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(54) **A TAMPER-EVIDENT CLOSURE**

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## Description

**[0001]** The present invention relates generally to a closure for a container and particularly to a closure with means for indicating that the closure has been opened at least once.

**[0002]** There is an increasing demand for tamper-indicating systems which clearly indicate to the consumer if a container has been tampered with and has, for instance, been re-filled with un-authorised contents. Whilst it is relatively easy to produce some form of tamper-evidence, it is much more difficult to provide tamper evidence which cannot be either overcome without causing the tamper-evidence system to activate, or activated and then returned to a visually identical state so as to appear non-activated.

**[0003]** A particularly useful method of providing tamper-evidence is to use a system in which a closure is initially located in a first position, but once removed can only be returned to a second position which is visually distinct from the first position. For example, US 5738231 describes a closure with a part which is moved during the opening process so that following opening it cannot pass back over a projection on the container finish. The result is that the closure can only return to a position in which it is axially displaced with respect to its original position. Document WO 02096771 describes a closure with a first portion with inner and outer parts, and a second portion. Initially a section of the inner part of the first portion protrudes below the level of the outer part and is held firmly by a region of the second portion which is formed so as to have a reduced circumference. When the first portion is removed the section of the inner part is pulled from under the area of reduced circumference on the second portion. After removal the inner part of the first portion and the area of reduced circumference on the second portion retain their original dimensions, so that if the first portion is reapplied the inner part can no longer pass under the area of reduced circumference. Accordingly a gap is produced between the outer part of the first portion and the second portion, because the section of the inner part which was previously trapped under the second portion is now trapped above the area of reduced circumference.

**[0004]** In both of the above prior art documents a gap is formed by trapping an obstructing member. The problem with such systems is that the obstruction member is easily accessible and could be removed, for example by cutting to defeat the tamper-evidence.

**[0005]** Another prior art document is US 3 923 184, this document discloses a tamper-evident closure according to the preamble of claim 1.

**[0006]** The present invention seeks to address the above problem.

**[0007]** In one aspect, the invention provides a tamper-evident closure for a container, the closure comprising: a first portion including inner and outer parts, and a second portion, wherein the outer part is movable relative to

the inner part from a first position in which the outer part is immediately adjacent the second portion to a second position in which there is an unobstructed gap therebetween, and wherein the inner and outer parts are adapted to become irreversibly locked in the second position so that the outer part cannot be moved back to the first position to close the gap, and that the closure includes means for preventing the inner part from moving relative to the second portion until the outer part has reached the second position.

**[0008]** The present invention therefore does not rely on an obstructing member becoming trapped to form a gap therebetween. Consequently, it is not possible to defeat the tamper-evidence by simply removing the obstructing member by cutting.

**[0009]** The prevention means may comprise friction means between the first and second portions.

**[0010]** The friction means may be provided by two sets of ratchet teeth. Such teeth are simple to produce with plastic materials.

**[0011]** The second portion may be connected to a container and the first portion may comprise a cap. Certain industries demand closures with a first portion comprising a cap and a second portion comprising a sleeve which is connected to a container; for example the spirits industry.

**[0012]** The second portion may be permanently fixed in its position on the container. This prevents the second portion from being moved upwardly to close the gap.

**[0013]** The second portion may be adapted to engage a non-return fitment associated with the container. This is because certain industries, in particular the spirits industry, demand additional measures to prevent tampering. Non-return fitments fulfil this demand by preventing re-filling of the containers regardless of other tamper-evidence measures.

**[0014]** The first portion may include a ratchet arrangement for locking the inner and outer parts in the second position. A ratchet arrangement is a simple and efficient method of irreversibly locking the inner and outer parts together.

**[0015]** In another aspect the invention provides in combination a container and a tamper-evident closure, the closure comprising: a first portion including inner and outer parts, and a second portion, wherein the second portion is connected to the container and the first portion is a removable top cap, the first portion outer part is movable relative to the inner part from a first position in which the outer part is immediately adjacent the second portion to a second position in which there is an empty, unobstructed gap therebetween, thereafter the first portion is removable and the inner and outer parts are adapted to become irreversibly locked in the second position so that the outer part cannot be moved back to the first position to close the gap when the first portion is replaced, characterised in that, prevention means are provided to prevent the inner part from moving relative to the second portion until the outer part has reached the second position.

tion.

**[0016]** The combination may further comprise a non-return fitment connectable to the container, the second portion being adapted to engage the fitment.

**[0017]** The present invention will now be more particularly described, by way of example, with reference to the following drawings, in which:

Figure 1 is an exploded side view of a closure arrangement formed in accordance with the present invention;

Figures 2A to 2F are views of a pourer part;

Figures 3A to 3F are views of an inner ratchet part;

Figures 4A to 4F are views of an outer ratchet part;

Figure 5 is a cross-section of an assembled closure shown in a first position;

Figure 6 is a cross-section of the closure of Figure 5 shown in a second position;

Figure 7 is a cross-section through the pourer with the inner and outer ratchet removed;

Figure 8A is a side view of the closure arrangement of Figure 1 shown assembled and in an unopened position;

Figure 8B is a side view of the closure arrangement of Figure 8C following initial opening and removal of a lid part; and

Figure 8C is a side view of the closure of Figure 8B when the lid has been replaced.

**[0018]** Referring first to Figure 1 there is shown a closure generally indicated 10. The closure 10 comprises: an outer ratchet 30; an inner ratchet 40; an optional sealing wad 50; and a pourer 60. The closure 10 is adapted to form part of a closure arrangement when fitted into an aluminium shell 20 and onto the neck 80 of a bottle via a sealing washer 70.

**[0019]** Figures 2A to 2F shows the pourer 60 in more detail. The pourer 60 comprises a base part 61 which is generally cylindrical and of a diameter approximately equal to the outer diameter of an associated container neck to which the closure may be fitted. The base part 61 has an upper surface 62. A small diameter cylinder 63 is mounted on the upper surface 62 and has an external screw thread 65. The combination of the base part 61 and the smaller cylinder 63 has a bore 64 running through it to allow the contents of the container to be poured once the closure has been opened. On the outer wall of the smaller cylinder 63 are located two sets of ratchet teeth 64.

**[0020]** Figures 3A to 3F show the inner ratchet 40 in more detail. The ratchet 40 has a cylindrical body 41. The body 41 is open at one end but closed by an upper plate 42 at the other. On the inner surface of the open end of the body 41 ratchet teeth 43 are formed. Further, a screw thread 44 is formed on the outer surface of the body 41. A step 45 is provided between the outer surface on which the thread 44 sits and the inner surface on which the ratchet teeth 43 sit. The reason for the step 45 will

be explained below. Two sets of ratchet teeth 46 are also formed on the outer surface of the body 41 at the end opposite to the open end. Finally, another screw thread 47 is formed on the inner surface of the body 41 but axially above the ratchet teeth 43.

**[0021]** Figures 4A to 4F show the outer ratchet 30 in more detail. The ratchet 30 has a cylindrical body 31 which has a bore 32 running through it. On the inner surface of the upper end of the body 31 are formed a set of ratchet teeth 32. At the lower end and on the inner surface of the body 31 a thread 34 is formed. Finally, the body 31 has an annulus 35 at the lower end of the body 31 which narrows the bore 32.

**[0022]** Figure 5 shows a cross-section through an assembled closure 10 comprising the pourer 60, the inner ratchet 40 and the outer ratchet 30. The closure 10 is shown in combination with a container neck 80. The pourer 60 is held in place onto the container by the sealing washer 70 which fits inside the neck 80.

**[0023]** The closure 10 is shown in the initial unopened position. This is indicated by the fact that the annulus 35 of the ratchet 30 is flush against the upper surface 62 of the pourer 60.

**[0024]** Figure 5 shows the interrelationship between the various ratchet teeth and the screw thread of the pourer 60 and ratchet parts 30, 40.

**[0025]** Figure 6 shows a further cross-section of the closure 10. However, in this figure the closure has been particularly opened as is indicated by the gap "G" between upper surface 62 and annulus 35.

**[0026]** The partially opened state of Figure 6 is reached by the outer ratchet 30 being turned relative to the pourer 60. This rotation caused the threads 34 of the outer ratchet 30 to ride up the threads 44 of the inner ratchet 40. Ratchet teeth 32 and 46 do not prevent this relative rotation since they are arranged such that when they are rotated in this opening manner the teeth do not interlock but merely ride over each other in the well understood method of ratchet teeth.

**[0027]** By contrast ratchet teeth 64 and 43 do interlock when the closure is being opened. This ensures that the inner ratchet 40 and the pourer 60 do not initially rotate relative to one another.

**[0028]** Also shown in Figure 6 is the feature that annulus 35 is raised up away from upper surface 62 thus creating gap "G", but that the axial travel of annulus 35 is limited by step 45 on the underside of the inner ratchet 40. Once this position has been reached outer ratchet 30 cannot be rotated further relative to inner ratchet 40.

**[0029]** Accordingly, continued rotation of the outer ratchet 30 relative to the pourer 60 will overcome the interlocking ratchet teeth 64, 43 and thus allow the pourer 60 to unscrew itself from the inner ratchet 40. This is achieved through the interaction of threads 65 and 47. Eventually, the combination of inner and outer ratchets 40, 30 will be released from the pourer 60, such that the contents of the container may be dispensed via the bore 64 in pourer 60.

**[0030]** Figure 7 shows the pourer 60 and container neck 80 free of the inner and outer ratchets 40, 30.

**[0031]** When it is desired to close the container, the inner and outer ratchets 40, 30 are placed on the pourer 60 and rotated in the usual closing direction so that the threads 65, 47 may interact. Ratchet teeth 64, 43 are designed such that when rotated relative to one another in this closing direction the teeth do not interlock but merely ride over each other.

**[0032]** The combination inner and outer ratchets 40, 30 may only be rotated to the extent shown in Figure 6. This is because the underside of the ratchet teeth 43 on the inner ratchet 40 will butt up against the upper surface 62 of the pourer 60 thus preventing any further relative axial movement. Further, ratchet teeth 46, 32 interact with each other when the outer ratchet 30 is rotated in the closing direction. This prevents any relative rotation of the inner and outer ratchets 40, 30. This interaction between ratchet teeth 46 and 32 also acts to prevent the outer ratchet 30 being rotated in the closing direction even if the closure 10 has only been opened very slightly.

**[0033]** As soon as the closure 10 has been opened for the first time a gap "G" is created between the underside of annulus 35 and the upper surface 62. This gap can never be closed up again since the arrangement of ratchet teeth prevent this as explained above. This gap is still present even if the inner and outer ratchets 40, 30 are removed from the pourer 60 and then re-applied since ratchet teeth 46, 32 prevent the relative rotation of the inner and outer ratchets 40, 30.

**[0034]** Further, although not shown, the upper end of outer ratchet 30 could be sealed such that no tools may be used to overcome the opposed ratchet teeth 46, 32.

**[0035]** Further still, due to the cylindrical body wall 31 the opposed ratchet teeth 46, 32 cannot be tampered with from the lower side without obviously damaging the outer ratchet 30.

**[0036]** Consequently, the combination of these features prevents "re-setting" of the closure so as to eliminate the gap "G" and accordingly, the closure is vastly superior to the known prior art in this respect.

**[0037]** The closure 10 is shown in Figures 8A to 8C in combination with an ROPP (roll on pilfer proof) metal shell 20 which acts as type of sheath.

**[0038]** The shell 20 is split into three main parts: upper 21; middle 22; and lower 23. These three parts are separated by two lines of frangible bridges 24, 25. The upper part 21 is fixed to the outer ratchet 30 by well known means, so that to open the closure the upper part 21 is grasped and turned. As the outer ratchet 30 rotates and moves axially away from pourer 60 the first line 24 of frangible bridges breaks. This breakage acts as tamper evidence. The gap "G" created as the closure is opened, and as discussed above, will be seen as a gap between the upper part 21 and the middle part 22, as shown in Figure 8C. The upper part 21 also acts as further tamper evidence means since it encloses the outer 30 and hence the inner 40 ratchets and is adhered to the outer ratchet

30 by such means as crimping or glueing. Accordingly, the opposed ratchet teeth 46, 32 are even more difficult to access so that re-setting of the closure is virtually impossible without visibly damaging the upper shell 21.

**[0039]** The middle and lower parts 22, 23 are used to ensure that the pourer 60 cannot be removed from the container neck 80. This is achieved because the lower part 23 is crimped onto the neck 80 as may be seen by reference 26. The outer ratchet 30 is held in the upper part 21 by crimping as may be seen by reference 28. Further the middle part 22 is crimped onto the base part 61 of the pourer 60 as may be seen by reference 27. Thus, if the pourer part is removed from the container neck 80, the lower line 25 of frangible bridges is broken which thus acts as tamper evidence.

**[0040]** Figure 8B shows a side view of one embodiment of the closure including an ROPP wherein the upper part together with the inner 40 and outer 30 ratchets have been removed revealing the pourer 60. The pourer 60 is affixed to a container 80 by means of the lower 23 and middle 22 parts of the ROPP being crimped over them.

**[0041]** Although crimping is discussed as the means of fixing the shell parts 21, 22, 23 to the closure 10, other methods such as glueing or welding could, of course, be used.

**[0042]** Another feature of the inner ratchet 40 may be seen in Figures 3A to 3F. This is the feature that the two sets of ratchet teeth are formed on a band 48 which is attached to the rest of the inner ratchet by means of narrow straps 49. The two sets of teeth fit closely to the corresponding teeth 32 on the inner surface of the outer ratchet 30. However, the band 48 has a circumference which is slightly smaller than the circumference of the bore of the outer ratchet 30. This allows a degree of flexibility in the band 48 as will be explained below. The straps 49 are spaced about the circumference of the inner ratchet 40 and form "windows" 49A between them. This arrangement further provides for a degree of flexibility in the band 48 and allows it to deform out of a circular shape when the closure is initially being opened. This allows the ratchet teeth 46, 32 to slip over one another as described above. This flexibility is necessary because the two sets of ratchet teeth 46 and 32 are arranged so that they fit very closely together. This closeness ensures that the outer ratchet 30 cannot be turned relative to the inner ratchet 40 in the closing direction since this relative rotation would eliminate the gap "G" and hence eliminate the evidence of the closure having been opened.

**[0043]** Although shown in this manner it should be understood that other arrangements are possible to allow the ratchet teeth to slip over one another. Also, there could be a different number, from the two sets described, of ratchet teeth 46.

**[0044]** In another embodiment, the outer surface of the lower end of the inner ratchet 40 (i.e. that part which has ratchet teeth 46 on its inner surface) could be brightly coloured. This would accentuate the presence of the gap "G" since it is this surface which is visible once the closure

has been initially opened.

**[0045]** Although a closure according to the invention has been described above in combination with a metal ROPP it would also be possible to combine the closure with other types of material. Also, the closure could be affixed to an associated container by other means such as adhesive or welds. Further, since the basic combination of inner and outer ratchets and pourer is air tight in its own right this combination could be used without any other form of outer sheath.

**[0046]** Finally, although ratchet teeth 64, 46 are described as the friction means necessary to allow the closure to operate correctly, other means could be employed. For instance, roughened surfaces could be chosen to provide enough friction to "lock" the pourer 60 and inner ratchet 40 together, on initial opening, whilst the outer ratchet 30 is rotated relative to the inner ratchet 40 but not to provide enough friction to prevent the inner ratchet 40 and pourer 60 being rotated relative to one another after the gap "G" has been created and with continued rotation of the outer ratchet 30.

**[0047]** Other means that might be employed are the use of such materials as VELCRO (RTM) or adhesive.

## Claims

1. A tamper-evident closure (10) for a container (80), the closure comprising:

a first portion including inner (40) and outer (30) parts, and  
 a second portion (60),  
 wherein the outer part (30) is movable relative to the inner part (40) from a first position in which the outer part (30) is immediately adjacent the second portion (60), **characterised in that** said outer part (30) is movable to a second position in which there is an unobstructed gap (G) therebetween, and wherein the inner (40) and outer (30) parts are adapted to become irreversibly locked in the second position so that the outer part (30) cannot be moved back to the first position to close the gap (G),  
 the closure includes means for preventing the inner part (40) from moving relative to the second portion (60) until the outer part (30) has reached the second position.

2. A closure according to Claim 1, wherein the prevention means comprises friction means between the first and second portions.
3. A closure (10) according to Claim 2, wherein the friction means are provided by two sets of ratchet teeth (64, 32).
4. A closure (10) according to any of Claims 1 to 3,

wherein the second portion (60) is adapted to be connected to a container (80) and the first portion comprises a cap.

5. A closure (10) according to any preceding Claim, wherein, in use, the second portion (60) is permanently fixed in its position on the container.
6. A closure (10) according to any preceding Claim, wherein the second portion (60) is adapted to engage a non-return fitment associated with a container.
7. A closure (10) according to any preceding Claim, wherein the first portion includes a ratchet arrangement (46, 32) for locking the inner (40) and outer parts (30) in the second position.
8. In combination, a closure (10) according to any preceding Claim and a shell (20) in to which the closure is fitted.
9. In combination a container (80) and a tamper-evident closure (10), the closure (10) comprising:

a first portion including inner (40) and outer (30) parts, and  
 a second portion (60),  
 wherein the second portion (60) is connected to the container (80) and the first portion is a removable top cap, the first portion outer part (30) is movable relative to the inner part (40) from a first position in which the outer part (30) is immediately adjacent the second portion (60) to a second position in which there is an empty, unobstructed gap (G) therebetween, thereafter the first portion is removable and the inner (40) and outer (30) parts are adapted to become irreversibly locked in the second position so that the outer part (30) cannot be moved back to the first position to close the gap (G) when the first portion is replaced,  
**characterised in that,**  
 prevention means are provided to prevent the inner part (40) from moving relative to the second portion (60) until the outer part (30) has reached the second position.

10. A combination according to Claim 9, wherein the combination further comprises a non-return fitment connectable to the container, the second portion (60) being adapted to engage the fitment.

## Patentansprüche

1. Verschluss mit Originalitätssicherung (10) für einen Behälter (80), wobei der Verschluss Folgendes auf-

weist:

- einen ersten Abschnitt mit einem inneren (40) und einem äußeren (30) Teil, sowie einen zweiten Abschnitt (60), wobei der äußere Teil (30) relativ zu dem inneren Teil (40) aus einer ersten Stellung, in der der äußere Teil (30) unmittelbar an den zweiten Abschnitt (60) angrenzt, bewegbar ist, **dadurch gekennzeichnet, dass** der äußere Teil (30) in eine zweite Stellung bewegbar ist, in der sich dazwischen ein unversperrter Spalt (G) befindet, und wobei der innere (40) und der äußere (30) Teil in der zweiten Stellung irreversibel arretiert werden können, so dass der äußere Teil (30) nicht in die erste Stellung zurück bewegt werden kann, um den Spalt (G) zu schließen, der Verschluss Einrichtungen aufweist, die verhindern, dass sich der innere Teil (40) relativ zu dem zweiten Abschnitt (60) bewegt, bis der äußere Teil (30) die zweite Stellung erreicht hat.
2. Verschluss gemäß Anspruch 1, wobei die Verhinderungseinrichtung Reibungsmittel zwischen dem ersten und zweiten Abschnitt aufweist.
3. Verschluss (10) gemäß Anspruch 2, wobei die Reibungsmittel aus zwei Sätzen von Sperrzähnen (64, 32) gebildet sind.
4. Verschluss (10) gemäß einem der Ansprüche 1 bis 3, wobei der zweite Abschnitt (60) mit einem Behälter (80) verbunden werden kann und der erste Abschnitt eine Kappe aufweist.
5. Verschluss (10) gemäß einem der vorhergehenden Ansprüche, wobei der zweite Abschnitt (60) im Gebrauch in seiner Stellung auf dem Behälter fest fixiert ist.
6. Verschluss (10) gemäß einem der vorhergehenden Ansprüche, wobei der zweite Abschnitt (60) in ein mit einem Behälter verbundenes Absperranbauteil einrasten kann.
7. Verschluss (10) gemäß einem der vorhergehenden Ansprüche, wobei der erste Abschnitt eine Sperrzahnordnung (46, 32) zur Arretierung des inneren (40) und äußeren Teils (30) in der zweiten Stellung aufweist.
8. Ein Verschluss (10) gemäß einem der vorhergehenden Ansprüche in Kombination mit einer Hülse (20), in der der Verschluss befestigt ist.
9. Ein Behälter (80) in Kombination mit einem Verschluss mit Originalitätssicherung (10), wobei der Verschluss (10) Folgendes aufweist:

einen ersten Abschnitt mit einem inneren (40) und einem äußeren (30) Teil, sowie einen zweiten Abschnitt (60), wobei der zweite Abschnitt (60) mit dem Behälter (80) verbunden ist und der erste Abschnitt aus einer abnehmbaren, oberen Kappe besteht, der äußere Teil (30) des ersten Abschnittes relativ zu dem inneren Teil (40) aus einer ersten Stellung, in der der äußere Teil (30) unmittelbar an den zweiten Abschnitt (60) angrenzt, in eine zweite Stellung bewegbar ist, in der sich dazwischen ein leerer, unversperrter Spalt (G) befindet, daraufhin der erste Abschnitt abnehmbar ist und die innere (40) und äußere (30) Teil irreversibel in der zweiten Stellung arretiert werden können, so dass der äußere Teil (30) nicht in die erste Stellung zurück bewegt werden kann, um den Spalt (G) zu schließen, wenn der erste Abschnitt wieder eingesetzt wird, **dadurch gekennzeichnet, dass** Verhinderungseinrichtungen vorgesehen sind, welche verhindern, dass sich der innere Teil (40) relativ zu dem zweiten Abschnitt (60) bewegt, bis der äußere Teil (30) die zweite Stellung erreicht hat.

10. Kombination gemäß Anspruch 9, wobei die Kombination weiterhin ein mit dem Behälter verbindbares Absperranbauteil aufweist, wobei der zweite Abschnitt (60) in das Anbauteil einrasten kann.

## Revendications

1. Fermeture inviolable (10) destinée à un récipient (80), la fermeture comprenant :
- une première partie incluant des parties intérieure (40) et extérieure (30), et une deuxième partie (60), dans laquelle la partie extérieure (30) peut être déplacée par rapport à la partie intérieure (40) depuis une première position dans laquelle la partie extérieure (30) est immédiatement adjacente à la deuxième partie (60), **caractérisée en ce que** ladite partie extérieure (30) peut être déplacée vers une deuxième position dans laquelle il existe un espace non obstrué (G) entre celles-ci, et dans laquelle les parties intérieure (40) et extérieure (30) sont conçues pour être verrouillées de manière irréversible dans la deuxième position de sorte que la partie extérieure (30) ne puisse pas être redéplacée vers la première position pour fermer l'espace (G), la fermeture comprenant un moyen destiné à interdire à la partie intérieure (40) de se déplacer par rapport à la deuxième partie (60) jusqu'à ce que la partie extérieure (30) ait atteint la deuxième

me position.

2. Fermeture selon la revendication 1, dans laquelle le moyen d'interdiction comprend un moyen de frottement entre les première et deuxième parties. 5
3. Fermeture (10) selon la revendication 2, dans laquelle le moyen de frottement est fourni par deux ensembles de dents d'encliquetage (64, 32). 10
4. Fermeture (10) selon l'une quelconque des revendications 1 à 3, dans laquelle la deuxième partie (60) est conçue pour être reliée à un récipient (80) et la première partie comprend un bouchon. 15
5. Fermeture (10) selon l'une quelconque des revendications précédentes, dans laquelle, lorsqu'elle est utilisée, la deuxième partie (60) est fixée de manière permanente dans sa position sur le récipient. 20
6. Fermeture (10) selon l'une quelconque des revendications précédentes, dans laquelle la deuxième partie (60) est conçue pour s'engager avec un élément de montage d'anti-retour associé à un récipient. 25
7. Fermeture (10) selon l'une quelconque des revendications précédentes, dans laquelle la première partie comprend un système d'encliquetage (46, 32) destiné à verrouiller les parties intérieure (40) et extérieure (30) dans la deuxième position. 30
8. Combinaison d'une fermeture (10) selon l'une quelconque des revendications précédentes et d'une coque (20) dans laquelle la fermeture est montée. 35
9. Combinaison d'un récipient (80) et d'une fermeture inviolable (10), la fermeture comprenant :

une première partie incluant des parties intérieure (40) et extérieure (30), et 40  
 une deuxième partie (60),  
 dans laquelle la deuxième partie (60) est reliée au récipient (80) et la première partie est un bouchon supérieur amovible, la partie extérieure (30) de la première partie peut être déplacée par rapport à la partie intérieure (40) depuis une première position dans laquelle la partie extérieure (30) est immédiatement adjacente à la deuxième partie (60) vers une deuxième position dans laquelle il existe un espace vide, non obstrué (G) entre celles-ci, par la suite la première partie est amovible et les parties intérieure (40) et extérieure (30) sont conçues pour être verrouillées de manière irréversible dans la deuxième position de sorte que la partie extérieure (30) ne puisse pas être redéplacée vers la première position pour fermer l'espace (G) lorsque la première 50  
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partie est remise en place,

**caractérisée en ce que,**

un moyen d'interdiction est fourni pour interdire à la partie intérieure (40) de se déplacer par rapport à la deuxième partie (60) jusqu'à ce que la partie extérieure (30) ait atteint la deuxième position.

10. Combinaison selon la revendication 9, dans laquelle la combinaison comprend en outre un élément de montage d'anti-retour pouvant être relié au récipient, la deuxième partie (60) étant conçue pour s'engager dans l'élément de montage.

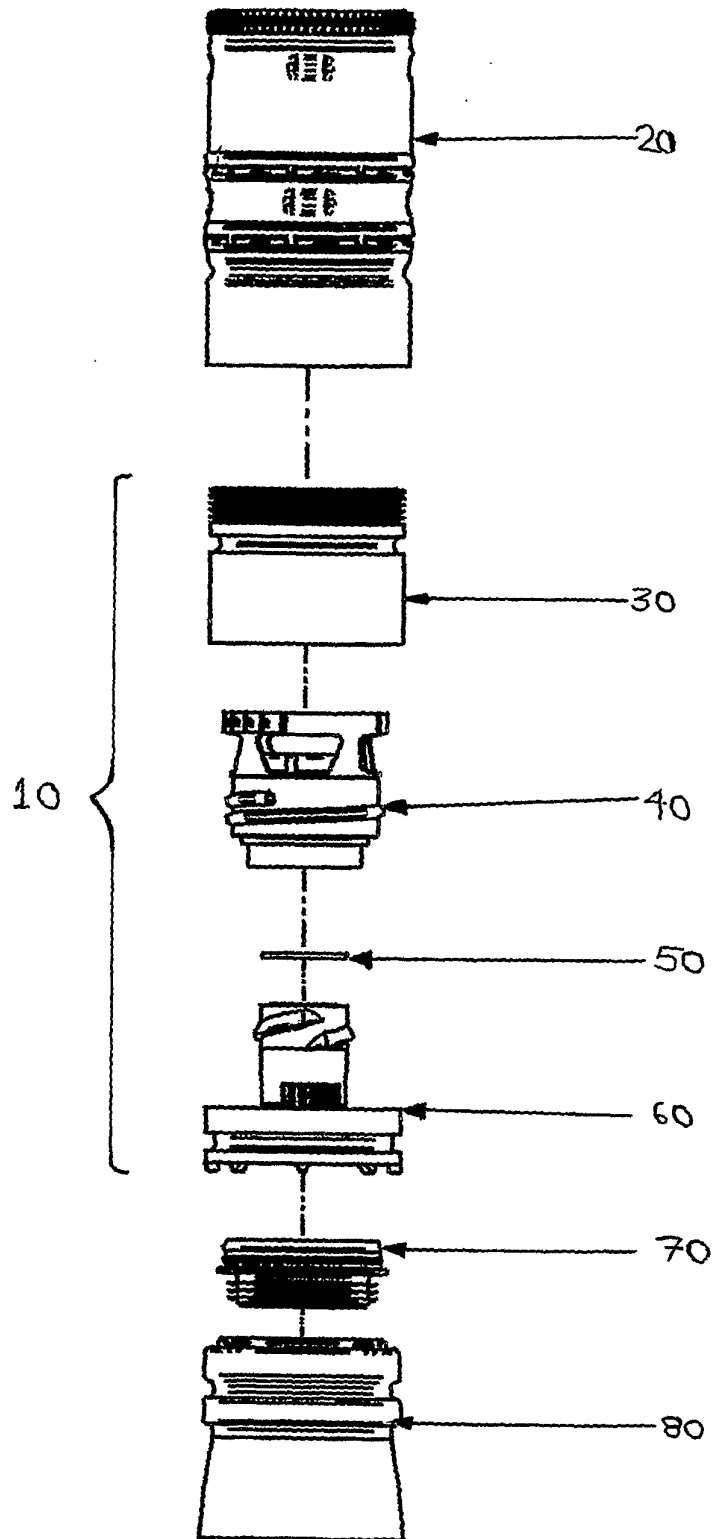
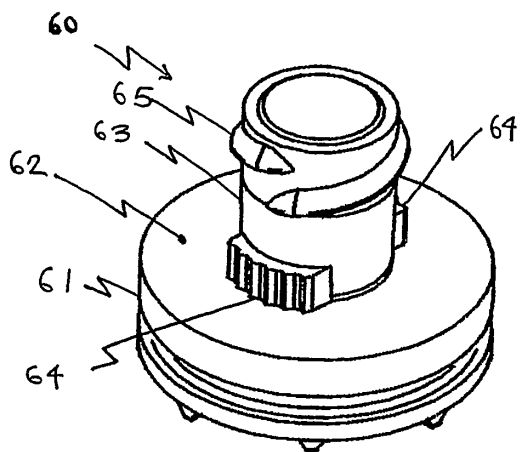
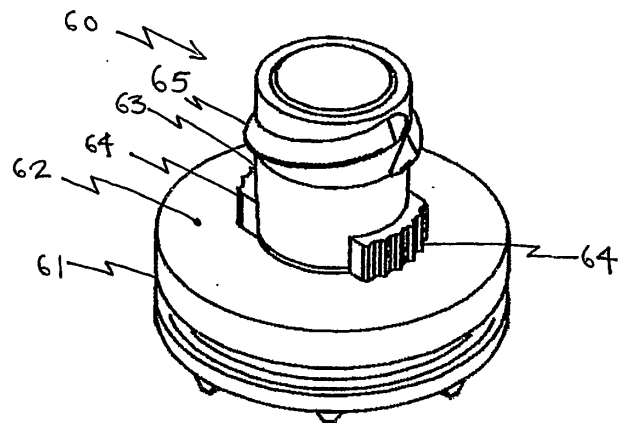


FIGURE 1

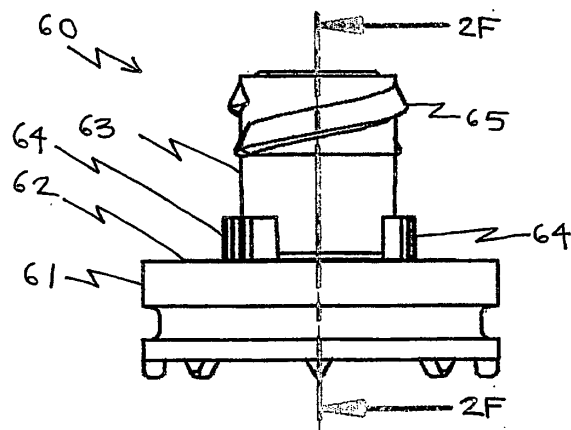




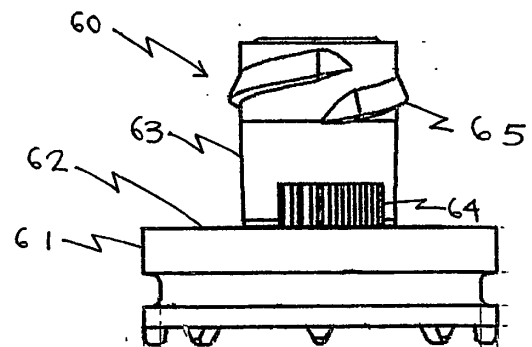
**FIGURE 2A**



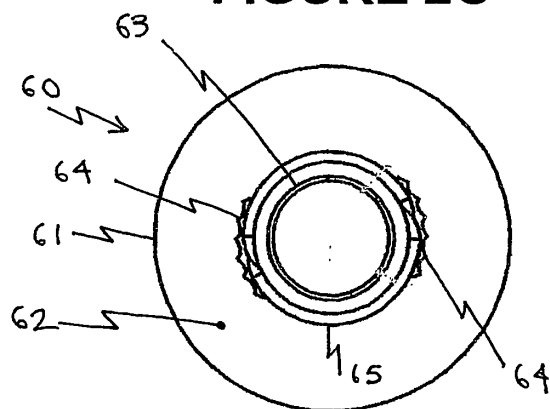
**FIGURE 2B**



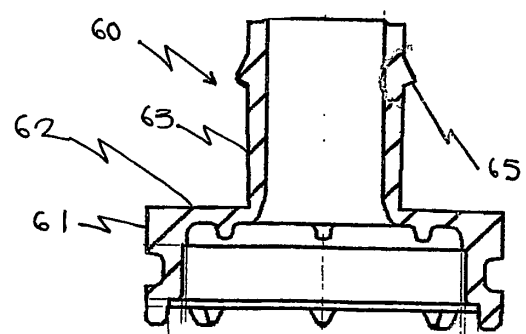
**FIGURE 2C**



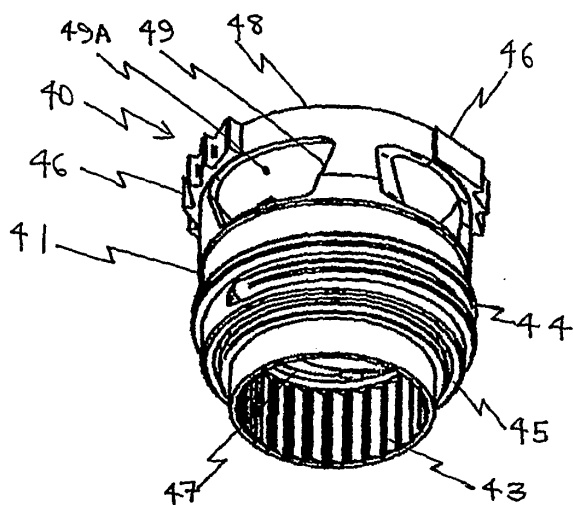
**FIGURE 2D**



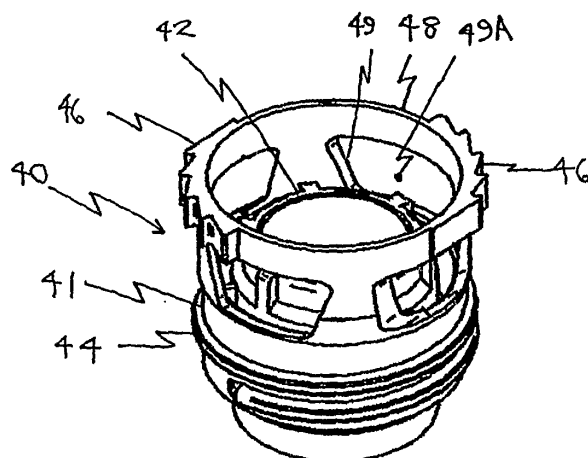
**FIGURE 2E**



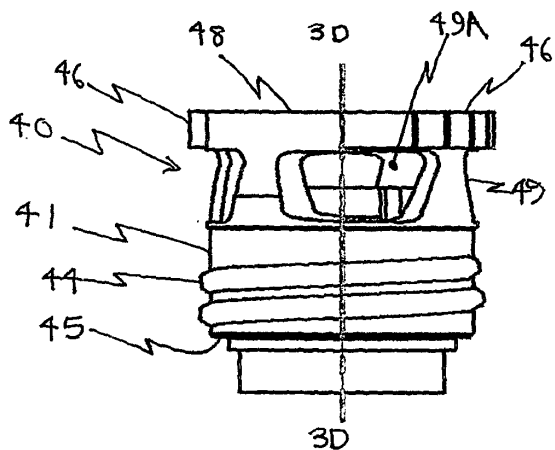
**FIGURE 2F**



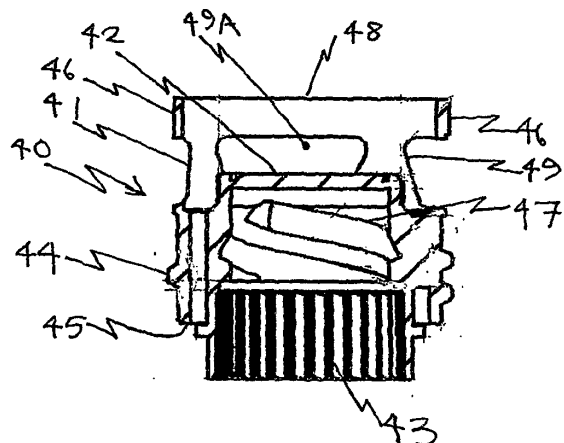
**FIGURE 3A**



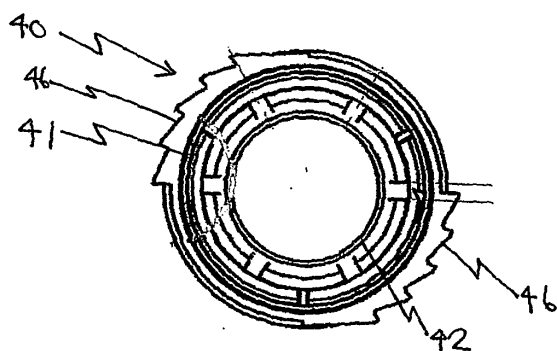
**FIGURE 3B**



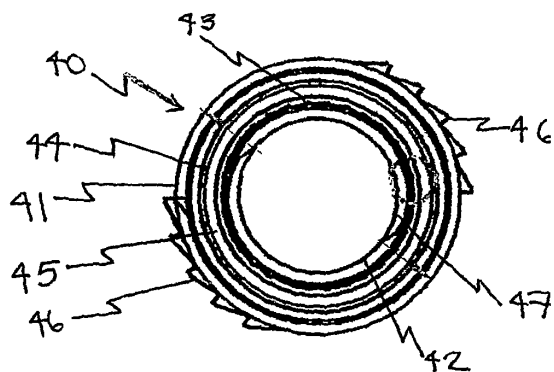
**FIGURE 3C**



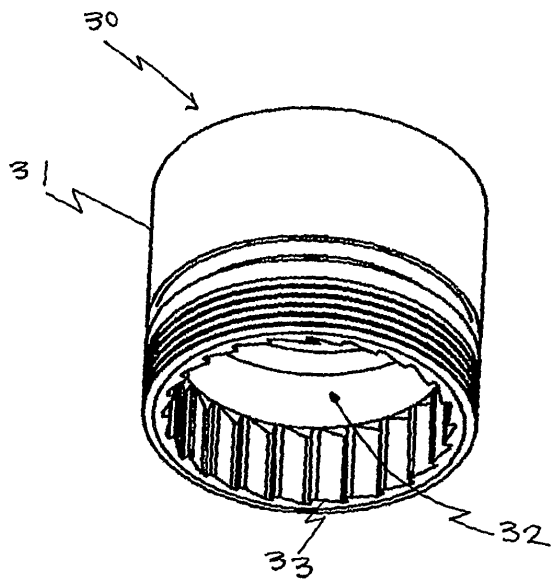
**FIGURE 3D**



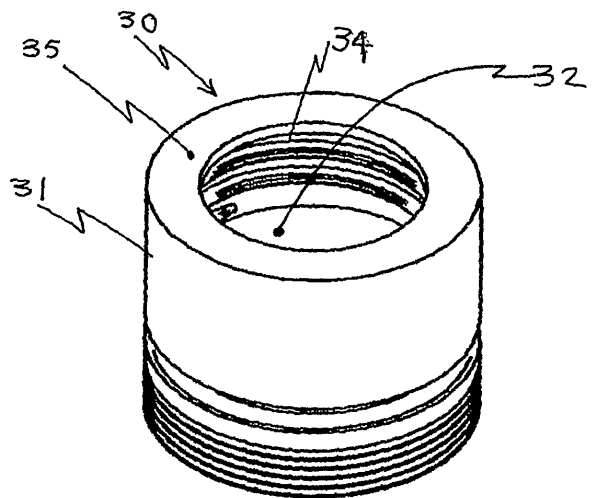
**FIGURE 3E**



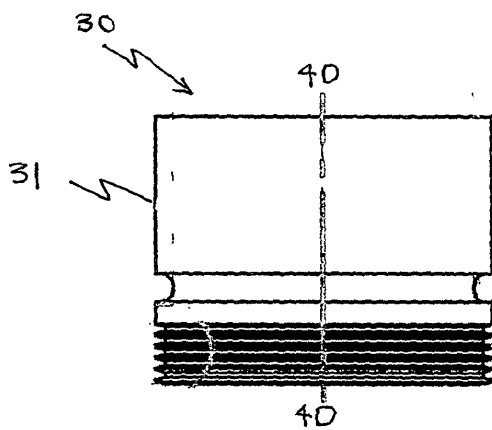
**FIGURE 3F**



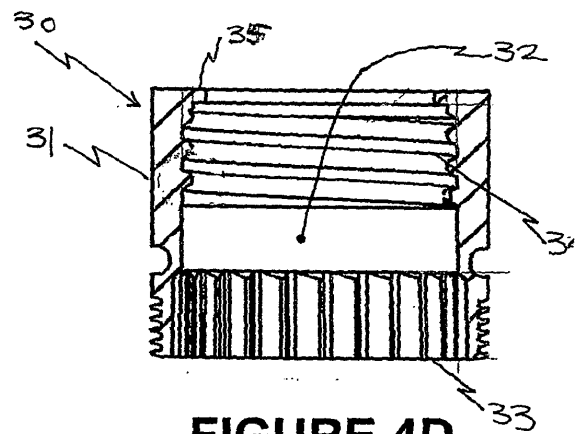
**FIGURE 4A**



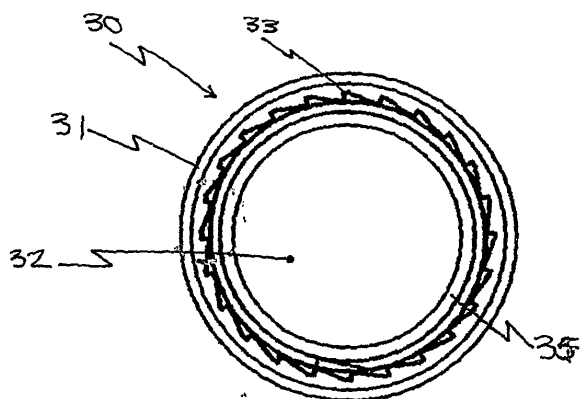
**FIGURE 4B**



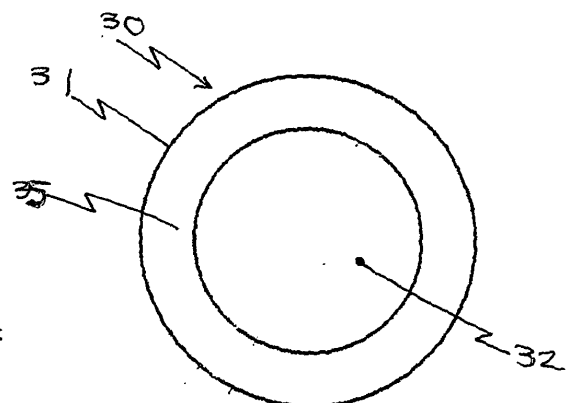
**FIGURE 4C**



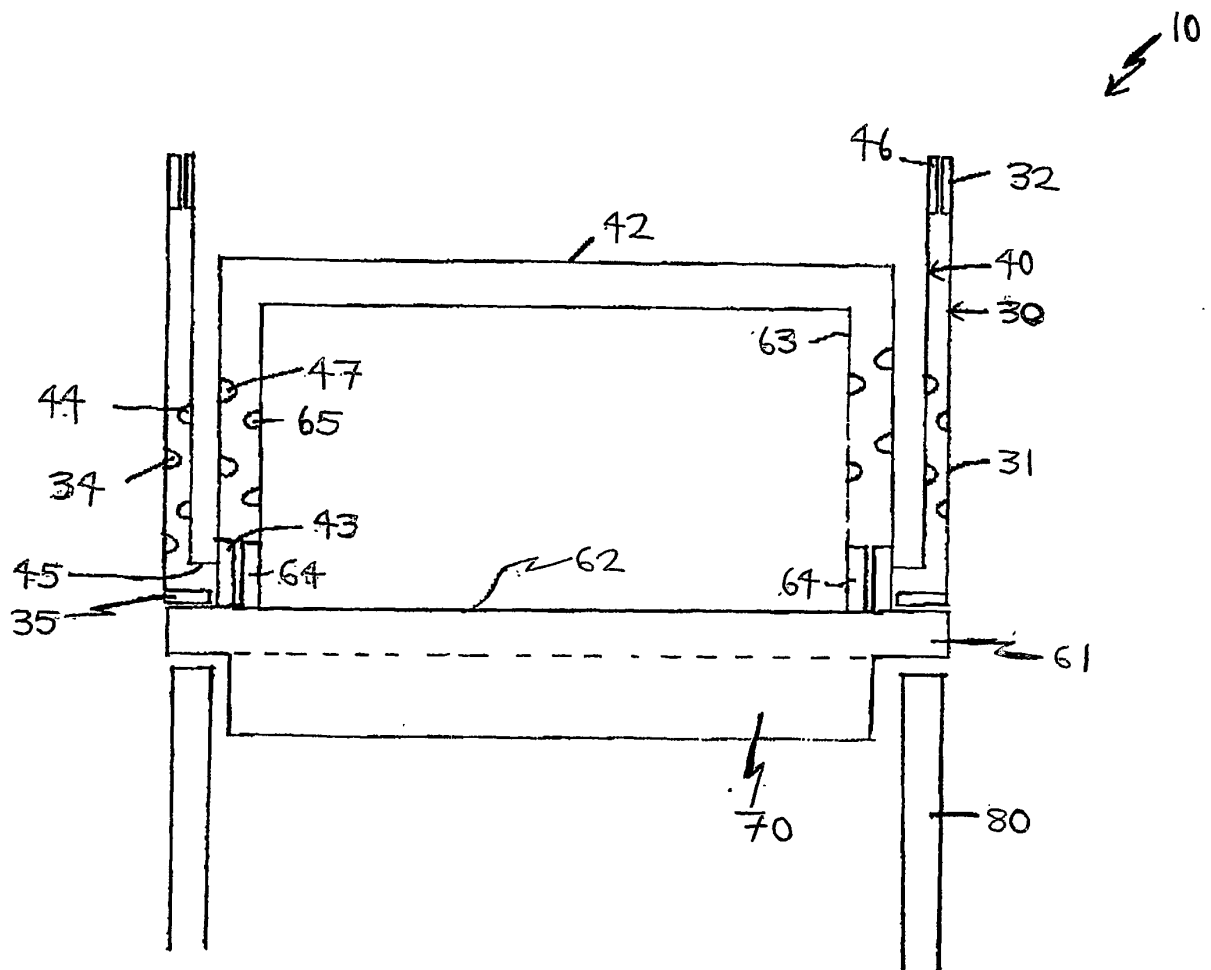
**FIGURE 4D**



**FIGURE 4E**



**FIGURE 4F**



### FIGURE 5

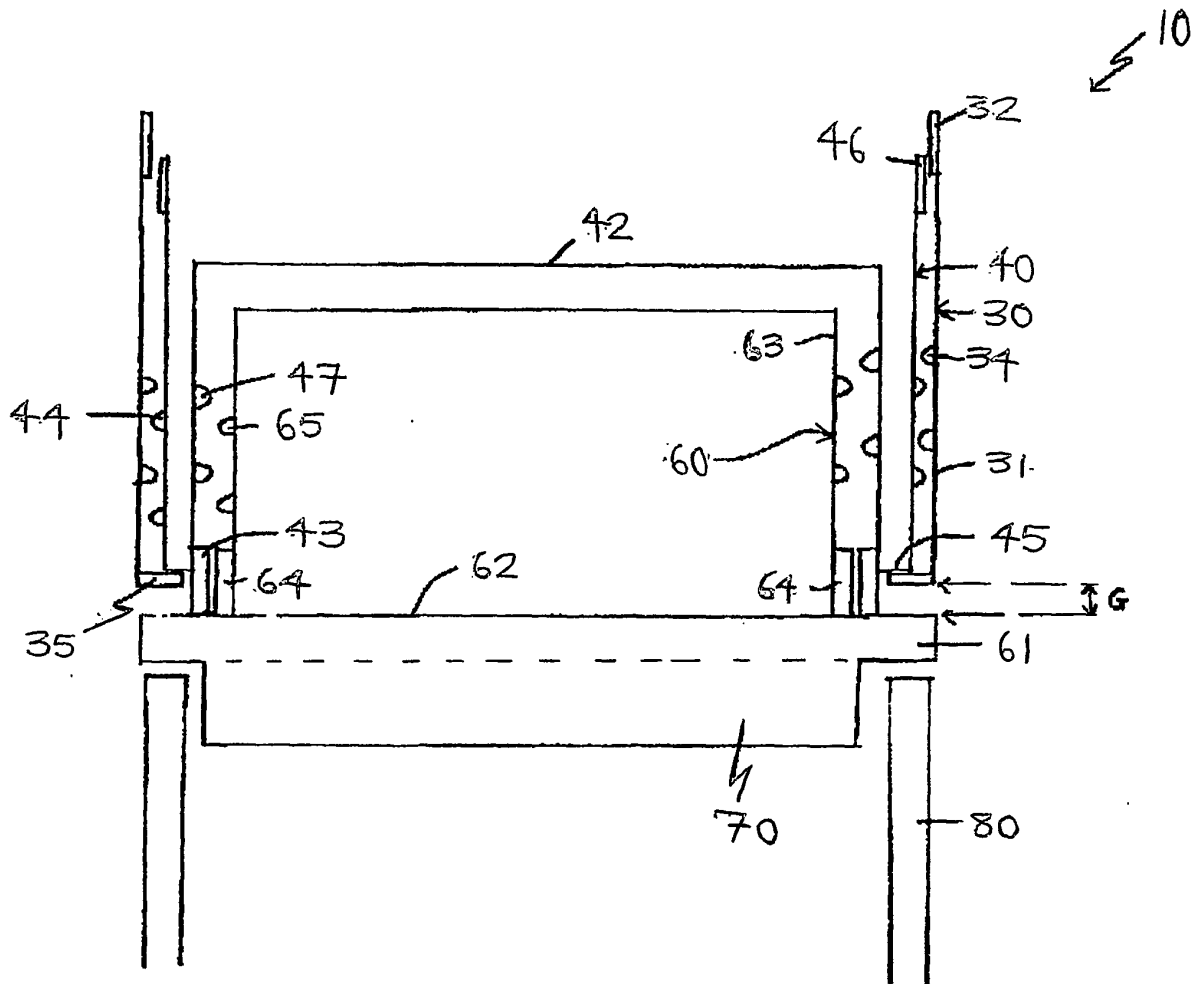


FIGURE 6

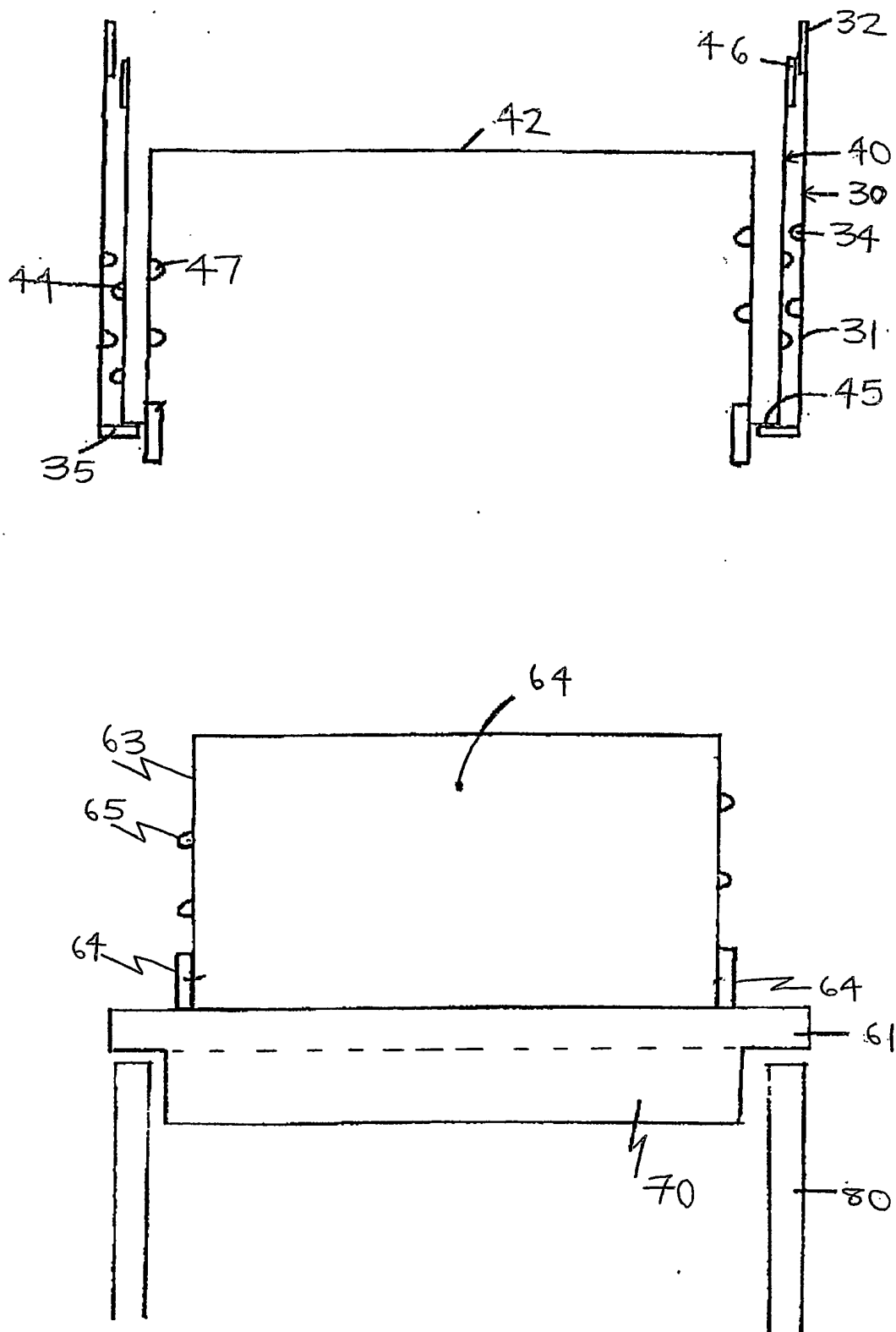
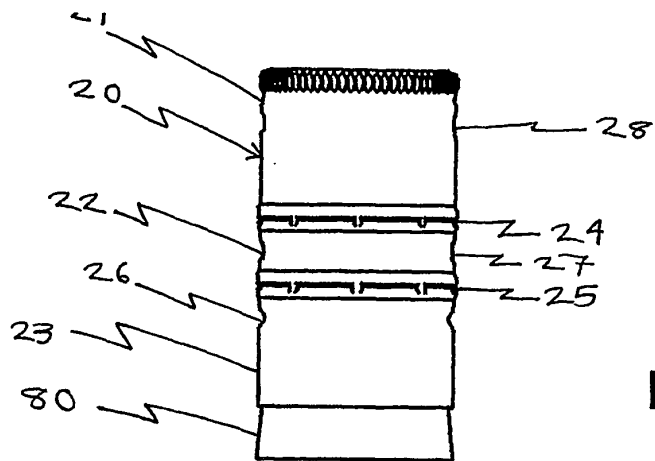
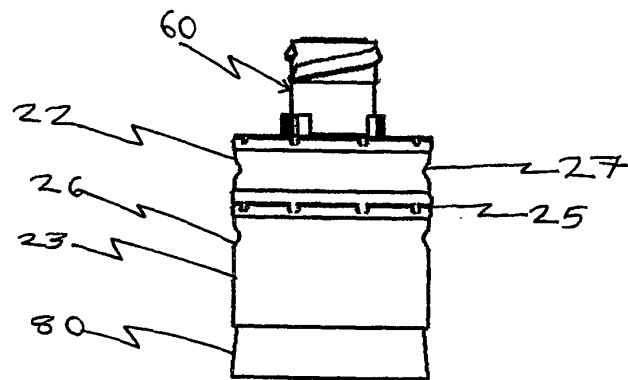


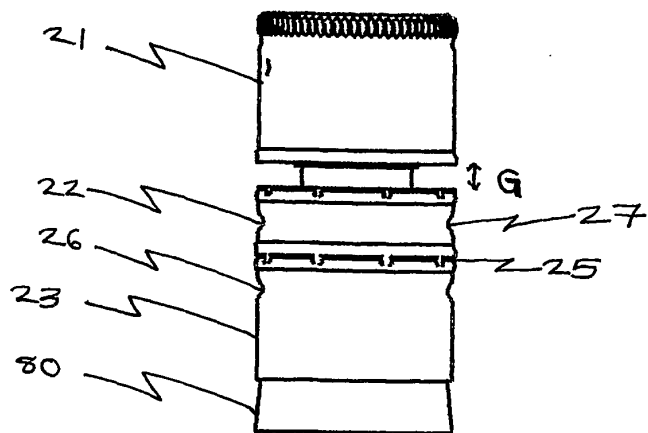
FIGURE 7



**FIGURE 8A**



**FIGURE 8B**



**FIGURE 8C**

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

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