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(71) Applicant *(for all designated States except US)*: **IMA SAFE S.r.l.** [IT/IT]; Via Emilia 428-442, I-40064 Ozzano Emilia (bologna) (IT).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **TAMPIERI, Pierluigi** [IT/IT]; Via Toscanini, 49, I-40026 Imola (bologna) (IT). **CONSOLINI, Agostino** [IT/IT]; Via Emilia, 43/B, I-40064 Ozzano Emilia (bologna) (IT).

(74) Agent: **DALL'OLIO, GIANCARLO**; Via Delle Armi, 1, I-40137 Bologna (IT).

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(54) **Title:** METHOD FOR PACKING ARTICLES, IN PARTICULAR PHARMACEUTICAL ARTICLES

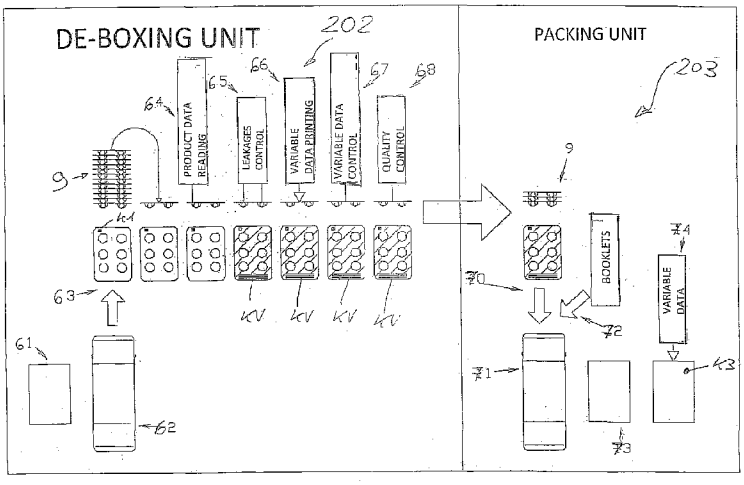

Fig. 3

(57) **Abstract:** A method for packing articles, in particular pharmaceutical articles, comprising stages of production of a succession of blister packs containing the articles, packing resulting groups of blister packs in cartons, and storing the cartons in at least a warehouse unit, the method being characterised in that it includes transferring the cartons to at least a second warehouse unit, opening the cartons and extracting the groups of blister packs in order to enable performing of an inserting of information on each group of blister packs or on each blister pack, and packing the blister packs, provided with the information, in box containers.

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A METHOD FOR PACKING ARTICLES

TECHNICAL FIELD

The invention relates to a method for packing articles, in particular pharmaceutical articles.

BACKGROUND ART

In general, a known apparatus for packing articles, for example pharmaceutical articles or the like, in packs known as blister packs, in turn destined to be subsequently inserted and arranged piled in groups internally of relative containers, such as for example boxes or cartons, overall comprises, according to what is schematically illustrated in appended figure 1, a unit 100 for blister pack production, coupled to a unit 101 for packing in cartons.

The blister pack unit 100 in turn comprises at least an unwinding station 50 of a first strip 1 in which cells 2 are subsequently formed, a supply station 3 of articles P which are to be housed in the cells 2, a control station 4 of the presence and condition of the articles P, an unwinding station 51 of a second strip 5 which will be used to seal the first celled strip 1 with the cells 2 filled with the articles P, followed by a cutting station 8 in which formation of single blister packs B is performed, the blister packs B having been obtained by means of sequential cutting of the celled strip 1.

Between the unwinding station 51 and the cutting station 8 there is a

printing station 6 in which variable data is printed (or another method) on the celled strip 1 and a further control station 7 of the printed data itself.

In particular, the variable data which is printed on the celled strip 1 in the station 6, and which is therefore visible on each single blister pack B obtained successively from the strip 1, relate for example to a production batch number, and/or the name of the producer of the article P and/or other necessary and important information for the traceability and control of the blister pack B and therefore the relative articles P contained in the blister pack B.

At the packing unit 101 coupled to the blister pack production unit 100, the blister packs B produced by the unit 100 are duly piled to form groups 9 which are then introduced, by pusher means at an insertion station 10, into boxes or cartons 11 together with any further elements or variable data such as for example instructions or information sheets or booklets 12. At a following closing station 13 the cartons 11 are closed and supplied to a further printing station 14, in which variable data or codes are impressed or printed on the cartons 11, which data might for example relate to a production batch number, and/or to a packing date and a respective use-by date for the active ingredient of the article P, or other like data codes.

At present, with the aim of combining the high quality and production standards required for blister packs and their cartons, and in the light of an increasing flexibility of distribution and sale throughout the world, it is advantageous to use a limited number of production plants and warehouses, which are therefore large and often situated in a limited number of industrialised countries, which are able to guarantee very

large production batches, and from whose warehouses the quantity of blister pack cartons are sourced, which will then be transported and sent on to the different countries of the world in such quantities as to satisfy, time by time, the demands of the specific markets.

The production and distribution methods however are the cause of certain drawbacks.

A considerably complex management burden is created, in particular with reference to the treatment and control of the variable data to be associated to the blister packs and/or the relative cartons, as this data must necessarily be printed compatibly with the languages used in the respective target countries for distribution and sale.

A similar consideration has to be made for the variable elements such as information sheets, which among other things, as is known, contain not only the instructions for the correct use and dosage, but also and especially provide information on any side-effects of the drug contained in the articles P, and which therefore in order to be perfectly understood must be written in the official language of the specific country in which the drugs are to be put on sale.

Further, the production line of the whole packing apparatus, made up of the blister unit and the cartoning unit, has to be halted and newly set up each time the data or identification codes are to be changed to make them compatible with product destination.

These production halts, as is easily understandable, considerably reduce the efficiency of the production line and thus have a considerable negative economic impact.

The aim of the present invention is to obviate the problems and

drawbacks mentioned above.

In particular, the invention intends to overcome the drawbacks by means of a packing methodology which enables a production of blister packs and their subsequent packing in box cartons, with the peculiarity of comprising a first stage in which association of the variable data to the blister packs and/or relative cartons is at least partially left off, thus increasing the production efficiency of the packing and boxing line, and a second stage, following the first stage, realised in a different place, in which the association of the variable data is completed or indeed applied in its entirety.

The above aims are obtained according to the content of the claims.

DISCLOSURE OF THE INVENTION

A method for packing articles, in particular pharmaceutical articles, comprising stages of production of a succession of blister packs containing the articles, packing resulting groups of the blister packs in cartons, and storing the cartons in at least a warehouse unit, the method being characterised in that it includes transferring the cartons to at least a second warehouse unit, re-opening the cartons and extracting the stacked groups of blister packs in order to enable performing of an inserting of information on each group of blister packs or on each blister pack, and packing the group of blister packs, provided with the information, in box containers.

BEST MODE FOR CARRYING OUT THE INVENTION

In particular a first embodiment, given by way of non-limiting example, of a packing apparatus for realising the method of the invention is illustrated in figures 2 and 3 of the appended tables of drawings.

Figure 2 illustrates a blister pack production unit 200, coupled to a box-packing unit 201;

The blister pack production unit 200 in turn comprises an unwinding station 50 of a first strip 1 in which cells 2 are subsequently formed, an article P supply station 3 for articles P which will be housed in the cells 2, a control station 4 of the presence and condition of the articles P, an unwinding station 51 of a second strip 5 which will be used to close the first celled strip 1 by sealing, the cells 2 having been filled with the products P, followed by a cutting station 8 in which formation of the single blister packs B is done by sequential cutting of the celled strip 1.

Between the unwinding station 51 and the cutting station 8 there is a printing station 6 in which codes K1 are printed on the celled strip 1 and a further control station 7 of the printed codes.

In particular, codes K1 printed at the station 6 relate exclusively to recognition of the article P or recognition of the type of drug or active ingredient used.

At the boxing unit 201 coupled to the blister unit 200 the blister packs B produced by the unit 200 are duly piled to form groups 9 which are then introduced into cartons 11, by special pusher means at an insertion station 10. At a subsequent closing station 12 the cartons 11 are closed and sent on to a further printing station 13, in which codes K2 are impressed on the cartons 11 so that they will be accurately

recognisable.

The blister packs and the cartons thus obtained can then be stored using conventional techniques for storing, in warehouses, from which they are transferred to other warehouses, located for example in different places from the production site, meaning from the factories in which the units 200 and 201 are located.

Storage can be optimised by using maximum-height cartons such as to be able to introduce piles of blister packs formed by a greatest possible number of single packs.

Turning to figure 3, a "de-boxing" unit 202 is illustrated, specially predisposed to realise the present invention. The unit 202 is supplied with the cartons 11 produced and realised by the packing apparatus schematically illustrated in figure 2.

The unit 202 comprises the following operating stations: an opening station 62 in which the cartons 11 are automatically opened; an extraction station 63 at which a piled group 9 of blister packs B is removed in sequence from each open carton 11; a control station 64, in which a reading or detection of the codes K1 printed on the blister packs B is made; a control station 65 of the seal state of the single blister packs B with detection of any leakage; a printing station 66 of variable data KV on the blister packs B, the variable data KV being, for example, the production batch number, and/or the name of the producer of the article P and/or other data which is necessary and important for the traceability and control of the blister pack B and thus the relative articles P contained therein.

There is also a station 67 for controlling the variable data KV and a

quality control station 68.

A relative reject station for defective blister packs B could be included for each of the control stations 65, 67 and 68.

The blister packs B thus processed are then sent to a boxing unit 203 similar or identical to the traditional unit 101 illustrated in figure 1, in order to be duly re-piled to form groups 69 which are introduced in an insertion station 70 in relative cartons 71 together with further elements or variable data such as contents information sheets or booklets 72, the cartons then being closed at a closing station 73; a printing station 74 is included for impressing variable data K3, such as for example printed material or stamps and seals relating to a specific country of destination, and/or the production batch number, and/or the packing date and the important use-by date of the drug in the article P, or other like information codes.

The apparatus unit 202 having these functions thus enables processing of the blister packs B, produced and boxed using units 200 and 201 of figure 2, by adding the missing variable data whose association to the blister packs B and relative cartons had been withheld, with the exception of codes K1 and K2.

In this way, the method frees the blister pack production line from the complex management of the variable data, thus increasing production efficiency and preventing down-times for setting up the data.

The stage of “customising” in the management of the variable data is thus devolved on the apparatus illustrated in figure 3, which can preferably be installed but not limitedly so in other sites or different warehouses, for example in the final country of destination to which a

specific production batch is destined.

Thanks to this organisation of the production, the stages in which the blister packs and the cartons are differentiated with specific aspects, especially linguistic aspects, of the country which is the market of destination can be postponed; this solution further enables the different data to be applied in more appropriate sites, such as in the country itself to which the packs are destined.

With the invention, the following advantages are obtained:

the possibility to store the blister packs in standard cartons (boxes, packages) in order to guarantee long storage in warehouses or when shipping; thus preventing the use of "special" cartons which do not guarantee the same level of product protection;

the possibility to store the blister packs without modifying the existing production lines with additional operating groups, which increase both complexity and cost, but which are necessary for inserting the blister packs in "special" containers;

a packing apparatus, fed with boxes or cartons containing, for example, blister packs, sachets or vials, able to automatically open the boxes, extract the packs contained therein, read off any product identifying data, possibly perform controls on the integrity and quality of the product, complete it with insertion of variable data, control the data and be connected to a traditional boxing unit. A relative reject station can be present for each control station.

In practice, the functionalities can be summed up by the following points:

automatic carton storage;

control of correspondence of a code present on the boxes and rejection in case of non-correspondence;

opening of the cartons;

extraction of the piled groups of blister packs;

possible control on effectiveness of blister pack seal;

positioning of single blister packs on a conveyor;

control of correspondence of a code relating to articles contained in a blister pack and possibility of rejection;

printing of data or information sheets, for example in relation to a country of destination, contents, production batch, use-by date, use modalities etc;

control of above-cited printed material and possible rejection;

insertion in final carton containers suitable for final marketing.

CLAIMS

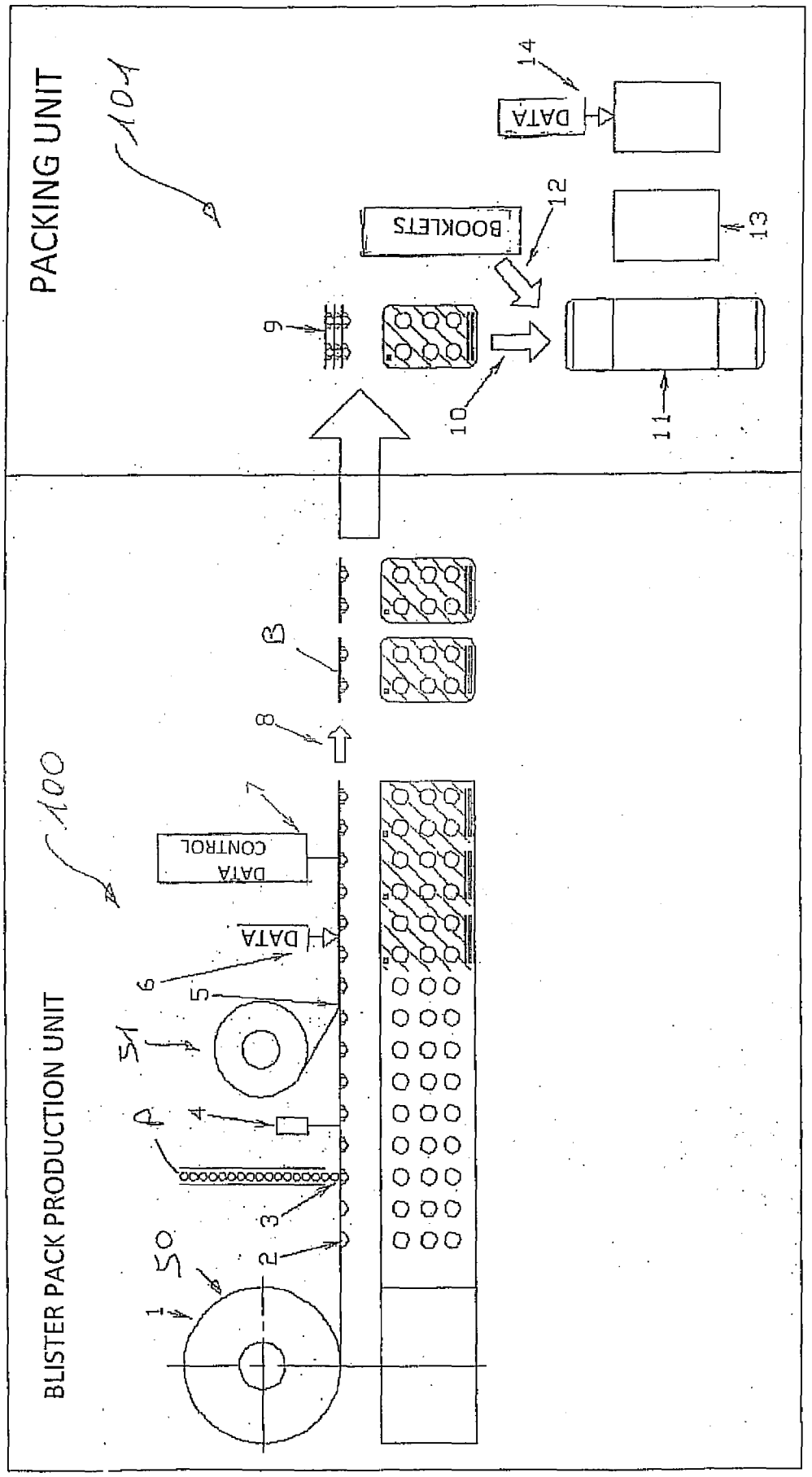
1). A method for packing articles, in particular pharmaceutical articles, comprising stages of production of a succession of blister packs containing the articles, packing resulting groups of the blister packs in cartons, and storing the cartons in at least a warehouse unit, the method being characterised in that it includes transferring the cartons to at least a second warehouse unit, re-opening the cartons and extracting the stacked groups of blister packs in order to enable performing of an inserting of information on each group of blister packs or on each blister pack, and packing the group of blister packs, provided with the information, in box containers.

2). The method of claim 1, characterised in that the inserting of information comprises application by printing of data or codes on each blister pack.

3). The method of claim 1 or 2, characterised in that the inserting of information comprises association of relative information sheets or booklets to the groups of blister packs.

4). A method for packing articles, in particular pharmaceutical articles, comprising a plurality of operating stages realised in a sequence, among which at least a stage of unwinding of a first strip of packaging material, a stage of formation on the first strip of a plurality of cells in order to form a celled strip, a stage of inserting articles in the cells, a stage of sealing the celled strip filled with the articles, a stage of applying on the celled strip at least a code relating to the articles, a stage of cutting the sealed celled strip in order to form a succession of single blister packs, a stage of piling the blister packs in order to define stacked groups of the blister packs, a stage of inserting the groups in

succession into partially open cartons and a stage of closing the cartons; the method being characterised in that it comprises further stages of re-opening the cartons in succession, extracting the groups of the blister packs from the open cartons with the aim of inserting information on each group of blister packs or on each blister pack, and packing the groups of blister packs provided with the information into relative final box containers.



PRIOR ART

fig. 1

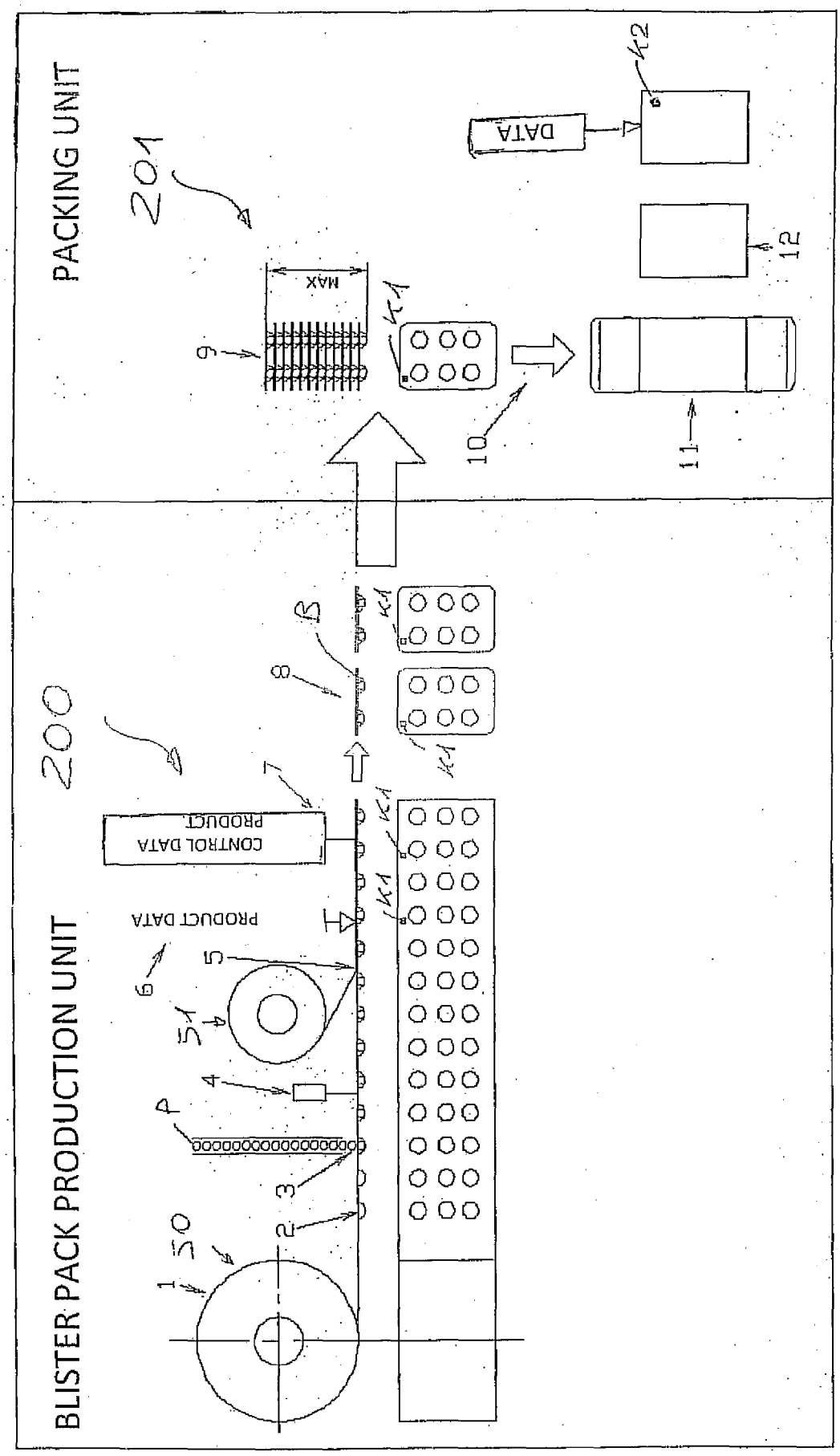

PACKING UNIT
201
DATA
K2
12
MAX
9
K1
10
11
BLISTER PACK PRODUCTION UNIT
200
8
7
CONTROL DATA
PRODUCT
PRODUCT DATA
6
5
51
4
4
3
2
150
1

fig. 2

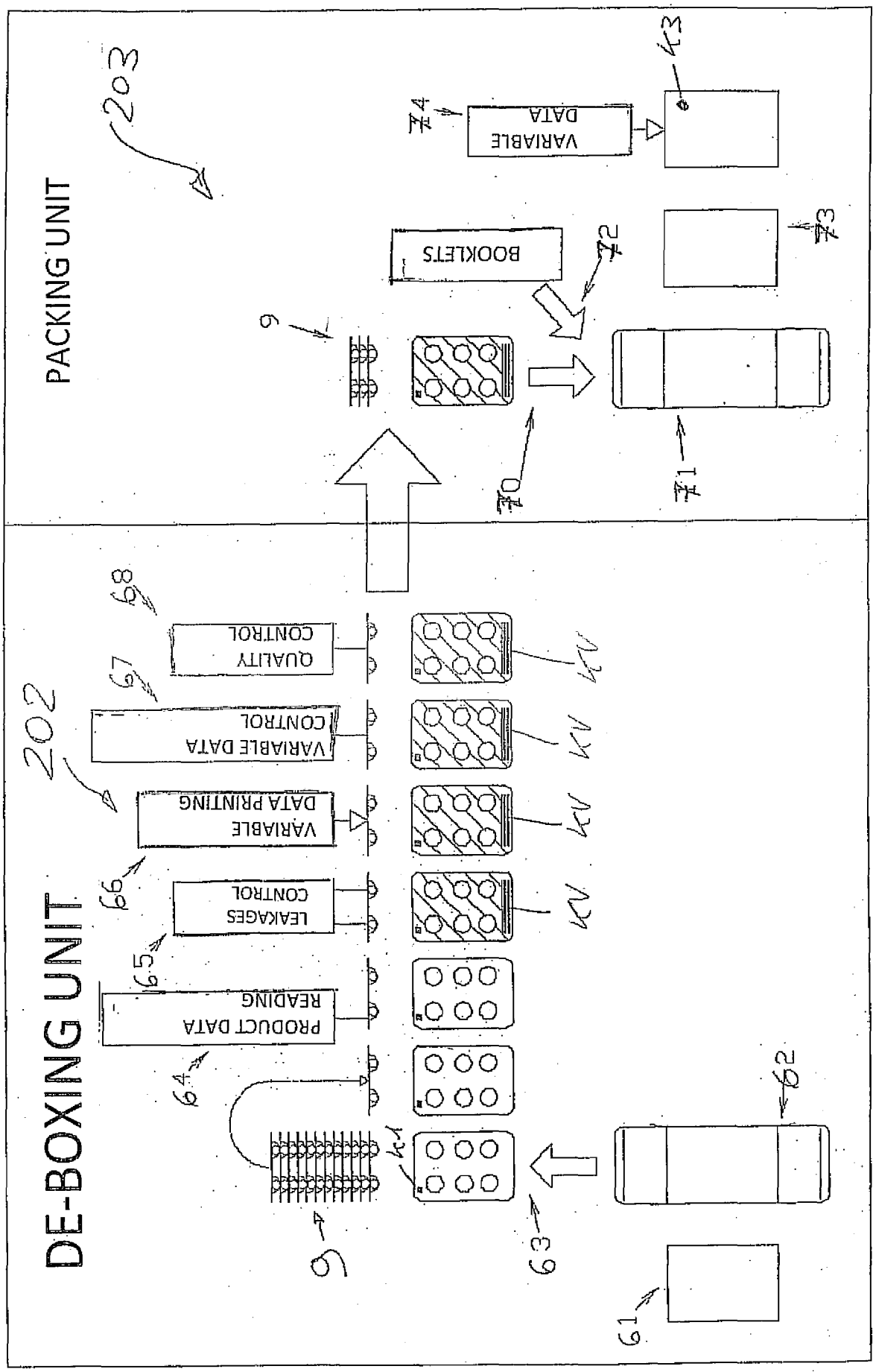

PACKING UNIT
203
VARIABLE DATA
BOOKLETS
DE-BOXING UNIT
202
QUALITY CONTROL
VARIABLE DATA CONTROL
VARIABLE DATA PRINTING
LEAKAGES CONTROL
PRODUCT DATA READING

fig. 3

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2008/062150

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65B5/06 B65B5/10 B65B61/20 B65B61/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65B A61J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	FR 2 810 974 A (ASSIST PUBL HOPITAUX DE PARIS [FR]) 4 January 2002 (2002-01-04) page 6, line 26 - page 11, line 24; figures	1-4
Y	EP 0 465 437 A (IMA SPA [IT]) 8 January 1992 (1992-01-08) column 8, line 9 - column 14, line 2; figures	1-4
A	WO 2005/108209 A (IMA SPA [IT]; CONTI ROBERTO [IT]) 17 November 2005 (2005-11-17) page 5, line 25 - page 7, line 22; claims; figures	1,2,4

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Jagusiak, Antony

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2008/062150

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2006/055515 A (ESCHER GROUP LTD [US]; MURPHY MICHAEL J [US]) 26 May 2006 (2006-05-26)	
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2008/062150

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