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(54) **Ballasting envelope for diving equipment**

(57) Ballasting envelope (1) for diving equipment, consisting of a container (2) for ballasting material fixed sealingly onto a support (3); on at least one side of said support (3) at least one handgrip (4, 11, 13, 14) for the envelope (1) is provided. Moreover, said envelope (1)

shows on one or more sides of the support (3) for the container one or more coupling elements (7, 9, 10) cooperating with means, such as spring-catches or others, for the fixing of the envelope (1) on any point of a jacket or other diving equipment.

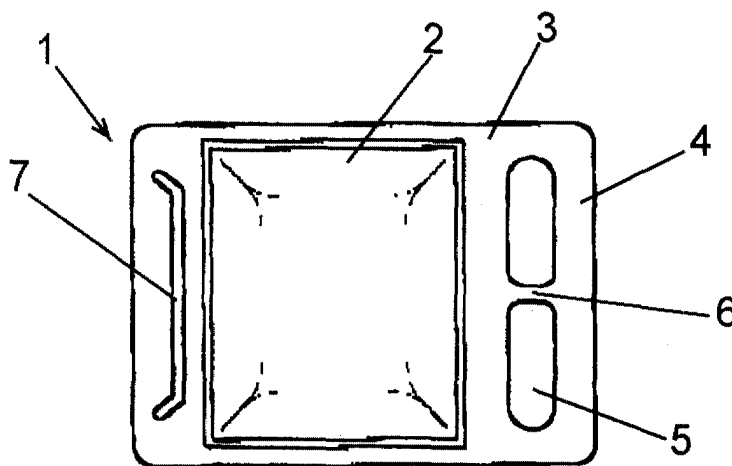


Fig. 1

Description

[0001] The present invention relates to a ballasting envelope for diving equipment, such as jackets, belts or others.

[0002] As is generally known, scuba divers can use ballasting systems, soft or hard, consisting of envelopes, welded and waterproof, which contain heavy materials (such as lead) in various forms (for instance shot). Said ballasting envelopes generally require a suitable pocket provided with extraction means allowing their transport and removal, if necessary. Such supporting pocket is usually applied to the diver's jacket, thus increasing the overall dimensions of the jacket and the friction with water during the diving session because of the reduction in the adhesion of said jacket to the diver's body. Moreover, said supporting pockets for the ballast are quite expensive, and their price might sometimes exceed the price of the ballast itself.

[0003] The present invention, therefore, aims at carrying out a ballasting envelope for diving equipment which overcomes the disadvantages shown by known ballasts.

[0004] The present invention reaches said objective by means of a ballasting envelope for diving equipment, consisting of a container for ballasting material fixed sealingly onto a support, in which on at least one side of said support at least one handgrip for said envelope is provided.

[0005] According to a feature of the present invention the envelope consists of coupling elements, such as slots or holes, cooperating with means, such as spring-catches or others, for the fixing of the envelope on any point of the diver's equipment.

[0006] Said envelope according to the present invention thus allows to obtain great advantages, both from the economic point of view and as far as comfort is concerned, reducing the overall dimensions of the jacket and therefore its friction with water, and it can also be rapidly coupled, by means of said spring-catches, onto any point of the diver's equipment (jacket, ballasting belt, etc.), in order to correct rapidly an excessive floating, both on surface and underwater.

[0007] Other features and advantages of the present invention will be better understood from the following description, regarded as a mere, nonlimiting example and referring to the enclosed drawings, in which:

- Fig. 1 shows a first form of embodiment of a ballasting envelope according to the present invention, provided with a handle obtained on the side of said envelope;
- Fig. 2 shows a second form of embodiment of the envelope according to the present invention, provided with an outside handle connected to said envelope;
- Fig. 3 shows a third form of embodiment of the envelope according to the present invention, provided

with a lateral extension consisting of a tail;

- Fig. 4 shows an execution variant of the envelope according to the present invention, provided with a lateral extension consisting of a tape;
- Fig. 5 shows another execution variant of the envelope according to the present invention, provided on one side with a tail and on the other side with slots;
- Fig. 6 shows a further execution variant of the envelope according to the present invention, laterally provided with handles and slots;
- Fig. 7 shows a chain obtained by linking ballasting envelopes according to the invention;
- Fig. 8 shows a variant of the chain in Fig. 7; and
- Fig. 9 shows a ballasting belt obtained by linking together ballasting envelopes according to the invention.

[0008] Fig. 1 shows a first form of embodiment of the ballasting envelope 1 according to the present invention. It consists of a container 2 made of heavy ballasting material, such as lead shot, said container being welded sealingly to a support 3 having a substantially rectangular shape and being extended on its two opposite sides so as to obtain, on one side, a handle 4 consisting of a grasping opening 5 provided with a stiffening bridge 6, and, on the opposite side, a bar 7 projecting above said support 3. In this first form of embodiment, therefore, the handgrip of the envelope 1 consists of the handle 4 made of the same material as the support 3.

[0009] Fig. 2 shows a second form of embodiment of the envelope 1, in which two slots 9 are obtained on two opposite sides of the support 3. On each side of said slots 9 a hole has been provided for the following assembly of a substantially C-shaped handle 11, provided on its ends with a pair of holes 12 to be located in this case on the two holes 10 placed laterally with respect to the right-hand slot 9. On said pair of holes 10 and 12, once they have been placed the ones onto the others, the handle 11 can be connected to the support 3, for instance by means of fixing pins (not shown). Such C-shaped handle 11 shows a stronger structure and a more anatomic shape than the handle 4 described in Fig. 1.

[0010] Fig. 3 shows a third form of embodiment of the envelope 1, in which the handgrip of said envelope consists of two band-type projecting tails 13, obtained by means of the extension of two opposite sides of the support 3 of the container 2. As can be observed, on the left-hand side of said support 3 and between the corresponding tail 13 and the container 2 there is a slot 9 provided laterally with a hole 10. Thanks to the suitable shape of the outside end of said tails 13 the tails 13 can be coupled to a traction handle 14 of the known type for lead-carrying pockets.

[0011] In Fig. 4 the handgrip consists of a tape 15, whereas on the support 3 of the envelope 1 there are one or more slots 9 on each side, and a hole 10; in this case, on the left-hand side of the support 3 there are

two slots 9, placed one beside the other and provided laterally with a hole 10, whereas on the right-hand side there is only one slot 9. The tape is fixed onto said right-hand slot 9 by introducing its inside end into the slot 9, then by folding and sewing it. As an alternative, the tape 15 could be welded or clamped to the support 3 by means of the handle 14. The dashes indicate the situation in which the inside end of the tape 15 is introduced into the first slot 9 placed on the left with respect to the container 2, then it is folded on itself and sewn, welded or clamped according to the description.

[0012] Fig. 5 shows a combination of the envelopes 1 described in Fig. 3 and 4, in which on the right-hand side of the support 3 there is a tail 13, made as one piece and possibly provided with a traction handle 14, and on the left-hand side there are two slots 9 and a hole 10 located laterally with respect to said slots.

[0013] Fig. 6 shows another variant of the present envelope 1, consisting of two handles 4 obtained on two opposite sides of the support 3, said handles consisting each of an opening 5, whereas two opposite slots 9 are obtained on the other two sides.

[0014] Fig. 7 shows a chain made of two ballasting envelopes 1, each consisting of a slot 9 and a hole 10 on the left-hand side, and of a tail 13 on the right-hand side; the free end of said tail 13 is connected to a fixing and abutting element 16, such as for instance the traction handle shown in the previous figures. The chain of envelopes 1 can be built by introducing the free end of the tail 13 into a slot 9 placed on the side of an adjacent envelope and by fixing it onto the element 16, which also has an abutting function in order to prevent that said tail 13 comes out of said slot 9.

[0015] Fig. 8 shows a variant of the connection mode between two envelopes 1. In this case the free end of the tail 13 on the left-hand envelope 1 is first introduced into the slot 9 of the right-hand envelope and then into the slot 9 of said left-hand envelope.

[0016] The chains of envelopes 1 obtained in the two previous figures thus allow the rapid link between said envelopes both in series (as shown) and in parallel, in order to obtain the desired ballast weight though maintaining the extractability of the whole chain; as a matter of fact, in case of extraction the handgrip of the first envelope 1 of the chain draws all the envelopes connected to it.

[0017] Fig. 9 shows envelopes 1 provided laterally with two slots 9 and with a hole 10, and connected one to the other by means of a belt 17 passing through said slots and building, together with a release buckle 17, a ballasting belt.

[0018] If the envelopes are not linked so as to build chains or belts, but they are located in the pockets of diving jackets, said envelopes will be provided with holding elements such as Velcro, rivets or others, which, if necessary, can allow their rapid and easy release.

Claims

1. Ballasting envelope (1) for diving equipment, consisting of a container (2) for ballasting material fixed sealingly onto a support (3), characterized in that on at least one side of said support (3) at least one handgrip (4, 11, 13, 14) for said envelope (1) is provided.
2. Ballasting envelope (1) according to claim 1, characterized in that on one or more sides of the support (3) of the container there are one or more coupling elements (7, 9, 10) cooperating with means, such as spring-catches or others, for the fixing of the envelope (1) on any point of a jacket or of any other diving equipment.
3. Ballasting envelope (1) according to claim 1, characterized in that said handgrip (4, 11, 13, 14) consists of a handle (4) obtained by extending laterally the material of the support (3).
4. Ballasting envelope (1) according to claim 2, characterized in that said handle (4) is provided with at least one opening (5).
5. Ballasting envelope (1) according to claim 3, characterized in that said handle (4) is provided with a stiffening bridge (6) placed in said opening (5).
6. Ballasting envelope (1) according to claim 1, characterized in that said handgrip (4, 11, 13, 14) consists of an outside handle (11) connected to one side of the support (3) of the envelope (1) by means of suitable fixing means.
7. Ballasting envelope according to claim 6, characterized in that said handle (11) is substantially C-shaped and shows on its ends a pair of holes (12) corresponding to holes (10) obtained on one side of the support (3).
8. Ballasting envelope (1) according to claim 1, characterized in that said handgrip (4, 11, 13, 14) consists of at least one lateral extension (13, 14) similar to a tape.
9. Ballasting envelope (1) according to claim 7, characterized in that said lateral extension (13, 14) is a tail (13) obtained from the material of the support (3).
10. Ballasting envelope (1) according to claim 7, characterized in that said lateral extension (13, 14) is a tape introduced and fixed into at least one slot (9) obtained on at least one side of the support (3) of the envelope (1).

11. Ballasting envelope (1) according to claims 6 and 7, characterized in that the free end of said lateral extension (13, 14) is fixed to a traction handle (13).
12. Ballasting envelope (1) according to claim 1, characterized in that said support (3) shows on two opposite sides at least one handgrip (4, 11, 13, 14) and on each of the other two opposite sides at least one slot (9). 5
13. Ballasting envelope (1) according to claim 1, characterized in that said support (3) shows on two opposite sides at least one slot (9) and at least one lateral extension, respectively, (13), said lateral extension (13) being introduced into a slot (9) placed on one side of an adjacent support (3), provided with fixing and abutting means (16) of its free end on said slot (9) of the adjacent support (3). 10 15
14. Ballasting envelope (1) according to claim 1, characterized in that said support (3) shows on two opposite sides one or more slots (9), in said slots (9) a belt (17) being introduced so as to build, together with other adjacent supports (3) provided with slots (9), a ballasting belt. 20 25
15. Ballasting envelope (1) according to claim 1, characterized in that it consists of holding elements with rapid release such as Velcro, rivets or others. 30

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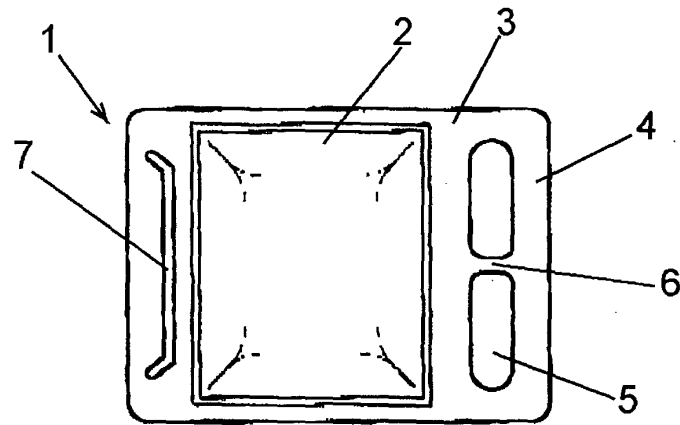


Fig. 1

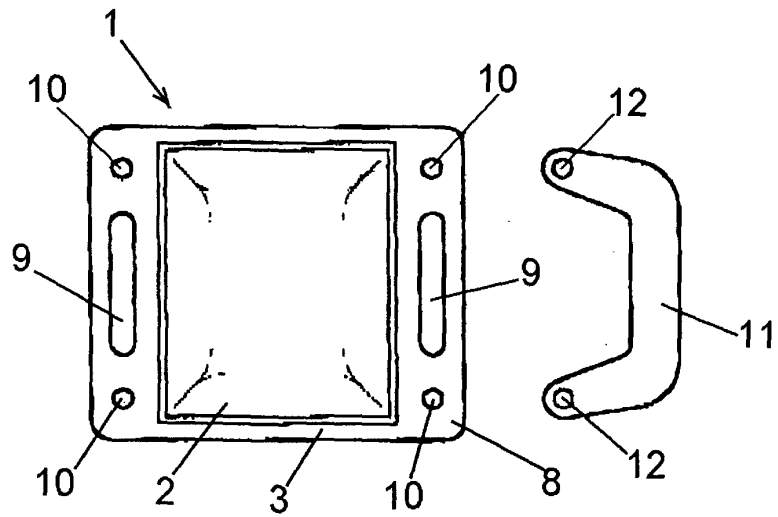


Fig. 2

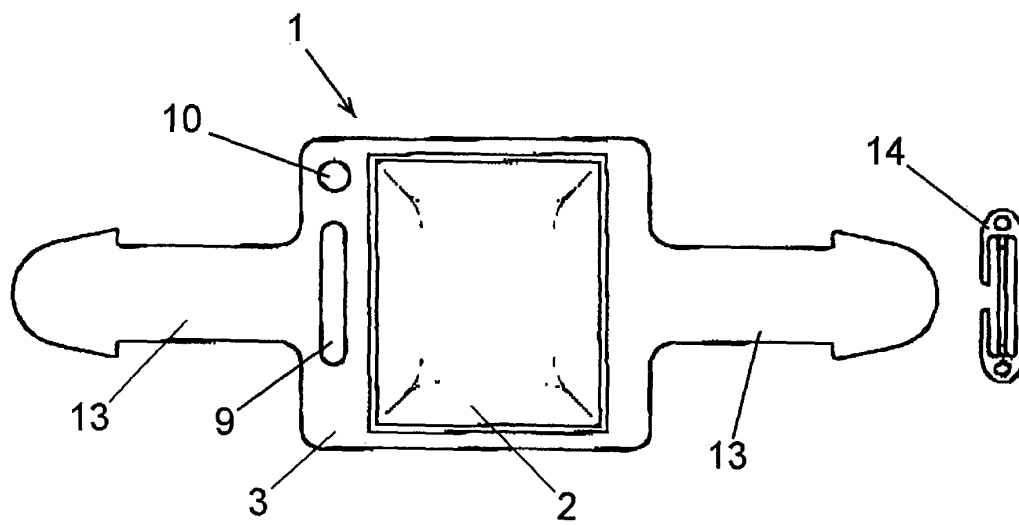


Fig. 3

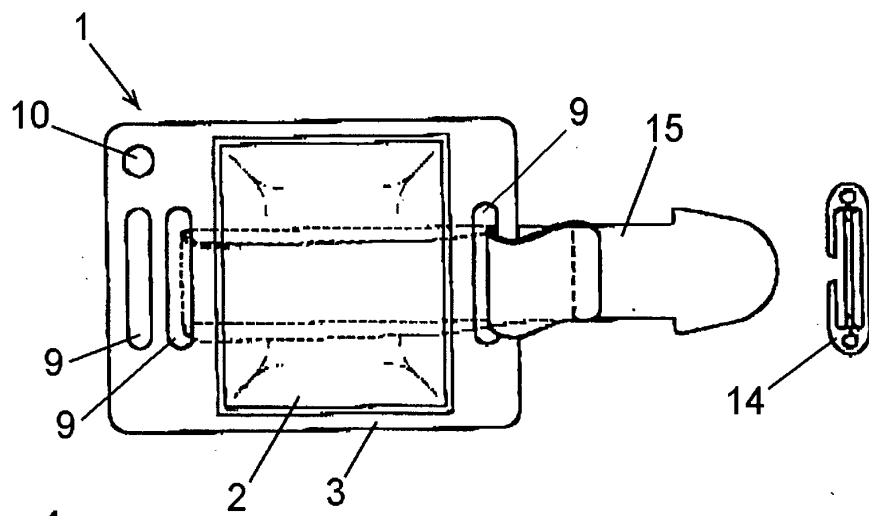


Fig. 4

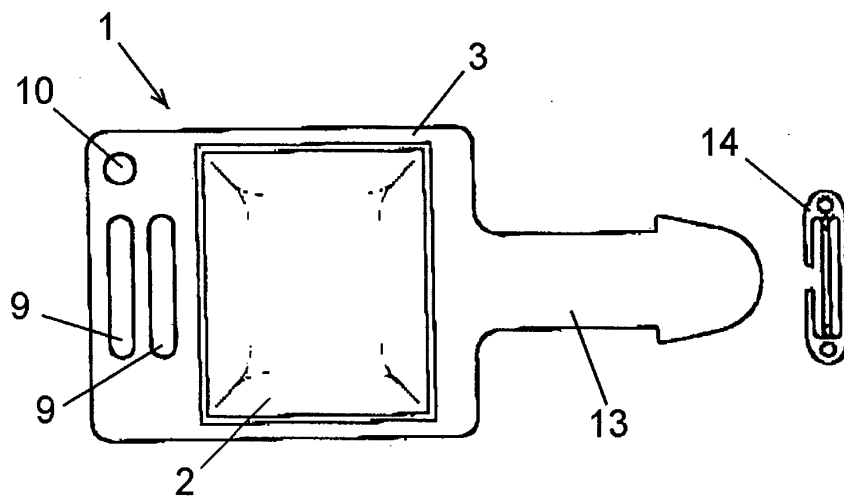


Fig. 5

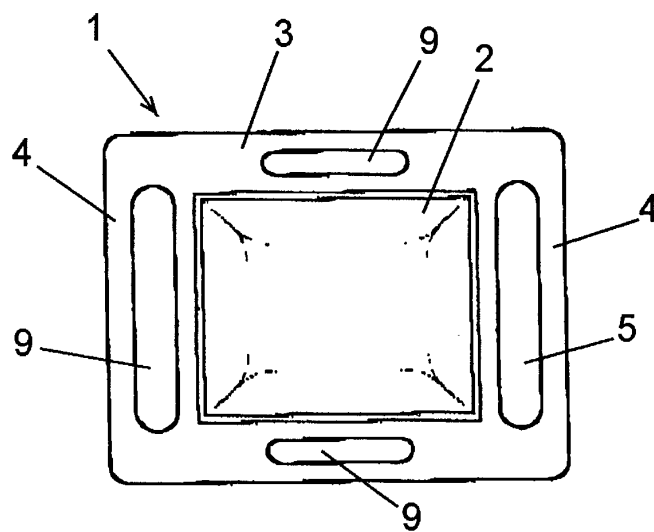
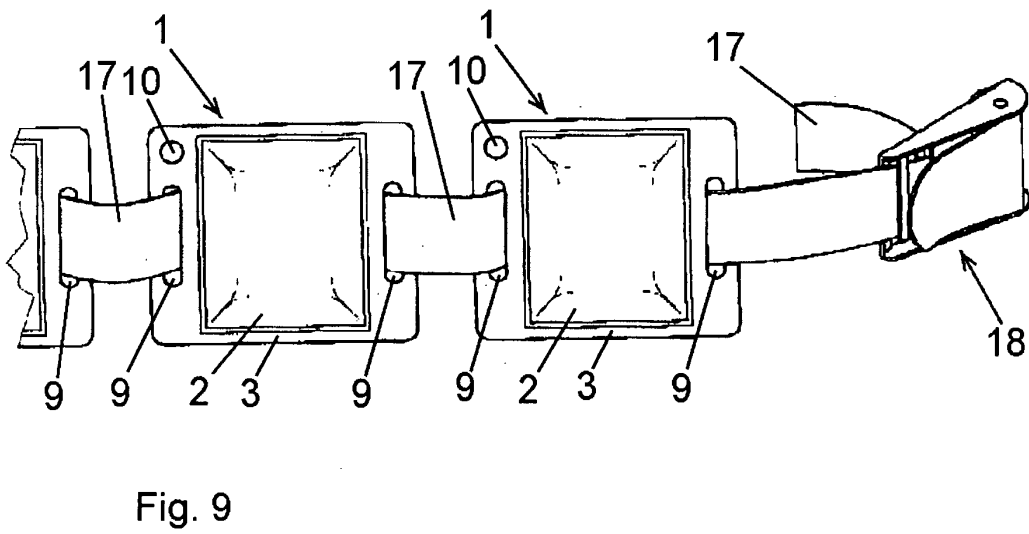
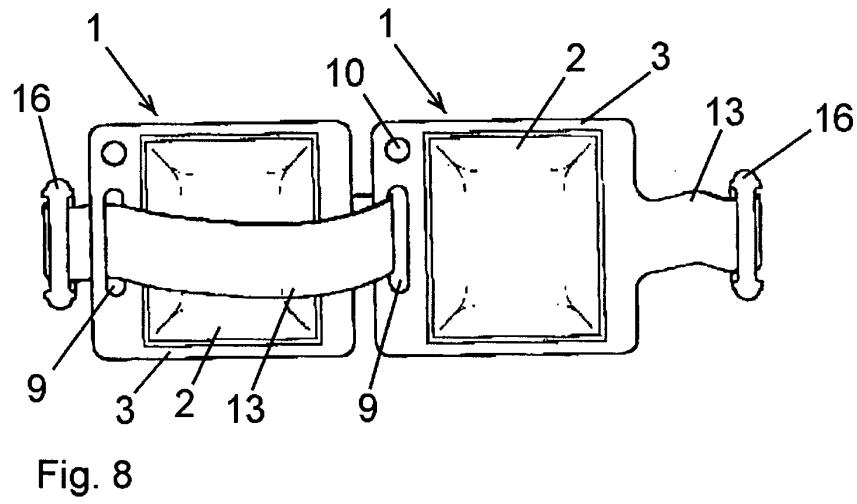
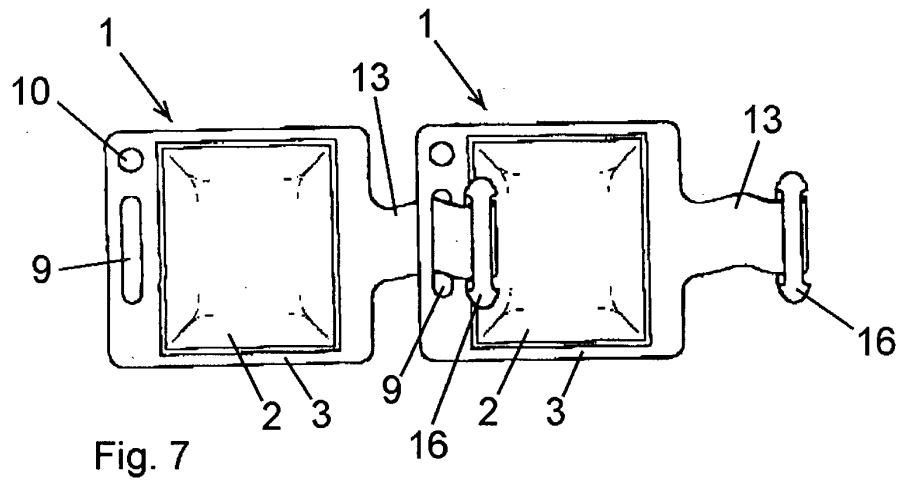


Fig. 6





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 00 12 5100

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| Place of search THE HAGUE | | Date of completion of the search 23 April 2001 | Examiner DE SENA HERNAND..., A |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p> | | | |

EPO FORM 1503 03.82 (P4/C01)

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