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## (54) Extractable plug with screw cap and security ring

(57) Plug for small containers consisting of a central element formed by a screw cap (1) with one single external handling flap (5), formed by an outer stiffening ring (8) connected to the flap by tearable shanks (11, 12), the stiffening ring having a lower external swell (9), consisting of an external element formed by a pourout (14), formed by an external annular body (16), formed by an intermediate thin deformable wall section(17) and formed by an outer security ring (19) connected to the external annular body (16) by tearable shanks (18), this security ring (19) featuring an internal annular recess (20) in which to lodge the swell (9) of the stiffening element (8) when assembling the central and external elements forming the plug.

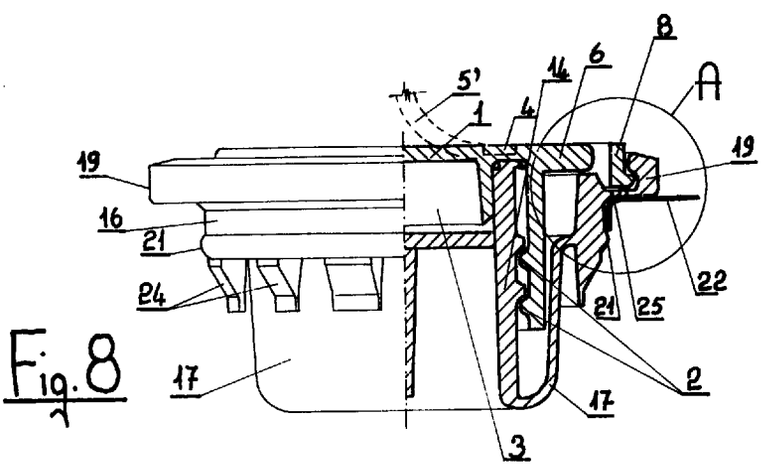


Fig. 8

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## Description

**[0001]** This invention covers an extractable plug for cans or tins, to be applied after the can or tin has been filled.

**[0002]** Various types of extractable stoppers and plugs, mostly in plastic material, are known which in their most recent solution consist of two elements, i.e.:

a) a central element consisting of an internally threaded cap, a stiffening ring, and semicircular flaps that can be raised to handle the cap and to extract the pourout,
b) an external element including an extractable externally threaded pourout on which it is screwed the cap, an external annular locking body inside the shaped hole of the container and a thin deformable wall section connecting the extractable pourout to the external body and including a security ring connected to the external body.

**[0003]** These two elements are stably assembled by reciprocal properly shaped links which prevent the plug from being tampered with.

**[0004]** These extractable plugs as they are now manufactured, are highly functional and efficient, but they have the drawback of being useful only for rather large containers featuring a bottom large enough to bore a hole in which to fit the plug.

**[0005]** The efforts to create a similar known extractable plug for small containers has not led to any significant results, on the contrary, it was found that it is impossible to reduce the plug diameter because this reduction does not leave sufficient space for the pourout since it was necessary to keep the various components adequately dimensioned.

**[0006]** In other words, the flat space of the plug was completely taken up by its components, to the detriment of the pourout.

**[0007]** A substantial modification of the known plug is therefore necessary so that it can also be used on small containers and that is the objective of this invention.

**[0008]** To be brief, this Patent covers a plug that consists of two elements, i.e. a central and an external element, of which the central element consists of an internally threaded cap, with one single flap, to be raised for handling, connected by means of tearable shanks to an external stiffening ring located at the upper wall level of the cap. A circular or annular zone on the upper surface of the cap is machined so as to cause friction on the thumb when opening the cap by a rotary action on the raised handling flap, and to facilitate the assembly of the two elements of the plug.

**[0009]** According to this invention, the external element of the plug is provided with a drip-catcher shaped pourout and this pourout is externally threaded to receive the closing cap; this external element presents also a ring blocking the plug inside the hole in the container as well as an external sealing ring around the opening in the container bottom apt to receive and secure the stiffening ring and to connect the central with the external element. This external peripheral security ring is connected to the ring locking the plug inside the container hole by means of a peripheral series of tearable shanks. These tearable shanks of the handling flap and of the external peripheral security ring will form a protection against any tampering with the plug and its contents, since their rupture will immediately evidence such tampering.

**[0010]** The handling flap of the cap is also utilized, when the cap is screwed on the pourout, to extract the pourout, for faciliting the pouring of the contents after unscrewing of the cap. Other characteristics of the plug in question corroborating its efficiency for small sized containers will be described hereinafter.

**[0011]** The invention in question is illustrated for exemplification purposes in the enclosed drawings in which:

Fig. 1 shows a top view of the central element of the plug;
Fig. 2 shows a section according to I-I of the element in Fig. 1;
Fig. 3 shows the section according to II-II of the element in Fig. 1;
Fig. 4 shows the section according to III-III of the element in Fig. 1;
Fig. 5 shows a top view of the external element of the plug;
Fig. 6 shows the section according to IV-IV of the element in Fig. 5;
Fig. 7 shows the section of the complete plug according to III-III in Fig. 1;
Fig. 8 shows the section of the complete plug according to V-V in fig. 5;
Figures 9, 10 and 11 show various solutions of the outer security ring of the external element based upon various shapes of the edge of the hole in the container.

**[0012]** With reference to these drawings, Figures 1 to 4 refer to the central element, the cap 1 being provided with an internal thread 2 and an annular projection 3 acting as a seal. The upper face of the cap features a machined circular or annular zone with shapings to facilitate the assembly of the two elements of the plug and this shaping is exemplified in the drawing by an annular saw toothing 4.

**[0013]** A flap 5 is located on the outside of this cap 1 to which this flap 5 is connected by a zone 6 and it can be raised by means of a tooth 7 opposite to the connecting zone 6. useful to screw the cap down or to unscrew it.

**[0014]** A stiffening ring 8 with a lower external swell 9 is located outside the flap 5. This stiffening ring 8 is lowered in the zone 10 where it is present the tooth 7 so

that it will be possible to slip a nail under the tooth 7 to raise the handling flap 5.

**[0015]** The stiffening ring 8 is connected by tearable shanks 11 to the flap 5 and it is also connected by other tearable shanks 12 to the zone 6 connecting the flap 5 to the cap 1. The central element thus described is obtained in one single mold.

**[0016]** The external element of the plug shown in Fig. 5 and 6 is also obtained in one single mold and it features the extractable pourout 14 provided with an external thread 15 matching the thread 2 of the cap 1, it features on outer body 16 and it features a thin walled section 17 connecting the extractable pourout 14 to the outer body 16.

**[0017]** The outer body 16 presents an external security ring 19 connected by tearable shanks 18, this security ring being provided with an internal recess 20 in which to lodge the swell 9 of the stiffening element 8. The interaction between this recess 20 and the swell 9 guarantees assembly of the two plug elements.

**[0018]** The lower external zone of the outer body 16 features a swell 21 striking against the shaped edge of the hole in the container 22 thus ensuring a stable fitting of the plug.

**[0019]** The upper edge of the pourout 14 is turned outwards, its peripheral end being thinned to form an efficient drip-catcher 23.

**[0020]** The assembly of the plug and its position in the container 22 after filling are shown in Fig. 7 and 8, while Fig. 8 shows how easy it is to raise the flap 5 in its position 5 after the shanks 11 connected to the stiffening ring 8 have been torn away.

**[0021]** The security ring 19 has the aim to ascertain whether the plug has been tampered with.

**[0022]** As a matter of fact, the plug can be removed from the hole in the container 22 only by acting with a screwdriver or the like on the edge of the hole in order to flatten and change the shape of the swell 21 of the outer body 16 but this would cause the deformation of the ring 19 and would tear away the shanks 18 as an evidence of tampering.

**[0023]** This anti-tampering protection is partly also provided by the flap 5, since any attempt to remove the plug would result in tearing away the shanks 11 connecting the flap 5 to the cap 1.

**[0024]** The lower zone of the outer body 16 of the external element features numerous peripheral projections 24 turned downward to facilitate truing and assembly of the plug on the container 22.

**[0025]** With reference to detail A shown in Fig. 8, the Figures 8,9,10 and 11 show the various shapes 25, 25a, 25b, and 25c into which the edge of the hole in the container 22 may be bent and the matching security rings 19, 19a, 19b and 19c that are also differently shaped as can be seen in the drawings.

**[0026]** The handling flap 5 of the cap is also utilized, when the cap is screwed on the pourout 14, to extract the pourout as indicated in Fig. 6 with dotted lines, for faciliting the pouring of the contents after unscrewing of the cap.

## Claims

1. Extractable plug for containers consisting of two elements, i.e.:

   a) a central element featuring a screw cap (1), a stiffening ring (8) around the cap (1)and a cap handling flaps (5) external to the stiffening ring (8) to which the flaps(5) are connected by tearable shanks (11),
   b) an external element featuring an extractable pourout (14) closed by the cap (1), an outer annular body (16), a deformable thin walled section (17) connecting the pourout (14) to the outer body (16), and a security ring (19) also connected to the outer body, characterized in that:
   c) on the outside of the cap (1) there is one single handling flap (5) connected to the cap by a zone (6), which flap can be raised by means of a projecting tooth (7) in opposite position to the zone (6) jointed to the cap,
   d) the stiffening ring (8) is on the outside of the handling flap (5) and it is connected to this flap (5) by tearable shanks (11) and linked to the connecting zone (6) between flap (5) and cap (1) by tearable shanks (12) while the stiffening ring (8) also features a lower external swell (9),
   e) the outer body (16) of the external element presents an external security ring (19) connected by tearable shanks (18),
   f) the above mentioned security ring (19) has an annular internal recess (20) in which to lodge the swell (9) of the stiffening element (8) and the action of this swell (9) inside the recess (20) ensures assembly of the two plug elements, so that any attempt by ill-intentioned persons to tamper with the plug or with the security ring will immediately become obvious due to the rupture of the shanks (11,12,18).

2. Plug as described in claim 1 characterized in that the stiffening ring (8) features a lowering (10) in the zone corresponding to the tooth (7), to allow the opening of the cap (1) with the raised handling flap (5).

3. Plug as described in claim 1 characterized in that the cap (1) has at its top face a machined circular or annular zone (4) to facilitate the assembly of the two plug components and to facilitate the handing of the cap.

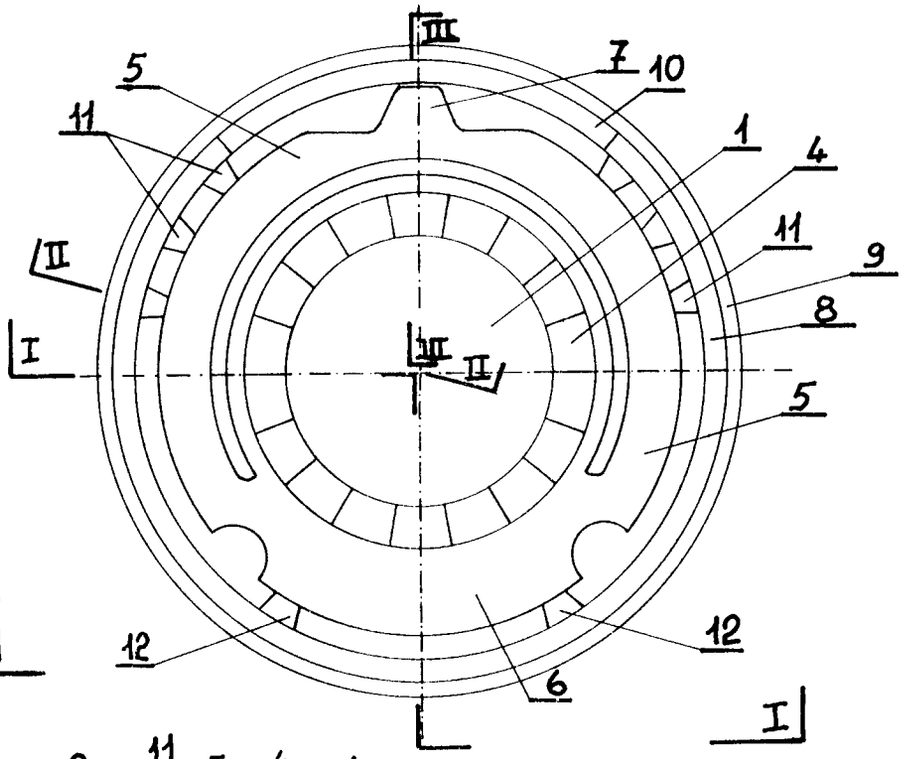


Fig. 1

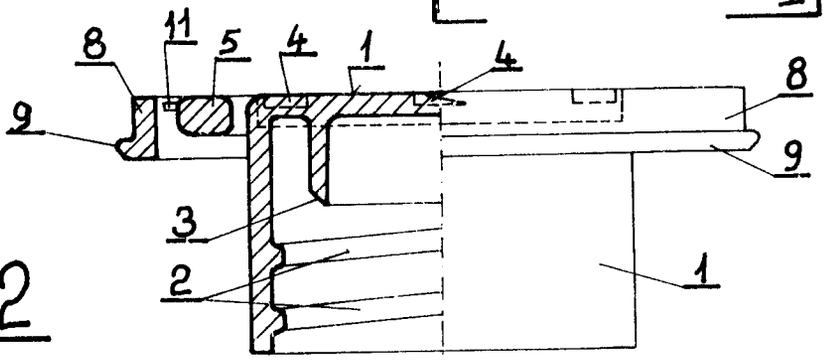


Fig. 2

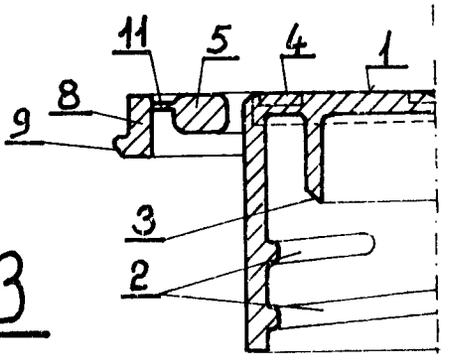


Fig. 3

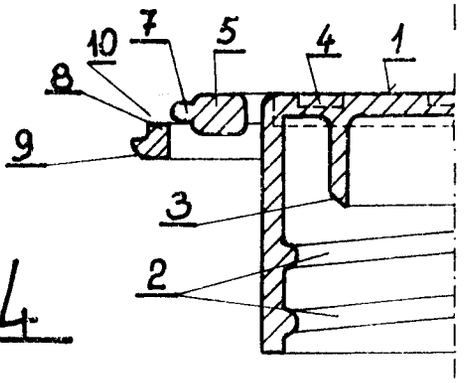


Fig. 4

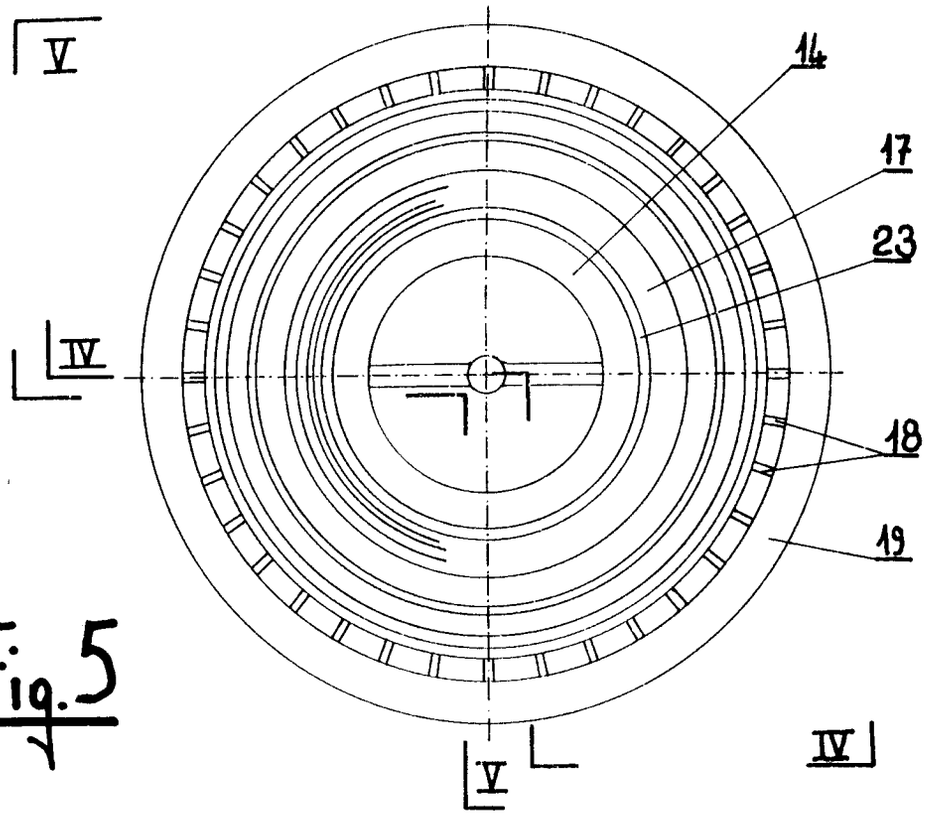
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Fig.5

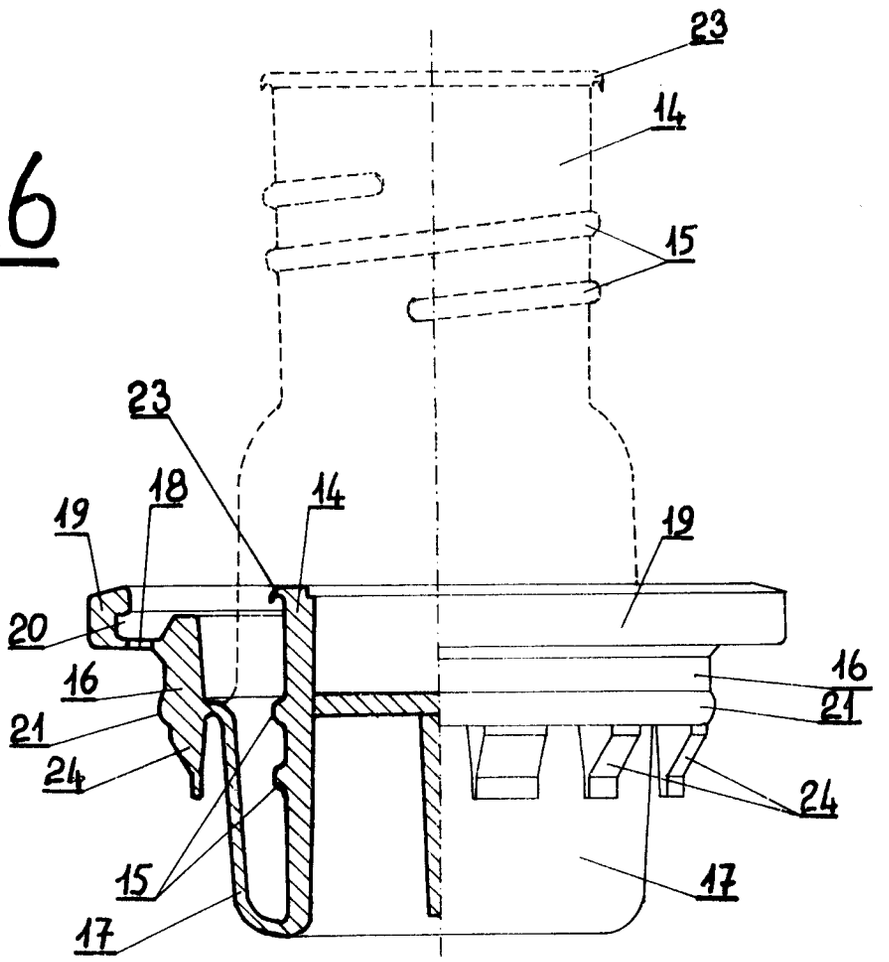
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Fig.6

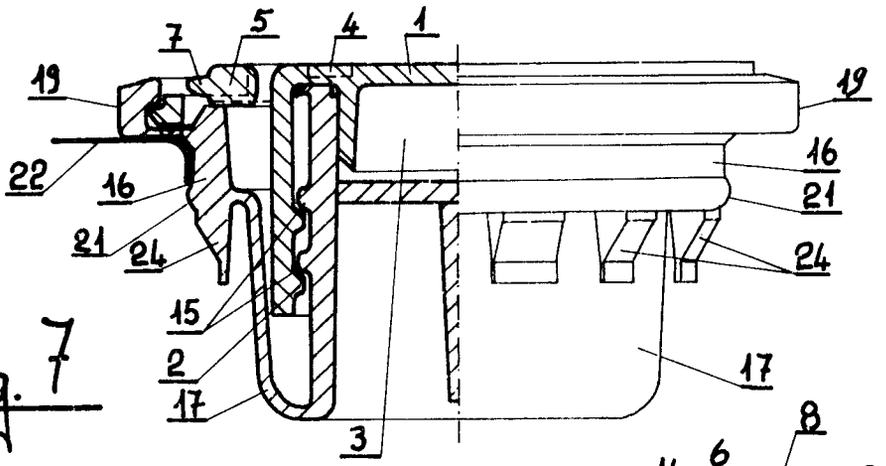


Fig. 7

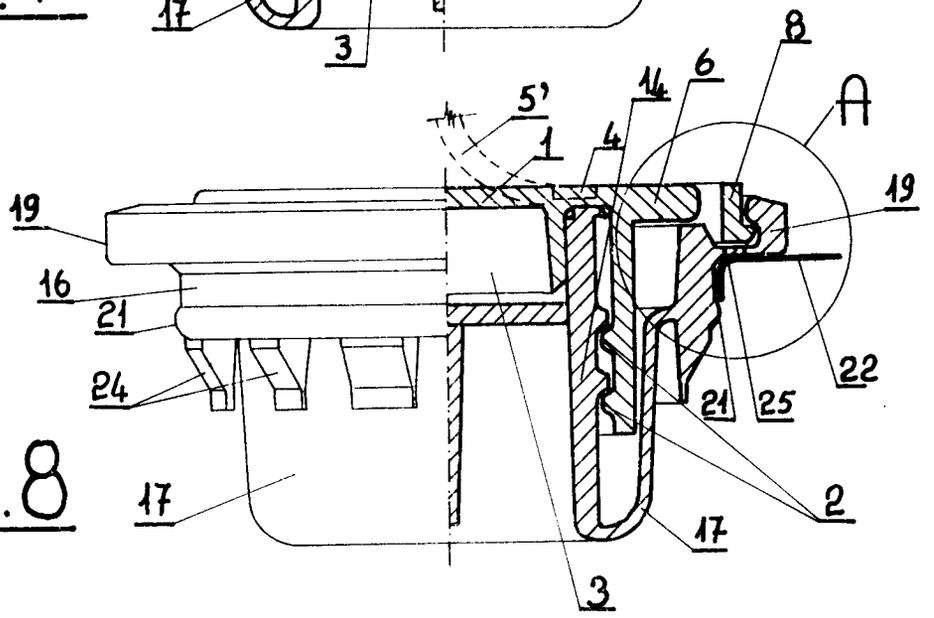


Fig. 8

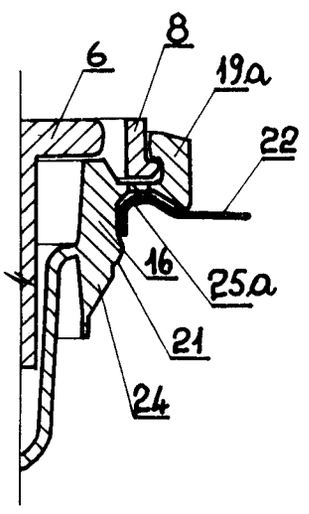


Fig. 9

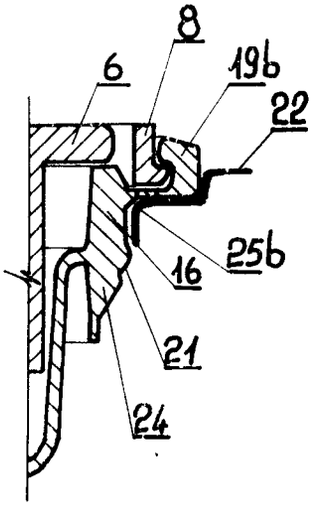


Fig. 10

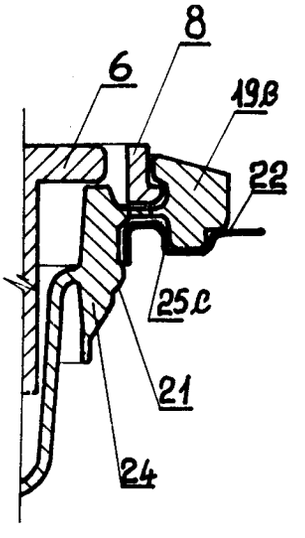


Fig. 11

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# EUROPEAN SEARCH REPORT

Application Number
EP 98 10 9390

## 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.6) |
|---|---|---|---|
| A | EP 0 345 502 A (INVAT SRL) 13 December 1989 * column 2, line 29 - column 4, line 24 * * figures 1-5 * | 1-3 | B65D47/06 |
| A | EP 0 269 499 A (REMY ETS PIERRE) 1 June 1988 * column 3, line 57 - column 5, line 17 * * column 6, line 28 - line 61 * * figures 1-15 * | 1 | |
| A | EP 0 417 453 A (INVAT SRL) 20 March 1991 * column 4, line 14 - column 5, line 48 * * figures 1-10 * | 1 | |
| A | EP 0 620 160 A (RIEKE CORP) 19 October 1994 * column 7, line 27 - column 8, line 33 * * figures 1-6 * | 1 | |
| A | GB 2 199 814 A (ROBINSON & SONS LTD) 20 July 1988 * page 4, line 9 - line 26 * * figure 1 * | 1 | TECHNICAL FIELDS SEARCHED (Int.Cl.6) B65D |

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| THE HAGUE | 24 March 1999 | Papatheofrastou, M |

CATEGORY OF CITED DOCUMENTS

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## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 98 10 9390

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24-03-1999

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| EP 0345502 A | 13-12-1989 | NONE | |
| EP 0269499 A | 01-06-1988 | FR 2606377 A | 13-05-1988 |
| | | FR 2609968 A | 29-07-1988 |
| EP 0417453 A | 20-03-1991 | IT 222983 Z | 12-05-1995 |
| EP 0620160 A | 19-10-1994 | AU 5902694 A | 20-10-1994 |
| | | BR 9401463 A | 18-10-1994 |
| | | CA 2119695 A | 14-10-1994 |
| | | JP 6345111 A | 20-12-1994 |
| GB 2199814 A | 20-07-1988 | NONE | |

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