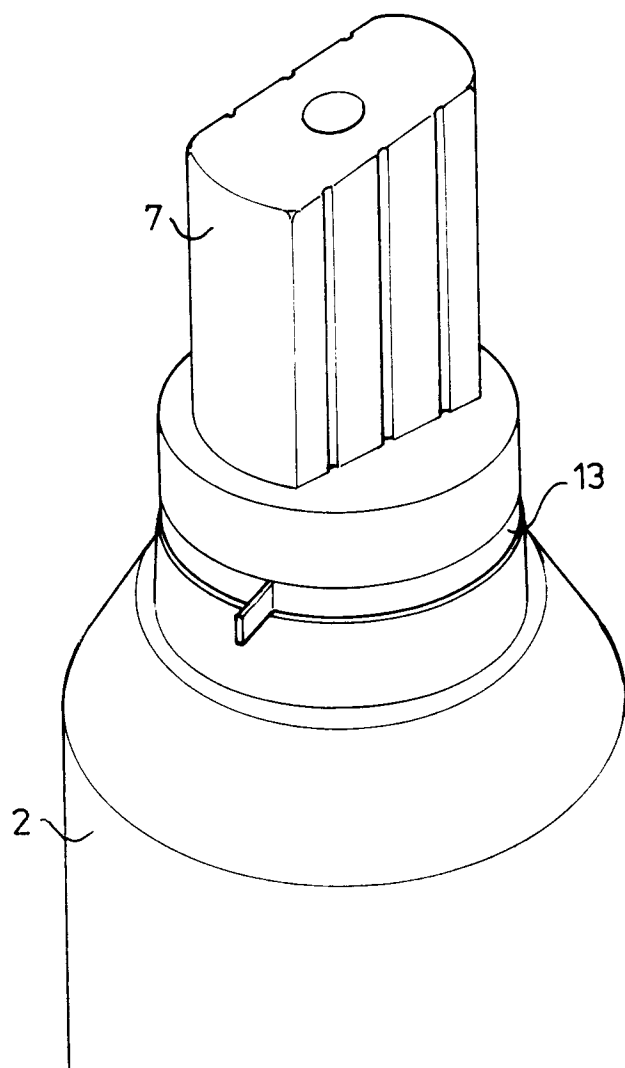


fig-3





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 95 20 0640

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.6)
A,D	BE-A-427 392 (R.GRAEBENER) 31 May 1938 * figures 7,8 *	1-8,10	B65D47/06 B65D47/12
A	GB-A-2 097 367 (AXEL CRONE) 3 November 1982 * abstract; figures *	1,9	
A,D	GB-A-1 349 530 (DANIE MONTGOMERY) 3 April 1974 * figures *	1,2	
A	CH-A-659 990 (RORY LTD) 13 March 1987 * the whole document *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B65D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 17 July 1995	Examiner Zanghi, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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