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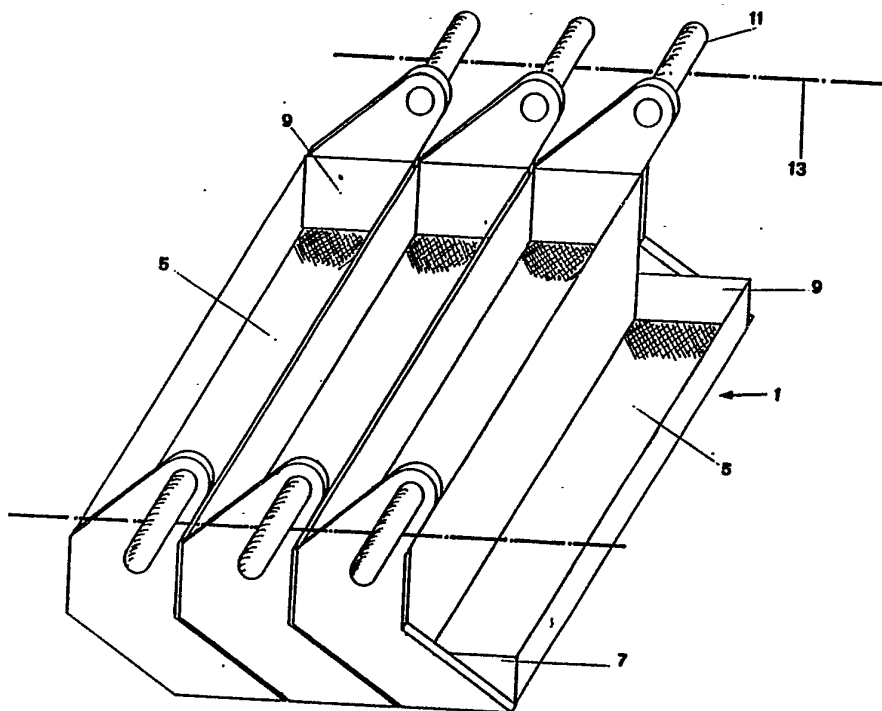
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(54) Title: CONTINUOUS CONVEYOR FOR PASTA PRODUCTS INSIDE A DRYER



(57) Abstract

A continuous conveyor for pasta products inside a dryer consisting of substantially flexible transport means arranged inside the dryer according to the desired path and of a plurality of containers which are restrained to said substantially flexible transport means characterized in that each container (1) consists of at least two ventilated (3) shelves located at different heights and in staggered position one in respect of the other so that when said containers are restrained to said transport means (13) they result to be partially penetrated one into the other, with each shelf of any element located in a position underlying the upper shelf of the adjacent element.

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Continuous conveyor for pasta products inside a dryer

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The invention relates to a continuous conveyor for pasta products inside a dryer.

In the pasta production industry it is a known process that of having fresh pasta to undergo a drying cycle.

5 In particular, such fresh pasta in the form of nests is obtained by placing simultaneously more threads of pasta, and these already wound-up in form of a spiral, into a special container shaped like a cylindrical holed bottom cup.

10 It goes without saying that the pasta nest height depends on the weight of the nest itself, and usually it is some centimeters high.

As a consequence of this, dryer optimal exploitation turns out to be almost impossible because of the limited height of pasta nest.

15 It is infact well known that a dryer is dimensioned for a certain capacity, that is to remove a certain quantity of water per unit of volume of pasta and it is also known that, under conditions which are very different to nominal ones, dryer efficiency is low; which consequently increases running
20 costs.

Moreover, the whole conveying system used for the pasta to be dried is exploited only partially, which results in high operating costs since the hourly quantity of treated

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pasta is lower than that which would be potentially treated.

5 All this is true for the transport lines of nest-shaped pasta containers which within certain limits are dimensioned independently from container size; but it is particularly true for the same containers whose cost per unit of volume of pasta is reciprocally proportional to their capacity.

10 With the aim of eliminating, or at least reducing this inconvenience, it has been proposed to place, one over the other while keeping them separated, more pasta nests into each container.

In such a way it has been possible to exploit more efficiently each container, its transport lines and the whole dryer.

15 This known solution however does not solve all problems; and particularly, being the pasta fresh when placed into the containers, it frequently happens to find some pasta nests stuck together at dryer exit.

20 This is not a problem when cooking the pasta as the nests when into the water get immediately separated, whereas they may be the cause of big troubles at the packaging machines.

Pasta nests are infact packed according to quantities which not always are multiples of those obtainable from each

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container; therefore, their separation which does not result to be so easy when they are already "dried", is absolutely necessary.

5 A further problem of these known machines is represented by the fact that it is not possible to superimpose more than two pasta nests at the time since the weight itself and the low consistency of the fresh pasta would result in squashing the underlying nest flat.

10 These, already serious, limitations of nest shaped pasta products become still more serious, and even unacceptable, should there be the case of other pasta shapes such as spianarelle, lasagne or matasse.

15 According to the invention all these drawbacks are eliminated by a continuous conveyor for pasta products inside a dryer, consisting of substantially flexible transport means arranged inside the dryer according to the desired path and of a plurality of containers which are restrained to such substantially flexible transport means, characterized in that each container comprises at least two ventilated shelves
20 placed at different heights and in staggered position one with respect to the other in such a way that when said containers are restrained to said transport means they result to be partially penetrated one into the other, with each

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shelf of any element located in a position underlying the upper shelf of the adjacent element.

The invention is hereinafter further clarified with reference to the enclosed drawings in which:

5 fig. 1 shows in perspective view a length of the continuous conveyor with three matched containers,

fig. 2 illustrates the continuous conveyor according to section II-II fig. 3,

fig. 3 shows it according to section III-III of fig. 2, and

10 fig. 4 shows it in partially sectioned side view.

As it can be seen from the drawings, the continuous conveyor according to the invention comprises a set of containers 1 formed by two staggered shelves 3.

15 Such shelves 3 have substantially a parallelepiped shape with the holed bottom made, for instance, of a wire gauze 5.

On the two side walls 7, 9 of these containers 1, two cylindrical pins 11 have been mounted in a center-of-gravity position for their restraining to correspondent sprockets 12 provided on chains 13 driving the containers into the dryer.

20 These chains 13 are supported by a runner 14 and they are generally driven by means of an electric motor which is not shown in the drawings. According to machine drying capacity and to its dimensioning, containers may be also be

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formed by more than two superimposed shelves.

The continuous conveyor according to the invention operates as follows.

5 As fresh products, in the desired shape, are laid into the containers these latter are hooked through their cylindrical pins 11 by the sprockets 12 of the chains 13 in close succession so as they penetrate one into the other in such a way that every staggered shelf is positioned perfectly under the upper shelf of the container coming next.

10 Should a more precise transversal positioning of the pasta nests or pasta matasse be required, the shelves may be also used as supporting elements for metal or plastic, cylindrical or prismatic holed-bottom cups.

15 From what it has been above described it clearly appears that the continuous conveyor for pasta products offers many advantages and particularly:

- it enables an optimum exploitation of the dryer;
- it makes it possible to obtain high efficiencies and consequently lower operating cost;
- 20 - it enables to keep the various nests or matasse of dried fresh pasta separated;
- it may be easily utilized with practically any kind of fresh pasta.

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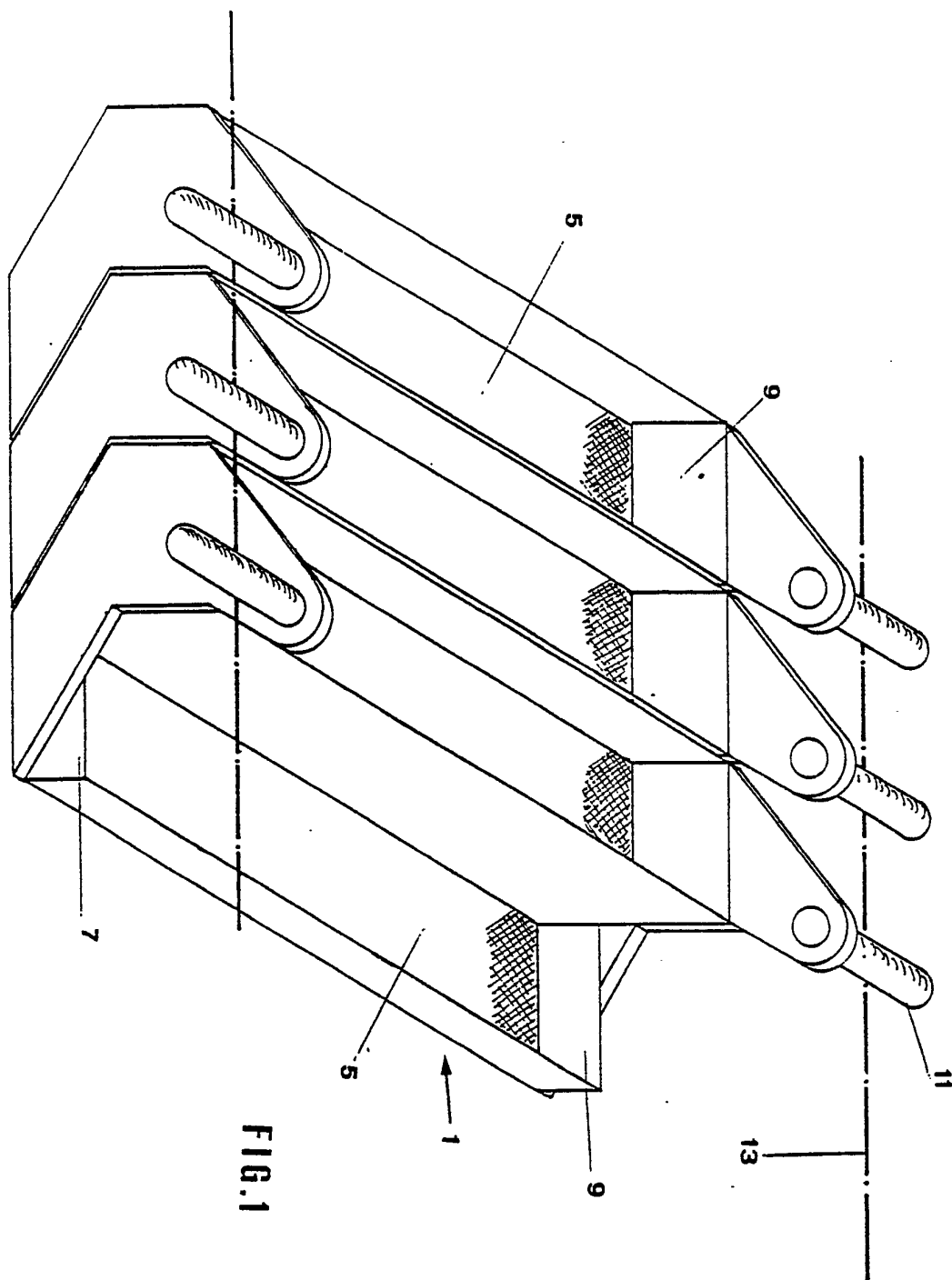
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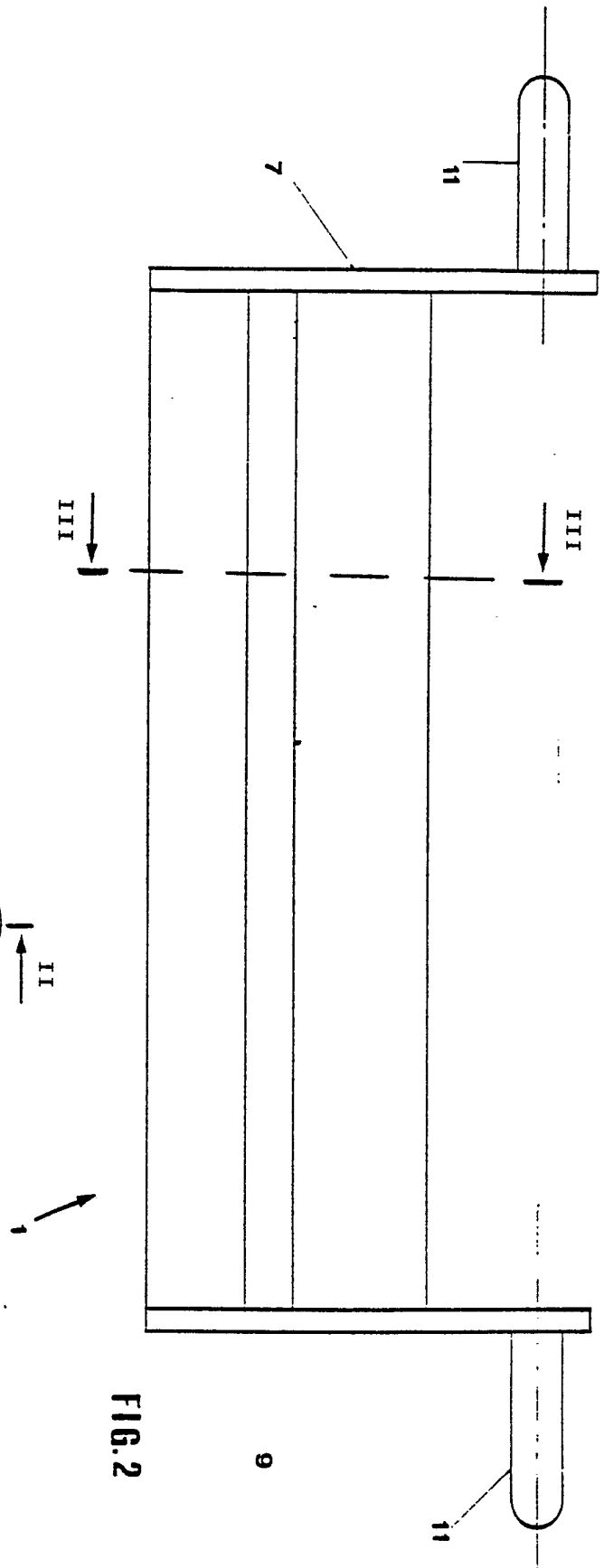
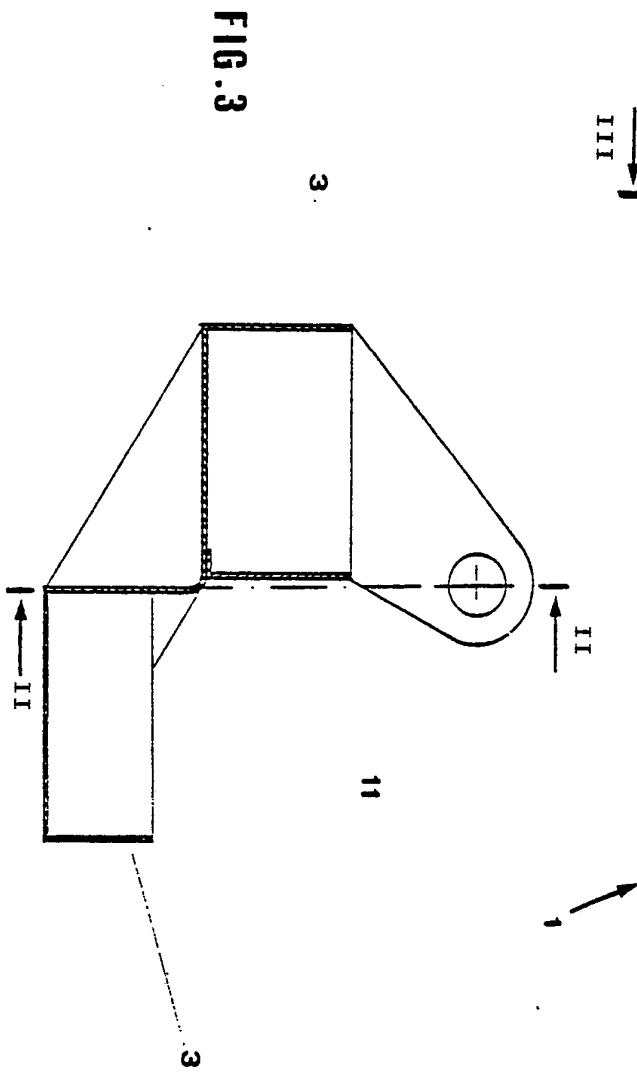
1. A continuous conveyor for pasta products inside a dryer consisting of substantially flexible transport means arranged inside the dryer according to the desired path and of a plurality of containers which are restrained to said substantially flexible transport means characterized in that each container (1) consists of at least two ventilated (3) shelves located at different heights and in staggered position one in respect of the other so that when said containers are restrained to said transport means (13) they result to be partially penetrated one into the other, with each shelf of any element located in a position underlying the upper shelf of the adjacent element.
2. Conveyor according to claim 1 characterized in that the containers (1) are restrained to transport means by means of pins (11) which are in a centre-of-gravity position with respect to the staggered shelves.
3. Conveyor according to claim 1 characterised in that the bottom and/or the walls of the shelves of the containers are holed.
4. Conveyor according to claim 1 characterised in that container shelves act as supports for holed-bottom cylindrically shaped cups.

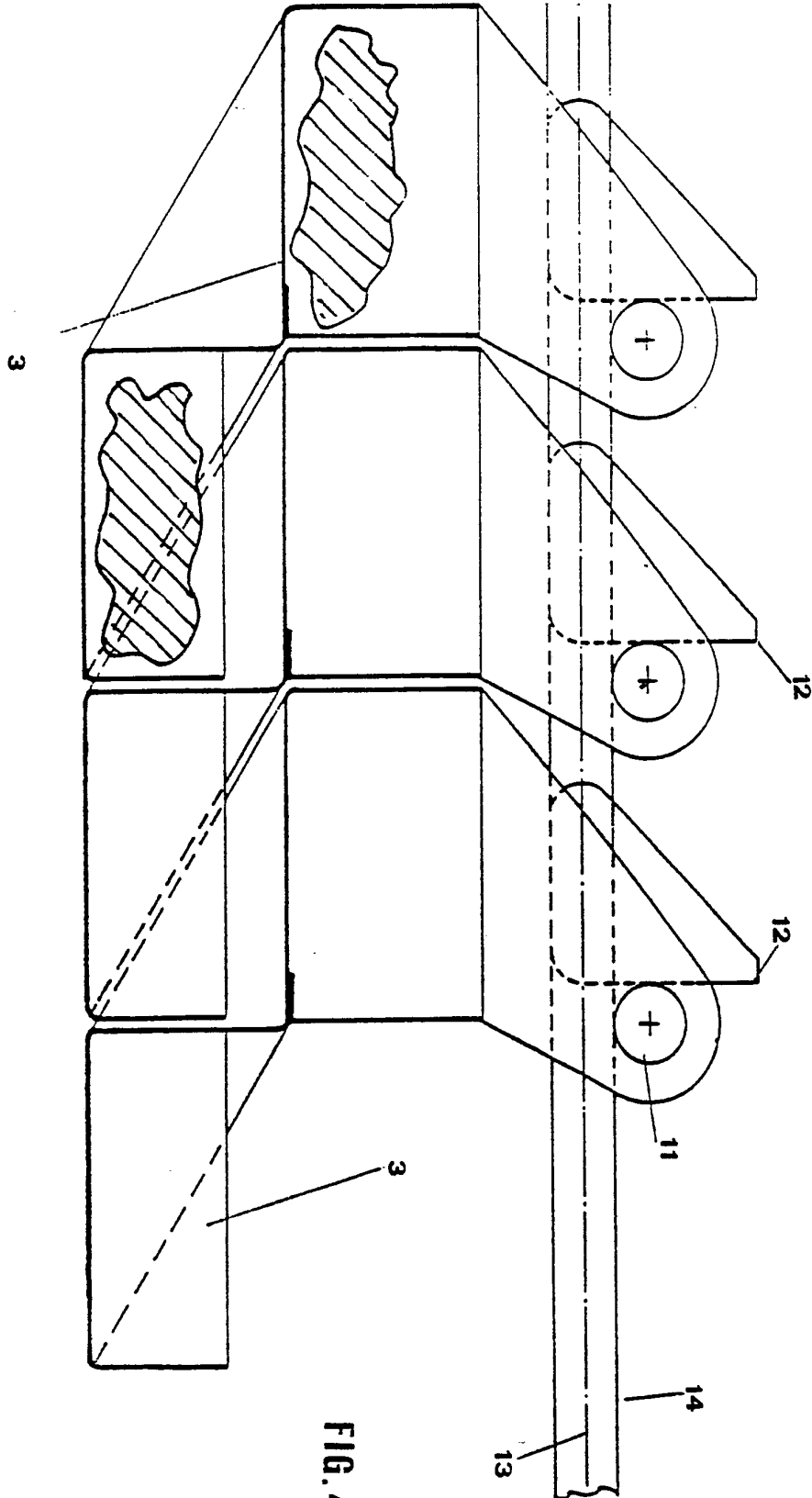
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5. Conveyor according to claim 1 characterised in that container shelves act as supports for holed-bottom prismatically-shaped cups.

5 6. Conveyor according to claim 1 characterised in that the holed surface of container shelves is made of a wire gauze.



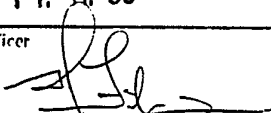




INTERNATIONAL SEARCH REPORT

International Application No.

PCT/EP 90/01245

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC: Int.Cl. 5 F26B15/14 ; F26B25/18 ; B65G17/36		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
Int.Cl. 5	F26B ; B65G	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹		
Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
Y	FR,A,1171223 (GEBR. BÜHLER) 23 January 1959 see the whole document	1, 3, 6
A	---	2
Y	US,A,1952193 (BAKER) 27 March 1934 see the whole document	1, 3, 6
A	---	
A	FR,A,614395 (COMPAGNIE DES CHARBONS RECONSTITUES) 13 December 1926 see the whole document	1
A	---	
A	FR,A,1131120 (GEBR. BUEHLER) 18 February 1957 see the whole document	1
A	---	
A	DE,A,1629028 (PORTLAND-ZEMENTWERKE HEIDELBERG AG) 14 January 1971	
¹⁰ Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "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 "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		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
29 OCTOBER 1990	14. 11. 90	
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ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO.

EP 9001245
SA 38676

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
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29/10/90

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US-A-1952193		None	
FR-A-614395		None	
FR-A-1131120		None	
DE-A-1629028	14-01-71	None	