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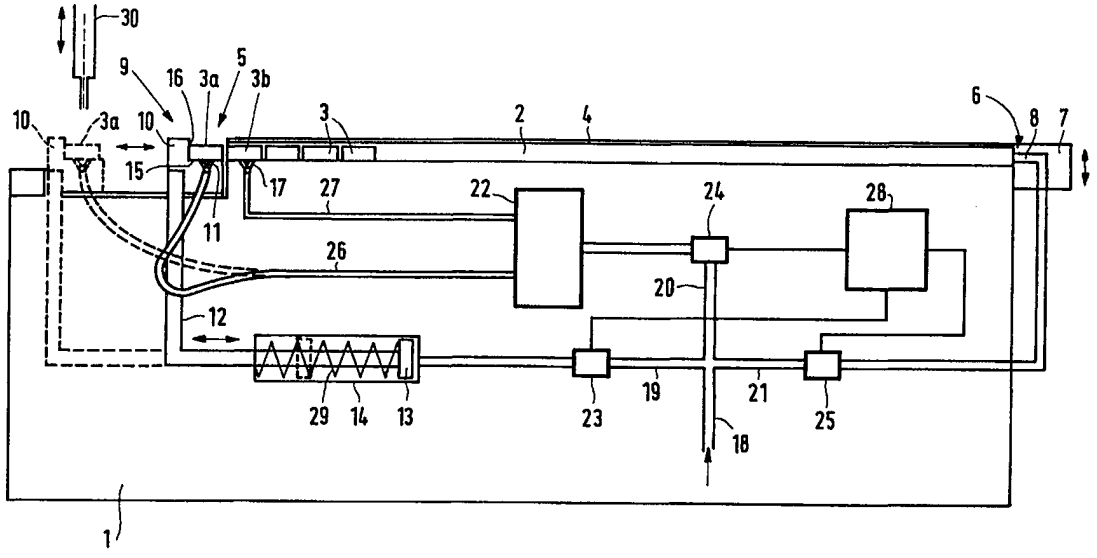

(57) Abstract

The invention relates to a component supply and separation apparatus comprising a supply duct (2) in which components (3) are disposed one after the other in a row. The apparatus comprises a component separation head (10) disposed near an outlet (5) of the supply duct, which head is movable away from the outlet and towards the outlet of the supply duct. Both the separation head (10) and the supply duct (2) have a suction port, respectively for holding a first component (3a) of the row on the separation head and for holding the second component (3b) of the row in position in the supply duct. The invention also relates to a corresponding method.

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A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H05K 13/02, B65G 47/14
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)

IPC6: H05K, B65G

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

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4953749 A (S. KUBOTA ET AL.), 4 Sept 1990 (04.09.90), figures 13a,13b, abstract -- --------	1-5

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4953749 A	04/09/90	DE 3717918 A,C	03/12/87
		JP 63225025 A	20/09/88
		US 4801044 A	31/01/89
		JP 2546647 B	23/10/96
		JP 62280129 A	05/12/87
		JP 2084806 C	23/08/96
		JP 7107958 B	15/11/95
		JP 63127600 A	31/05/88