Attachment for a container.

An attachment for a mouthed container, particularly one moulded from fibrous pulp material, comprises, in a preferred embodiment, an outer element (5) for placement externally of the mouth (60) of the container, a deformable member (6), e.g. a rubber seal, for placement internally of the mouth (60) of the container, and a cam-lever device (10, 12, 30) for deforming the deformable member (6) into sealing and/or gripping relationship with the outer element (5), wherein the mouth (60) of the container is sealed and/or gripped between the deformed member (6) and the outer element (5). In other embodiments the cam lever device which acts as the clamping mechanism is replaced by various clip arrangements or cooperating screw threads, which perform a similar clamping action. The attachment preferably includes a pouring spout (20) for dispensing a product contained in the container and a cap (50) to act as a closure for the attachment/container combination.
The present invention relates to an attachment for a container having a mouth via which material contained in the container may be dispensed. More particularly the invention relates to an attachment for such a container, which may provide not only a closure for the container but also a convenient dispensing device for delivering a product contained in the container.

One known type of stopper for use exclusively on wine-type bottles is described for example in FR-A-2232489. This stopper includes a rubber seal mounted on an axially oriented spigot between a lower end flange and an upper platform, and a cam-lever device attached to the upper end of the spigot for compressing the seal between the lower flange and the upper platform so as to deform it radially outwardly against the inner wall of the rigid bottle neck, thereby forming a sealing plug for the bottle. This construction is however limited in application to bottles whose necks have a particular degree of strength and rigidity.

Another known device utilising a similar principle to the above described wine bottle stopper is disclosed in, for example, WO 90/09342. Here there is described a spout for insertion into the planar wall of a container, the device including a portion for piercing and insertion into the container to provide fluid communication between the interior of the container and an external spout portion of the device, and a cam-lever operated sealing device which clamps the spout to the container wall in a leak-proof manner.

It is an object of the present invention to provide an attachment for a mouthed container, not necessarily of rigid material, which may act as a closure for the container or as a delivery means or, preferably, as both.

Accordingly, in one aspect of the present invention there is provided an attachment for a mouthed container, comprising an outer element for placement externally of the mouth portion of the container, a deformable member for placement internally of the mouth portion of the container, and means for deforming the deformable member into sealing and/or gripping relationship with the outer element, whereby the mouth of the container is sealable and/or grippable between the deformable member and the outer element.

The deformable member which seals and/or grips the wall of the container mouth is preferably of an elastomeric material, e.g. rubber. This member may take any suitable form; for example it may be cylindrical or toroidal, or in some embodiments may even comprise a plurality of sections each having a different one of these configurations. In generally preferred embodiments the deformable member is in the form of a ferrule.

It is to be understood that the configuration, resilience and/or material of the deformable member may be selected in accordance with the degree of sealing and/or gripping which the attachment is intended to provide. This may also depend for example on the shape and material of the mouth portion of the container with which the attachment is to be used. It may further also depend on the forces exerted on the deformable member by the deforming means. For example, a large deforming force applied to the deformable member may produce a strong gripping effect on the container mouth and thus a good sealing action, whereas smaller deforming forces may produce a less efficient seal, but depending upon the magnitude of the deforming force and any of the other parameters mentioned above, may still provide a sufficient gripping action for the attachment to perform its desired function.

In preferred embodiments of the attachment of the invention the outer element is in the form of a shroud which may have any of several different configurations. Preferably it has a generally substantially cylindrical portion which, when the attachment and the container are in combination, externally abuts the mouth portion of the container, thereby providing a bearing element against which the deformable internal member can be urged to grip and/or seal between it and the outer element the walls of the container mouth.

The shroud which preferably forms the outer element of the attachment may if desired be designed to fit or match the external contour of the region of the container at or in the vicinity of its mouth. As well as providing certain aesthetic opportunities, this feature may be particularly important in the construction and operation of attachments in accordance with the invention in which the means for deforming the deformable member are provided at least in part by the construction or shape of the outer element in combination with the construction or shape of the mouth portion of the container.

Accordingly, within the scope of the invention it is possible not only for the deforming means to be provided as a mechanical feature of the device distinct from the outer element, but the deforming means may alternatively be provided by mutually interengageable features provided by the outer element and the mouth portion of the container, respectively, which features function together to exert the necessary deforming force on the deformable internal member under the action of mounting the attachment on the mouth of the container in the manner appropriate to the construction of the device.

The mutually interengageable features of the outer element and mouth portion of the container may comprise for example one or more shoulders or protrusions on one of the elements and corresponding recesses or like features on the other element, the action of bringing these respective features into mutual engagement providing the necessary force for deforming the deformable member therebetween. As
another example, the mutually interengageable features may include mutually engaging screw threads, the action of screwing the outer element onto the mouth of the container providing the necessary deforming force to deform the deformable member between the two elements. Specific examples of suitable deforming means which utilise the above mentioned interengageable features on the outer element and the mouth portion of the container are described in detail in the context of several preferred embodiments of the invention further below.

In another preferred embodiment of the attachment of the invention the deforming means for deforming the deformable member into sealing and/or gripping relationship with the outer element is a distinct mechanical feature of the device and may be operated as and when desired to effect securement of the attachment to the mouth of a container.

In one practical form of this embodiment the means for deforming the deformable member comprises: a stationary element; a core moveable axially within the mouth of the container, a portion of the core being axially spaced from the stationary element and the deformable member being retained between that portion of the core and the stationary element; and means for moving the core axially within the mouth of the container between a first position in which the deformable member is substantially undeformed and a second position in which the deformable member is deformed radially of the mouth of the container into a sealing and/or gripping relationship with the outer element of the attachment.

The radially outward deformation of the deformable member upon axial movement of the core is preferably achieved by use of a lifting core which has a lifting portion, e.g. a projection or shoulder or flange, situated beneath and spaced from the stationary element, so that when the core is lifted the deformable member situated in the space between the lifting portion and the stationary element is compressed and deformed radially outwardly to achieve the sealing and/or gripping configuration with the outer element.

The lifting of the lifting core is preferably achieved by use of a cam-lever device, as is already known per se in the art, for example in the wine bottle stopper referred to above.

In practical embodiments of the attachment of the invention, the deforming means which enable the device to be clamped onto the mouth of the container are adapted to act reversibly, so that they may be released to allow an attachment already secured in place on a container to be removed therefrom. This feature allows the attachment of the invention to be used repeatedly on different containers.

In preferred embodiments of the invention, the attachment includes delivery means such as a pouring spout which, when the attachment and the container are in combination, is in communication with the interior of the container so that a product can be dispensed, e.g. poured, from the container via the pouring spout. Thus, in practical embodiments of the invention the attachment has one or more passageways therethrough (e.g. one main aperture or a plurality of apertures) to allow passage of the container of product contained therein when the attachment is in secured combination therewith. It is particularly preferred that the pouring spout is closeable, for example by a screw-threaded or a snap-fit cap. Such a cap may advantageously constitute a dosing device once removed from the attachment, e.g. for the purpose of measuring desired quantities of product dispensed from the container.

The container with which the attachment of the invention may be combined may take any desired form, so long as it has a mouth portion which is able to be sealed and/or gripped between the deformed internal member and the outer element of the device. The term "mouth" as used herein, when applied to the container with which the attachment of the invention is to be used, means that generally substantially cylindrical or frusto-conically sectioned portion of any type and configuration of container which includes an orifice via which material contained within the container may be dispensed. Thus, this term covers not only containers such as bottles having preformed or preconfigured necks, but also containers such as bags, e.g. plastic bags or bags of composite materials, which have an opening formed therein, via which product may be delivered from within the bag. The opening may for example be formed immediately prior to attachment of the device of the invention, such as by an incision or severing of a corner of the bag, or alternatively it may be preformed but occluded by a patch or similar protective element which may be removed immediately prior to use.

Preferably, however, containers suitable for use with attachments in accordance with the present invention are in the form of bottles or mouthed box-type containers formed from semi-rigid or substantially rigid material such as plastics or moulded fibrous, e.g. cellulosic, material. The latter material is particularly preferred because of its high environmental friendliness and biodegradability and examples of such containers moulded from organic fibrous material are well documented in the patent literature. Suitably, such containers comprise a shell of moulded cellulosic material, the interior (and possibly exterior) of which is lined with one or more layers of a barrier material, e.g. a polymeric material, impermeable to the product to be put in the container.

Thus, in accordance with preferred embodiments of the present invention the attachment is a closeable pouring spout which can be securely attached to the open neck of a container, with the deformed internal member forming a seal against the inner wall of the container mouth. By virtue of the various forms of
clamping/release means, the attachment is readily transferable from one container to another.

Preferred embodiments of the present invention will now be described in detail, by way of example, with reference to the accompanying drawings, in which:

- Figure 1(a) is a perspective view of the components of a first embodiment of the attachment of the invention;
- Figure 1(b) is an enlarged part-sectional view of the assembled attachment of Figure 1 in position on the mouth of a container prior to the operation of the clamping mechanism;
- Figure 1(c) is a side view of the assembled attachment and container of Figure 1(b);
- Figure 2(a) is an exploded perspective view of the components of a second embodiment of the attachment of the invention;
- Figure 2(b) is a perspective view of the assembled attachment of Figure 2(a);
- Figure 2(c) is a part-sectional view of the assembled attachment of Figure 2(b) in position on the mouth of a container prior to the operation of the clamping mechanism;
- Figure 2(d) is a similar view to that of Figure 2(c), in which the clamping mechanism has been operated to clamp the attachment to the mouth of the container;
- Figure 3(a) is an exploded perspective view of the components of a third embodiment of the attachment of the invention;
- Figure 3(b) is an enlarged part-sectional view on line III of Figure 3(a) of the assembled attachment in position on the mouth of a container with the clamping mechanism functioning to clamp the attachment to the mouth of the container;
- Figure 3(c) is a side view of the assembled attachment and container of Figure 3(b);
- Figure 4(a) is an exploded perspective view of the components of a fourth embodiment of the attachment of the invention;
- Figure 4(b) is a perspective view of the assembled attachment of Figure 4(a);
- Figure 4(c) is a perspective view of the assembled attachment shown in Figure 4(b), but with the closure cap raised showing the internal pouring spout, in which condition product contained in the container to which the attachment is secured may be dispensed;
- Figure 4(d) is an enlarged part-sectional view of the assembled attachment of Figure 4(b) showing the clamping mechanism functioning to clamp the attachment to the mouth of the container;
- Figure 5(a) is an exploded perspective view of the components of a fifth embodiment of the attachment of the invention;
- Figure 5(b) is a perspective view of the assembled attachment of Figure 5(a);
- Figure 5(c) is a part-sectional view of the assembled attachment of Figure 5(b) in position on the mouth of a container prior to the operation of the clamping mechanism;
- Figure 5(d) is a similar view to that of Figure 5(c), in which the clamping mechanism has been operated to clamp the attachment to the mouth of the container.

The various embodiments of the invention shown in the Figures will now be described in detail with reference thereto. It is to be understood that these illustrated embodiments are by way of example only and are not intended to limit the scope of the present invention to particular constructions or designs. In particular, it is possible within the scope of the invention for a given attachment to comprise different individual features from more than one of the illustrated embodiments.

Referring firstly to Figure 1(a), the principal components of the attachment of this first embodiment are shroud 4, rubber sealing element 6, lifting core 10, cam lift ring 12 and cam lever 30. Screw-threaded cap 50 is provided for attachment to the top of the lifting core 10, within which, preferably integrally therewith, is formed a pouring spout 20. The inside of the cap 50 may advantageously be formed with a drain-back feature, for example a cylindrical flange 52 (see Figure 1(b)), so that the cap may be used to good effect as a measuring/dosing device for the product to be dispensed from the container.

The shroud 4 includes a generally cylindrical portion 5 and integral therewith a generally annular portion 9 which forms the stationary element defined above.

The lifting core 10 includes a central passageway wherethrough product can pass, and comprises also as a lifting portion a circumferential projection 15 which defines between it and the annular portion 9 of the shroud 4 a space within which is accommodated the cylindrical rubber sealing element 6.

The cam lift ring 12 is held fast with the lifting core 10, for example by means of a screw-thread connection, which also assists easy assembly of the device. Extending outwardly from the cam lift ring 12 on diametrically opposite sides thereof are lugs 14 which are adapted for insertion into apertures or recesses 32 in arms 34 of the cam lever 30. Each of the arms 34 is shaped as a cam, so that as the lever 30 is pivoted by manual manipulation of the handle portion 36, the cam surfaces of the arms 34 abut the upper surface of the annular portion 9 of the shroud 4, thereby axially displacing the cam lift ring 12 relative...
to the shroud 4. The cam configuration of the arms 34 enables the device to maintain its either non-sealing/non-gripping or sealing/gripping action once the lever 30 is pivoted into either of its respective positions.

Apart from the rubber sealing element 6, which may in fact be of any suitable elastomeric material, any or all of the components of the attachment may be conveniently formed of moulded plastics.

In going from the position shown in Figure 1(b) to that shown in Figure 1(c), the cam lever 30 is pivoted through 180°, which, via the cam lift ring 12, causes the lifting core to be displaced in an upward direction so as to axially compress the rubber seal 6 between the projection 15 of the lifting core 10 and the stationary element 9. The resultant radially outward deformation of the rubber seal 6 brings it into a sealing configuration with the cylindrical portion 5 of the shroud 4, in which it internally grips and also seals the wall of the mouth 60 of the container.

The extent of the sealing/gripping action may at least partly depend on the configuration of the wall of the container mouth 60 between the deformed seal 6 and the outer cylindrical portion 5 of the shroud 4. Ideally, that configuration is such as to internally seal the mouth of the container and also to grip it securely so as to form a safe, tight, product-proof connection.

It is particularly preferred that the walls of the container mouth slope inwardly towards its open orifice as shown in Figures 1(b) and 1(c). This provides an improved gripping and sealing action of the deformed seal 6 in association with the cylindrical portion 5 of the shroud 4.

In order to release the attachment from its secured condition on the mouth of the container as shown in Figure 1(c), the cam lever device is simply operated in reverse, so that the attachment re-assumes the condition shown in Figure 1(b), in which it can be simply lifted clear of the container mouth.

Turning now to Figure 2(a), the attachment of this second embodiment of the invention comprises the following principal components: clamping core 74, rubber sealing member 76, locking ring 82 and cap 120. As in the first embodiment, the cap 120 incorporates a drain-back feature in the form of a radially inner flange 121. The clamping core 74 is provided with a pouring spout 90 within the central passageway through the core 74. The cap 120 is securable to the core 74 by virtue of screw threads 88.

The clamping core 74 comprises a generally cylindrical portion 75 which lies externally of the mouth portion of the container onto which the attachment is fitted, a generally annular portion 79 which constitutes a stationary element against which the resilient sealing member 76 is compressed when the attachment is clamped onto the container, and a plurality of circumferentially spaced clamping elements 85, each of which is hingeable relative to the cylindrical portion 75. The hinge means are preferably provided by virtue of each clamping element 85 being formed integral with the cylindrical portion 75 but with a reduced thickness of material defining the boundary between these two elements, the hingeability being provided by the resilience and/or flexibility of the material at the reduced thickness region.

The clamping core 74 is preferably formed of plastics material (which is useful for providing the necessary resilient hinge connection between the clamping elements 85 and the cylindrical portion 75), and is conveniently a one-piece moulding.

As seen more clearly in Figures 2(c) and 2(d) each clamping element 85 is provided on its radially inwardly facing side with a projection 85a such as a generally radially inwardly projecting rib or similar projecting element of any suitable cross section. The rib on each element preferably cooperates with a corresponding recess, indentation or neck in the wall of the mouth portion of the container onto which the attachment is to be fitted, so that the mouth portion of the container is externally grippable by each clamping element 85.

Although in this illustrated embodiment the plurality of clamping elements 85 are provided all the way round the periphery of the clamping core 74, it is possible for such elements 85 to be provided only at selected positions around that periphery. Generally, however, sufficient clamping elements must be provided to ensure that the container onto which the attachment is fitted is gripped sufficiently securely and the number, position and even shape of the clamping elements may be selected as desired in order to give the appropriate degree of securement.

Correspondingly, the preferred recess, indentation or neck referred to above in the wall of the container may extend around the periphery of the container mouth only to the extent that is necessary for the clamping elements 85 that are present to cooperate with the container mouth in the manner described above.

Although less preferably, it is even possible within the scope of this embodiment for no distinct recess, indentation or neck to be provided in the wall of the container, in which case the necessary gripping action is by virtue of friction between the container material and the clamping elements 85 and/or embedding of the latter into and/or deformation of the material of the container walls.

As shown in Figures 2(c) and 2(d), the sealing member 76 comprises a generally cylindrical portion 76a and integral therewith a generally annular portion 76b. Preferably one of the annular portion 76b of the sealing element 76 and the annular portion 79 of the clamping core 74 is provided with a circular projection 77a (as seen in Figure 2(c)).
In this second embodiment of the attachment of the invention the means for deforming the seal 76 into gripping and sealing relationship with the clamping elements 85 of the clamping core 74 is provided by the locking ring 82, which is also preferably of moulded plastics material. The locking ring 82 is provided with screw threads 83 for mutual cooperation with corresponding threads 83 provided on the exterior of the cylindrical portion 75 of the clamping core 74. Upon screwing the locking ring 82 down onto the clamping core 74, the clamping elements 85 which are normally in a radially outwardly projecting condition as shown in Figure 2(c), are forced radially inwardly, thereby clamping between them and the sealing member 76 the walls of the mouth 130 of a container upon which the attachment is fitted. The normally outwardly pointing configuration of the clamping elements 85 as shown in Figure 2(c) allows the container mouth walls to be readily inserted into the space between the clamping elements 85 and portion 76a of the seal 76 prior to operation of the clamping mechanism.

Whilst Figure 2(c) shows the condition of the device immediately prior to screwing down of the locking ring 82 onto the clamping core 74, Figure 2(d) shows the condition of the device after the locking ring 82 has been thus screwed down so as to clamp and seal the attachment onto the container mouth. As illustrated in Figure 2(d), the clamping elements 85 grip the externally recessed wall of the mouth portion 130 of the container by virtue of the latter being clamped between the clamping elements 85 and the cylindrical portion 76a of the sealing element 76. The annular portion 76b of the sealing element 76 is also compressed in this condition, so that it substantially fills the void between the top of the container mouth and the annular portion 79 of the locking core 74, this providing an efficient sealing action for preventing leakage of product out of the container via the attachment connection.

As shown in Figures 2(c) and (d) the top of the container mouth is preferably provided with an annular flange 131 which assists the gripping and sealing action of the sealing element 76 when the attachment is in its locked condition as shown in Figure 2(d).

For removal of the attachment from the container mouth, the clamping mechanism is disengaged by unscrewing the locking ring 82, which brings the attachment back into the condition shown in Figure 2(c), in which the clamping elements 85 are free from gripping engagement with the container mouth walls and thus the attachment free to be lifted clear therefrom.

Turning to Figure 3 of the drawings which shows a third embodiment of the attachment of the present invention, this form of device comprises as its principal components the usual elastomeric sealing element 146, clamp body 144 and screw-threaded cap 190 (with drain-back feature).

In this embodiment, the construction of the main clamp body 144 is simpler than the equivalent group of components in the embodiment shown in Figure 2, and may be conveniently formed as a one-piece plastics moulding preferably incorporating, as before, a pouring spout 160. As shown more clearly in Figure 3(b), a lower extension from the clamp body 144 terminates in a peripheral shoulder 147 above which is retained the normally cylindrical resilient element 146. Constituting a stationary element as defined above, which retains the sealing element 146 between it and the peripheral shoulder 147, is an internal step 149. It is against this internal step 149 that the sealing element 146 is compressed when the attachment is secured onto the mouth of the container 200.

The clamp body 144 further comprises a generally substantially cylindrical outer portion 145 which externally abuts the walls of the mouth portion of the container when the attachment is in position thereon. The outer portion 145 of the clamping body 144 is formed at a number of sites around its periphery with a number of clamping arms 148. Preferably two such clamping arms 148 are provided, on diametrically opposite sides of the clamping body 144, though more than two such arms 148, e.g. three or more, may be provided if desired, preferably at equal spacings around the periphery of the clamping body 144.

Owing to the resilience of the integral connection between the clamping arms 148 and the main clamping body 144, which may be assisted for example by the provision of keyhole slots 151 at each side of the respective clamping arms 148 where they join the main clamping body 144, no additional urging means are necessary in this construction and the required clamping action of the attachment onto the mouth of the container is achieved by virtue of the lower distal portion of each clamping arm 148 being formed into a radially inwardly projecting foot 155 which is adapted for location beneath a corresponding radially outwardly projecting shoulder 210 formed in the container mouth wall. The shoulder 210 may conveniently be formed as a neck or part-circumferential recess in the container walls.

As in the first embodiment illustrated in Figure 1, in the present third embodiment of the attachment the wall of the container mouth may advantageously be configured such as to present a non-cylindrical section 202 against which the sealing element 146 can at least partially bear, thereby assisting the gripping and sealing action of the device.

Once the attachment of this third embodiment is positioned on the mouth of the container 200 immediately prior to effecting deformation of the sealing element 146, the configuration of the components of the attachment corresponds substantially to that shown in Figure 1(b), the sealing element 146 being
in a normally relaxed cylindrical condition and retained between the internal step 149 and peripheral shoulder 147 of the clamping body 144. The lower edge of the sealing element 146 abuts the inner wall of the shoulder 210 and it is between the internal step 149 and the inner wall of the shoulder 210 that the sealing element 146 is compressed as the attachment is pressed down onto the mouth of the container.

As shown in Figure 3(b), when the attachment is in its proper gripping and sealing condition, the sealing element 146 grips between it and the clamping arms 148 the walls of the container mouth and also forms a seal against the container mouth interior to prevent leakage of product therefrom. As the attachment is pushed down onto the container to reach the condition shown in Figure 3(b), the clamping arms 148 are pushed sufficiently past the wider diameter portion of the container neck against which bears the sealing element 146, so that the clamping feet 155 snap into place in the recesses beneath the shoulders 210 of the container neck, thereby clamping the attachment in place.

In this embodiment, therefore, the size and shape of the container neck must be selected carefully so as to match the configuration of the clamping arms 148 of the attachment, for appropriate gripping and/or sealing to be achieved.

Referring now to Figure 4 of the drawings which shows a fourth embodiment of the attachment according to the invention, the arrangement here comprises a shroud 222, elastomeric sealing member 216, spinner washer 218 and clamp body 230. The latter component includes an integrally connected closure cap 234 (with drain-back feature). As before, the body portion 214 of the clamp body 230 incorporates a pouring spout 232.

The shroud 222 includes a generally substantially cylindrical portion 223 having formed on its inner surface screw threads 226 which are constructed for engagement with corresponding screw threads 246 formed on the external surface of the mouth portion 240 of the container onto which the device is fitted.

A lower extension of the body portion 214 of the clamp body 230 terminates as before in a peripheral shoulder 215 which retains above it the frustoconical portion 216a of the elastomeric sealing member 216. Integral with this frustoconical section 216a is a substantially annular section 216b. Above the latter and preferably also at least part of the former sections lies the spinner washer 218, which reduces friction between the sealing member 216 and the upper annular portion 224 of the shroud 222 as the latter is rotated when being screwed down onto the container mouth.

Preferably the body portion 214 of the clamp body 230 is provided with a circumferential rib 215a which assists in retaining the elastomeric sealing member 216 when the attachment is not mounted on a container and which also helps to prevent over-compression of the sealing member 216 (and thus over-tightening of the shroud 222) as the shroud 222 is screwed down onto the container mouth.

The action of screwing the shroud 222 onto the mouth 240 of the container causes the container mouth walls to be clamped between the screw threads 226 of the shroud 222 and the frusto conical section 216a of the sealing member 216. At the same time, additional clamping action is generated between the screw threads 228 and the upper annular portion 224 of the shroud 222. This additional clamping action makes it desirable for the walls of the container mouth 240 to terminate in an annular flange as shown in Figure 4(d) which bears against the annular portion 216b of the sealing element 216 with the friction-reducing spinner washer 218 therebetween.

Turning now to Figure 5 of the drawings which shows a fifth embodiment of the attachment of the present invention, the principal components of this device are similar to those of the embodiment shown in Figure 1. Here the principal components of the attachment comprise: clamping core 260 (including integral pouring spout 270), cylindrical resilient sealing member 256, clip ring 258, compression ring 255 and screw-threaded cap 300 (with optional drain-back internal flange feature).

Referring particularly to Figures 5(a) and 5(c), the hollow clamping core 260 comprises a lower platform 265 above which is retained the substantially cylindrical (when in its unstressed condition) element 256. Screw threads 267 are provided for cooperation with corresponding threads on the interior wall of the lower portion 261 of the clip ring 258, for securing the two components together with the sealing member 256 between them. The upper edge of the sealing member 256 is retained by a plurality of (or one single circumferential) compression lugs 254 (Figure 5(c)) formed on the interior of the compression ring 255 and which project through respective window(s) 254a in the clip ring 258.

Provided at at least two sites on the periphery of the clip ring 258 are respective clip elements 262 which are connected to the main body of the clip ring 258 by resilient integral connections. As are all of the main components of this embodiment of the attachment (except of course for the resilient sealing member 256 which is formed by any conventional method), the clip ring 258 is preferably formed as a one-piece plastics moulding. Preferably two diametrically opposite clip elements 262 are provided on the clip ring 258, though a greater number may be provided if desired or as necessary. Each of the clip elements 262 corresponds to a locking aperture 257 provided in the compression ring 255, through which apertures a radially outward projection on each respective clip element 262 projects when the compression ring 255 and clip ring 258 are in their locked condition.
Figure 5(c) shows the condition of the attachment of this embodiment in position on the mouth of a container 310 immediately prior to the clamping mechanism deforming the sealing member 256 into gripping and sealing relationship against the outer element of the device which is constituted by the substantially cylindrical portion 253 of the compression ring 255. In the condition as shown, each locking element 262 is resiliently flexed radially inwardly by the interior wall of the substantially cylindrical portion 253 of the compression ring 255. At this point the compression lugs 254 on the interior of the compression ring 255 abut the upper edge of the sealing member 256 and in order to effect clamping of the attachment from this position, the compression ring 255 is simply forced downwardly relative to the clamping core 260 within the mouth of the container, into the condition shown in Figure 5(d).

In moving to this latter position, the compression lugs 254 compress the sealing member 256 so as to deform it radially outwardly and clamp between it and the substantially cylindrical portion 253 of the compression ring 255 the walls of the container mouth 310. A result of this movement is that the locking apertures 257 in the compression ring 255 and the outwardly projecting portions of clip elements 262 come into register, which allows the clip elements 262 to spring back under their resilience into their normal position as shown in Figure 5(d). In this condition the clip elements 262 lock the compression ring 255 in place and prevent its reverse movement which is urged by the resilience of the sealing member 256.

Thus, in the condition shown in Figure 5(d), the attachment is clamped securely and sealingly onto the mouth of the container 310, with the clip elements 262 locking the attachment in that condition. To unlock the attachment, by simple manual manipulation the clip elements 262 may be forced radially inwardly so that they no longer hinder the relative upward movement of the compression ring 255, in which event the latter is free to be lifted upwardly and clear of the clip ring 258 to allow the sealing member 256 to assume its unstressed cylindrical condition as shown in Figure 5(c), in which condition the attachment is free to be simply lifted up out of the container mouth.

The open mouth of containers with which attachments in accordance with the invention may be used may (as already mentioned) advantageously be formed with a lip or radial flange such as that shown as 65 in Figure 1. This may not only assist location of the attachment onto the open container neck, but is also useful for providing product-filled containers with, for example, a foil seal, in which condition such product-filled containers may be separately sold.

After purchase of such a container of product, the foil seal may be broken, an attachment according to the invention located onto the open container mouth, and the clamping device operated to secure the attachment onto the container, thereby providing a closure/pouring spout for enabling a consumer to safely and easily dispense the product from the container as well as store it in a safe and secure condition.

When all the product has been used and disposal of the empty container desired, the attachment can simply be removed and transferred to another container on which it is needed. Thus, the attachment of the invention leads to simpler and cheaper manufacture of product-filled containers and reduces waste.

There is no limit to the types of product with containers of which attachments in accordance with the invention may be used. Liquids, e.g. detergents, are particularly attractive, but powders and other solids, as well as many other types of product are also applicable.

**Claims**

1. An attachment for a mouthed container, comprising an outer element for placement externally of the mouth portion of the container, a deformable member for placement internally of the mouth portion of the container, and means for deforming the deformable member into sealing and/or gripping relationship with the outer element, whereby the mouth portion of the container is sealable and/or grippable between the deformed member and the outer element.

2. An attachment according to claim 1, further including one or more passageways therethrough for allowing passage out of the container of product contained therein when the attachment is mounted thereon.

3. An attachment according to claim 1 or claim 2, wherein the outer element is a shroud having a substantially cylindrical portion for externally abutting the mouth portion of the container.

4. An attachment according to any one of claims 1 to 3, wherein the deformable member is an elastomeric sealing member, at least a portion of which is in the form of a ferrule.

5. An attachment according to any one of claims 1 to 4, wherein the means for deforming the deformable member comprises:
   (i) a stationary element;  
   (ii) a core moveable axially within the mouth portion of the container, a portion of the core being axially spaced from the stationary element and the deformable member being retained between that portion of the core and the stationary element; and
9. An attachment according to claim 8, wherein the locking ring is engageable with the external portion of the clamping core by a screw-threaded connection, the action of engaging the locking ring with the external portion of the clamping core being by a screwing action of the locking ring relative to the clamping core.

10. An attachment according to claim 8 or claim 9, wherein each clamping element includes a generally radially inwardly projecting rib for cooperation with a or a respective recess in the wall of the mouth portion of the container.

11. An attachment according to any one of claims 8 to 10, wherein the clamping elements extend integrally from and are hingedly movable relative to the external portion of the clamping core.

12. An attachment according to any one of claims 8 to 11, wherein the deformable member comprises a generally substantially cylindrical section and integral therewith a generally substantially annular section, said generally cylindrical section performing a predominantly gripping function with the outer element and said generally annular section performing a predominantly sealing function with the outer element.

13. An attachment according to claim 7, wherein the means for deforming the deformable member comprises:

(i) a clamp body movable axially within the mouth portion of the container, the clamp body including an internal step between which and a shoulder formed in the wall of the mouth portion of the container is compressed and deformed radially outwardly the deformable member as the clamp body is pushed axially into the mouth portion of the container; and
(ii) one or more clamping arms extending from the clamp body externally of the mouth portion of the container, wherein the or each of the clamping arms includes a foot for engagement with said shoulder formed in the wall of the container mouth portion, the engagement of the or each foot with the shoulder when the clamp body is pushed axially into the mouth portion of the container maintaining the attachment in a condition in which the deformable member is deformed into sealing and/or gripping relationship with the clamping arm or arms, in which condition the mouth portion of the container is sealed and/or gripped between the deformed member and the clamping arm or arms.

14. An attachment according to claim 7, wherein said mutually interengangeable features comprise mutually interengangeable screw threads on each of the outer element and the wall of the container mouth portion respectively, the action of screwing the outer element onto the mouth of the con-
container exerting said deforming force which deforms the deformable member into said sealing and/or gripping relationship with the outer element.

15. An attachment according to claim 14, wherein the deformable member comprises a first section for sealing and/or gripping between it and a generally substantially cylindrical portion of the outer element a generally substantially cylindrical portion of said container mouth wall, and integral with the first section a second section for sealing and/or gripping between it and a generally substantially annular integral portion of the outer element a generally substantially annular integral section of the container mouth wall.

16. An attachment according to any one of claims 1 to 4, wherein the means for deforming the deformable member comprises:

(i) a clamping core for placement internally of the mouth portion of the container, the clamping core including a lower platform above which is situated the deformable member;

(ii) a compression ring comprising a shroud for placement externally of the mouth portion of the container and having formed on the interior thereof one or more compression lugs for compressing between it or them and the said lower platform the deformable member when the compression ring is displaced axially of the container mouth portion towards the said lower platform, which compression deforms the deformable member radially outwardly into said sealing and/or gripping relationship with said shroud; and

(iii) one or more clip elements provided on the clamp body for engagement with corresponding apertures in the compression ring so as to maintain the clamp body and the compression ring in a fixed relative position in which the deformed deformable member seals and/or grips the wall of the container mouth portion between it and said shroud.

17. An attachment according to any preceding claim, further including a pouring spout constructed for communication with the interior of the container when the attachment is mounted thereon.

18. In combination, a mouthed container and an attachment for the container, the attachment being an attachment according to any preceding claim.

19. The combination according to claim 18, wherein the container comprises a shell of moulded fibrous material optionally having an interior lining of one or more layers of a barrier material impermeable to a product to be put in the container.

20. The combination according to claim 18 or claim 19, wherein the mouth portion of the container includes at least one section having an external and/or internal diameter which is less than the external and/or internal diameter, respectively, of the adjacent sections of the mouth portion.

21. The combination according to any one of claims 18 to 20, wherein the mouth of the container includes at its opening a radial flange.