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(54) Safety and seal-of-guarantee termination system for necklaces or strings of gems, particularly pearls

(57) At each end a string of pearls is fixed to an eyelet of a plate or tab element having a raised elastic tooth.

An end half-clasp for the string of pearls comprises a housing for the tab with an abutment surface for retention of the tooth. The tensile strength of the tooth is calculated to be less than the breaking strength of the string of pearls, so that the tooth yields before the string breaks to prevent the pearls getting lost.

A box-like seal-of-guarantee is applied on the tab element when the latter is not yet coupled to the closing clasp so as to cover the tab element and the end knot of the string of pearls completely, in such a way that it is not possible to tamper with the one or the other without such tampering becoming clearly visible.

It is preferably applied to the jewellery field.

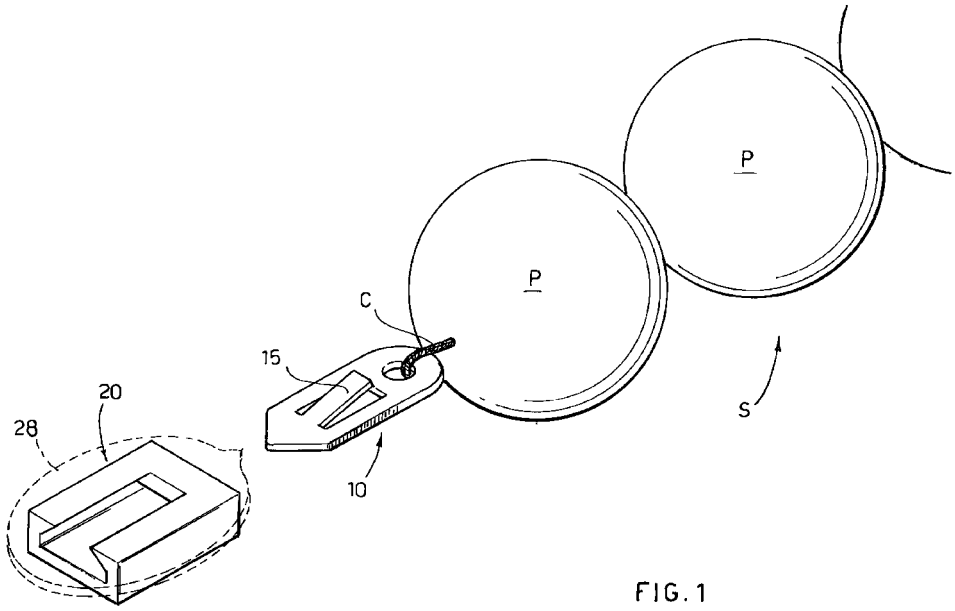

FIG. 1

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Description

[0001] In the jewellery field, strings of precious stones, pearls, etc., are known, such as necklaces or bracelets, which comprise a number of gems, for example pearls, threaded on a cord, which has each of its ends knotted to a half-clasp, the two half-clasps being coupleable together in such a way that they can be uncoupled.

[0002] A drawback with this type of mounting consists in the fact that the string for threading the pearls or gems, when subjected to a certain tensile stress, may break, and in this case the pearls or gems come off their string, fall and are scattered. It is common experience that it is then generally difficult to gather up all the pearls or gems.

[0003] Another drawback that has been noted in the field is that when a jeweller is selling his wares, he presents strings of pearls, or generically gems, to a buyer so that the latter can make his choice, and separately presents a number of clasps to the buyer for the latter to choose from. Then, when the customer has chosen a string of pearls and a clasp, it is necessary to connect the string with the clasp by means of knotting operations which require a certain amount of time and a certain degree of ability. It would be desirable to simplify the operation of connecting a string of gems to a clasp so as to enable prompt consignment to the buyer.

[0004] A further point which for some time has attracted the attention of customers and producers of gems or pearls in particular is represented by the possibility of providing the end customer in some way with a guarantee that the entire string of pearls is made up completely of pearls of a certain quality, without there being any possibility of tampering or undue replacements being made.

[0005] Bearing in mind the requirements specified above, the system forming the subject of the present application has been devised, as defined in Claim 1. Further new and useful characteristics are mentioned in the subsequent claims.

[0006] In other words, according to the invention, a string or necklace of pearls or other precious stones has each end of the string knotted to a tab element provided with a raised elastic tooth. With the tab element there collaborates, in the half-clasp destined to couple to the aforesaid end, a housing element which has an abutment surface for retaining the tooth so that, when a half-clasp is attached to the string of pearls or gems, the tab-half-clasp coupling is stable and not reversible, if not by breaking the tooth. The strength of the tooth of the tab is calculated so as to be lower than the breaking strength of the string that carries the pearls, so that there occurs a preferential breaking of the tooth instead of the string in the case of tensile stress, in order to prevent the pearls or gems getting scattered.

[0007] According to a further important characteristic of the invention, a seal-of-guarantee element having the form of a small box is mounted on the tab element and covers and encloses completely the tab element and the knot at the end the string on the tab element. The seal element cannot be opened without showing the opening in an irreversible way, so as to constitute to all effects a seal of guarantee.

[0008] The invention makes it possible to overcome the drawbacks referred to and to achieve the purposes mentioned above. In particular, it enables a string of pearls or jewels and a clasp to be selected separately and then be connected together easily and quickly. Also, in the case of a tensile force being applied to the string of pearls, it makes possible a preferential breaking of the necklace at its end instead of the cord itself breaking. Finally, it guarantees the end customer that the original string of pearls or gems is complete and untampered.

[0009] A preferred exemplary unrestrictive embodiment of the invention will be described in what follows, with reference to the attached drawings, in which:

- Figure 1 is an enlarged exploded perspective view of one end of a string of pearls attached to a tab element according to the invention and with a housing element prearranged for connection, shown in a half-clasp, which is drawn with a dashed line;
- Figure 2 is a plan view of the tab element in the enlarged scale of the previous figure;
- Figure 3 is a sectional view of the tab element in the same scale as that of the previous figures according to the plane indicated by 3-3 in Figure 2;
- Figure 4 is an enlarged perspective view of the housing element, without the decorative part of the half-clasp, and shown in a perspective view different from that of Figure 1;
- Figure 5 shows the housing element in sectional view according to the plane indicated by 5-5 in Figure 4;
- Figure 6 shows the tab element engaged in a housing element in plan view and in the enlarged scale of the previous figures;
- Figure 7 is a section according to a plane indicated by 7-7 in Figure 6;
- Figure 8 is a perspective view of the tab element engaged in the housing element;
- Figure 9 is an enlarged scale plan view of the seal element in an opened-out condition prior to its being bent;
- Figure 10 is a perspective view of the seal element in a pre-bent condition for its mounting on one end of a string of pearls; and
- Figure 11 is a perspective view of the seal element mounted and closed on an end of a string of pearls provided with a tab element.

[0010] It is here pointed out that in this text the term "string of pearls" will be used for reasons of simplicity, but it is understood that the string of pearls could in fact

be any string of precious or semiprecious gems.

[0011] With reference first to Figure 1, according to the invention, at each end of a string of pearls S, comprising a number of pearls P threaded on a cord C, is applied a tab-like element indicated by the reference number 10. The tab element is generally made of a strip of metal that is punched and curved. The tab element may be better seen in Figures 2 and 3 and comprises a rounded end 11 provided with a through eyelet 12, a body 13 with a central U-shaped slit 14 delimiting a tooth 15, and an end 16, which is generally but not necessarily pointed. The tooth 15 is bent out of the plane of the body 13 of the tab, as may be more clearly seen in Figure 3. The end of the cord C is knotted around the end 11, passing through the eyelet 12. The tooth 15 remains joined to the body 13 towards the distal end 16 with respect to the string of pearls, whilst the more raised end of the tooth faces the string of pearls. The tooth is elastically deformable when it is pushed in one direction, from its root, and undeformable when it is pushed head on.

[0012] The housing element, indicated as a whole by the reference number 20, will now be described. The element 20 comprises basically a parallelepipedal box-like body 21 which is hollow (the hollow part is indicated by the reference number 22) and presents a slot 24 on one side 23, which sets the cavity 22 in communication with the outside. The dimensions of the slot 24 are such that they enable passage of the tab element 10. An adjacent side 25 of the element 20 has a step-shaped part 26 generally made as a wall of a slit 27. The width of the slit 27 is not smaller than the width of the tooth 15 of the element 10.

[0013] The housing element 20 is incorporated, in any way, for example by gluing or welding, in a decorative clasp or half-clasp 28 for the necklace or the like that it is intended to form with the string of pearls, in such a way, however, as to leave access to the slot 24 free. The housing element 20 couples to the tab element 10 in the way illustrated in Figures 6, 7 and 8; i.e., the tab element 10 is inserted in the slot 24, the tooth 15 bends downwards elastically until it gets past the step 26 and then, once past it, clicks into the raised position. Now the half-clasp brought onto the housing 20 remains constrained to the respective end of the necklace, and since the slit 27 is not accessible, in that it is covered by the body of the half-clasp, the coupling cannot be undone other than by breaking one of the elements. In particular, according to the invention, the breaking strength of the tooth 15 is such that, for a tensile force applied to the necklace, the tooth 15 yields way before the cord C yields, so that a break occurs first at the element 10 instead of on the cord C, so keeping the string of pearls intact.

[0014] The replacement of the tab element 10 will be carried out in a specialized centre so that the knotting on a new intact tab element will not give rise to doubts as to the fact that the pearls or gems threaded onto the string are the same ones.

[0015] Of course instead of the tooth 15 with pre-set breaking strength, it could be the abutment surface 26 that has a pre-set breaking strength, even though this would be more difficult to implement and have less practical attractiveness.

[0016] With reference now to Figures 9, 10 and 11, a seal-of-guarantee element is indicated as a whole by the reference number 30. The guarantee element 30 is made of punched sheet metal and comprises two half elements 31 and 32 connected together by a thin neck 33. The half-element 31 has a bottom wall 34 and bent side flanges 35, 35, with tongues 36, 36.

[0017] The half-element 32 has a bottom wall 37, bent side flanges 38, 38 with slots 39, 39 and a bent end flap 40.

[0018] The neck 33 comprises a through slot 50 having a width not smaller than the width of the tab element 10 and a slightly larger thickness. The slot 50 is longitudinal along the neck 33; i.e., the larger dimension of the slot extends from the half-element 30 to the half-element 32. The position of the slots 39, 39 and tongues 36, 36 is such that they are made to correspond when the device is bent in box form.

[0019] The longitudinal and transverse dimensions of the element 30 are preferably correlated to the dimensions of the tab element 10 in the following way:

- The width of the walls 34, 37 is not less than the width of the tab element 10;
- The height of the side flanges 35, 38 is less than the width of the tab element 10;
- The length of the bottom wall 34 and the bottom wall 37 is not less than the overall length of the tab element 10.

[0020] There now follows an explanation of how the guarantee element is applied. With the guarantee element 30 half-bent in the condition of Figure 10, the guarantee element 30 is applied with the slot 50 on the tab 10 until beyond the entire tab 10 and the knot of the cord and the wall of the neck 33 is brought into a position adjacent to an end pearl P. The entire element 30 is then rotated about the cord so that the slot 50 is no longer set on the same plane as the body of the tab 10. The element 30 is then closed by deforming the neck 33, possibly squeezing it around the knot in the cord. The box thus obtained is blocked by deforming the tabs 36 inside the slots 37.

[0021] The situation is now the one that may be seen in Figure 11. The seal thus mounted, which will preferably bear a mark regarding the pearls or any punchmark of guarantee, can thus not be removed without breaking or deforming some part of the seal, a fact which would reveal to the buyer that the string of pearls has been tampered with.

Claims

1. A termination system for a string of gems, characterized in that it comprises:

   a tab element (10) provided with connection means (12) for an end or cord of said string of gems, and retention means (15),
   and at least one of the following:
   a housing element (20) matchable with a closing clasp or half-clasp and comprising: a cavity or internal housing that communicates with the outside through a slot (24) having dimensions such as to enable passage of said tab, and an abutment wall (26) for said retention means;
   a seal-of-guarantee element (30) designed to receive in it said tab element and an end of said cord knotted to it.

2. A system according to Claim 1, characterized in that said retention means comprise a tooth of the tab element, the said tooth being raised and elastically deformable when it is pushed in one direction and having a pre-set breaking strength when stressed in another direction.

3. A system according to Claim 2, characterized in that said tab element (10) is made of sheet metal and said tooth (15) is made by punching a U-shaped slit and deforming out of plane of a the tooth thus defined by punching.

4. A system according to Claim 3, characterized in that a hooking means for the cord is a through eyelet (12) at one end of the tab element.

5. A system according to Claim 1, characterized in that said housing (20) has a box-like shape in which one (23) of the smaller walls comprises said slot (24), and said abutment surface (26) is parallel to said wall provided with said slot.

6. A system according to Claim 2, characterized in that said tooth of the tab element is pre-set for yielding when it is engaged against said abutment wall of the housing element for an applied tensile force smaller than the tensile force that would break the cord.

7. A system according to Claim 1, characterized in that said seal-of-guarantee element (30) is made of bent, punched sheet metal and comprises a first half-element (31) and a second half-element (32) joined together by a neck portion (33) that comprises a through slot (50) for the tab element, said slot extending between the first half-element and the second half-element and has dimensions slightly greater than those of the tab element.

8. A system according to Claim 7, characterized in that the first half-element (31) comprises a bottom wall (34) and two side flanges, the second half-element (32) comprises a bottom wall (37), two side flanges (38) and an end flap, the side flanges of the first half-element being provided with tongues (36), the side flanges of the second half-element being provided with slots in positions corresponding to the tongues of the other half-element, so that when the seal-of-guarantee element is bent back on itself in a box shape, the tongues of one half-element can be deformed to engage the slots of the other half-element.

9. A system according to Claim 7, characterized in that the main dimensions of said element are defined as follows:

   length not smaller than the total length of the tab element;
   width, orthogonal to the through slot (50), smaller than the width of the tab element.

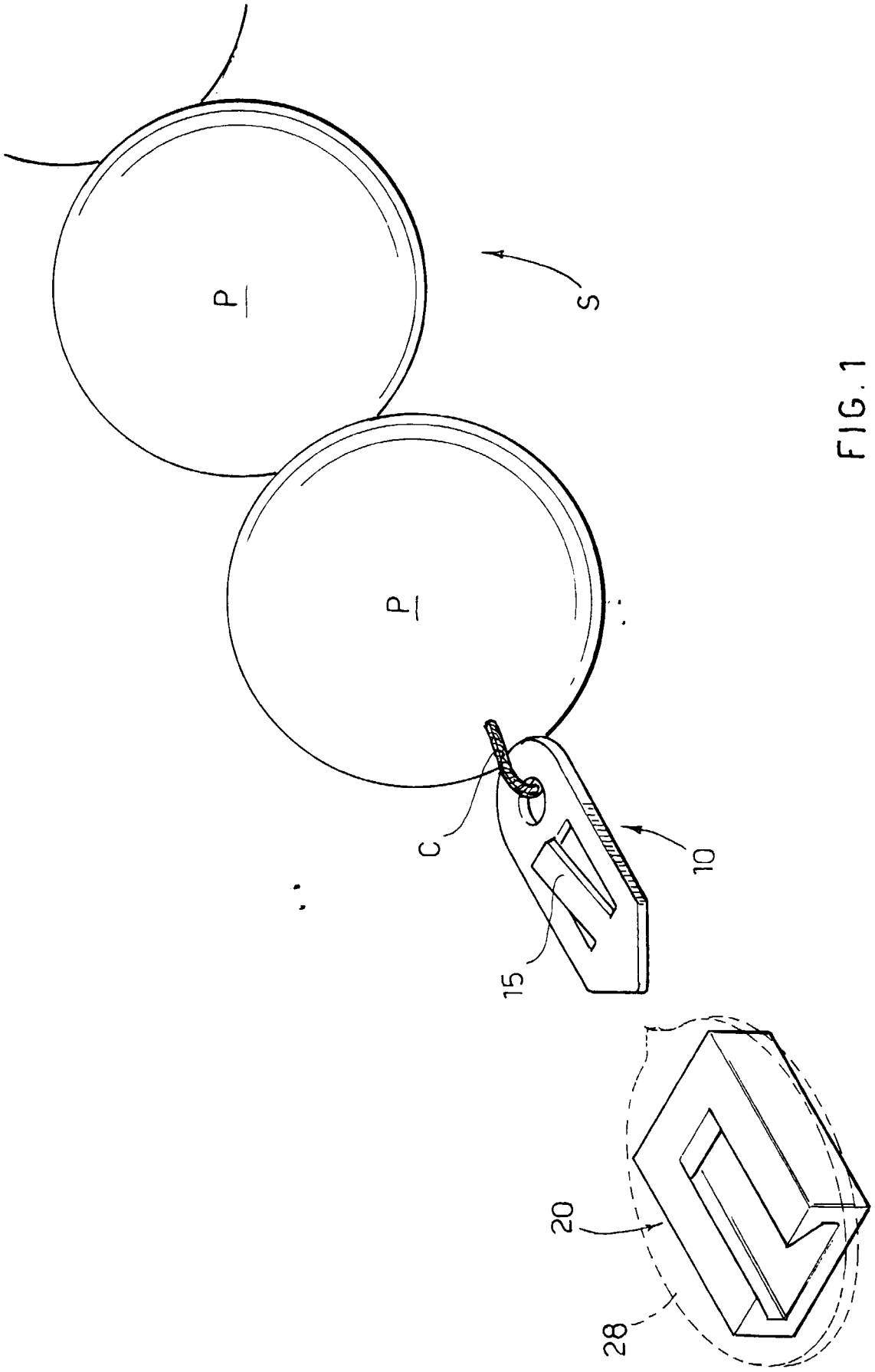


FIG. 1

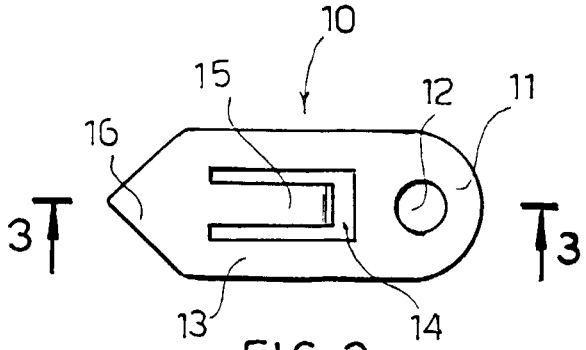


FIG.2

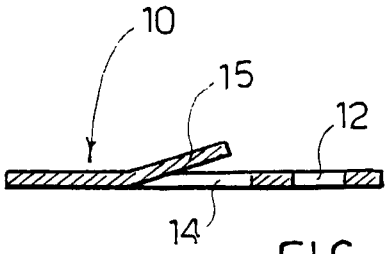


FIG.3

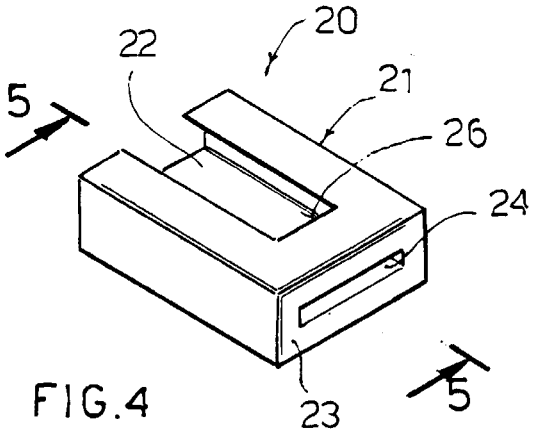


FIG.4

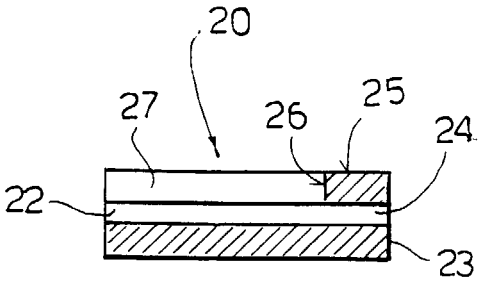


FIG.5

FIG.6

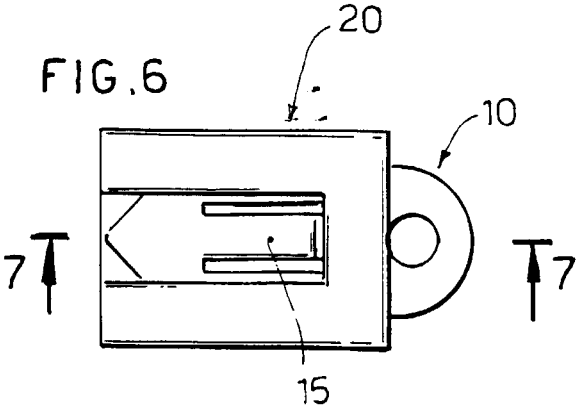
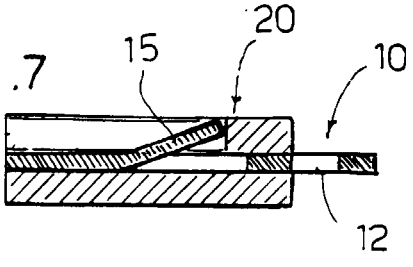


FIG.7



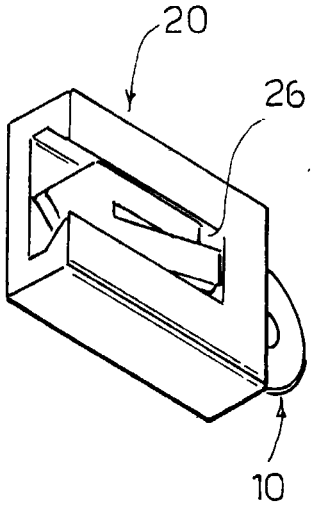
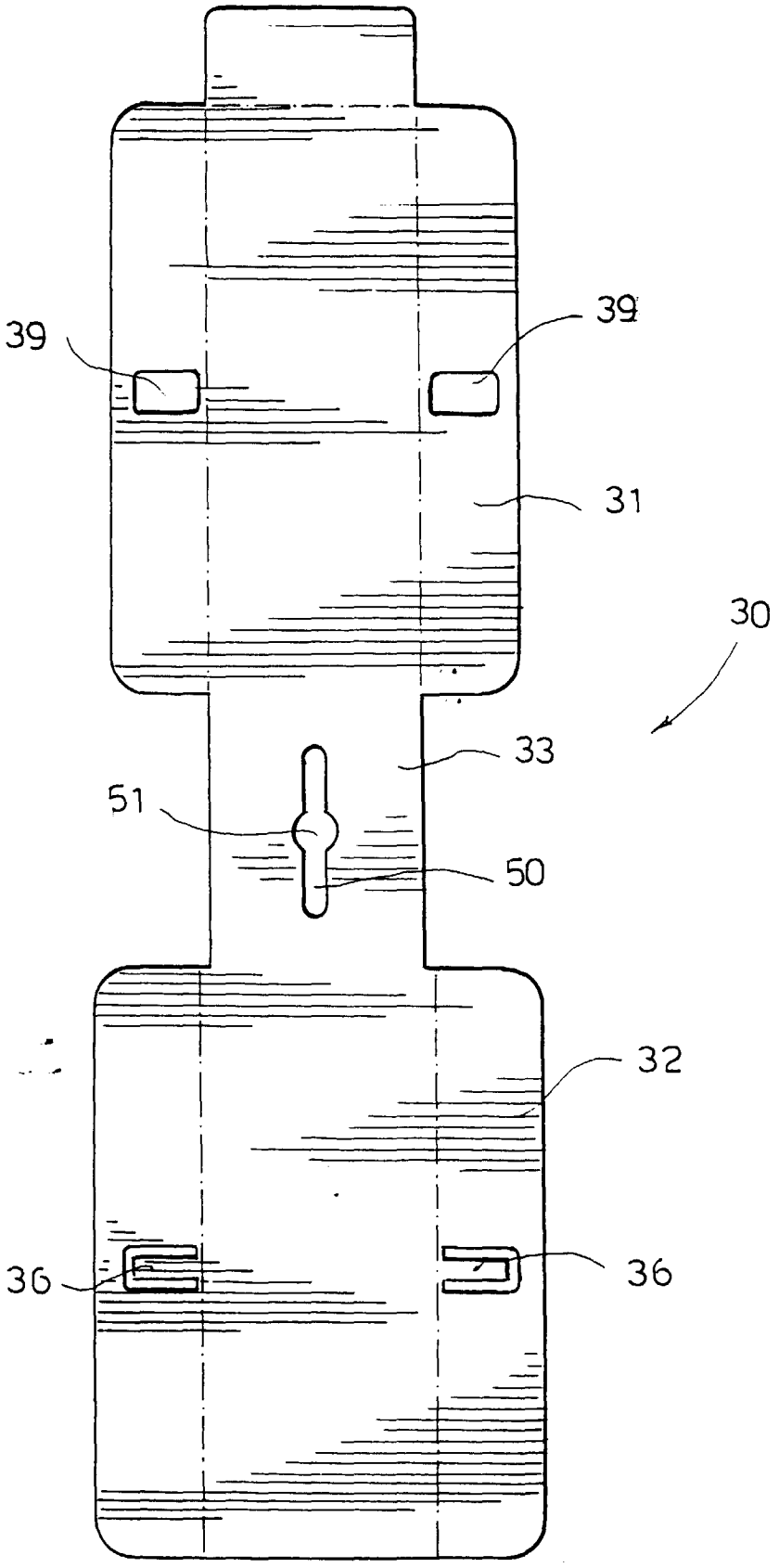


FIG.8

FIG.9



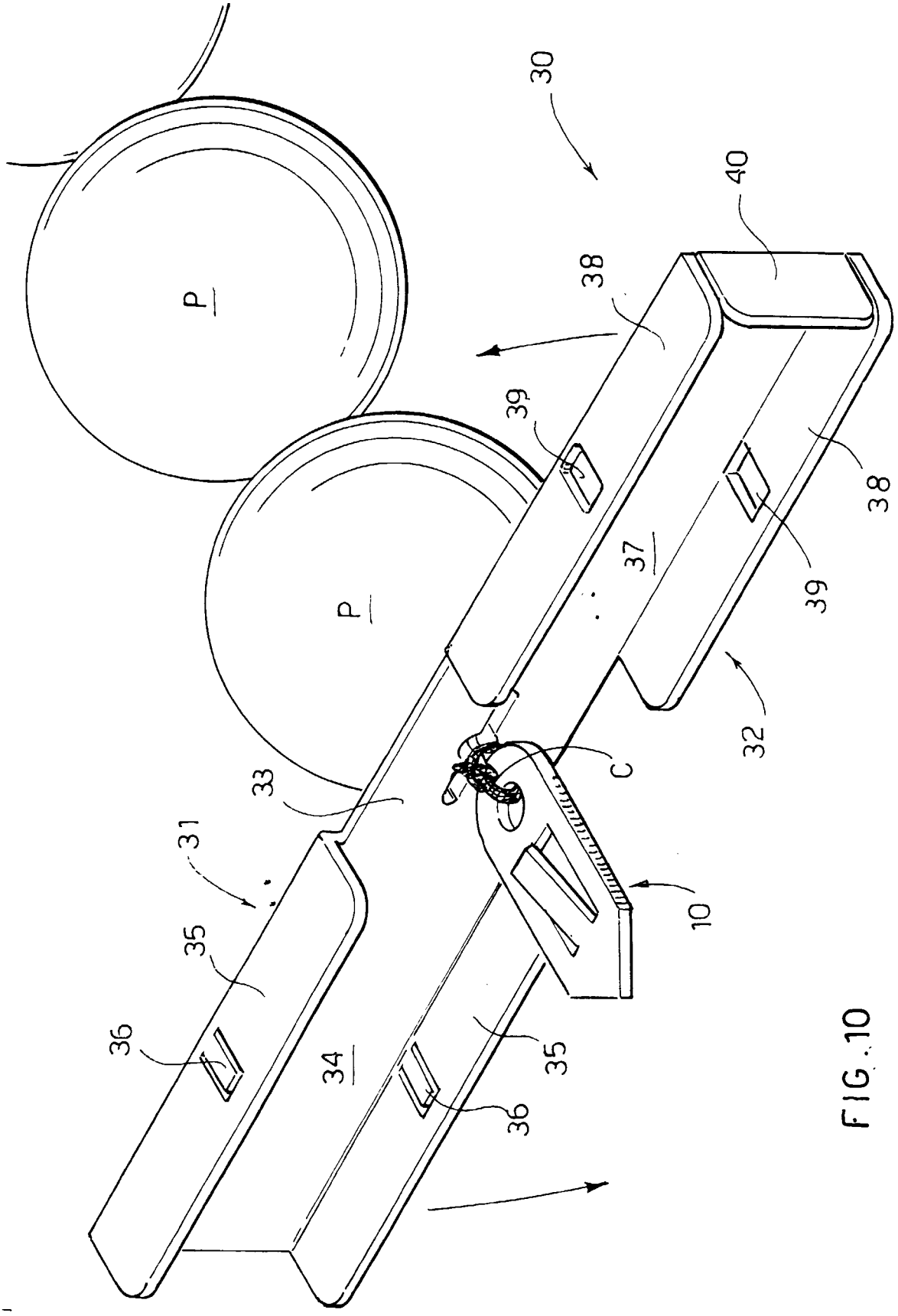


FIG. 10

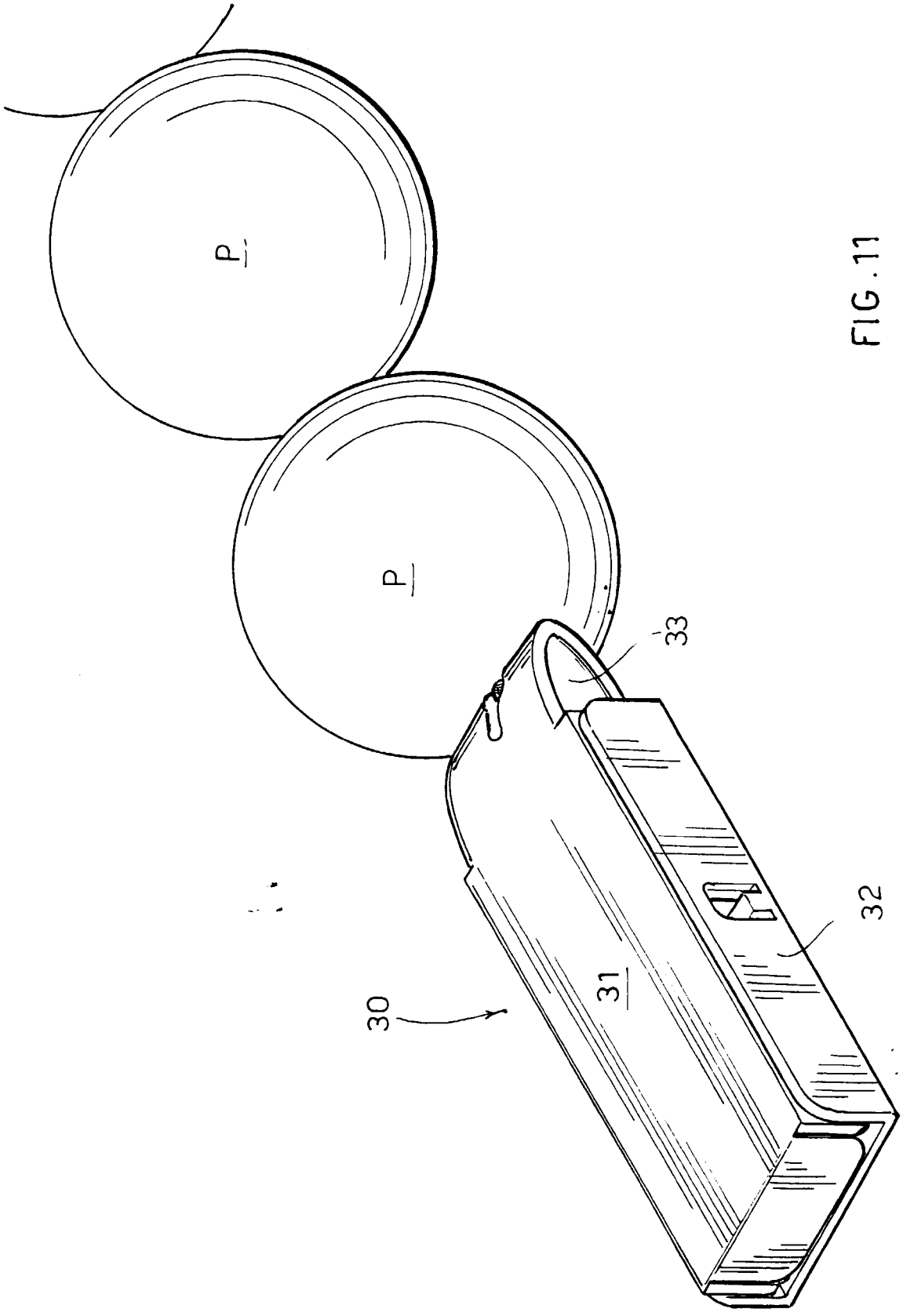


FIG.11

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 99 83 0493

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 4 024 607 A (ROSENBERG MELVIN ET AL) 24 May 1977 (1977-05-24) * column 2, line 13-30; figure 1 *	1-5	A44C5/20
X	US 4 426 854 A (GELDWERTH SIMON ET AL) 24 January 1984 (1984-01-24) * column 2, line 47 - column 3, line 5; figures 1-3 *	1,2,4,5	
X	US 2 164 657 A (LEVY NAT) 4 July 1939 (1939-07-04) * column 2, line 4-34; figures 1,3 *	1,2,5	
A	US 4 494 279 A (KILGUSS HOWARD M) 22 January 1985 (1985-01-22) * abstract; figures *	1	
A	DE 40 13 880 A (FOERSTER BERNHARD GMBH) 8 August 1991 (1991-08-08) * abstract; figures *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A44C

~~The present search report has been drawn up for all claims~~

Place of search	Date of completion of the search	Examiner
MUNICH	20 December 1999	Kock, S

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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Application Number
EP 99 83 0493

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1(part), 2-6

European Patent Office

LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 99 83 0493

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1(part),2-6

A termination system for a string of germs having a tab element for connection with an end of a cord or said string of germs and a retention means. A housing element is provided for matching with said tab, said housing element having an abutment wall for interaction with the retention means.

2. Claims: 1(part),7-9

A termination system for a string of germs having a tab element for connection with an end of a cord or said string of germs and a retention means. A seal-of-guarantee element is provided for receiving in it the tab element and an end of the cord knotted thereto.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 99 83 0493

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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20-12-1999

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4024607 A	24-05-1977	US 3967351 A	06-07-1976
		CA 1081487 A	15-07-1980
		IN 146979 A	20-10-1979
		AU 504918 B	01-11-1979
		AU 1288476 A	13-10-1977
		BE 840666 A	02-08-1976
		BR 7602284 A	12-10-1976
		CH 614611 A	14-12-1979
		DE 2616905 A	04-11-1976
		DK 171176 A	19-10-1976
		FR 2307488 A	12-11-1976
		GB 1538338 A	17-01-1979
		IL 49367 A	30-09-1979
		IT 1060975 B	30-09-1982
		JP 51135771 A	24-11-1976
		NL 7604103 A	20-10-1976
		OA 5305 A	28-02-1981
		RO 75928 A	28-02-1981
		SE 7604346 A	19-10-1976
US 4426854 A	24-01-1984	CA 1215849 A	30-12-1986
US 2164657 A	04-07-1939	NONE	
US 4494279 A	22-01-1985	NONE	
DE 4013880 A	08-08-1991	DE 9001148 U	28-06-1990

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