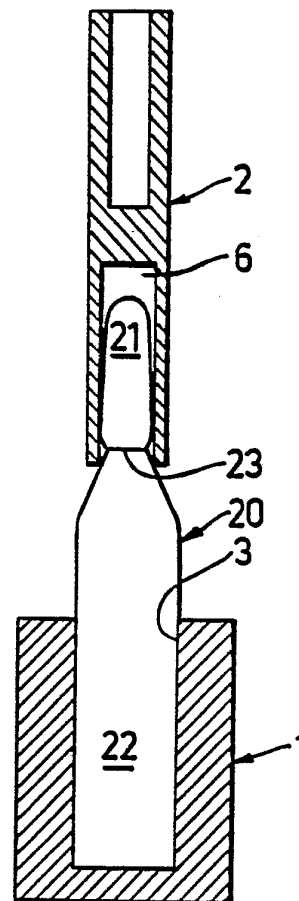




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/SE86/00264 (22) International Filing Date: 5 June 1986 (05.06.86) (71)(72) Applicant and Inventor: JOHANSSON, Gunnar [SE/SE]; Pl. 769, Kauppinen, S-981 27 Kiruna (SE). (74) Agents: ONN, Christer et al.; AB Stockholms Patentbyrå, Zacco & Bruhn, Box 3129, S-103 62 Stockholm (SE). (81) Designated States: AT (European patent), AU, BE (European patent), CH (European patent), DE (European patent), DK, FR (European patent), GB (European patent), IT (European patent), JP, LU (European patent), NL (European patent), SE (European patent), US.		Published <i>With international search report.</i> <i>In English translation (filed in Swedish).</i>
(54) Title: A METHOD AND DEVICE FOR BREAKING AMPOULES (57) Abstract The device comprises an ampoule holder (1) and a breaking rod (2; 2'). The ampoule holder (1) has a recess (3) which can house a lower portion (22) of an ampoule (20). The breaking rod (2; 2') has a recess (6; 6') which can receive an upper portion (21) of the ampoule (20). By holding the ampoule holder (1) by one hand and moving the breaking rod (2; 2') aside by the other hand a harmless breaking of the ampoule (20) in its waist section (23) is obtained.		



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A method and device for breaking ampoules

This invention relates to a method and a device for breaking ampoules.

5 So-called injection ampoules of glass are normally provided with a waist portion where the ampoule is to be broken so that the liquid contents of the ampoule will be available. Breaking of the ampoule is mostly carried out so that an indication of fracture is filed
10 in the glass at the waist of the ampoule and the ampoule is broken by hand. Then there is a risk that the ampoule is crushed in the filing operation and there is also a risk that the ampoule will be crushed at the very breaking moment. If the ampoule is crushed
15 there are great risks of cuts in one's hands and, moreover, it may be directly unsuitable to get the contents of the ampoule on a sore hand.

It is therefore the object of this invention to provide a method and a device simplifying the breaking
20 of ampoules simultaneously as the risk of accident is reduced, and this object is achieved by means of the characteristic features of the method and the device set forth in the claims.

The invention eliminates the need of the above-
25 -mentioned filing and also simplifies the very breaking moment. Besides saving time the risk of personal injury is eliminated and the invention is thus also valuable in view of industrial safety.

30 Illustrative examples of the invention will be described in the following in greater detail by means of the enclosed drawings wherein Fig. 1 is a lateral view of an ampoule holder according to the invention, Fig. 2 is a top plan view of the ampoule holder according to Fig. 1, Fig. 3 is a lateral view of a breaking rod according to the invention, Fig. 4 shows a section of the
35 breaking rod taken along the line IV-IV in Fig. 3, Fig.

5 shows a section of the breaking rod taken along the line V-V in Fig. 3, Fig. 6 shows an ampoule placed in an ampoule holder and a breaking rod placed on the ampoule, the ampoule holder and the breaking rod being shown i section, Fig. 7 corresponds to Fig. 6 but shows the ampoule holder, ampoule and breaking rod after a finished breaking operation, and Fig. 8 corresponds to Fig. 6 but shows another embodiment of a breaking rod according to the invention.

10 The device for breaking ampoules comprises one member in the form of an ampoule holder 1 and one member in the form of a breaking rod 2. The ampoule holder is provided with recesses 3-5 which have such a form and size that they can house and fix a lower portion 22 of an ampoule 20. As there are different sizes of ampoules it is suitable to provide the ampoule holder 1 with a number of different recesses.

15 The breaking rod 2 shown has two recesses 6 and 7 of a size and form that they can house an upper portion 21 of an ampoule 20, as shown in Figs. 6 and 7. The recesses 6 and 7 are preferably of different sizes so that two ampoule sizes can be managed with only one breaking rod 2.

20 An ampoule is broken by placing the ampoule 20 so that its lower portion 22 enters a recess of the ampoule holder 1 of a corresponding size, see Fig. 6. The breaking rod 2 is thereafter applied to the upper portion 21 of the ampoule 20 so that the upper portion 21 enters a recess of a suitable size in the breaking rod 2. The very method of breaking an ampoule is carried out in such a way that the ampoule holder 1 is held by one hand and the breaking rod 2 is laterally broken by the other hand, see Fig. 7, until the ampoule 20 is broken in its waist 23. The upper portion 21 of the ampoule can thereafter be thrown away and the contents of liquid of the lower portion 22 of the ampoule can be

emptied and the lower portion thrown away.

5 . The breaking rod 2' shown in Fig. 8 has two recesses 6' and 7', which are substantially adapted to the tapering upper portion 21 of the ampoule 20 by their form. The recesses 6' and 7' offer in this way a release that facilitates the removal of the upper portion 21 of the ampoule after breaking. The depths of the recesses 6' and 7' are further adapted to the length of the respective upper portion 21 so that
10 breaking can be carried out without the risk of the lower portion 22 being damaged at the same time as a maximal lever effect is obtained.

15 It is appreciated from the above specification that a person carrying out breaking of an ampoule need not touch the very ampoule during the dangerous breaking operation.

 The invention can be freely varied within the scope of the appended claims.

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Claims

1. A method of breaking ampoules (20), c h a r -
a c t e r i z e d in that a device is used which com-
5 prises two portions (1, 2; 2'), one portion (1) having
at least one recess (3-5) for enclosing one portion
(22) of the ampoule (20) at least partly, the other
portion (2; 2') having at least one recess (6; 6', 7;
7') for enclosing another portion (21) of the ampoule
10 (20) at least partly and that the ampoule (20) is
broken by producing a relative motion between the por-
tions (1, 2; 2') of the device.

2. A device for breaking ampoules (20), c h a r -
a c t e r i z e d in that it comprises two portions
15 (1, 2; 2'), that one portion (1) has at least one re-
cess (3-5) for enclosing one portion (22) of the am-
poule (20) at least partly and the other portion (2;
2') has at least one recess (6; 6', 7; 7') for enclos-
ing another portion (21) of the ampoule (20) at least
20 partly.

FIG.1

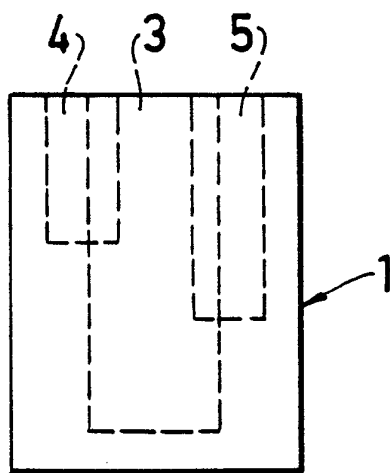


FIG.2

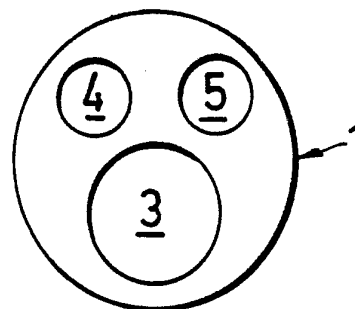


FIG.3

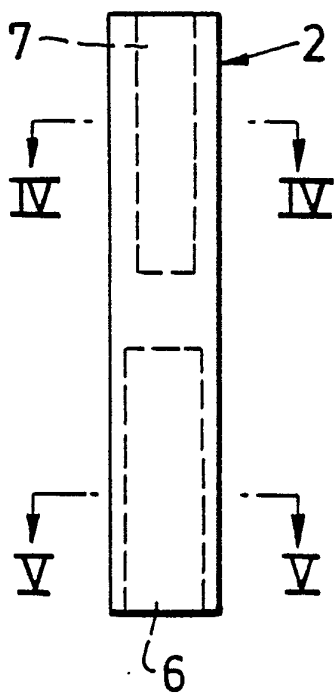


FIG.4

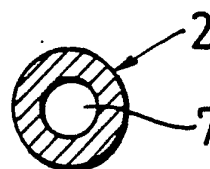


FIG.5

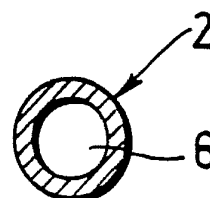
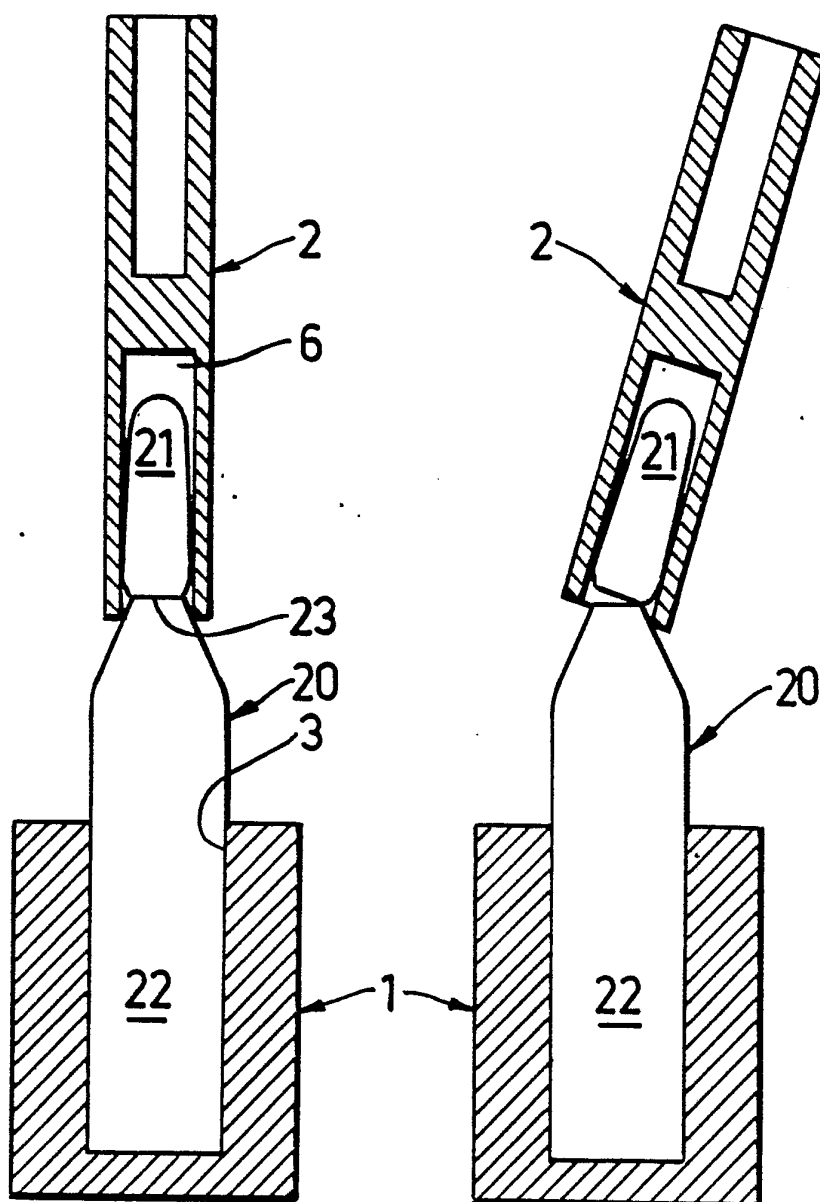


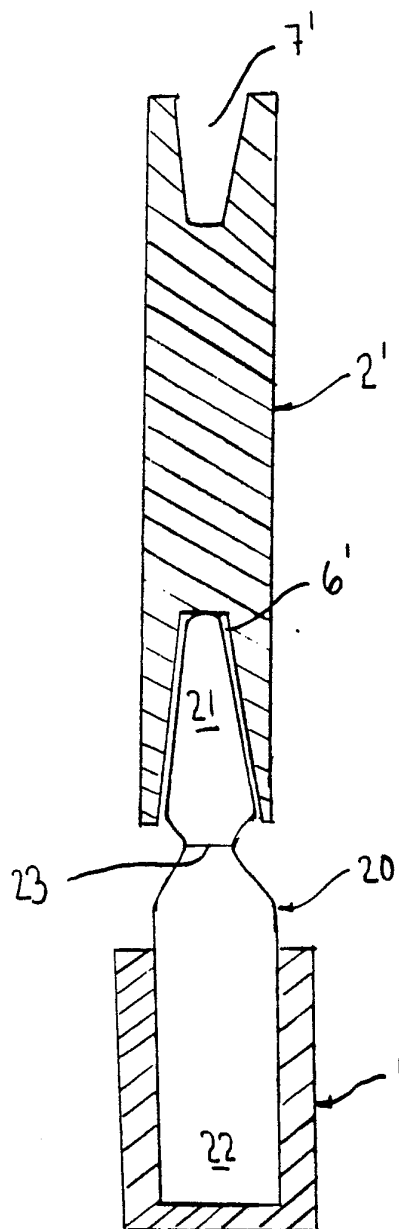
FIG. 6'

FIG. 7



3/3

FIG. 8



INTERNATIONAL SEARCH REPORT

International Application No PCT/SE86/00264

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) *		
According to International Patent Classification (IPC) or to both National Classification and IPC 4		
A 61 J 1/08		
II. FIELDS SEARCHED		
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III. DOCUMENTS CONSIDERED TO BE RELEVANT *		
Category *	Citation of Document, 11 with indication, where appropriate, of the relevant passages 12	Relevant to Claim No. 13
X	SE, A, 8304894-2 (MAGYAR OPTIKAI MŰVEK) 15 March 1984	1,2
X	NO, B, 137 637 (I M S LIMITED) 19 December 1977	1,2
X	DE, A1, 3 130 247 (PRÄMETA PRÄZISIONSMETALL U KUNSTSTOFFERZEUGNISSE G BAUMANN & CO) 17 February 1983 & SE, 8107231 FR, 2495466 GB, 2091240 NL, 8105442	2
X	DE, A1, 3 141 483 (MUTZEL, MAXIMILIAN) 5 May 1983 & WO, 82/03984 EP, 0078825	2
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