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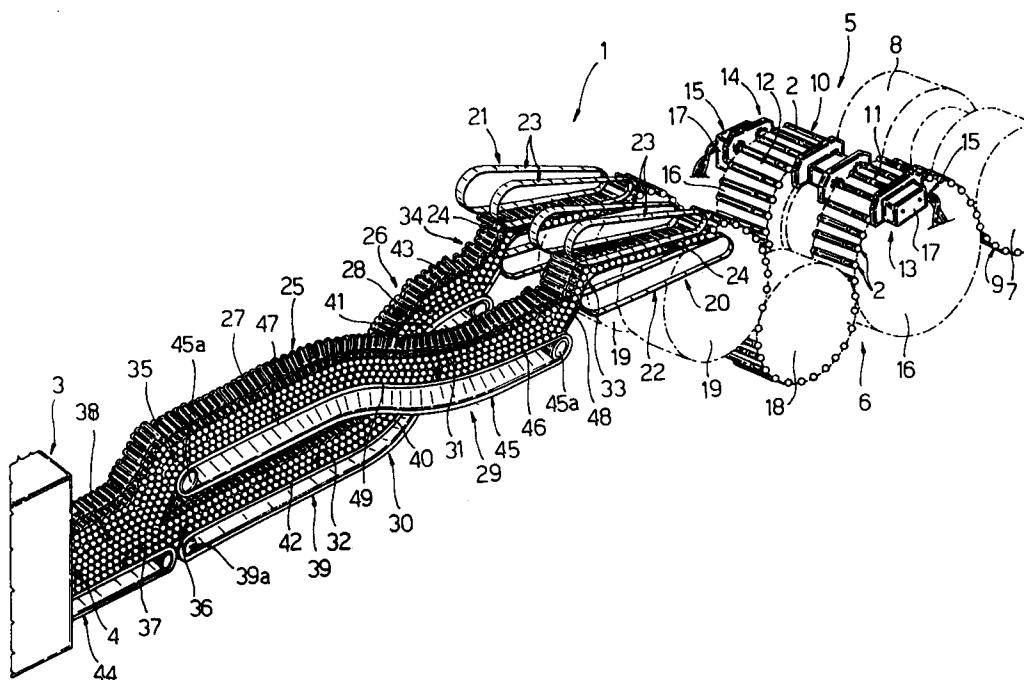
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I-10121 Torino (IT)(54) **Method of forming a bulk stream of equioriented cigarettes.**

(57) A method of forming a bulk stream (38) of equioriented filter-tipped cigarettes (2), whereby the cigarettes (2) in each of two orderly successions (9, 10) of equioriented single cigarettes (2) are collected together to form a first (27) and second (28) orderly

bulk stream of equioriented cigarettes; and the two streams (27, 28) are fed one into the other to form a single orderly bulk stream (38) of equioriented cigarettes (2).

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The present invention relates to a method of forming a bulk stream of equioriented cigarettes.

The method according to the present invention is advantageously employed for bulk feeding a continuous stream of equioriented cigarettes to a one-input packing machine.

As described, for example, in British Patent n. 2,241,866, filter-tipped cigarettes are formed on a filter assembly machine, along a first portion of which each portion in a first succession of cigarette portions with a given spacing is joined, at a rolling station and by means of a strip connecting element, to a corresponding portion in a second succession of cigarette portions, to form a tobacco item hereinafter referred to as a "double cigarette". Each double cigarette consists of two cigarette portions separated by a double filter connected integral with the two cigarette portions by said connecting element.

Again according to the above British patent, once formed, the double cigarettes are fed successively through a cutting station where they are cut transversely in half to form two successions of oppositely-oriented single cigarettes, i.e. arranged with the respective filters facing and substantially contacting each other. The two successions of filter-tipped cigarettes are then fed to a turnover station where each cigarette in one succession is turned over and fed into the space between two adjacent cigarettes in the other succession, to form a single succession of equioriented cigarettes.

The succession of equioriented cigarettes so formed is then fed through a quality control station where a single test unit successively tests the permeability and/or integrity and/or ventilation of the cigarettes and, if necessary, provides for rejecting them at a reject station.

At this point, the cigarettes are fed one on top of the other onto a conveyor to form a mass of equioriented cigarettes which is fed continuously to the input of a packing machine.

Recent improvements to filter assembly machines (see, for example, Italian Patent Application n. BO92A000311) now enable two successions of spaced equioriented cigarettes to be formed directly from the cut double cigarettes, for better performing the above tests, and which provide for obtaining two separate equioriented streams of single cigarettes at the output of the filter assembly machine. The two streams so formed may advantageously be supplied to the respective inputs of two separate packing machines, or to the two inputs of a two-line packing machine, but pose problems in the case of supply to a single one-line packing machine.

It is an object of the present invention to provide a cigarette feeding method designed to overcome the above difficulty.

According to the present invention, there is provided a method of forming a bulk stream of equioriented cigarettes from two streams of single cigarettes, the cigarettes in each stream being equioriented in relation to the cigarettes in the other stream, and the method being characterized in that it comprises stages consisting in collecting together the cigarettes in each said stream of single cigarettes, to form two bulk streams of equioriented cigarettes; and feeding the two bulk streams one into the other to form a single overall bulk stream of equioriented cigarettes.

According to a preferred embodiment of the above method, the two bulk streams of cigarettes are fed into each other by feeding one of said two streams on top of the other.

The invention will be described with reference to the accompanying drawing which shows a partial, schematic view in perspective, with parts removed for clarity, of a system implementing the method according to the present invention.

Number 1 in the accompanying drawing indicates a system for producing and feeding cigarettes 2 to a packing assembly 3 with one input 4.

System 1 comprises a filter assembly machine 5 (shown partially) with an output portion 6 comprising two coaxial, adjacent rollers 7 and 8 rotating clockwise (in the accompanying drawing) about respective axes (not shown), and to which are fed in known manner respective successions 9 and 10 of equioriented single cigarettes 2.

Rollers 7 and 8 constitute the input rollers of respective conveyor lines 11 and 12 for feeding successions 9 and 10 through respective test stations 13 and 14, and each comprising in known manner a test unit 15 inside respective station 13, 14. Each unit 15 in turn comprises a roller 16 tangent to respective roller 7, 8, and which provides for feeding respective cigarettes 2 to known test devices 17. Each device 17 provides for successively testing the permeability and/or integrity and/or ventilation of cigarettes 2 in respective succession 9, 10, and, if necessary, for rejecting them at a known reject station (not shown) along the periphery of a respective roller 18 tangent to respective roller 16 and interposed between roller 16 and a respective output roller 19.

Rollers 19 cooperate with respective known feed devices 20 and 21, each comprising, in particular, a pair of adjacent bottom conveyors 22; and a pair of adjacent top conveyors 23, each facing a respective bottom conveyor 22 with which it defines a respective channel 24 for feeding and guiding cigarettes 2 in a respective succession 9, 10.

Devices 20 and 21 constitute the input elements of respective conveyor lines 25 and 26 for feeding respective orderly bulk streams 27 and 28 of equioriented cigarettes 2 to said input 4 of

assembly 3. In addition to devices 20 and 21, lines 25 and 26 also comprise respective conveyors 29 and 30 defining respective channels 31 and 32 for guiding streams 27 and 28. Channels 31 and 32 present respective inputs 33 and 34 communicating with channels 24 of respective devices 21 and 22; and respective adjacent, superimposed outputs 35 and 36 communicating with the input of a channel 37 for feeding input 4 of assembly 3 with a single orderly bulk stream 38 of equioriented cigarettes 2, formed by combining streams 27 and 28.

More specifically, conveyor 30 comprises a belt 39 looped about two pulleys 39a and presenting a delivery branch defining the bottom of channel 32. The delivery branch of belt 39 extends along a substantially S-shaped path, and presents a curved intermediate portion 40, and substantially straight end portions 41 and 42. Portion 41 is located below device 21, and is connected to the bottom conveyors 22 of device 21 by a chute 43; while portion 42 extends in line and coplanar with the delivery branch of a further belt 44 (shown partially), the delivery branch of which defines the bottom wall of channel 37.

Conveyor 29 comprises a belt 45 looped about two pulleys 45a and presenting a delivery branch defining the bottom of channel 31. The delivery branch of belt 45 extends along a substantially S-shaped path, and comprises two substantially straight end portions 46 and 47. Portion 46 extends below device 20, and is connected to conveyors 22 of device 20 by a chute 48 substantially parallel to chute 43; while portion 47 extends directly over and parallel to portion 42. The delivery branch of belt 45 also comprises an intermediate portion 49 extending substantially over and curving the opposite way to portion 40.

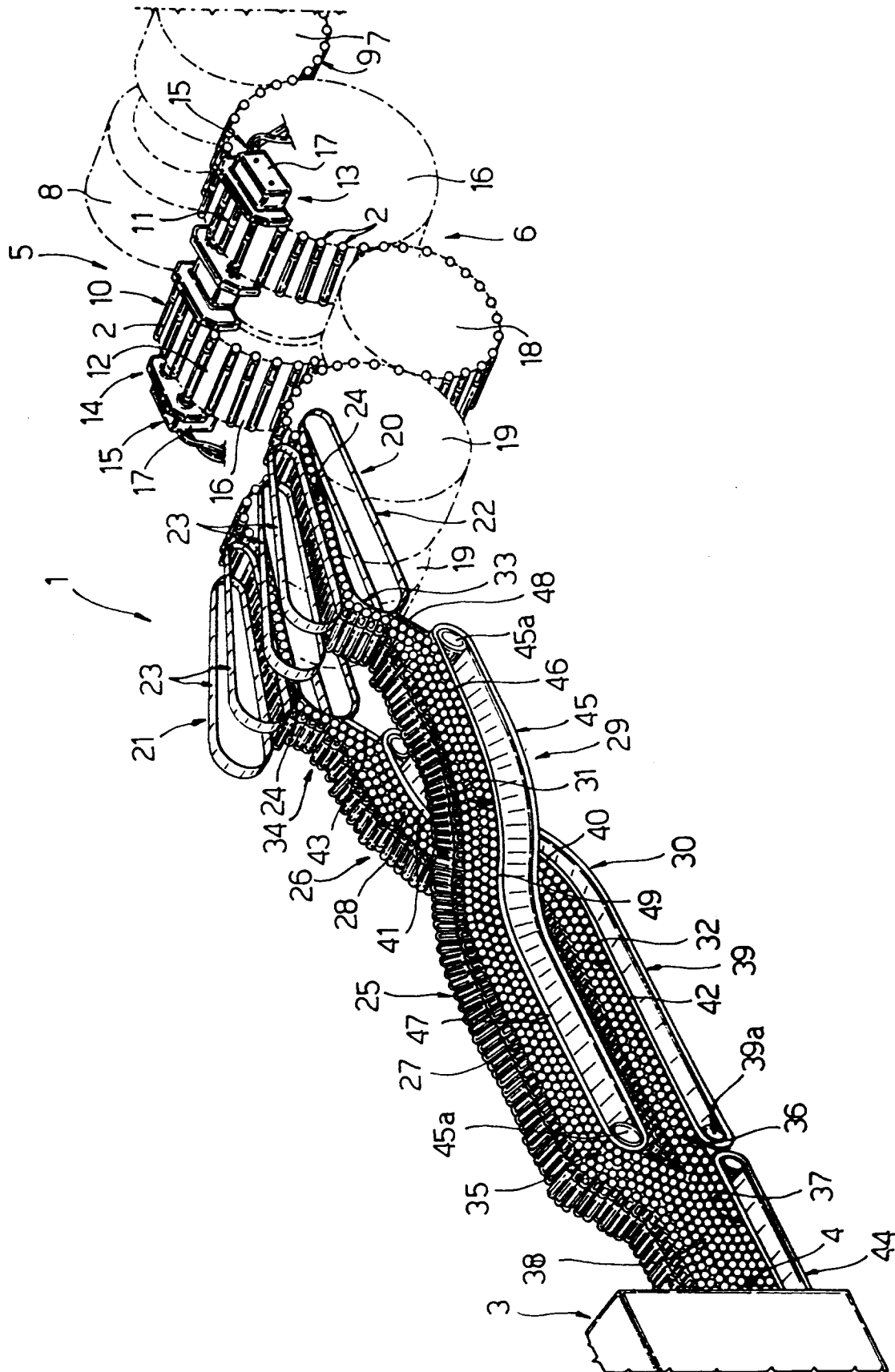
As such, conveyors 29 and 30 therefore provide for receiving respective streams 27 and 28 from devices 20 and 21 arranged side by side and at the same level; feeding stream 27 directly over stream 28; and combining streams 27 and 28 by simply feeding one on top of the other, to form, in an extremely straightforward, low-cost manner, a single end stream 38 of equioriented cigarettes.

feeding the two bulk streams (27, 28) one into the other to form a single overall bulk stream (38) of equioriented cigarettes (2).

2. A method as claimed in Claim 1, characterized in that the two bulk streams (27, 28) of cigarettes are fed one into the other by feeding one (27) of the two said bulk streams (27, 28) of cigarettes on top of the other (28).
3. A method as claimed in Claim 1 or 2, characterized in that said bulk streams (27, 28) of equioriented cigarettes are fed inside respective at least partially superimposed channels (31, 32) presenting respective superimposed outputs (35, 36).
4. A method as claimed in Claim 3, characterized in that said overall stream (38) of equioriented cigarettes is formed in a respective channel (37), the input of which communicates with the outputs (35, 36) of the feed channels (31, 32) of said two bulk streams (27, 28) of equioriented cigarettes.

Claims

1. A method of forming a bulk stream (38) of equioriented cigarettes (2) from two streams (9, 10) of single cigarettes (2), the cigarettes (2) in each stream (9, 10) being equioriented in relation to the cigarettes (2) in the other stream (10, 9), and the method being characterized in that it comprises stages consisting in collecting together the cigarettes (2) in each said stream (9, 10) of single cigarettes, to form two bulk streams (27, 28) of equioriented cigarettes; and





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EUROPEAN SEARCH REPORT

Application Number
EP 94 10 8316

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.5)
X	GB-A-1 519 293 (MOLINS LIMITED) * the whole document * ---	1-4	A24C5/35
X	GB-A-1 159 791 (MOLINS MACHINE COMPANY LIMITED) * the whole document * ---	1-4	
X	GB-A-2 051 552 (MOLINS LIMITED) * the whole document * ---	1,2	
X	GB-A-2 007 964 (MOLINS LIMITED) * the whole document * ---	1,2	
P,X	EP-A-0 580 150 (G.D. SOCIETA PER AZIONI) * column 6, line 57 - column 7, line 15; figure 5 * -----	1-4	
			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			A24C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 7 September 1994	Examiner Riegel, R
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			