

EUROPEAN PATENT APPLICATION

Application number: 78300515.0

Int. Cl.³: **B 65 D 77/18**

Date of filing: 18.10.78

Date of publication of application:
30.04.80 Bulletin 80 9

Designated Contracting States:
BE CH DE FR LU NL SE

Applicant: **Coleing, William Reginald**
212 Ladyshot
Harlow Essex(GB)

Inventor: **Coleing, William Reginald**
212 Ladyshot
Harlow Essex(GB)

Representative: **Nash, Keith W.**
2 Wingate Way
Cambridge, CB2 2HD(GB)

Security seal.

Security seals are described each comprising a first tubular member (10) and a second barbed closure member (40) which is held captive in the first member and protrudes from one end thereof in such a way as to allow the leading end of the protruding section of the closure member to be pushed into a closure aperture at the other end of the tubular member, so that a barbed section of the closure member is held captive in the closure aperture in the first member, to form a complete ring for securing the bag or the closure member of members of a container. The barbed sections (44) of the closure member are apertured to assist in the collapse of the closure member as it is pushed through the closure aperture.

The cross-section of the closure member is necked behind the barbed section(s) to assist in its severance to break the seal. Two or more barbed sections are provided in one seal to allow the seal to be remade after the first barbed section has been used and severed. A discharge aperture is provided by which severed barbed sections can be removed from the first member. Alternatively the severed sections are retained in the first member as a record of the number of times the seal has been used. Additionally or alternatively the different sections of the barbed closure member are uniquely marked as by numbering.

EP 0 010 115 A1

- 1 -

Title: Security seal

DESCRIPTION

Field of the invention

This invention concerns security seals for bags and containers. Such seals are used for money bags and for containers used in the distribution and bulk handling trades (e.g. wholesale and retail food distribution).

This type of seal does not rely on strength for security but solely on the fact that one of the parts has to be severed in order to gain access to the interior of the bag or container and consequently at the end of a journey it can be readily determined whether or not the latter has been tampered with.

Background to the invention

One type of container with which such a seal can be used comprises a bag having a single open end and having two parallel lines of holes which extend substantially parallel to the open end of the bag a short distance therefrom. The bag can be sealed by folding the bag over between the two lines of holes so that the holes in the two lines are aligned, folding the bag in a concertina manner in a direction perpendicular to the first fold so that the pairs of holes are all aligned in the direction parallel to the direction of the original fold and pushing a sealing member through the aligned holes. Such a bag will herein be referred to as an eyelet bag.

Hitherto the sealing member has typically comprised a rod or wire or chain. The present invention provides a replacement for such devices which can be sealed without the need for special tools or keys etc. and which will reveal at the end of transit whether or not the seal has in any way been tampered with or broken during transit or storage.

Security seals are also used by companies and authorities who require a security system to be seen to be operated with regard to their goods



when in transit or in storage. To this end it is known to use lengths of metal or wire or plastics material and to thread such devices through a pair of lugs associated with the fastening of a door or doors to a container and to seal the two ends of the device so that one end cannot
5 be pulled away from the other end without leaving some form of damage which can be readily seen upon inspection thereby indicating that the seal has been tampered with. One of the lugs would typically be formed on the door frame and the other on the door or alternatively one lug may be on one door and the other on another door of a double-door unit.

10 Such security seals are only generally capable of being used once and whilst this is of no great disadvantage where packages are being shipped for example by the Post Office from one point to another this does represent a disadvantage where the same type of security seal is being used to indicate that a load in a container lorry has not been
15 tampered with between ports of call. Here it is necessary to provide a supply of fresh security seals at each port of call so that when the first security seal is broken at the first port of call, and either goods taken from the container or added to the container, the latter can be resealed with a fresh security seal by an authorised person to
20 allow the container to proceed to the next port of call. In the event that the stock of fresh security seals is lost or run down at any one port of call or for some reason is unavailable, the container will be delayed until a fresh security seal can be obtained from elsewhere.

Objects of the invention

25 It is one object of the present invention to provide an improved security seal which cannot be opened once sealed without damaging one or other of the component parts to an extent that it will be readily noticed.

30 It is another object of the present invention to provide an improved security seal for indicating whether containers or packages have been interfered with or broken open during transit or storage and which can be used more than once.

35 It is a further object of the present invention to provide a security seal which is not only capable of being used more than once, but which will permanently indicate how many times it has been broken and re-made.

The invention

According to one aspect of the present invention a security seal

comprises a first member (typically tubular) one end of which forms a barbed entry for a closure member which is held captive in and protrudes from the first member and at least the end of the closure member which is to be inserted into the barbed entrance is itself barbed so that once
5 it has been introduced into the barbed entrance it cannot be withdrawn therefrom.

Preferably the end of the closure member which is held captive in the first member includes an enlarged cross-section region which will not pass through the exit end of the first member.

10 The closure member may be formed from flexible material to facilitate its introduction into the interior of the first member.

Where the first member is in the form of a discontinuous or open ring the closure member is preferably also curved so as to form an open ring, the radius of curvature of which is similar to that of the first
15 member.

Preferably the tubular member and the closure member are both formed from plastics material.

Where the cross-section of the closure member is non-symmetrical and is for example rectangular (in which the width is considerably
20 greater than the thickness), then the barb is conveniently in the form of a flattened arrowhead having two triangular barbs which extend in the plane of the thickness of the cross-section of the closure member.

The seal formed when the barbed end of the closure member is pushed into the appropriate entrance in the one end of the tubular member can
25 only be broken by severing either the tube or the closure member so as to break the continuous loop so formed. Typically the closure member is severed and to facilitate this severance the latter is purposely weakened at at least one point along its length so as to allow it to be cut or severed more easily at that point.

30 Typically the aperture into which the barbed end of the closure member is introduced includes a shoulder which prevents the inserted member from being pulled in a backward direction out of the aperture after it has been introduced. After the closure member has been severed, it is simple enough to remove the tail end of the second member from
35 the tubular member but it has been found difficult to retrieve the severed barbed end which of course is retained in the said other end of the tubular member.

According therefore to a preferred feature of the invention an exit



aperture is provided in the wall of the tubular member together with guide means therewithin through which a severed barbed end of the closure member can pass to allow the barbed end thereof to be gripped and pulled out from the tubular member.

- 5 In order to reduce the risk of fraud, a unique marking such as the name of a company or the like may be stamped or formed or printed in the surface of the said tubular member and a similar marking may be provided on or in the closure member.

- 10 It is to be understood that the tubular and closure members may be of any shape which will allow them to be threaded through the closure member of the container or bag or other member which is to be sealed. It is also to be understood that the tubular member into which the closure member is introduced may itself form part of another member and whilst it may itself be designed either alone or with the closure member
15 to comprise a handle, it may alternatively include as an attachment thereto or an integral part thereof, a handle or like carrying member.

According to another aspect of the present invention in a security seal of the type so far described, the second member is formed at intervals along its length with barbs.

- 20 In order to prevent unauthorized or accidental insertion of successive barbs into the closure aperture the cross-section of the second member is increased between each axially spaced pair of adjoining barbs, the dimensions of the increased cross-section being such as to allow it to pass through the exit in the first member but prevent it from passing
25 through the closure aperture.

- Breaking this type of seal involves severing the second member, where it extends between the exit and the closure aperture so as to remove the increased cross-section region, after which it is possible to push the severed leading end of the second member completely into the
30 first member, to allow the next barbed section of the second member to be pushed into the said closure aperture to re-make the seal.

The increased cross-section regions may be integral with the said second member or may be rings of appropriate external dimensions, formed around the said second member between the adjoining axially spaced barbs.

- 35 The provision of the enlarged cross-section regions ensures that it is impossible for a subsequent barb to be introduced into the closure entrance of the first member without first removing the enlargement located in front of that barb and this can only be done by cutting and

thereby irrevocably damaging the second member in advance of that barb.

The first member may be transparent or formed with a window along some or all of its length to allow the barbed sections contained therein to be seen.

5 In use the leading end of the second member is withdrawn from the exit end of the tubular member, the latter having been threaded through the holes in the lugs of a bag or other container or doors or other members which are to be secured, and the leading end is inserted into the entrance in one end of the tubular member and pushed in until the
10 barbed leading end of the second member has cleared the entrance and has sprung apart to engage the shoulder behind it.

 When the sealed container or package arrives at its destination, the seal is broken by cutting the length of the second member which extends between the entrance and exit of the tubular member and removing
15 the enlarged cross-section region, after which the seal can be re-used by pushing the severed leading barbed end of the second member fully through the entrance into the tubular member, trimming the new leading end of the remainder of the second member which protrudes from the exit of the tubular member, pulling this from the exit until the new leading
20 end can be inserted into the entrance of the tubular member and there- after pushing this new leading end into the entrance until the next barbed section has been pushed completely through the entrance and is trapped behind the shoulder at the rear of the entrance.

 Since the severed barbed sections will be contained within the
25 tubular member after it has been used, a check can be made to see how many times the seal has been broken and resealed when the package or container arrives at its final destination or back at the base depot or the like. In addition or alternatively a check on the number of barbed sections remaining unused in the tubular member, can be used to reveal
30 the same information.

 The severed barbed ends may be retained in the first member, in which case the life of such a seal is limited to the number of barbs on the second member. Alternatively by providing an exit aperture as described above the severed barbed ends may be retrieved and the said first
35 member can be re-used many times.

 A stop member is required to anchor the tail end of the second member when the last barbed section is used, and to this end the tail end of the second member is enlarged so as to prevent it from passing



through the exit in the first member.

The sections of the second (barbed) member between the barbs are preferably marked to denote each such section uniquely, such as by numbering.

5 The invention will now be described by way of example with reference to the accompanying drawings.

In the drawings

Fig. 1 is a plan view of the main part (tubular member) of one embodiment of the invention, comprising a security seal,

10 Fig. 2 is a plan view of the subsidiary (closure) member of the security seal shown in Fig. 1 and is adapted to be introduced into the member shown in Fig. 1,

Fig. 3 is an edge view of the main member in the direction of the arrow A in Fig. 1,

15 Fig. 4 is an edge view of the main member shown in Fig. 1 viewed in the direction of the arrow B in Fig. 1,

Fig. 5 is a cross-section through the end of the closure member on the line C-C in Fig. 2,

20 Fig. 6 is a plan view of the main (tubular) member of another embodiment of the invention also in the form of a security seal,

Fig. 7 is a plan view of the ancillary or closure member which is introduced into the main (tubular) member of the seal shown in Fig. 6,

Fig. 8 is a cross-section on the line D-D in Fig. 7,

Fig. 9 is an edge view in the direction of the arrow E in Fig. 6,

25 Fig. 10 is an edge view in the direction of the arrow F in Fig. 6,

Fig. 11 is a plan view of a completely assembled open ring-shaped tubular member drawn to a different scale when formed from two halves joined by bands,

30 Fig. 12 is a plan view partly in cross-section of a tubular member forming one part of another security seal embodying the invention,

Fig. 13 is a half section on B-B in Fig. 12,

Fig. 14 is an end view of the exit end in the direction of the arrow A in Fig. 12,

35 Fig. 15 is a half section through the tubular member in the direction of arrow C in Fig. 12,

Fig. 16 is a half section through the entrance end of the tubular member on the line D-D of Fig. 15,

Fig. 17 is a side view of part of a spike assembly for inserting



into the tubular member of Fig. 12 to form a seal,

Fig. 18 is a cross-section through the spike assembly of Fig. 17 on the line A-A,

Fig. 19 is a plan view of the main part of a security seal,

Fig. 20 is a plan view of the subsidiary member adapted to be introduced into the main part shown in Fig. 19,

Fig. 21 is an edge view of the first member in the direction of the arrow A in Fig. 19, and

Fig. 22 is an edge view of the member shown in Fig. 19 viewed in the direction of the arrow B.

Description of embodiments shown in the drawings

Referring to Figs. 1 to 5, a security seal comprises a main C-shaped tubular member 10 having an enlarged end 12 to form a shoulder against which the folds of a bag or the like can be urged as the member 10 is threaded through holes formed in the wall of a bag or like member near the open end thereof.

An opening 16 communicates with a passage 18 which extends around a substantial portion of the C-shaped member 10 and terminates at 20. The wall of the member 10 is cut away at 22 and 24 to form aligned slots and the slot 22 is further cut away with recesses 26 and 28 the purpose of which will be described hereinafter.

A second passage shorter than the first passage is formed at the other end of the C-shaped member and is denoted by reference numeral 30. The passage communicates between an entrance 32 formed at the entrance end of the C-shaped member 10 and extends between the entrance 32 and a slot 34 formed in the wall of the tubular member 10 and through which the leading end of an introduced member can be pulled after it has been severed in order to break the seal as will hereinafter be described.

Immediately behind the entrance 32 the cross-section of the passage 30 is reduced to form shoulders as denoted by reference numerals 36 and 38.

The closure member is shown in Fig. 2 as comprising a second C-shaped member 40 the leading end of which is formed with a barb or arrowhead generally designated 42 having barb extensions 44 and 46. The material forming the member 30 is cut away to form an internal slot 48 the extreme ends of which are widened as at 50 and 52 so as to allow the member 40 to collapse thereby closing the slot 48 as it is introduced into the entrance 32 and through the narrowing passage section. As soon



as the barbs 44 and 46 are beyond the shoulders 36 and 38 the two barbs 44 and 46 spring outwardly and by virtue of their construction prevent the leading end of the C-shaped member from being withdrawn in a rearward direction from the entrance 32 into which it has been pushed.

5 The rear end of the member 40 is formed with two diametrically aligned ears 54 and 56 and as will be seen with reference to Fig. 5, includes two abutments 58 and 60 which extend perpendicularly from the plane of the member 40 and assist in guiding the rear end of the member
10 40 around the interior of the member 10.

The member 40 is introduced into the member 10 by pushing the leading end 42 into the passage 18 through the slot 22. By feeding the member 40 through the slot 22 the barbed end 42 finally appears through the exit 16 whereafter it can be pulled out of the exit and finally the
15 ears 54 and 56 are received the one in the slot 22 and the other in the slot 24 and the member 40 can be pulled further round the passage 18 until the barbed end 42 can be introduced into the opening 32. As has hereinbefore been mentioned, on pushing the barbs 44 and 46 beyond the shoulders 38 and 36, the leading end 42 is locked into this end of the
20 C-shaped member 10 and the seal can only be broken by severing the member 40 for example at the point denoted by the necking 62. Thereafter the leading end can be pushed further through the entrance 32 until the leading end 42 appears through the exit slit 34 and the remaining section containing the ears 54 and 56 can be pushed back through
25 the opening 16 until the ears align with the entrance portion denoted by the enlarged cutaway sections 26 and 28 in the slots 22 whereafter the ears 56 can be pulled readily outwardly and the rear end of the member 40 pulled out of the passage 18 and completely out of the member 10.

30 The second embodiment of security seal shown in Figs. 6 to 10 is essentially very similar to that shown in Figs. 1 to 5 but in this embodiment the plane of the slots formed in the interior of the main C-shaped member are at right angles to those in the Figs. 1 to 5 embodiment and in consequence the member which is introduced into the main
35 member can be elongate provided it is formed from flexible material and this has certain advantages.

To simplify matters the same reference numerals have been used to denote parts which are common to the two types of seal, those used to



identify parts from which the second seal is formed being denoted with a suffix and where the parts are completely different, totally different reference numerals are used to illustrate the relevant parts in the second seal.

5 The main seal is thus denoted by reference numeral 10' and the member which is introduced therewith which is an elongate flat member of flexible material as distinct from the relatively rigid curved member 40, is denoted by reference numeral 64. The entrance into which the barbed end 42' of the member 64 can be inserted is best seen in Fig. 10 and comprises a cutaway section 66 into which the ears 54' and 56' can be slotted. The cutaway 66 communicates with a slot formed diametrically across the member 10' and denoted by reference numeral 68. The end of the slot 68 determines the maximum extent which the hammer-head end formed by the ears 54' and 56' can move around the arcuate path within the member 10'.

15 The plane of the exit 16' and the entrance 32' in the opposed ends of the C-shaped member 10' are at right angles to the plane of the corresponding exits and entrances 16 and 32 in Fig. 3 and the shoulders forming the tapering recess through which the barbed leading end 42' of the elongate member 64 is pushed are likewise at right angles to the plane of the shoulders in the previous embodiment of Figs. 1 to 5. Beyond the shoulders the passage curves around to form the guide required by the invention and terminates in a relatively wide exit formed by cutting away a large section of the wall of the tubular member 10' and is denoted by reference numeral 70. After the member 64 has been severed as at the point 62', the leading end (i.e. the left hand end containing the barbs 46' and 44') can be pushed further through the passage 30' to exit through the opening 70. As with the Figs. 1 to 5 embodiment, the rear end (i.e. the right hand end containing the hammer-head as shown in Fig. 7) can be pushed back through the exit 16' and if there is insufficient length, can be further pulled by gripping the diametrically extending ears 54' and 56' until the ears align with the cutaway section 66 when the elongate section can be removed from the member 10'.

25 As best seen with reference to Fig. 8, an abutment 72 extends perpendicularly relative to the plane containing the ears 54' and 56' and this abutment 72 engages in a further slot 74 formed in the wall of the member 10'. Alternatively the abutment 72 may be in the form of a nose which does not extend or protrude into the slot 74 as shown in Fig. 8.

the plane of the ears 56' and 54' and the slot 74 as shown in Fig. 9 can be dispensed with and simply a groove may be formed centrally of the member 10' between the wall sections containing the slot 68 to accommodate the nodule 72.

5 Although not shown the member 10 or 10' may form part of an overall assembly which may include a handle.

As shown in Fig. 10 the main/tubular member 10, 10' may be formed from two similar sections, each being of semi-circular cross-section and cooperating with the other half to form the generally circular cross-section tubular member 10'' and the two sections are secured by
10 moulded bands of plastics or metal as denoted by reference numerals 74, 76, 78, 80 and 82.

The seal shown in Figs. 12 to 18 comprises a tubular member 110 having an entrance end 112 and an exit end 114. The tube is curved
15 round to form part of a circle for convenience.

A window 116 is formed along part of the length of the tubular member and a second window 124 (see Fig. 13) is formed diametrically opposite on the other side of the tubular member. Alternatively the tubular member may be formed wholly or in part from transparent material.

20 A sleeve 118 is inserted into the end 112 and is fused into position after the spike shown in Fig. 17 has been inserted into the tubular member through the entrance end 112 (pointed end 130 first). The sleeve 118 includes an external cylindrical section which is fused to the wall of the tube 110 and an externally tapering section 120. The taper pro-
25 duces an annular cavity 122 within the tubular member into which flared barbs 132 (see Fig. 17) on the spike will spring when the pointed end 130 is reintroduced into the tubular member 110 through the sleeve 118.

Fig. 13 is a half section on the line B-B of Fig. 12 and shows the second window 124 formed diametrically opposite the window 116.

30 Fig. 14 shows the exit end of the tubular member in the direction of the arrow A of Fig. 12 and shows how the interior cross-section of the tube (shown by the dotted line 126) reduces down to the exit cross-section 127.

Fig. 15 is an internal view of the entrance end of the tube taken
35 in the direction of the arrow C in Fig. 12. This shows part of the annular cavity 122 formed as a result of the tapering external surface 120 of the sleeve 118 and Fig. 16 also shows by way of cross-section on the line D-D in Fig. 15 how this cavity is formed.

BAD ORIGINAL

Turning now to Figs. 17 and 18 the second part of the seal comprises a spike 128 which is of rectangular cross-section as shown in Fig. 18. At one end (the left hand end as shown in Fig. 17) the spike 128 is formed with a pointed end or nose 130 from which rearwardly protrude four flared fingers 132 having a natural resilience which causes them to spring out as shown to form a "barb", which can be overcome to cause the fingers of the barb to lie flush against the surface of the spike 128 to allow the barb to be pushed through a small hole such as the entrance passage 134 in the sleeve 118 of Fig. 12. Typically the barbs are splayed out at an angle of 8° to the spigot 128. The spigot is formed with similar barbs at intervals along its length one of which is shown at 136 and at its far end is formed with stepped enlargements of its cross-section at 138 and at 140 in the form of a truncated cone, the part conical surface of which is complementary to a part conical surface formed on the inside of the exit of the tube 142 in Fig. 12. The plug 140 cannot therefore be pulled through the exit end 114 of the tubular member 110.

Between successive barbs 136 are located annular discs or rings one of which is shown at 144 in Fig. 17. These are formed around the spigot after the spigot and barbs have been moulded, the hole in the centre of each disc or ring 144 being too small to allow the nose 130 or folded-down barbs 132 to be forced therethrough. Alternatively the rings or discs 144 may be formed integrally with the spigot and constitute cross-sectional enlargements thereof.

Weakening notches 129 and 131 are provided around the spigot 128 slightly in advance of the nose, and some distance behind the splayed apart fingers 132 of each barb 136.

The seal is closed by inserting the leading end 130 of the spigot 128 into the passage 134 in the entrance end 112 of the tubular member 110 until the barb fingers 132 splay out within the tubular member behind the entrance sleeve 118. In this position the leading end of the spigot cannot be withdrawn i.e. pulled backwards through the entrance sleeve 118 because of the interaction between the barb fingers 132 and the annular cavity 122.

The seal is broken by cutting the spigot 128 at the two notches 129 and 131 so that the section of spigot bearing the ring or disc 144 (or the enlarged cross-section) can be removed.

The seal can be re-sealed by withdrawing the cut end of the spigot

protruding from the exit 114 and inserting the nose of the next barb into the entrance 112 until its barb fingers are trapped behind the sleeve 118.

5 It will be seen that by making the diameter of the rings or discs 144 greater than the aperture 134 through the entrance sleeve 118, so only one barb can be pushed into the entrance sleeve 118 at any one time. If an attempt is made to push the next following barb towards the passage 134 the intervening ring or disc 144 prevents the nose end of the next barb from entering the passage 134.

10 All the parts of the seal assembly may be formed from a plastic material, preferably from the ABS range.

Referring to Figs. 19 to 22, a further security seal comprises a main C-shaped tubular member 210 which has an exit aperture 212 for used barbed sections of the inserted member shown in Fig. 20.

15 An opening 216 communicates with a passage 218 which extends around a substantial portion of the member 210 and terminates at 220. The wall of the member 210 is cut away at 222 to form an entrance for the member 240 shown in Fig. 20.

20 A second passage shorter than the first passage is formed at the other end of the C-shaped member 210 and is denoted by reference numeral 230. The passage 230 communicates between an entrance 232 formed at the entrance end of the main member 210 and extends between the entrance 232 and the aperture 212 formed in the wall of the tubular member 210 and through which the leading end of an introduced member can be pulled
25 after it has been severed in order to break the seal as will hereinafter be described.

Immediately behind the entrance 232 the cross-section of the passage 230 is reduced to form two shoulders 236 and 238.

30 The closure member is shown in Fig. 20 as comprising an elongate flexible member 240 the leading end of which is formed with a barb or arrowhead generally designated 242 having barb extensions 244 and 246. Similar barbs are formed at intervals along the length of the member 240. Only one such additional barb 243 is shown in Fig. 20. The material forming the member 240 is cut away to form an internal slot 248 the
35 extreme ends of which are widened as at 250 and 252 so as to allow the member 240 to collapse thereby closing the slot 248 as it is introduced into the entrance 232 and through the narrowing passage section. As soon as the barbs 244 and 246 are beyond the shoulders 236 and 238 the

two barbs 244 and 246 spring outwardly and by virtue of their construction prevent the leading end of the introduced member from being withdrawn in a rearward direction from the entrance 232 into which it has been pushed.

5 The rear end of the member 240 is formed with a ball 214 to assist in guiding the rear end of the member 240 around the interior of the member 210.

10 The member 240 is introduced into the member 210 by pushing the leading end 242 into the passage 218 through the slot 222. By feeding the member 240 through the slot 222 the barbed leading end 242 finally appears through the exit 216 whereafter it can be pulled out of the exit, and the member 240 can be pulled further round the passage 218 until the leading barbed end 242 can be introduced into the opening 232. As has hereinbefore been mentioned, on pushing the barbs 244 and 246
15 beyond the shoulders 238 and 236, the leading end 242 is locked into this end of the member 210 and the seal can only be broken by severing the member 240 at the point denoted by the necking 262. An enlargement of the cross-section in the form of a disc 263 either formed integrally with or as a separate member, ringed around the member 240 prevents the
20 next barb 243 from being introduced into the aperture 232 until member 240 has been severed at 262 and 262', and the inserted section of the member 240 cannot be pulled back through the member 210 by virtue of the engagement of the barbs with the exit 216.

25 The members making up the seals may be formed from a plastics material such as from the ABS range or the like and where the member does not have to be flexible, may be formed from, or reinforced with, metal.

 An exit 264 allows the last tail and the ball 214 to be removed.

- 1 -

Title: Security seal

CLAIMS

1. A security seal comprising a first member (10) one end of which is formed with a barbed entry (32) and the other end with an exit (16), a closure member (40) which is held captive in, and protrudes from the exit (16) in the first member, the closure member being formed at least at one end with a barb (44,46) by which it is adapted to be inserted into the barbed entry (32) from which it cannot be withdrawn once it has been introduced thereinto.
2. A security seal according to claim 1 in which the captive end of the closure member (40) is enlarged to prevent it from being pulled through the exit (16) in the first member (10).
3. A security seal according to claim 1 in which the barbed region of the closure member is formed with a slot (48) to assist in the collapse of the member as the barbed end is forced through the barbed entry (32).
4. A security seal according to claim 1 in which the closure member (40) includes a region of reduced cross-section (62) at which it can be readily severed.
5. A security seal according to claim 1 further comprising an aperture (34) in the wall of the first member beyond the barbed entry (32) and a passage (30) through which a severed leading end of the closure member (40) can pass to leave the first member.
6. A security seal according to claim 1 in which the closure member (128) is formed with barbs (136) at its leading end and at intervals along its length.
7. A security seal according to claim 6 in which the first member (110) is formed with a window (116,124) along some of its length to allow barbed sections contained therein to be seen.

BAD ORIGINAL.

8. A security seal according to claim 6 in which apertured discs (144) are located around the closure member (128) between each two adjoining barbs (136), the outside diameter of each disc (144) being such that it can pass through the exit (142) in the first member (110) but cannot pass through the closure aperture (134) thereof.

9. A security seal according to claim 6 in which the cross-section of the closure member (24) is increased between each two adjoining barbs (242, 243), the dimensions of the increase in cross-section (263) being such as to permit it to pass through the exit (216) but to prevent it from entering the closure aperture (232) in the said first member (210).

10. A security seal according to claim 2 in which the first member includes a further aperture (264) in the wall thereof to allow the enlarged end (214) of the second member (240) to be removed from the first member.

1/5

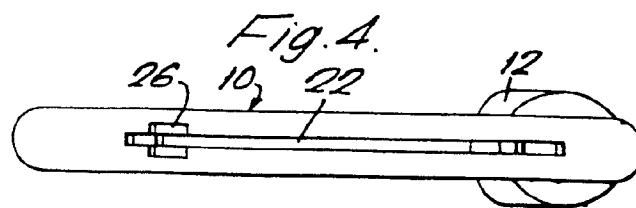
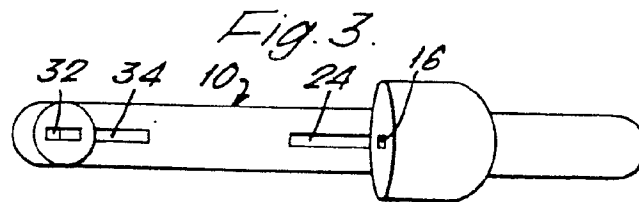
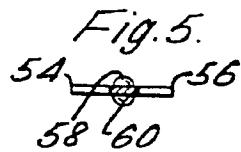
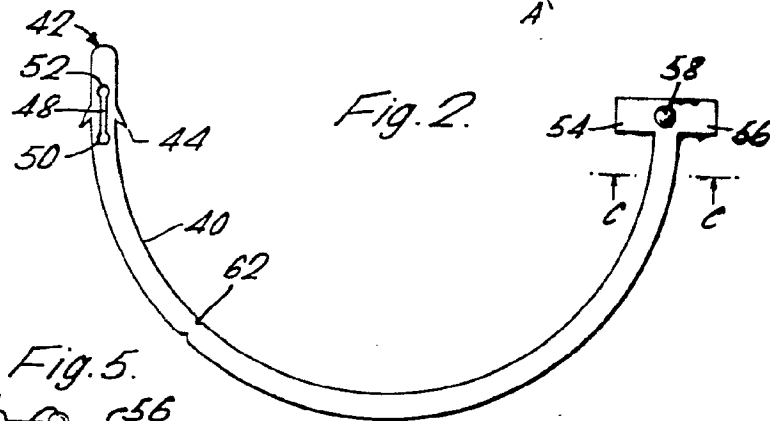
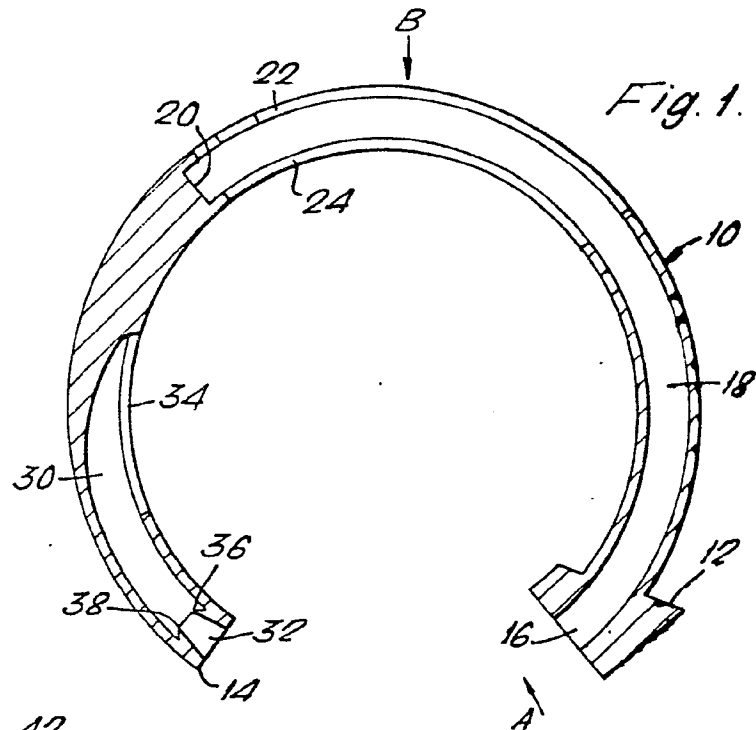


Fig. 6.

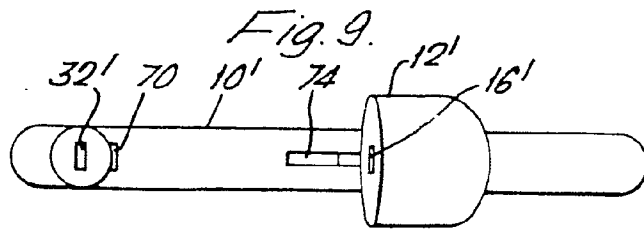
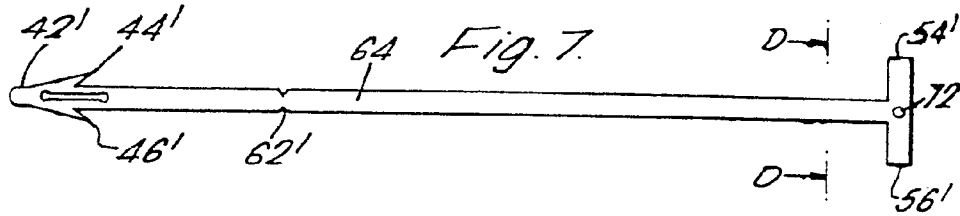
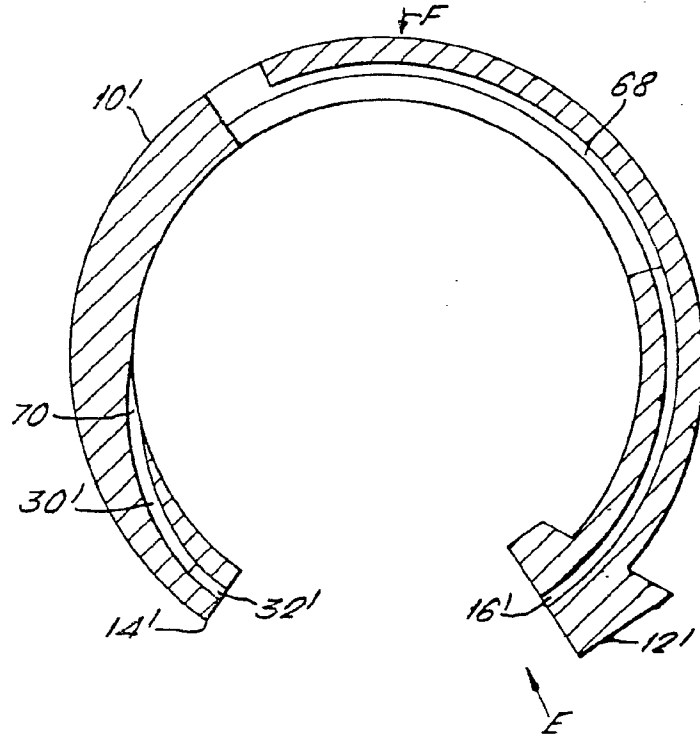


Fig. 8.

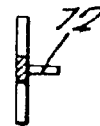
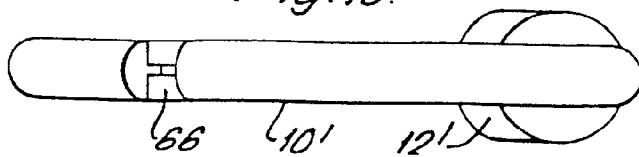


Fig. 10.



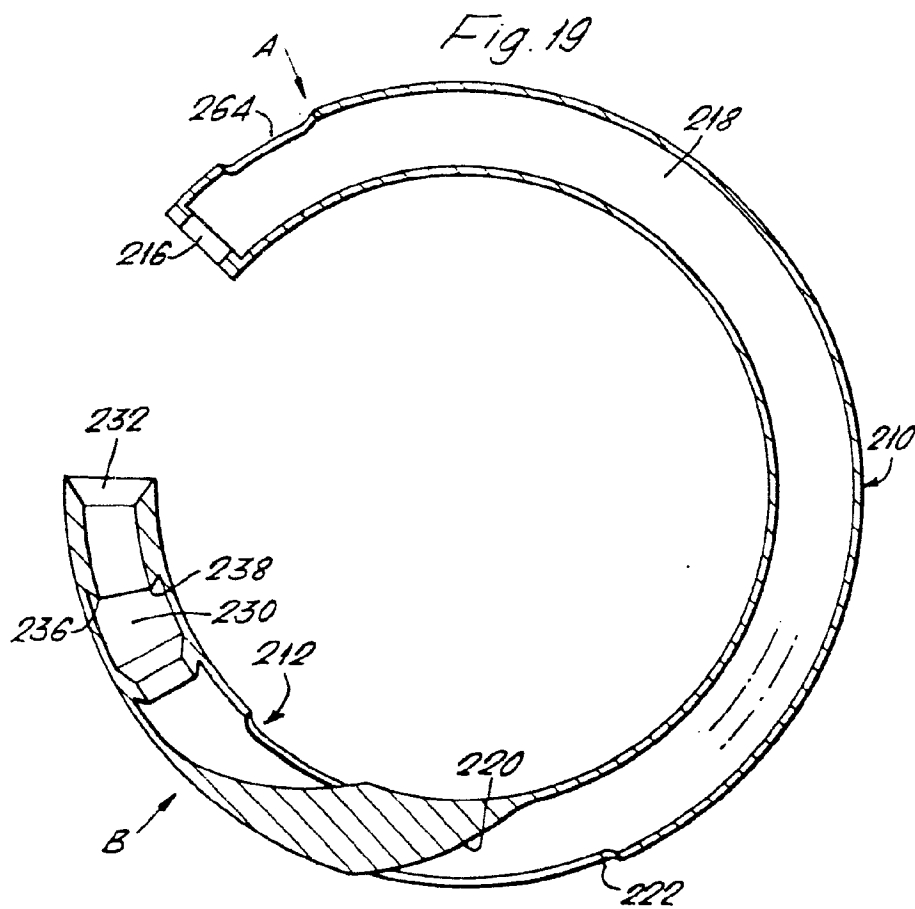
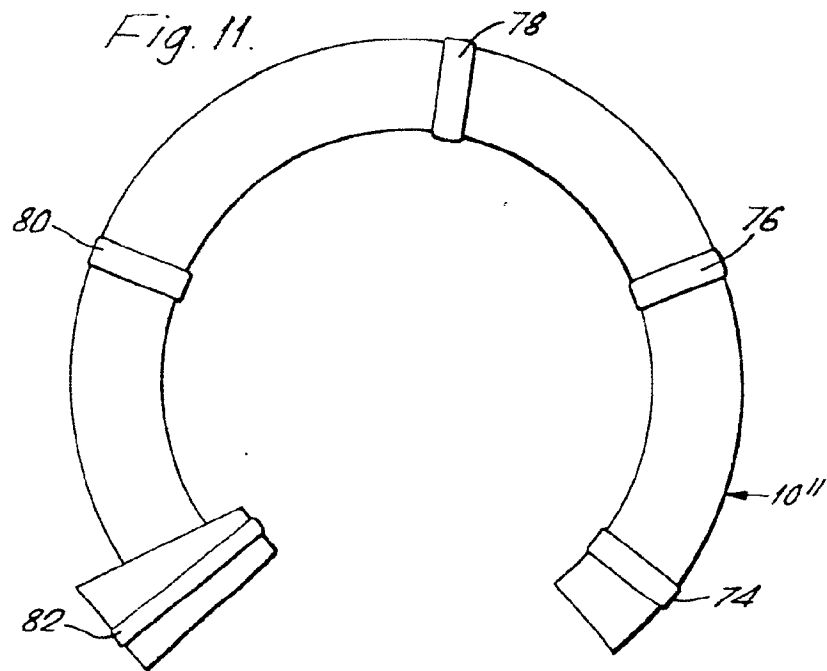


Fig. 12.

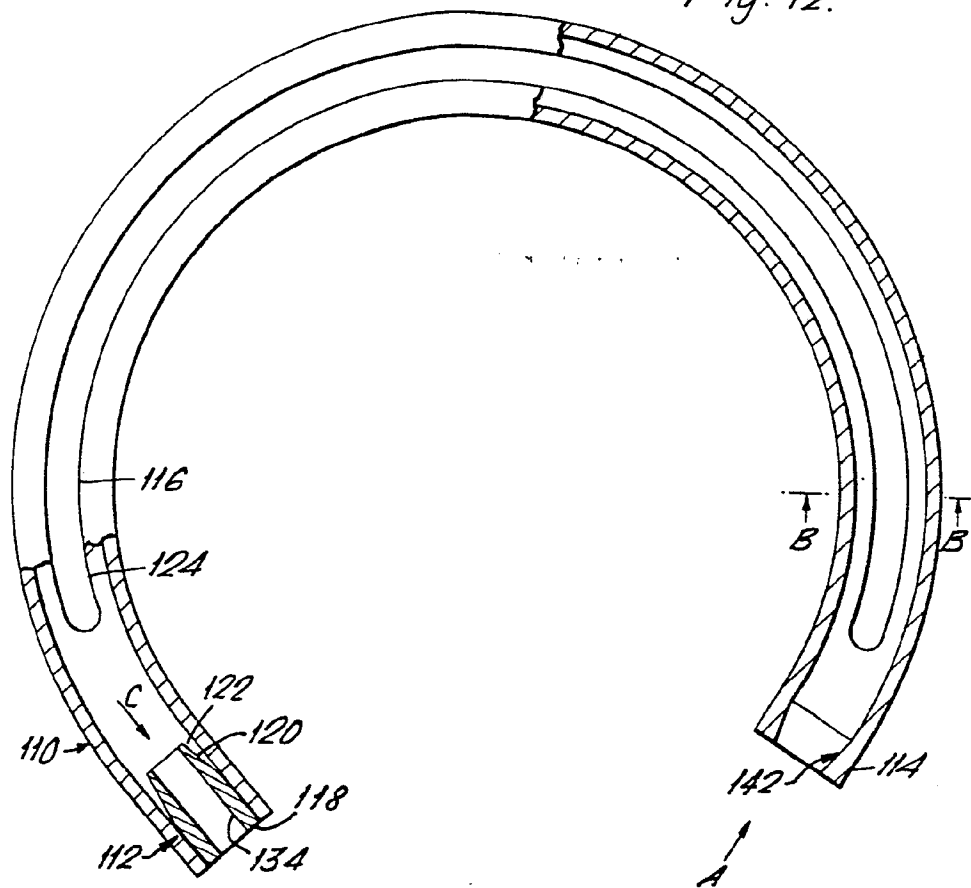


Fig. 13.



Fig. 14.

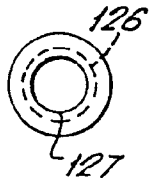


Fig. 15.

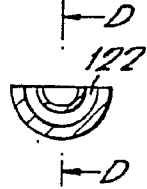


Fig. 16.

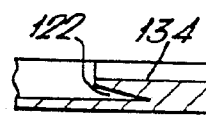


Fig. 17.

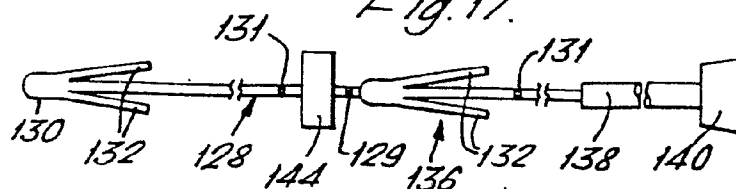


Fig. 18.





European Patent
Office

EUROPEAN SEARCH REPORT

0010115
Application number

EP 78 30 0515

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. ²)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	<u>US - A - 1 964 897 (WENK)</u> * Patent specification * --	1,3,4	B 65 D 77/18
	<u>US - A - 3 367 701 (WENK)</u> * Patent specification * ----	1,3	
			TECHNICAL FIELDS SEARCHED (Int. Cl. ²)
			B 65 D G 09 F
			CATEGORY OF CITED DOCUMENTS
			X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons
			&: member of the same patent family, corresponding document
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
The Hague	08-06-1979	VANTOMME	