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(54) Phials joinable together side-by-side

(57) The main feature of the present improvement consists in a particular shape of connecting means of phials that permits a union, detachment and re-attachment of more phials arranged in succession in such a way as to improve the tight and make the connection easier and safer.

Basically, each phial is provided with two lateral fins (6, 7). The shape of each lateral fin varies according to its position, the lateral fins (6, 7) being provided with holes and teeth.

More precisely, at least one (6) of the said lateral fins is provided with teeth (8) and shows two parts or sectors (9, 10) separated by at least one staggered tongue (11).

The other lateral fin (7) is provided with corresponding holes (12) that receive the said teeth (8).

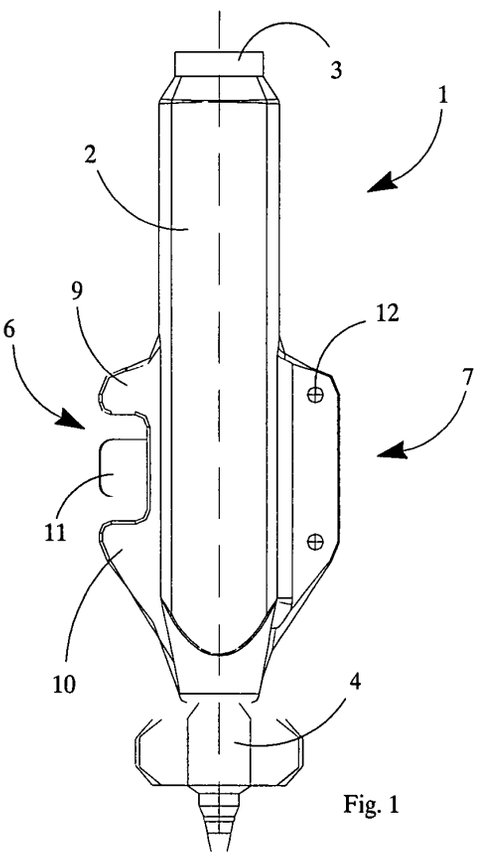

Fig. 1

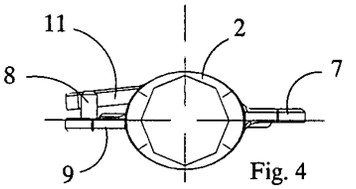

Fig. 4

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Description

[0001] The present invention proposes an improvement to connecting means of phials, in particular phials for containing medicines, cosmetics or the like.

[0002] The main feature of the present improvement consists in a particular shape of connecting means of phials that permits a union, detachment and re-attachment of more phials arranged in succession.

[0003] The said means permit to improve the union of two adjacent phials by utilizing a particular safety tongue that cooperates with teeth. The teeth permit to quickly connect more phials and prevent an unintentional detachment of the phials.

[0004] Further, a phial according to the present invention is provided with means for cutting an end of a closing element so as to permit the fluid to go out drop by drop.

[0005] As is known, in the fields of cosmetics and medicines liquid or fluid mono-dose products are utilized. The said liquid or fluid mono-dose products are inserted in proper phials.

[0006] At present, the known phials are formed by a containing cylindric plastic element. The bottom of the phial is closed, for instance with a hot pressing. The top of the phial is breakable and in some cases, the phial top may be recovered to close the phial again.

[0007] As is known, at present there exist some techniques to join more phials that typically are monodose phials.

[0008] The joint of more phials is obtained at present by placing the phial borders side by side in a direct contact of the phial borders or by utilizing particular tongues that are provided on the phial borders. The said tongues are provided with notches that may be linear or have a dovetail shape or another suited shape.

[0009] In addition, the applicant of the present invention filed another invention with Italian patent application Serial No. VR2002A000086, filed on 12 September 2002, regarding a joining system conceptually new that permits to carry out single phials and, if necessary, to fill them with different doses of liquid or fluid or with liquid or fluid having a different composition or viscosity. After all the single phials have been filled with the liquid or fluid, the single phials are connected or joined to each other so as to form an assembly of monodose phials having different quantities and qualities. This previous invention proposes that the said phials are joined to each other in any moment, even after the filling of the phials, and that it is possible to fill phials with any products so as to obtain differentiated lines, which is particularly useful, for instance when monodose treatments of growing intensity are required or treatments of different compositions, the said phials being contained in the same packet.

[0010] The present invention proposes an improvement to the connecting or joining means of phials consisting of safety tongue components that increase the tight of the parts and make the connection easier and safer.

[0011] All the above aims and advantages are reached according to the present invention through an improvement to a phial, in particular a phial for containing medicines, cosmetics or the like, comprising means that permit a mutual connection and the following detachment and/or re-attachment of more phials arranged consecutively, the said means are pair of fins that show a particular shape and are arranged on both opposite sides of the same phial, characterized in that at least one of the said fins is provided with teeth and is subdivided in two parts by at least one tongue arranged in a staggered manner whereas the other fin is provided with corresponding holes, and that the two parts of the said first fin and the staggered tongue thereof overlap the fin of the consecutive phial whereby the said teeth are inserted in the holes of the consecutive fin.

[0012] Another feature of the present invention is an essentially conical shape of the closing end of the phial, which end is provided with a capsule which is prenotched to permit its removal and a drop by drop supply of its contents.

[0013] Further features and details of the invention will be better understood from the following specification that is given as a non-restricting example on the hand of the accompanying drawings wherein:

Figure 1 is a schematic front view of one of the phials according to the invention on the whole;
Figure 2 is a schematic lateral view of the phial of Figure 1;
Figure 3 is a schematic front view of the phial as seen from the opposite side in comparison with that of Figure 1;
Figure 4 is a schematic plan view of the phial;
Figure 5 is a schematic plan view of the same phial but represented from the opposite side;
Figure 6 is a schematic view of an engaging tooth according to the detail X of Figure 5;
Figure 7 and Figures 8-13 are schematic views of the engaging system according to the present invention in possible embodiments thereof.

[0014] With reference to the accompanying drawings, number 1 denotes a phial as a whole according to the invention.

[0015] Phial 1 consists of a hollow body 2 provided with a base 3 and a capsule 4 provided with a removable cover 5. The hollow body 2 is manufactured by molding plastic material in an only body.

[0016] Lateral connecting fins 6 and 7 are provided on the hollow body 2 to permit a plurality of phials to be connected or joined consecutively. The phials to be joined may be equal or different. The phials may have different capacities, consistences and colours.

[0017] Unlike the previous invention of the present applicant, lateral fins 6 and 7 are carried out and shaped

in a particular way depending on their position and further, the fins are provided with engaging teeth.

[0018] More precisely, at least one (6) of the said fins is provided with teeth 8 and is subdivided in two parts 9 and 10 by at least one staggered tongue 11.

[0019] The other fin (7) shows corresponding holes 12 in which the said teeth 8 engage.

[0020] The parts 9, 10 and the staggered tongue 11 of the said first fin overlap fin 7 of the consecutive phial so that teeth 8 engage holes 12 of the consecutive fin.

[0021] The parts 9 and 10, the teeth 8 and the tongue 11 of fin 6 of each phial are coupled with the corresponding holes 12 of fin 7 of each adjacent phial in order to obtain a homogeneous arrangement of phials which are placed side by side and are coupled safely.

[0022] In the embodiment as shown, the tongues and teeth are alternate on the same fin. However, it is possible to provide the holes on this fin and the teeth on the opposite fin according to the most suitable arrangement for the customers and/or the production.

[0023] According to a possible version as represented in Figures 7-13, the teeth 13 of each fin show a bevelled shape while the holes 14 of the opposite fin are bevelled in the opposite direction. In this way, it is possible to obtain an easy safe coupling with a simple pressure and a slight thrust between two phials.

[0024] Advantageously, in the present version it is provided that the end of the closing capsule 4 consisting of a cap to be opened and closed is provided with a further auxiliary opening smaller head 15 which is notched to permit its removal and a drop by drop delivery of the phial contents.

[0025] For the mutual coupling of the phials it is thus sufficient to place the phials side by side and push the overlapped fins and tongues with a slight pressure until the phials are joined perfectly.

[0026] There are many possibilities for the union of the phials to obtain a modularity that is not disclosed in the known prior art solutions.

[0027] A technician of the field in question may provide any modifications and changes, for instance as regards the shape and type of the connecting groove and tongue system for the union of the fins, and may replace the said connecting system with similar coupling means in order to obtain solutions that are to be considered as included in the scope of protection of the present invention as further described in its peculiarities in the following claims.

Claims

1. Improvement to a phial, in particular a phial for containing medicines, cosmetics or the like, comprising means that permit a mutual connection and the following detachment and/or re-attachment of more phials arranged consecutively, the said means being pairs of fins showing a particular shape and being arranged on the two opposite sides of a same phial, **characterized in that** at least one of the said fins is provided with teeth and is subdivided in two parts by at least one tongue which is arranged in a staggered manner whereas the other fin is provided with corresponding holes, and that the two parts of the said first fin and the staggered tongue thereof overlap the fin of the consecutive phial whereby the said teeth are inserted in the holes of the consecutive fin.

2. Improvement to a phial as claimed in the foregoing claim, **characterized in that** the arrangement of the said teeth and corresponding holes may be alternate on a fin or the other.

3. Improvement to a phial as claimed in the foregoing claims, **characterized in that** at least one (6) of the said fins is provided with teeth (8) and is subdivided in two parts (9, 10) by at least one staggered tongue (11) while the other fin (7) shows corresponding holes (12) in which the said teeth (8) engage.

4. Improvement to a phial as claimed in the foregoing claims, **characterized in that** the parts (9, 10) and the staggered tongue (11) in the said first fin overlap fin (7) of the consecutive phial so that the said teeth (8) engage holes (12) in the consecutive fin.

5. Improvement to a phial as claimed in the foregoing claims, **characterized in that** according to a possible version, the teeth (13) of each fin show a bevelled shape and the holes (14) of the opposite fin are bevelled in the opposite direction so as to obtain an easy safe coupling with a simple pressure and a slight thrust between two phials.

6. Improvement to a phial as claimed in the foregoing claims, **characterized in that** the end of the closing capsule (4) consisting of a cap to be opened and closed is provided with a further auxiliary opening smaller head (15) which is notched to permit its removal and a drop by drop delivery of the phial contents.

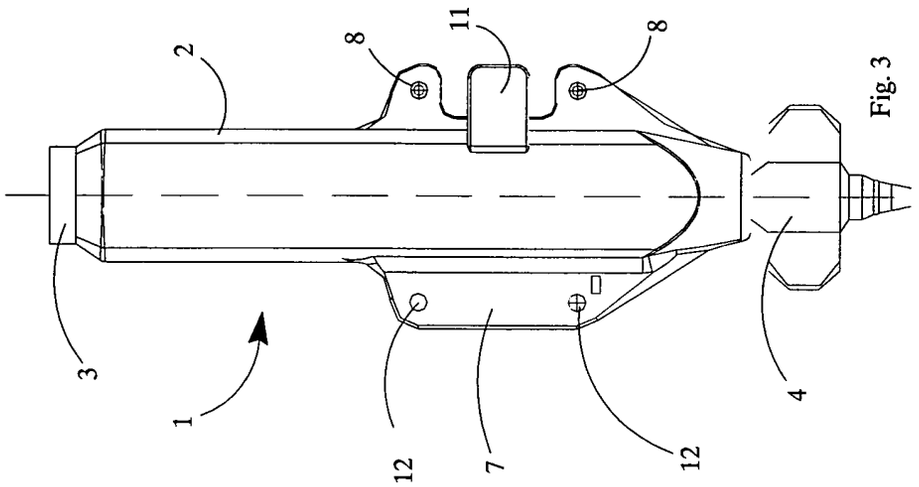

Fig. 3

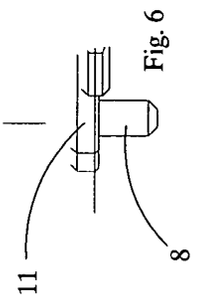

Fig. 6

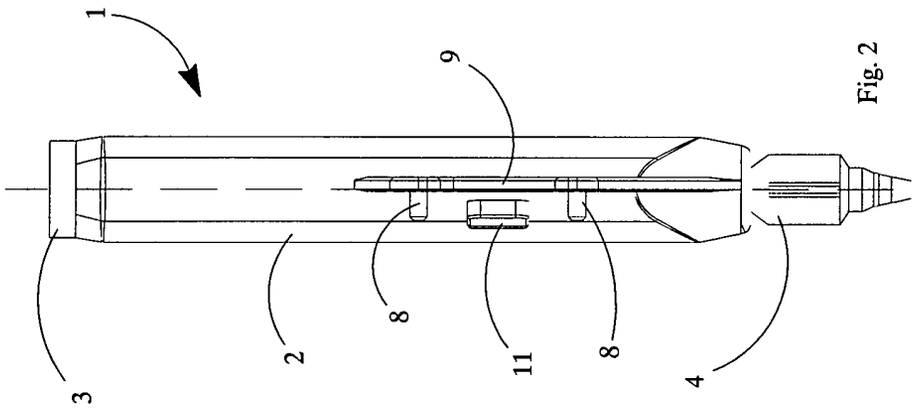

Fig. 2

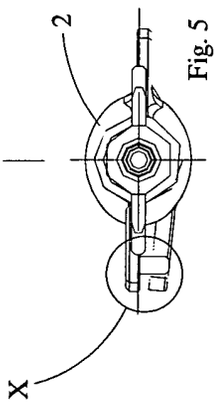

Fig. 5

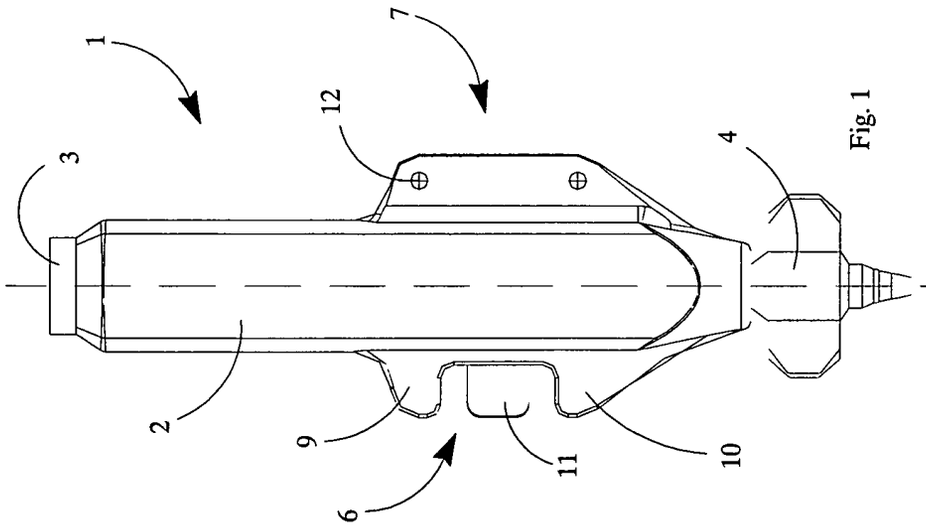

Fig. 1

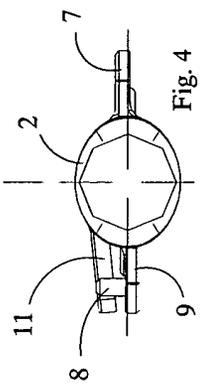

Fig. 4

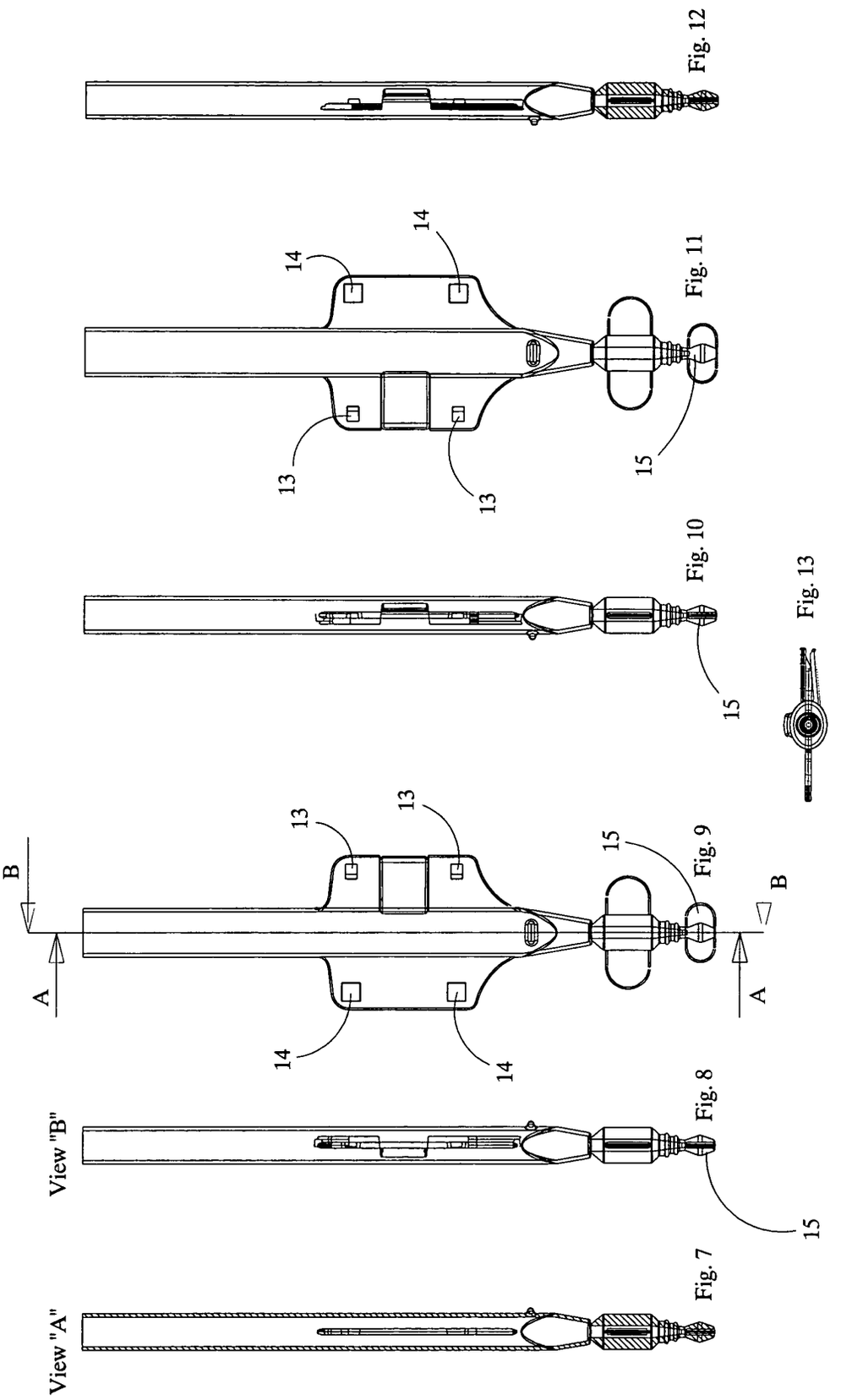

Fig. 7
Fig. 8
Fig. 9
Fig. 10
Fig. 11
Fig. 12
Fig. 13

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EUROPEAN SEARCH REPORT

Application Number
EP 04 01 1222

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)
A	EP 0 150 751 A (PHARMACIA AS) 7 August 1985 (1985-08-07) * figures *	1	B65D21/02 A61J1/06
A	US 4 133 445 A (MANDELBAUM ISIDORE) 9 January 1979 (1979-01-09) * figures *	1	
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7) B65D A61J

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	21 September 2004	Fournier, J

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