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⑤④ **A tamper resisting outlet fitting for a container.**

⑤⑦ A tamper resistant fitting for a container, particularly but not essentially a beverage container, comprises a plastics insert (10) which is located coaxially around a part (9) forming a closure in the outlet (21) in the side wall (20) of a container. The insert has a top flanged portion (15) which in use lies beneath the top plate (1) of the closure with three equi-radially spaced lugs (13) projecting from the top plate and provided for engagement with a tool through which rotational torque can be applied so as to engage the screw threading (12) on the insert with a complementary screw threading (25) on the outlet housing (21). When the closure is fully tightened into the housing the lugs (13) are broken off, this then leaving only frictional engagement between the outer peripheral surface of the closure (9) and the inner peripheral surface of the insert (10). The frictional coefficient between the two surfaces is arranged so that rotation will not occur with normal forces occurring in use, for example if a liquid extracting coupling device is connected with the top plate (1), but the parts will rotate at an applied value of rotational force which is less than that necessary to unscrew the insert (10) from the housing (21).

In a further feature a thin plastics cap (25) is provided which incorporates fingers (29) which deform during engagement with the housing (21) so that they lie beneath a protuberance (24). When the closure is removed the fingers are deformed downwardly and break off from the cap thereby providing evidence of tampering.

TITLE

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A Tamper Resisting Outlet Fitting for a Container

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This invention relates to a tamper resisting fitting for a container such as the liquid extractor tube outlet of a beverage cask or keg. In the art to which the invention more specifically relates a cask or keg of metal, or possibly other material, is provided with an upstanding bung hole outlet which incorporates an extractor tube assembly extending to the bottom of the keg and with valve means enabling liquid to be extracted from the cask and additionally to permit a gas to be introduced into the cask to effect displacement of the liquid. In such casks it is necessary to make provision for the replacement of the valve and extractor tube assembly and generally this is achieved by means of a screw threaded connection between the top of the assembly and the upraised bung hole outlet of the cask. It is also necessary however to provide for security so as to prevent unauthorised removal of the top fitting and pilfering or adulteration of the contents of the cask.

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According to this invention there is provided a tamper resisting fitting for a container, in which the

container has an outlet detachably engagable by a closure,
wherein an insert is interposed between the outlet and
closure, the insert having parts to engage the outlet to
secure the fitting, the closure being capable of rotating
5 with respect to the insert under application of a force
which is less than the force required to disengage the
insert from the outlet.

There is also provided and according to this
invention a tamper resisting fitting for
10 a container such as an extractor tube head to cask fitting
wherein the extractor tube head has a threaded portion to
engage a complementary threading on the bung hole outlet of
the cask with the threaded portion comprising an insert
coaxially located about the top end of the extractor tube
15 head and with a threading engaging the internal screw
threading of the outlet, the insert including one or more
frangible portions which engage with the extractor tube
head to enable the head and insert to be rotated together
and thus threadably engaged and tightened into the bung
20 hole outlet, the frangible portion or portions thereafter
being broken off, the insert frictionally engaging the
extractor head and arranged so that the head will not
rotate relative to the insert under normal conditions of
use but will rotate when applied rotational force exceeds a
25 predetermined value, said value being less than the force

required to unscrew the insert from the bung hole housing.

In a preferred embodiment the insert is of a synthetic plastics material providing an additional advantage of electrically insulating the extractor head from the cask.

5 In this arrangement the complete extractor tube head fitting with the insert can be screwed into the bung hole housing and tightened to the required torque loading by means of a suitable tool engaging lugs or detents or the like provided on the insert. After reaching the desired torque loading the lugs may either automatically break off or alternatively they can be snapped off thereby preventing any subsequent direct action being exerted on the insert through the lugs to unscrew same. The insert is otherwise
10 freely rotatable with respect to the extractor head but with a sufficient degree of friction existing between the two components, either by way of interference fit or by appropriately treating the mating surfaces, so that under normal use when the valved coupling head unit is fitted and rotated to lock same, the extractor tube head will not
15 rotate relative to the insert. However, if any attempt is made to remove the extractor tube head by using a spanner wrench or other tool to rotate the extractor head top plate then this will overcome friction between the insert and
20 extractor head before the necessary torque loading has been
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reached to effect unscrewing the head from the outlet.

5 If it is required to remove the extractor head to replace or repair same then a suitable special tool means can be provided which may engage formations on the insert to enable same to be rotated directly along with the extractor head thereby to unscrew same from the cask.

When the head is refitted then a new insert is provided, such an insert being a relatively inexpensive item especially if it is a plastics moulding.

10 The necessary degree of friction to achieve the intended result can be obtained by appropriate dimensioning of the mating surface areas, by shot blasting the plastics to increase friction or by other suitable means.

15 Removal in order to replace the extractor head can be achieved by means of a suitable clamping tool which locks the insert to the top of the extractor head which may then be unscrewed together with the insert.

20 In a preferred embodiment the annular insert is of a plastics material and has a longitudinal slit enabling same to be slid up over the extractor head to lie beneath a top plate thereof, the plastic insert having three lugs which extend laterally through recesses provided in the top plate, the lugs enabling a suitable tool to be engaged with the head and insert so as to rotate same to tighten the
25 screw threads to the appropriate torque whereupon the lugs

can either be snapped off manually or else arranged so that they break at the required torque loading. As will be appreciated, once the lugs have been snapped off there is no visible or easily accessible means whereby the plastic insert can then be rotated otherwise than by using a special tool or machine.

As well as the aforementioned described preferred means of achieving the object of this invention the threaded insert could be arranged so that it will only be rotatable in one direction by using a unidirectional drive means. Thus the insert can be torqued up to the required loading but cannot thereafter be moved in the opposite direction other than with some specially designed drive means.

In this invention, more broadly, there is provided an extractor tube head fitting which is rotatable with respect to a separate threaded insert but with an appropriately arranged degree of friction between the two parts when assembled, the insert being capable of being tightened to secure the parts with the degree of friction being such that relative slippage occurs at a torque loading which is below that required to undo screw thread.

The invention is further described by way of an embodiment shown as an example only.

In the drawings:-

Figure 1 shows an underneath plan view of an
extractor head fitting plate,

Figure 2 shows a section on line A-A of Figure 1,

5 Figure 3 shows an underneath plan view of the
extractor tube retaining body,

Figure 4 shows the retaining body partly in
section,

Figure 5 shows a plan view of a plastic insert,

10 Figure 6 shows a section on A-A of Figure 5,

Figure 7 shows a cross section through the
component parts assembled,

Figure 8 shows a plan view of the top of the
fitting shown in Figure 7.

15 Figure 9 is a view similar to Figure 7 but
including a tamper evident device,

Figure 10 is a partial plan view of the top of the
fitting shown in Figure 9,

20 Figure 11 is a plan view of the tamper evident ring,
and

Figure 12 is a cross section on A-A of Figure 11.

As shown in the drawings and referring firstly to
Figures 1 and 2, an extractor tube head fitting (not shown
in detail) includes a top plate 1 which has three flat
25 sides 2 to receive a so-called "tri-lobe" fitting. In use

a coupling head is placed over the top plate with suitable formations passing over the flats 2 and the head is then rotated so that the formations engage beneath the curved wing parts 3 of the head to secure same. The head, when
5 rotated fully home provides a firm connection and enables the valved ports located in the central aperture of the plate 4 to be opened. With customary arrangements the coupling head itself can be used to forceably rotate the top plate and thus to unscrew it from the cask giving
10 access to the contents.

Figures 3 and 4 show a valve body pressing which engages with the top plate with the end 5 of the pressing being positioned to lie within the annular seating 6 of the top plate (Figure 2). The lower skirt portion of the
15 valve body has a deformed zone 7 forming a central aperture 8 which embraces the top end of the extractor tube. Suitable valve means are housed in the top of the body, these being customary and therefore not shown in the drawings.

20 The tapering top end 9 of the body pressing is arranged to receive a plastics insert 10 (of Delrin material RTM) (Figures 5 and 6) which insert has a longitudinal slot in its wall enabling it to be sprung open sufficiently to fit coaxially around the portion 9 of the
25 valve body and thereafter to bear by its upper surface 11

against the top plate. The insert 10 has an external
threading 12 which engages in use a complementary threading
on the inner periphery of the bung hole outlet housing of a
cask or keg. The insert also includes a top flange 15 -
5 which seats against the lower surface of the top plate with
this flange having three radially extending lugs 13.
These lugs are joined to the top flange 15 by a connecting
bridge 14 which enables them to be broken off in a
relatively easy manner.

10 Figures 7 and 8 of the drawings show the three
components described, that is the top plate, valve body
pressing and insert, assembled together and ready for
insertion into the bung hole outlet of a cask. Referring
to these drawings, the valve body pressing 9 is connected
15 to the top plate 10 by means of a weld 16 and the threaded
insert 10 is slid over the body 9 from the lower end
thereof and by virtue of the longitudinal slot (not shown)
allowing radial expansion. The insert 10 bears by the
upper surface flange 15 against the top plate 1 and the
20 lugs 13 project outwardly from the flat side 2 of the top
plate.

In this condition the whole assembly may be inserted
into the bung hole housing and the top plate 2, together
with insert 10, is rotated, using a means engaging the lugs
25 13 so as to tighten the thread to the required torque

loading in the bung hole housing. After this operation the lugs 13 are bent downwards and thereby snapped off along the line 14. The tightening in the housing causes the insert to be firmly pressed against the valve body 9 so as to frictionally engage same. This frictional engagement is more than adequate to ensure that the top plate 1 will not rotate during normal use when the coupling head is fitted but will slip if excessive force is applied to the coupling head 2 in an attempt to unscrew the fitting from the bung hole housing. Thus the body 9 together with the top plate 1 will rotate relatively to the insert which will remain firmly secured within the housing preventing removal.

If it should be required to remove the fitting, for example to replace or repair it, then a suitable tool can be engaged laterally between the flange 15 of the insert and the top plate 2 in order to relatively secure these two parts together which can then be rotated so as to unscrew the complete fitting. When the unit is to be refitted then all that is required is for a new plastics insert 10 to be located over body 9 prior to reassembly. This is relatively inexpensive.

As will be apparent from the drawings, especially Figure 7, by making the insert 10 of a plastics material electrical insulation is provided between the bung hole

outlet and the extractor head fitting without any further means such as plastic linings or the like being required.

It will be appreciated that the broad concept of this invention wherein an insert is provided to threadably engage a bung hole housing and in which a central component frictionally engages the insert whereby rotation of the central component cannot unscrew the insert from the housing could be applied to other technical fields. For example, the arrangement need not necessarily be incorporated into an extractor head fitting intended for a beverage cask but could generally be used where a tamper resistant security device is required to retain a screwed fitting in containers of many forms.

Referring now to Figures 9 to 12 of the accompanying drawings these show a construction of fitting which is similar to that already described and parts of a like function have been identified with the same reference numerals for convenience of understanding. Referring firstly to Figure 9 of the drawings this, in essence, corresponds to Figure 7 already described but in this drawing a portion of the top of a cask 20 is shown which carries the upstanding bung hole outlet collar 21 secured by means of a fillet weld 22. The bung hole outlet 21 includes an internal screw threading 23 which engages the external screw threading 12 on the insert 10.

The upper portion of the bung hole outlet incorporates an annular protuberance 24. In the position shown in the full lines the top assembly is about to be engaged with the bung hole outlet whereas in the position indicated in broken lines the top assembly is fully screwed home. This embodiment also includes a generally cup shaped plastics moulding of thin cross section 25 which locates over the top of the insert 10, this moulding being provided to make evident any attempt at tampering with the fitting, for example by unscrewing same.

As shown more particularly in Figures 11 and 12, the tamper evident portion 25 has a top surface 26 which engages in a rebated portion of the top surface 15 of the insert 10 whereby when fitted an overall flush top surface is provided in the combination of the insert 10 and tamper evident ring 25. The ring 25 includes three equispaced apertures 27 which are provided in the top surface 26 and skirt portion 28. The side of the apertures lying in the skirt 28 have fingers 29 which project inwardly. Each aperture as shown includes four such fingers.

The apertures 27 allow the lugs 13 of the insert to project therethrough and further also permit a tightening tool or fitment to engage with the lugs as previously described. As may be appreciated from Figure 9, it is a feature of this aspect of the invention that the tamper

evident ring 25 is made as thin as possible so that it can be accommodated between the insert and the top plate 1 of the fitting. The operation of the tamper evident ring is as follows:

5 As the top plate assembly 1 with insert and extractor tube assembly is engaged with the screw thread 23 on the bung hole outlet 21, the annular protuberance 24 enters the lower portion of the skirt 28 of the ring 25 and during the engaging action will move upwardly to thereby displace
10 outwardly and ride over the projecting fingers 29. In the fully home position as indicated in broken lines in Figure 9, the fingers 29 will have moved back inwardly to lie beneath the protuberance 24 and by this means any attempt to unscrew the fitting will cause the fingers to be bent
15 downwardly and by virtue of the nature of the plastics material used they will be either permanently deformed or preferably snap off. It will be appreciated that to attempt to displace all the lugs outwardly to enable them to ride over the outer periphery of the protuberance 24.
20 will be a nigh impossible task. By this means therefore, a tamper evident means is provided which through visual inspection will enable any attempt to broach the cask to be easily ascertained. As may be seen, any rotation of the extractor tube assembly relative to the
25 insert 10 will have no affect on the tamper evident feature of the ring 25.

CLAIMS

1. A tamper resisting fitting for a container, in which the container has an outlet detachably engagable by a
5 closure, wherein an insert is interposed between the outlet and closure, the insert having parts to engage the outlet to secure the fitting, the closure being capable of rotating with respect to the insert under application of a force which is less than the force required to disengage
10 the insert from the outlet.

2. A fitting in accordance with Claim 1, wherein the insert has a frangible portion or portions engaging the closure and enabling the fitting to be secured, said
15 portion or portions being broken-off when the fitting is secured in the outlet.

3. A fitting in accordance with Claim 1 or 2, wherein the engagement between the outlet and insert is effected by
20 a screw thread.

4. A fitting in accordance with any preceding Claim, wherein the container outlet has an internal screw thread, the insert having an external screw thread engagable
25 therewith, the insert being located coaxially around and

frictionally engaging an outer surface of the closure, the arrangement being such that the force required to overcome the frictional engagement between closure and insert is less than the force required to undo the screw connection between insert and outlet.

5. A fitting in accordance with any preceding claim, wherein the insert has a drive engaging means whereby rotation in one direction only to secure the fitting is possible, the said means preventing rotation of the insert in the opposite direction.

6. A tamper resisting fitting for a container having a threaded closure engaging a complementary threaded outlet in the container, the threaded portion of the closure comprising an insert coaxially located about the closure, the insert having one or more frangible portions which engage with the closure to enable the insert and closure to rotate together and to be tightened into the outlet, said frangible portion or portions thereafter being broken off, the insert frictionally engaging the closure fitting and arranged so that the closure will rotate relative to the insert at a value of applied force which is less than that required to unscrew the insert from the outlet.

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7. A tamper resisting extractor tube head to cask fitting wherein the extractor tube head has a threaded portion to engage a complementary thread on the bung hole outlet of the cask with the threaded portion comprising an insert coaxially located about the top end of the extractor tube head, the insert including one or more frangible portions which engage with the extractor tube head to enable the head and insert to be rotated together and thus threadably engaged and tightened into the bung hole outlet, the frangible portion or portions thereafter being broken off, the insert frictionally engaging the extractor head and arranged so that the head will not rotate relative to the insert under normal conditions of use but will rotate when applied rotational force exceeds a predetermined value, said value being less than the force required to unscrew the insert from the bung hole housing.

8. A fitting in accordance with any preceding claim wherein the insert is of a plastics material having annular shape to embrace the closure, or extractor head, the annulus being split to enable same to be opened to be engaged around the closure or extractor tube head.

9. A fitting in accordance with any preceding Claims 2 to 8 wherein the frangible portion or portions comprise

laterally extending lugs engagable by a tool to effect tightening of the insert and closure into the outlet.

10. A fitting in accordance with any preceding claim,
5 wherein the insert has formations, such as detents, engagable by a tool means to rotate same for removal from the outlet.

11. A fitting in accordance with any preceding claim,
10 wherein the insert has portions adapted to be clamped by a tool against a part of the closure to effect removal from the outlet.

12. A fitting in accordance with Claim 7, wherein the
15 insert is annular and of a plastics material with a longitudinal slit enabling same to be slid up over the extractor head to lie beneath a top plate thereof, the plastic insert having three lugs which extend laterally through recesses provided in the top plate, the lugs
20 enabling a suitable tool to be engaged with the head and insert so as to rotate same to tighten the screw threads to the appropriate torque whereupon the lugs can either be snapped off manually or else arranged so that they break at the required torque loading.

25 13. A fitting in accordance with Claim 12, wherein the

insert comprises a cylindrical part embracing the extractor tube head and an integral flange part abutting the top plate and coplanar therewith.

5 14. A fitting in accordance with any preceding claims wherein tamper evident means are provided associated with the insert, said means having parts which resiliently deform when the insert and closure are fitted to the outlet, said parts separating through fracture when the
10 closure and insert are removed from the outlet.

15 15. A fitting in accordance with Claim 14, wherein the parts which deform comprise fingers which slide over and engage beneath a protuberance on the container or cask outlet, during fitting of the insert and closure.

16. A tamper resisting fitting for the outlet of a container, substantially as described herein with reference to Figures 1 to 8 or Figures 9 to 12 of the drawings.

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Claim(s) Nr 16	deemed to be abandoned
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FIG. 1.

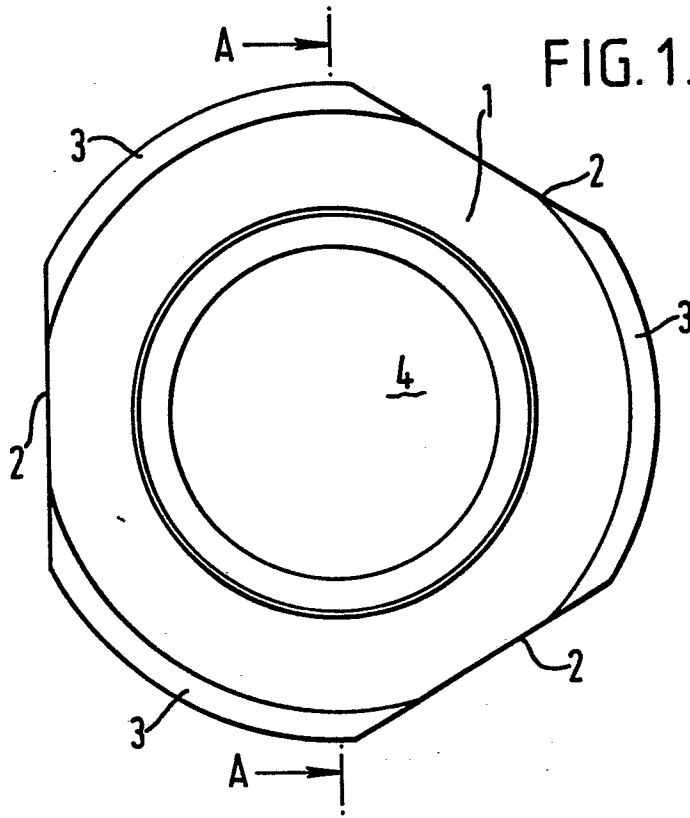


FIG. 2.

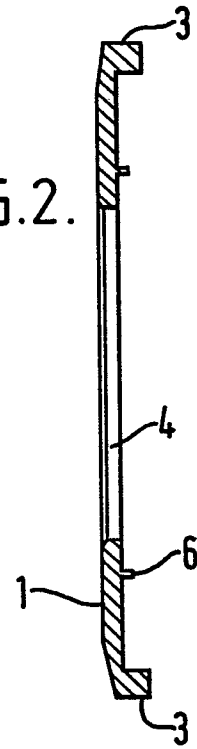


FIG. 3.

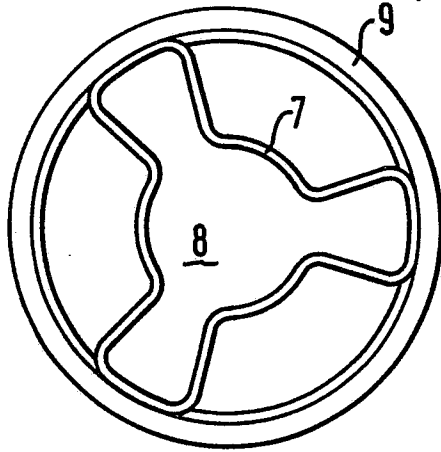
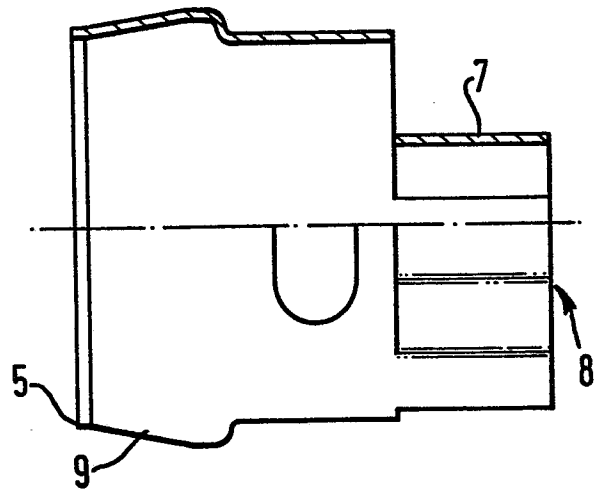
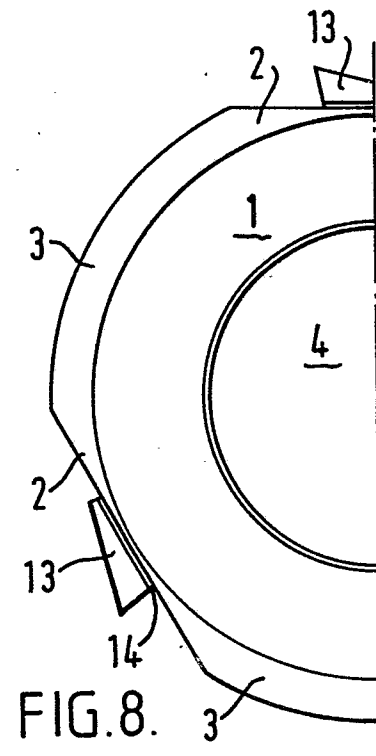
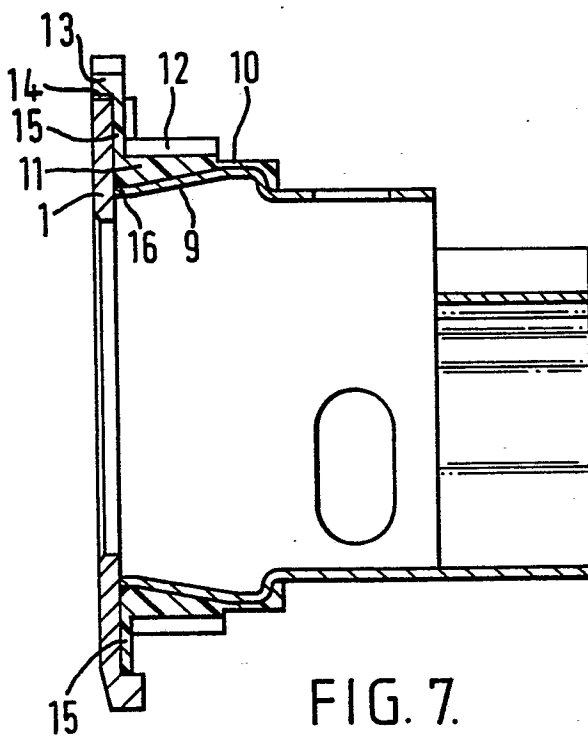
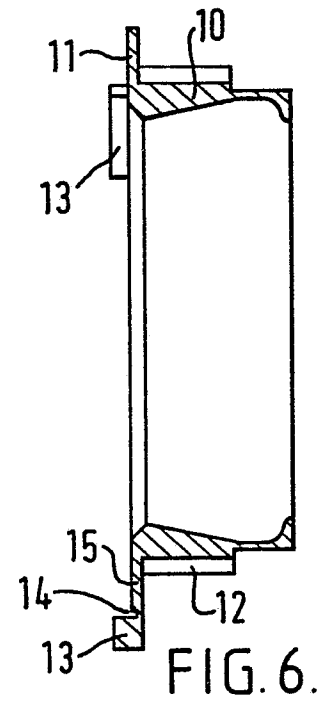
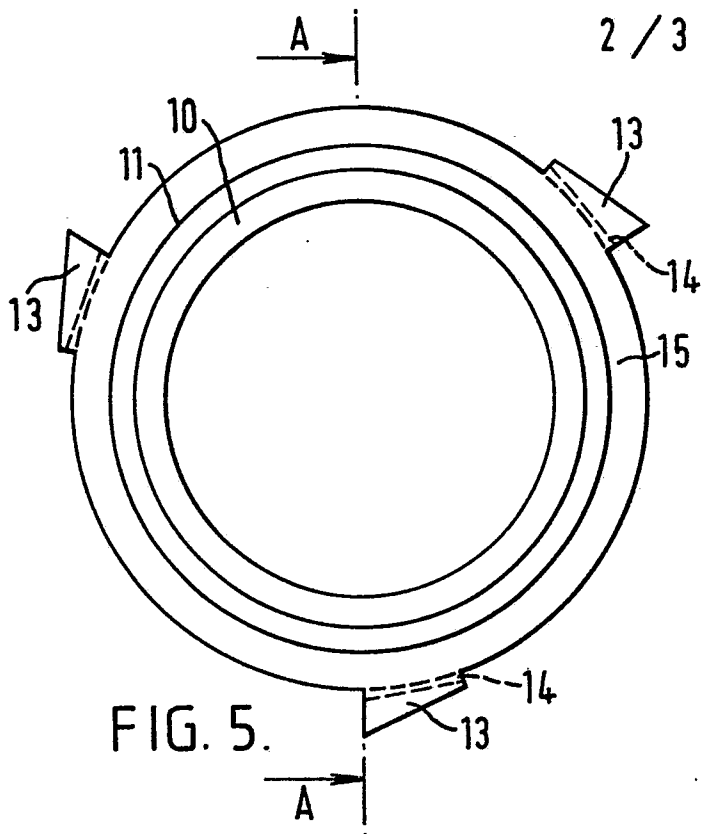


FIG. 4.





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