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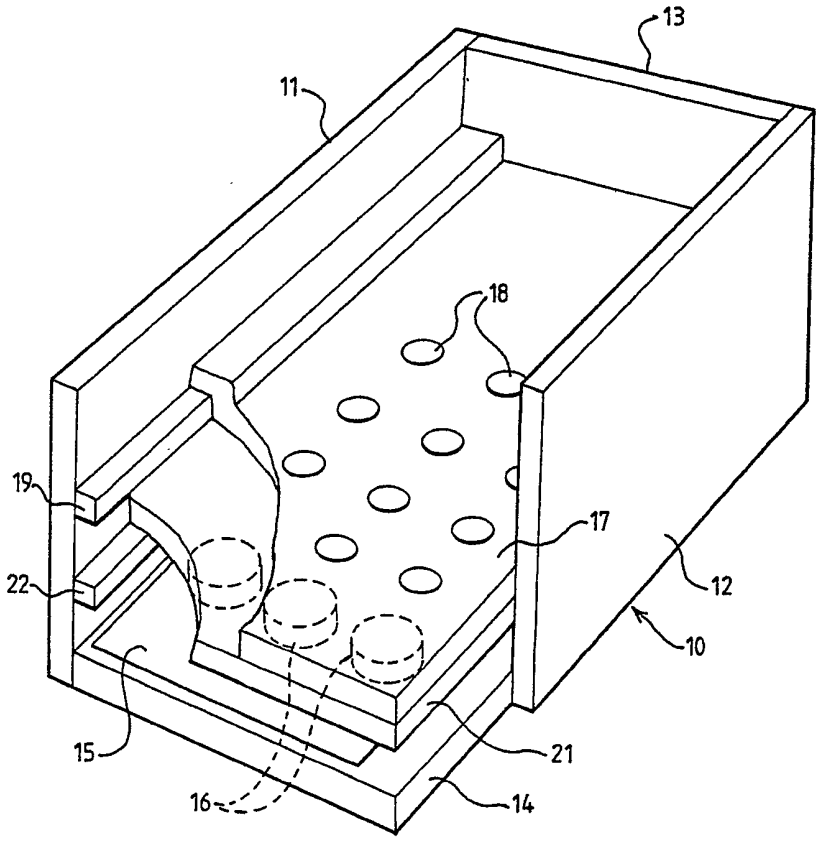
U1S S1580 S1806

(56) Documents Cited
GB 1459573 A **US 4693057 A** **US 3545164 A**

(58) Field of Search
UK CL (Edition K) **B8C CU17**
INT CL[5] **B65B 35/30 35/32**

(54) Charging tablets into a carrier

(57) Tablets are charged into formations of a tablet carrier (15) by distributing the tablets over a locating plate (17) having an array of holes (18), removing surplus tablets after the holes have been occupied and then withdrawing a blanking plate (21) from beneath the locating plate to allow the tablets to fall into respective formations of the carrier (15) beneath the blanking plate (21). A selection of locating plates (17) may have holes of differing shapes and sizes for use with different types of tablet. The blanking plate (21) is imperforate or may have an array of holes, the plate being initially in a position where its holes are offset from those in the locating plate. The body (10) accomodating the tablet carrier (15) and plates (17, 21) is tilted and vibrated in order to move tablets into the holes (18) and then remove surplus tablets.



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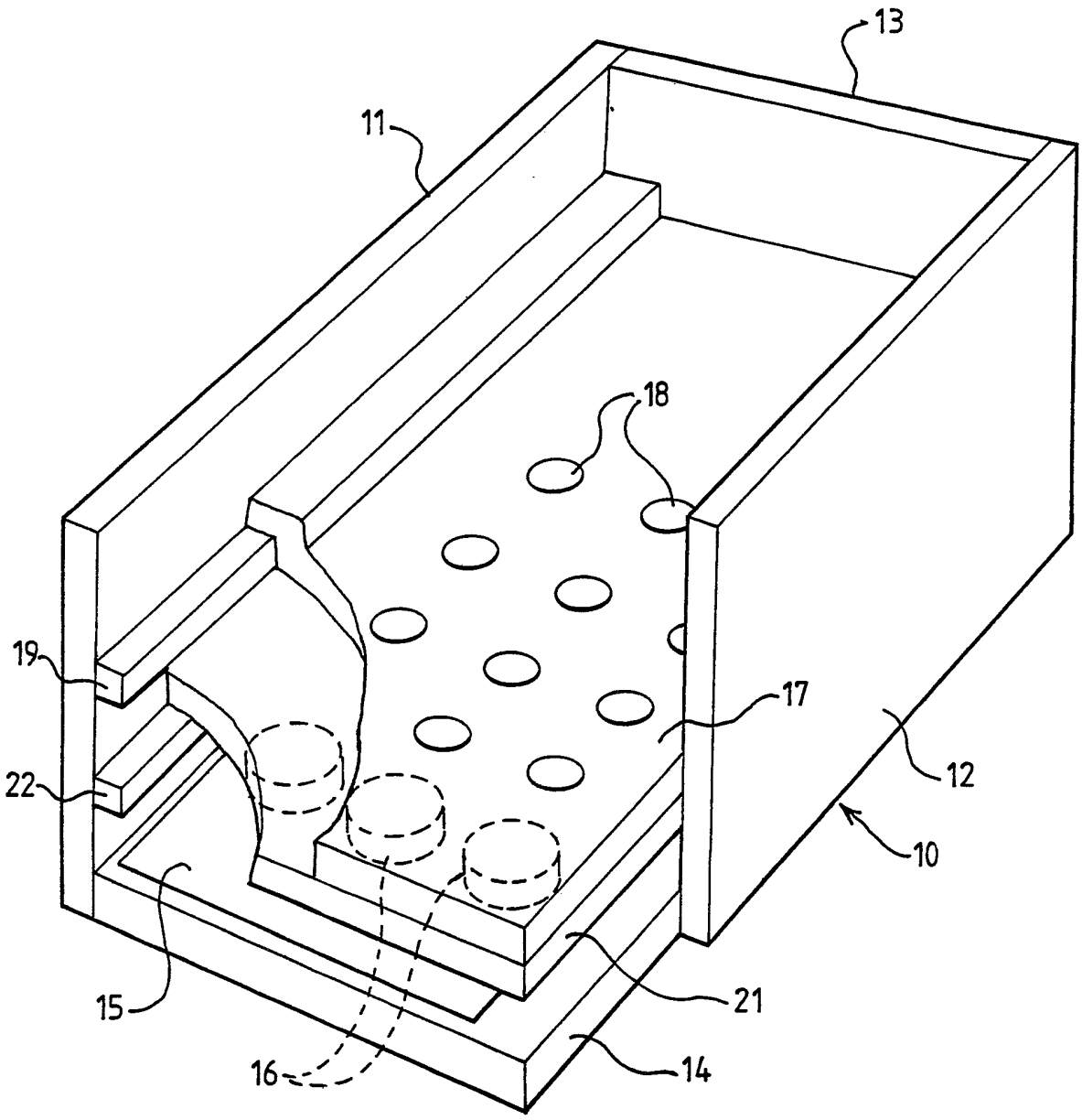
At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.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PATENTS ACT 1977

Title: Method and apparatus for charging tablets into a carrier

Description of Invention

The present invention relates to the charging of tablets and of capsules into a carrier for a number of tablets or capsules. For brevity, the expression tablet is used herein as a generic reference to discrete portions of pharmaceutical preparations, including capsules. It is known to provide for pharmaceutical tablets a carrier comprising a sheet formed with an array of formations adapted to receive tablets. Generally, the formations resemble bubbles which are open at one face of the sheet. When the formations have been charged with the required tablets, they are closed by application to the sheet of a membrane which covers all of the formations. Subsequently, to release a tablet or tablets from a single formation, the membrane is ruptured locally at a position corresponding to that of the selected formation. The formations can be assigned to particular days or times when the tablets are to be consumed so that the carrier provides a record of consumption of the tablets. When two or more different tablets are to be consumed at the same time, these can be placed in a single formation.

Tablets are usually dispensed from a bulk supply by a pharmacist. When the tablets are to be supplied in a carrier as herein before described, the pharmacist places the required tablets in the formations of the carrier by hand. This is a labour-intensive procedure.

According to a first aspect of the present invention, there is provided a method of charging tablets into formations of a tablet carrier wherein there is provided a locating plate having an array of holes, the holes are closed by a blanking plate at the underside of the locating plate, the tablet carrier is positioned beneath the locating and blanking plates with tablet-receiving formations of the carrier in register with the holes of the locating plate, a plurality of tablets are distributed on the locating plate until the holes are occupied by

tablets; surplus tablets are removed from the locating plate and the blanking plate is then moved to open the holes and allow the tablets to fall into respective formations of the carrier.

At least some of the holes may accommodate more than one tablet. The dimensions of the holes are selected according to the size and number of tablets to be accommodated in each formation of the carrier so that the required number of tablets occupies a hole sufficiently fully to prevent additional tablets entering the hole. Thus, the number of tablets accommodated in each hole is limited by the size of the hole concerned.

The tablets can be moved across the locating plate to the holes by vibrating and tilting the locating plate. Similarly, surplus tablets can be poured from the locating plate by tilting and vibrating the plate. It is unnecessary for the pharmacist to touch any of the tablets which are charged into the carrier.

The procedure may be repeated with tablets of a different kind to charge more than one kind of tablet into each of at least some of the formations of the carrier.

According to a second aspect of the invention, there is provided apparatus for use in a method according to the first aspect and comprising a body which includes spaced side walls, a locating plate spanning a gap between the side walls and a blanking plate, wherein the locating plate defines an array of holes, the body includes means for releasably supporting the locating plate between the side walls, the body includes means for supporting beneath the locating plate, when the locating plate is substantially horizontal, a tablet carrier, means are provided for supporting the blanking plate at the underside of the locating plate to close the holes and wherein the blanking plate is movable relative to the locating plate to open the holes.

Apparatus embodying the second aspect of the invention and which is used in a method according to the first aspect will now be described, with reference to the accompanying drawing, which shows a diagrammatic

representation of the apparatus, together with a tablet carrier, and with parts of the apparatus being broken away for clarity of illustration.

The apparatus illustrated in the accompanying drawing comprises a hollow body 10 which includes a pair of opposite, spaced side walls 11 and 12 and an end wall 13. The end wall 13 preferably extends from the side wall 11 to the side wall 12. An end of the body remote from the wall 13 may be entirely open. The top of the body is preferably open. The bottom of the body is at least partly closed by a bottom wall 14 for supporting a tablet carrier 15.

The tablet carrier 15 is a known carrier formed from a single sheet of a thermo-plastics material by deforming the material locally to displace portions of the material out of the general plane of the sheet to provide bubble-like formations 16. The formations 16 may all be of the same size or may differ from one another. Conveniently, the formations are arranged in rows and columns. The number of formations may be a multiple of seven, so that respective formations can be assigned to particular days. Usually, the sheet material from which the carrier 15 is formed is transparent.

The apparatus further comprises a locating plate 17 which spans the gap between the side walls 11 and 12. The locating plate preferably has mutually parallel and rectilinear longitudinal edges and a width slightly less than the width of the gap between these side walls 11 and 12. The length of the locating plate is preferably equal to the length of the body. There is formed in the locating plate a number of holes 18. The positions of the holes 18 relative to one another correspond to the positions of the formations 16 relative to one another. The number of holes is no greater than the number of formations 16 but may be less than this number. The thickness of the locating plate 17 is at least approximately equal to the thickness of tablets which are to be charged into the carrier 15. The locating plate 17 may be used with tablets having a thickness which is considerably greater than the thickness of the plate.

The body 10 includes supporting means for supporting the locating plate 17 in a position in which it is spaced downwardly from upper edges of the

side walls 11 and 12. By way of example, there is shown in the accompanying drawing supporting means in the form of a rib 19 which projects inwards from the side wall 11 to receive a marginal portion of the plate 17. A corresponding rib, not shown, is provided on the side wall 12. Alternatively, the side walls may be formed with grooves to receive marginal portions of the plate.

The apparatus further comprises a blanking plate 21 suitable for closing the holes 18 in the locating plate 17. Thus, the blanking plate is preferably of a size similar to that of the locating plate and is preferably imperforate. The body 10 is provided with further ribs 22, spaced downwardly from the rib 19, for supporting the blanking plate in the body beneath the locating plate with only a slight clearance between the plates. The blanking plate is spaced upwardly from the bottom wall 14 of the body sufficiently to accommodate the tablet carrier 15 in the body between the blanking plate and the bottom wall. Instead of resting on ribs, marginal portions of the blanking plate 21 may be received in grooves in the side walls.

The apparatus comprises a number of substitute locating plates, these having different arrays of holes. The arrays may differ in the number and/or the size of the holes.

When the apparatus is to be used for charging tablets into the carrier 15, there is selected a locating plate having a suitable array of holes. In a case where a single, circular tablet is to be charged into each of a number of formations of the carrier, there is selected a plate having circular holes corresponding in number to the number of formations to be charged with tablets. In a case where two, identical tablets are to be charged into each formation 16, elongated holes of a size each to accommodate two tablets but such that a third tablet cannot lodge in a hole is selected.

The selected locating plate is fitted into the body 10 with the blanking plate beneath the locating plate to close the holes thereof. A sufficient number of tablets is then poured onto the locating plate and the tablets are moved across the locating plate by tilting and vibration of the body 10 until each hole of the

locating plate has been fully charged with tablets. The surplus tablets are then poured from the locating plate by tilting and vibrating the body 10. The required carrier is then placed beneath the blanking plate with open sides of the formations uppermost and the blanking plate is withdrawn from the body 10 to allow the tablets to fall from the holes in the locating plate into the formations of the carrier. If no further tablets are required in the carrier, a membrane is placed on the carrier to close all of the formations 16 and is bonded to the carrier.

If additional tablets of a different kind are to be charged into some or all of the formations of the carrier, the procedure is repeated. If the number or size of the additional tablets differ from those of the first tablets, then a further locating plate is substituted for the locating plate first used.

If the dimensions of the carrier 15 are such that the carrier does not fully occupy the gaps between the side walls 11 and 12 or does not fully occupy the length of the body 10, guides may be provided in the body to engage the carrier 15 and guide the carrier to the required position beneath the locating plate. These guides may be in the form of ribs, similar to the ribs 19 and 20.

Whilst an imperforate blanking plate is preferred, it would be within the scope of the invention to provide a blanking plate which has apertures in positions corresponding to the positions of the formations 16. In this case, the blanking plate could be fixed in the body 10. During charging of tablets into holes into the locating plate, the locating plate would be positioned with its holes offset from the holes of the blanking plate. After the surplus tablets had been removed from the locating plate, the holes of the locating plate and blanking plate would be aligned by relative movement of these plates to permit the tablets to fall into the carrier.

The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate may, separately or in any

combination of such features, be utilised for realising the invention in diverse forms thereof.

CLAIMS:

1. A method of charging tablets into formations of a tablet carrier wherein there is provided a locating plate having an array of holes, the holes are closed by a blanking plate at the underside of the locating plate, the tablet carrier is positioned beneath the locating and blanking plates with the tablet receiving formations in register with the holes of the locating plate, a plurality of tablets are distributed on the locating plate until the holes are occupied by tablets, surplus tablets are removed from the locating plate and the blanking plate is moved relative to the locating plate to open the holes and allow the tablets to fall into respective formations of the carrier.

2. A method according to Claim 1 wherein at least some of the holes accommodate more than one tablet.

3. A method according to Claim 1 or Claim 2 wherein the steps of Claim 1 are repeated with different tablets to charge each one of at least some of the formations with different tablets.

4. Apparatus for use in a method according to any preceding claim and comprising a body which includes spaced side walls, a locating plate spanning a gap between the side walls and a blanking plate, wherein the locating plate defines an array of holes, the body includes means for releasably supporting the locating plate between the side walls, the body includes means for supporting beneath the locating plate, when the locating plate is substantially horizontal, a tablet carrier, means are provided for supporting the blanking plate at the underside of the locating plate to close the holes and wherein one of the plates is movable relative to the body to open the holes.

5. Apparatus according to Claim 4 wherein the body comprises one end wall only.

6. In combination, apparatus according to Claim 4 or Claim 5 and a plurality of substitute locating plates having respective arrays of holes which differ from each other.

7. A method of charging a tablet carrier substantially as herein described with reference to the accompanying drawing.

8. Apparatus according to Claim 4 substantially as herein described with reference to and as shown in the accompanying drawing.

9. Any novel feature or novel combination of features disclosed herein or in the accompanying drawing.

Patents Act 1977
Examiner's report to the Comptroller under Section 17 (The Search Report)

Application number

GB 9216999.4

Relevant Technical fields

(i) UK Cl (Edition K) B8C (CU17)

(ii) Int Cl (Edition 5) B65B 35/30, 35/32

Databases (see over)

(i) UK Patent Office

(ii) ONLINE DATABASE: WPI

Search Examiner

S R SMITH

Date of Search

9 OCTOBER 1992

Documents considered relevant following a search in respect of claims 1-8

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 1459573 (SOLBERN) See lines 13-26, 72-95 and 120-129 of page 5	1, 2
X	US 4693057 (RITTINGER) See line 24 of column 6 - line 15 of column 7, and line 50 of column 8 - line 18 of column 9	1, 4, 5, 6
X	US 3545164 (MIDDLETON) See lines 5-66 of column 2	1, 4