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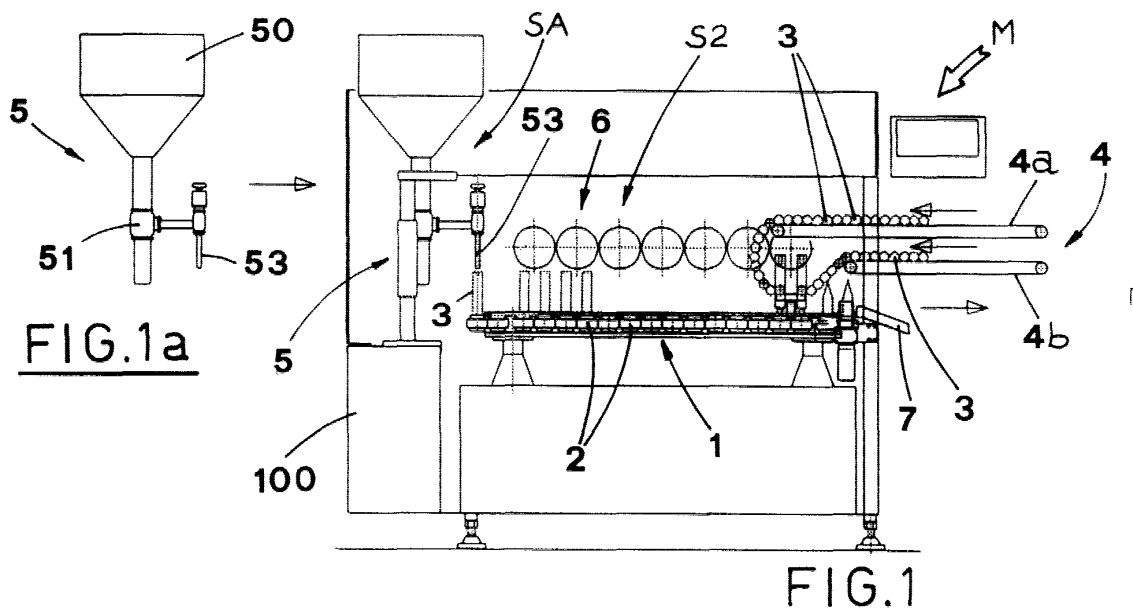
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(54) **Station for feeding products to containers, in particular tubes and a method for cleaning and sterilising said station**

(57) A station for feeding products to containers, in particular tubes, includes product dispensing means (5) for paste products, which can be removably fastened to the structure (100) of a tube filling and closing machine (M) by quick locking means (10). In this position, the product dispensing means (5) are operated by actuators (55) of the machine (M), so as to fill the tubes (3) with

the paste product. According to the method, in order to be cleaned and sterilized, the product dispensing means (5) are removed, during a machine stop, and taken to a suitable place, far from the machine (M). The operation of the machine (M) can be resumed immediately by installing cleaned and sterilized product dispensing means (5).



Description

[0001] The present invention relates to filling containers known as tubes, made of e.g. aluminium or synthetic material, with paste products, and relates in particular to a station for feeding products to tubes and to a method for cleaning and sterilizing said station.

[0002] According to a known and widely used technique, the tubes are produced with cylindrical shape, with the bottom open and the top already closed with a cap. The tubes are fed to the line of the tube filling and closing machine with the open bottom turned upwards, so that product dispensing means, situated in a feeding station, can introduce the product into the tubes.

[0003] In following stations, the tubes are closed assuming the classical, known to everyone, shape, and are subjected to possible additional operations e.g. coding, before being discharged from the line and sent to the packaging.

[0004] Problems are encountered with the tube filling and closing machines when cleaning and sterilizing of the product dispensing means in the feeding station are carried out, when the kind of product is to be changed, or for other reasons.

[0005] The problems include the necessity to stop the machine and consequently, the production, so as to clean and sterilize all elements which were in contact with the product.

[0006] This operation is extremely inconvenient and can soil the surrounding areas, which afterwards must be cleaned and sterilized, thus increasing time required for the whole operation.

[0007] Another disadvantage derives from the fact that the products can contain substances which are acid, corrosive or anyway harmful to the materials and/or elements of the machine being in contact and/or attacked by these products,

[0008] The object of the present invention is to propose a station for feeding products, associated to a tube filling and closing machine machine, which outweighs the above drawbacks by a technical solution which allows to simplify and speed up the cleaning and sterilization operations.

[0009] The above mentioned objects are achieved by the features of the independent claim, while preferred features are defined in the dependent claims.

[0010] The invention will now be described in more detail with reference to particular, non-limiting embodiments and with reference to the accompanying drawings, in which:

- Figure 1 is a schematic front view of a tube filling and closing machine equipped with the station for feeding products to tubes, proposed by the present invention;
- Figure 1a is a view of the above station separated from the machine, according to the same view as

Figure 1;

- Figure 2 is a top view of the machine of Figure 1;
- Figure 3 is a lateral view of the machine of Figure 1;
- Figure 3a is a lateral view of the proposed station separated from the machine, as seen in Figure 3..

[0011] With reference to the above figures, the reference indication M indicates a tube filling and closing machine, to which the proposed feeding station SA can be associated.

[0012] The machine M includes an endless close-looped conveying line 1, which extends in a horizontal plane.

[0013] The conveying line 1 is equipped with equispaced gripping means 2, for supporting relative tubes 3, upside down i.e. with their longitudinal axis being kept vertical.

[0014] The tubes 3 are placed on the conveying line 1 by transferring means, which are situated in a loading station S1, and which pick up the tubes 3 from conveying means 4 in a predetermined picking up area.

[0015] According to the shown, not limitative, example, the machine M operates in stepwise fashion, with two tubes being processed each time a step is performed, and the conveying means 4 include two conveyors 4a, 4b, each of which feeds one tube 3 in said picking up area each time.

[0016] Then, the line 1 brings the tubes 3 to the feeding station SA, where product dispensing means 5 fill each tube 3 with a measured quantity of the paste product.

[0017] The product dispensing means 5 substantially include a hopper 50, from which the product is withdrawn and introduced into distributing groups 51, e.g. syringes, which communicate with relative nozzles 53 situated over the open bottoms, turned upwards, of the corresponding tubes 3.

[0018] The pistons of the distributing groups 51 are operated, through stems 54, by respective actuators 55 carried by the structure 100 of the machine M and connected to the stems 54 by known quick connect/disconnect couplings, not shown in detail.

[0019] The product dispensing means 5 are supported by a plate 100a integral with the structure 100 of the machine M, by known and not shown in detail, quick locking means 10, which engage with a collar 56a formed by a frame 56 supporting the product dispensing means, thus reducing considerably the machine stop time for the product change.

[0020] At least one station S2, where known means 6 for closing the tubes 3 work, is situated downstream of the station SA.

[0021] In a discharge station S3, situated also downstream of the station SA, the tubes are discharged from the conveying line 1 and taken to an outlet line 7 by

transferring means, which are substantially similar to the ones in the loading station S1.

[0022] The presence of the proposed feeding station is particularly advantageous when the product dispensing means 5 are to be cleaned and/or sterilized.

[0023] According to the method claimed herein, it is enough to stop the machine M, close the apertures (nozzles, hopper etc.) with suitable caps, so as to prevent the product from going out, release the quick connect/disconnect couplings and the quick locking means 10, remove the product dispensing means 5 to be cleaned and sterilized and substitute them with sterilized product dispensing means 5.

[0024] At this point, it is possible to start again the machine M (and consequently, to resume the production), losing very little time and without soiling any other element.

[0025] The dirty product dispensing means 5 can be easily transferred to a suitable place, separated from the machine M, so as to be cleaned and/or sterilized in the most appropriate way.

[0026] The above description allows to understand how the proposed solution, although having a simple structure, allows to outweigh the disadvantages of the known tube filling and closing machines, already mentioned in the prior art.

[0027] Consequently, the construction of the tube filling and closing machine is simpler and cheaper, because preventing the loss of product during the cleaning operations allows to avoid all the technical precautions (protections, materials and elements particularly suitable for dirty environments, etc.), which considerably increase the costs, although they do not affect the machine operation.

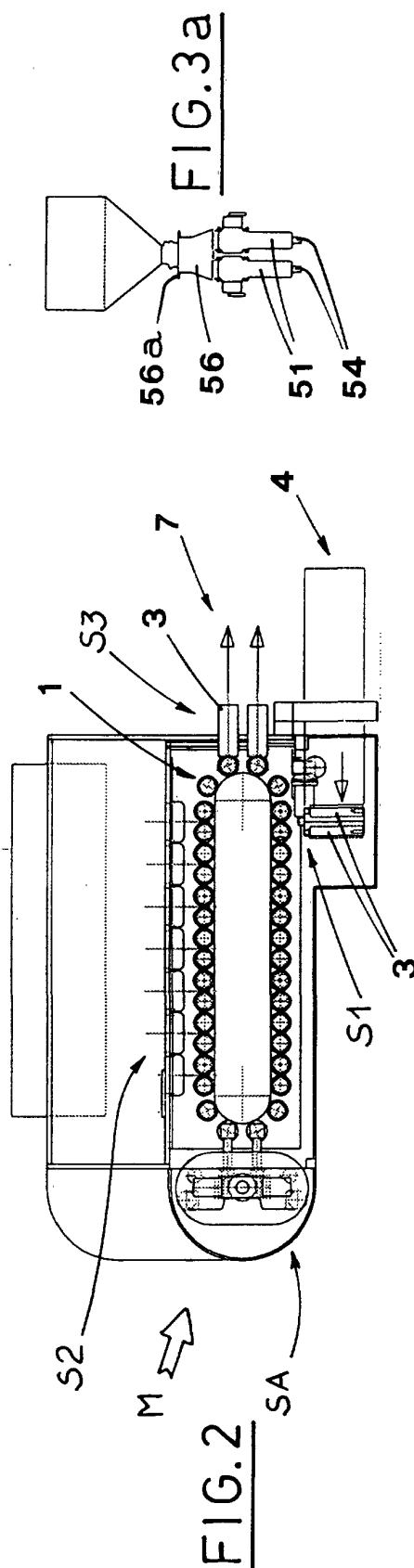
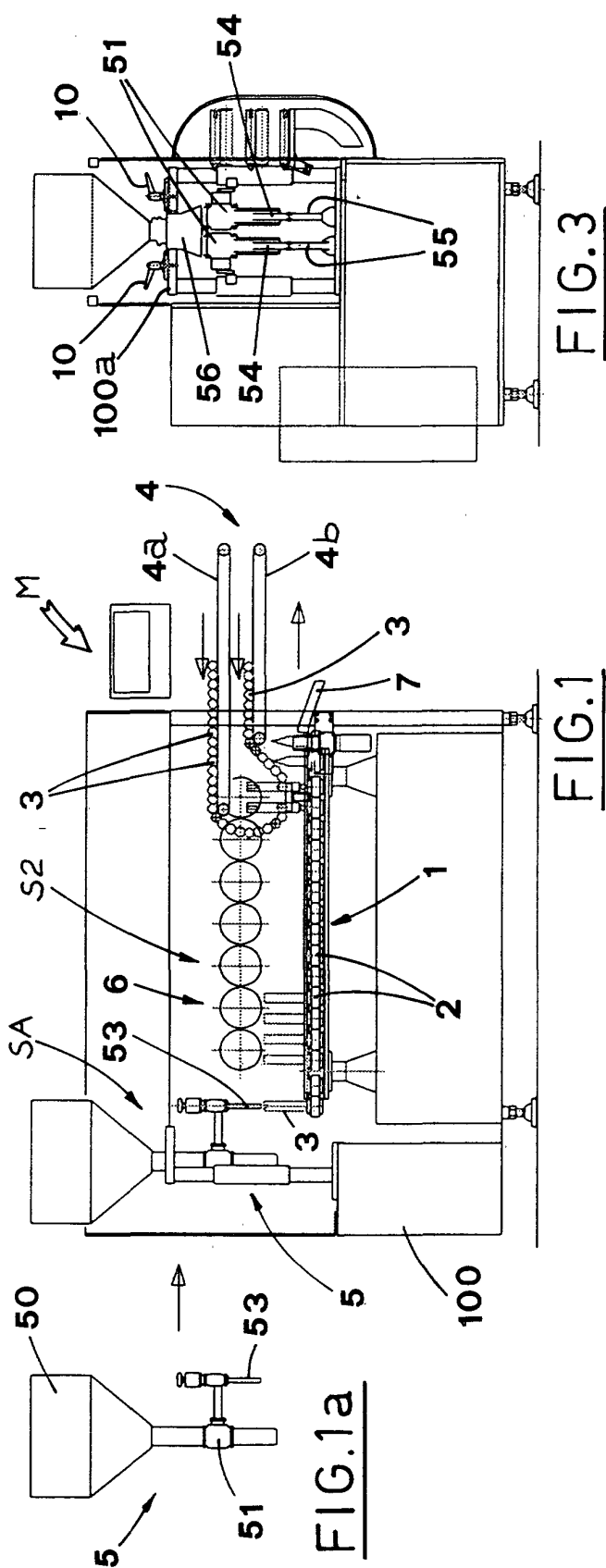
ized in that said quick locking means (10) are fastened to a plate (100a), which is integral with said structure (100) and which supports said product dispensing means (5), with said quick locking means (10) engaging with a collar (56a) formed by the frame (56) supporting said product dispensing means (5).

4. Feeding station, according to claim 1, **characterized in that** it includes quick connect/disconnect couplings for coupling said product dispensing means (5) with actuators (55).

5. A method for cleaning a station for feeding product to containers, in particular tubes, including product dispensing means (5) for feeding said product to said tubes said product dispensing means (5) being fastened to a structure (100) of a relative machine (M) in a selected position in which said product dispensing means (5) are associated to related control actuators (55) of said machine (M), for feeding said product, the method being , **characterized in that** with said product dispensing means (5) are removed from the structure (100), to be cleaned and/or sterilized in a suitable place, separated from the machine (M), while product dispensing means already cleaned and/or sterilised are mounted on the structure (100) of the machine, fastened thereto by means of quick locking means (10) and the machine is re-started.

Claims

1. Station for feeding product to containers, in particular tubes, including product dispensing means (5) for feeding said product to said tubes, **characterized in that** said product dispensing means may be constrained to the structure 100 of a related machine (M) in a position where they are associated with relative driving actuators (55) on said machine (M) positioned in such a way as to actuate said feeding, together with said product dispensing means (5), said product dispensing means being removable from said structure (100) to enable them to be cleaned and/or sterilised in a suitable location away from said machine (M).
2. Feeding station, according to claim 1, **characterized in that** it includes quick locking means (10) for fastening quickly said product dispensing means (5) to said structure (100).
3. Feeding station, according to claim 2, **character-**





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EUROPEAN SEARCH REPORT

Application Number
EP 01 11 4831

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.7)
X	US 4 545 507 A (BARALL HEINZ) 8 October 1985 (1985-10-08)	1,4,5	B65B3/16 B65B59/04
Y	* column 2, line 61 - column 6, line 36; figures *	2,3	
X	US 5 295 523 A (GENTILE ALISEO) 22 March 1994 (1994-03-22)	1,5	
X	US 5 431 198 A (TURTCHAN ALFONS ET AL) 11 July 1995 (1995-07-11)	1,5	
Y	US 3 760 853 A (TRUSSELLE W) 25 September 1973 (1973-09-25)	2,3	
	* column 3, line 20 - column 4, line 45 * * column 15, line 53 - column 16, line 8; figures *		
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B65B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 15 October 2001	Examiner Jagusiak, A
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 L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 11 4831

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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15-10-2001

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 4545507	A	08-10-1985	CA	1189035 A1	18-06-1985
US 5295523	A	22-03-1994	AU	4281793 A	18-11-1993
			CA	2135297 A1	28-10-1993
			WO	9321070 A1	28-10-1993
US 5431198	A	11-07-1995	NONE		
US 3760853	A	25-09-1973	NONE		

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82