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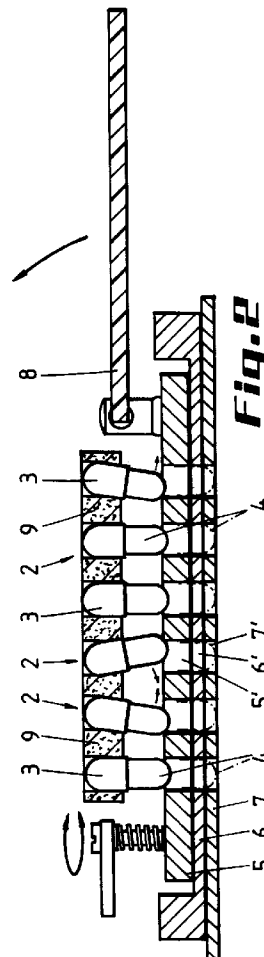
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(54) **Carrier for a series of capsules which are still to be filled and which may remain stored in this carrier.**

(57) Carrier (9) for a series of capsules (2) which are still to be filled and which may remain stored in this carrier (9), characterized in that the carrier (9) according to the invention consists of at least one layer of material which allows a mutual translation of the capsules (2), as well as an inclination with respect to their longitudinal axis and ensures a continued clamping of the capsules (2).



This invention relates to a carrier for a series of capsules which are still to be filled and which may remain stored in this carrier.

Capsules of the here intended type are usually known under the name "gelules" and consist of two parts, one of which is being filled and the other serves as "cover". The first can therefore be considered as male and the other as female element.

In order to fill these capsules, use is made of a device which comprises a.o. three perforated plates. Above the lowermost two plates, use is made of a third plate - provided as such with a hinged cover - wherein the female elements of the capsules are caught. The capsules are pushed bodily through the uppermost plate with borings. As a result of the relative motion of the lowermost plate with respect to the middle plate, the male parts of the capsules are clamped. The female parts of the capsules which remain clamped in the uppermost plate since they have a larger diameter, are removed from their male counterparts by removing the uppermost plate. On the plate which became available in this way (this is the middlemost) the powder is wiped off into the male parts.

All of these components are known and belong to devices which are in use for a long time.

It has already been proposed to catch the capsules with their male and female elements in a small thin cardboard plate which offers the advantage that the capsules have no longer to be applied one by one into the device. The object is to do this in one motion. Drawback of the proposed solution is the rigidity of the used material, i.e. cardboard or a similar material. When the capsules are somewhat out of the central axis with respect to the borings from the hereabove mentioned uppermost plate, problems arise.

The capsules caught in the small cardboard plate are indeed very difficult to adapt to the borings in this plate. The cardboard with the elastic covering or inclination does not permit a translation of the capsules with respect to the small cardboard plate and although a small inclination of the capsules is on the contrary possible, the capsules which are slightly canted out of their axis can then be inserted into the borings of the uppermost plate only with the greatest difficulty.

In order to solve this problem, use is made of an adaptor which one places onto the uppermost plate. Onto this adaptor comes the rigid (usually cardboard) carrier with the capsules. The function of this adaptor (usually a plate with holes) is creating a space between the carrier of the capsules and the uppermost plate. This space is necessary since the capsules, which are pushed out of the carrier, can undergo now a translation and possibly an inclination before they fall into the uppermost plate.

In a Dutch patent application No. 6914800 it has already been proposed to use a rigid carrier coated with an elastic material. The object of the elastic ma-

terial (foam material) is to firmly hold the entire capsule while they are drenched into a liquid. Due to the presence of this rigid carrier, the effect strived for by the applicant, namely allowing a translation or an inclination of the longitudinal axis of the capsules, is not obtained. Anyway, this is not at all an object of the invention according to said application since in this document it is also proposed to cover the resilient material with a textile. In this way, the rigidity of the whole is further increased.

The invention has now for object to present a capsule carrier which solves the hereabove mentioned problems so that the capsules can be pushed easily into the respective borings of the uppermost plate and therefore also of the two plates situated thereunder, while removing the "covers" or female elements and placing them back can be performed in a very easy way.

In order to enable this according to the invention, the carrier according to the invention consists of at least one layer of material which allows a mutual translation of the capsules, as well as an inclination with respect to their longitudinal axis and ensures a continued clamping of the capsules.

Still according to the invention, aforesaid material is a soft cellular foam material.

Other details and advantages of the invention will become apparent from the following description of a carrier for a series of capsules according to the invention. This description is only given by way of example and does not limit the invention. The reference numerals relate to the figures annexed hereto.

Figure 1 is a cross-section through a carrier for capsules consisting of a small cardboard plate, shown facing the essential elements of a device for filling capsules.

Figure 2 is an analogous cross-section wherein the cardboard carrier consists of a soft cellular foam material.

The carrier shown in figure 1 belongs to what can be considered as the state of the art. The carrier is composed here of a small cardboard plate 1 wherein the capsules 2 are caught with their "cover" 3. By "cover" is meant the female element of the capsule. The male element, 4, is the part which has to be filled after all of the capsules have been pressed into the plates 5, 6 and 7.

When this rigid carrier covered with an elastic material is used, the same situation occurs since the function of the elastic material is to enclose the capsule closely so as to allow the carrier to be turned around.

The hereabove mentioned components belong in no way to the invention and are components from known devices which belong also to the state of the art. By reference 8 there is meant a hinged plate by which the capsules can be pushed through the borings 5', 6' and 7' pertaining to the just mentioned

plates 5, 6 and 7.

Also, the female parts of the capsules are kept into their place in the uppermost plate through this hinged plate after having removed the uppermost plate from the two undermost plates.

It is again to be underlined that these components of a known device are mentioned only in order to illustrate the problems which arise when capsules 2 are caught in a small cardboard plate 1 or a plate consisting of a rigid and little flexible nor elastic material.

As it is shown by figure 1, one can form an idea of the problems which arise when the elongated capsules were inclined somewhat and are still to be pushed with difficulty through the successive borings of the plates 5, 6 and 7.

In order to obviate these drawbacks, it is now proposed to use as carrier a material consisting of a soft cellular foam material. Such a carrier 9 is shown in figure 2. The elongated capsules 2 shown in this figure 2 are in the same arbitrary position as those which are shown in figure 1. However, it is found now that by using a material such as a soft cellular foam material as carrier, this material allows a translation of one capsule with respect to the other. Also the inclination taken in by these capsules does not form an objection in this respect because the material of which the carrier 9 consists due to the possibility to elongate this in the width and in the length, pushing in through the openings 5', 6' and 7' of the plates 5, 6 and 7 does not provide difficulties. By pushing onto this soft cellular foam material, for example by means of the hinged plate 8, the capsules take in automatically their correct place with respect to these openings.

It is also of particular importance to indicate briefly that the "covers" 3 or female elements of the capsules remain well clamped thanks to the elasticity of the soft cellular foam material, the carrier 9 consists of, notwithstanding the fact that this layer of foam material allows a clear translation or inclination of the capsules. Placing the female elements 3 back onto the male elements 4 which have been filled and wiped off in the meantime, can then also be performed without difficulty.

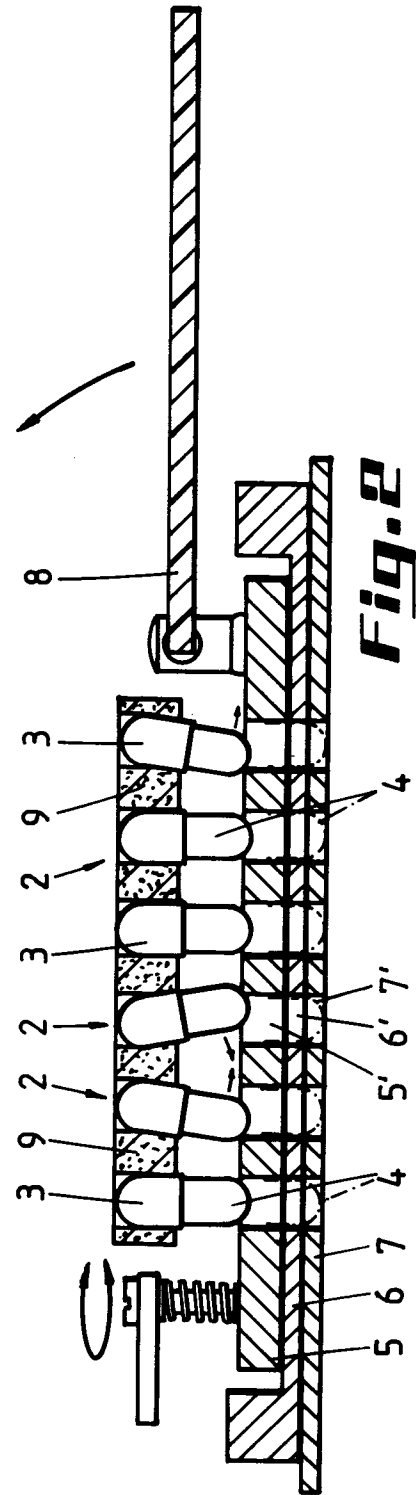
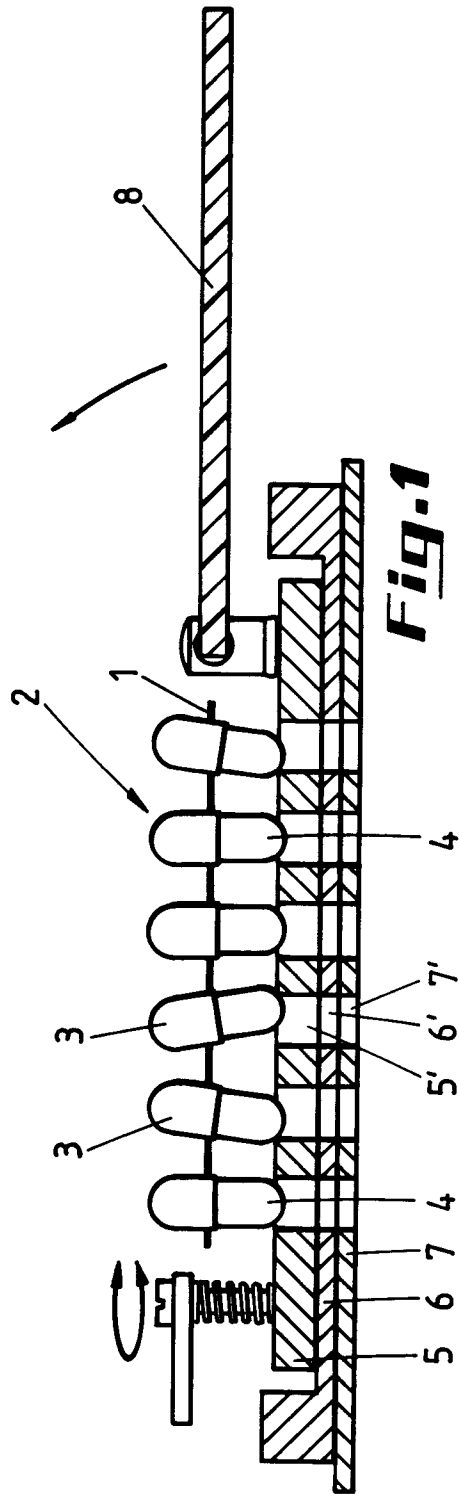
A last advantage of the carrier according to the invention is the fact that the filled capsules together with their covers 3 placed thereon may remain caught in the carrier 9 and that this entity can be put on the market as such.

Bringing the capsules back together with their rigid carrier is very difficult so that it becomes almost impossible to trade the capsules in their carrier.

The invention is not necessarily limited to the hereabove described embodiment and amendments could be applied hereto without leaving the scope of the patent application.

Claims

1. Carrier for a series of capsules which are still to be filled and which may remain stored in this carrier, characterized in that the carrier (9) according to the invention consists of at least one layer of material which allows a mutual translation of the capsules (2), as well as an inclination with respect to their longitudinal axis and ensures a continued clamping of the capsules (2).
2. Carrier according to claim 1, characterized in that aforesaid material is a flexible material.
3. Carrier according to claim 2, characterized in that aforesaid flexible material is a soft cellular foam material.
4. Carrier according to claim 3, characterized in that aforesaid foam material is a material from the group comprising : polyethene, polyurethane, foam rubber and technically equivalent materials.





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 93 87 0028

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.5)
X	NL-A-6 914 800 (C.E.R.T.A. S.A.) * page 1, line 13 - page 2, line 15 * * page 2, line 35 - page 3, line 6; figures 1,2 *	1-4	A61J3/07
A	FR-A-423 322 (REMINGTON) * the whole document *	1	
A	US-A-3 552 095 (INMAN) * column 3, line 23 - column 4, line 15; figures 3,4,6-9 *	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A61J
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 07 JULY 1993	Examiner BAERT F.
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 I : document cited for other reasons & : member of the same patent family, corresponding document			

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