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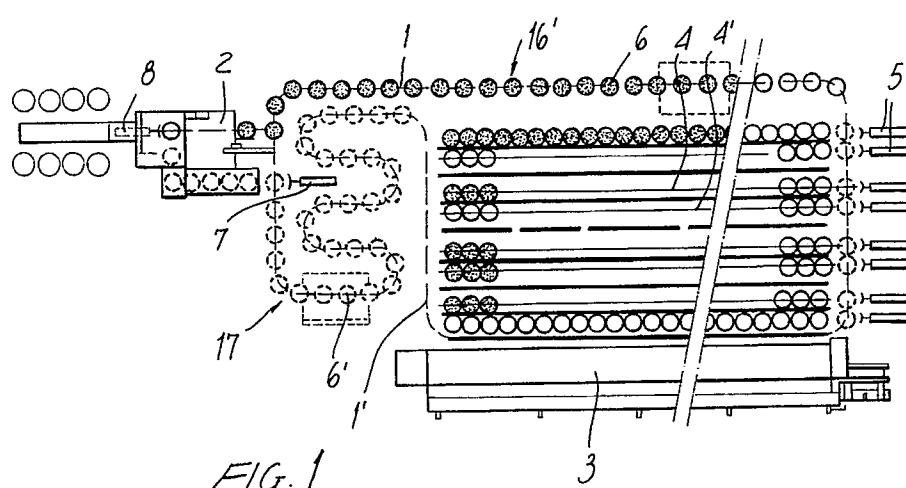
㉒ System for automatically driving textile cans from a drawing frame to a roving frame.

㉓ There is disclosed a system for automatically driving textile cans from a drawing frame to a roving frame, which system has been specifically designed and arranged so as to replace the textile cans even during the operation of the textile machine.

This system essentially comprises an endless conveyor device, such as, for example, a conveyor belt, adapted to drive the textile cans from the drawing frame to the roving frame, therewith can driving or pushing means cooperate to transversely push the single textile cans.

The textiles can driving or pushing means are adapted to drive full textile cans to a corresponding conveyor device, for example a roller conveyor, while simultaneously discharging empty textile cans at the opposite end of the roller conveyors, on the downstream portion of the conveyor belt.

These conveyors devices, in particular, are arranged, in adjoining pairs, in parallel to the roving frame supply belt and, at the start of the operation, bring full textile can rows to different levels.



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BACKGROUND OF THE INVENTION

The present invention relates to a system for automatically driving textile cans from a drawing frame to a roving frame.

As is known, cotton fibre processing methods generally comprise a web drawing operation (in which web is directly supplied by carding or combing machines), by using suitable drawing frames, and a subsequent transfer of the web to a roving frame, for carrying out the spinning step.

Also known is that the cotton fibre web is displaced from the drawing frame to the roving frame by using suitable textile cans which are filled by textile can filling devices.

Because of the comparatively large size and weight of these textile cans, these cans are usually displaced by suitable conveyor devices specifically designed for replacing the textile cans, which usually comprise one or more conveyor belts.

These conveyor belts, however, must be serviced by one or more operators for manually replacing empty textile cans with full textile cans.

These are known systems which have been specifically designed to automatize the replacement of empty textile cans with full textile cans between two operating textile machines.

Such a system is for example disclosed in the document DE 37 07 80 A1, in the name of Lippert GmbH.

This system, however, has been specifically constructed for different operating machines and carries out a transversal displacement of the textile cans by using a movable storing device.

In particular, this system allows for empty cans to be replaced with corresponding full textile cans, exclusively during a stop period of the roving frame, since it does not provide for the use of reserve cans.

Another system of this type is moreover disclosed in the document EP 0 220 945, of Howa; however, this system has been specifically constructed for transferring textile cans from a plurality of carding machines to a drawing frame so as to supply the latter, without considering the problem of the fibre hooks.

SUMMARY OF THE INVENTION

The aim of this invention is that of providing a system for automatically transferring textile cans from a drawing frame to a roving frame specifically adapted to quickly and reliably replace, in a fully

automatic way, an empty textile can row with a full textile can row.

Within the scope of the above mentioned aim, a main object of the present invention is to provide such a system for transferring textile cans from a drawing frame to a roving frame which comprises, for each supply textile can row a corresponding reserve textile can row.

Another object of the present invention is to provide such a system which is adapted to exchange the textile cans even with the textile machines in operation.

According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a system for automatically transferring textile cans from a drawing frame to a roving frame, characterized in that said system essentially comprises an endless conveyor belt extending from said drawing frame to said roving frame, therewith driving means cooperate for driving full textile cans on corresponding conveyor devices, for example of the roller type, while simultaneously discharging empty textile cans, arranged at the opposite end portions of said conveyor devices on the downstream portion of said conveyor belt, said conveyor devices being arranged, in adjoining pairs, in parallel to the supply front of the web of said roving frame and being adapted to bring, at the start of the operation, full textile can rows to a set level.

BRIEF DESCRIPTION OF THE DRAWINGS

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Further characteristics and advantages of the system for automatically transferring textile cans from a drawing frame to a roving frame, according to the present invention, will become more apparent from the following detailed description of a preferred, though not exclusive, embodiment of the subject system which is illustrated, by way of an indicative but not limitative example, in the accompanying drawings, where:

Figure 1 shows an operating diagram of the system according to the invention, and

Figure 2 shows a modified operating diagram of the system according to the present invention.

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DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the accompanying drawings, the system for automatically transferring textile cans from a drawing frame to a roving frame according to the present invention essentially comprises an endless conveyor device or belt 1 including a plurality of suitable textile can entraining members, of conventional type, which conveyor device extends from a drawing frame 2 to a roving frame 3.

More specifically, this endless belt extends along the web front supply portion of the roving frame and has two portion perpendicular to said roving frame so as to define a rectangular space therein there are arranged adjoining pairs of conveyor devices 4 and 4' parallel to the mentioned roving frame.

At an end portion of each of said conveyor devices, for example of the roller type, there are provided driving or pushing means 5, arranged beyond the endless belt and adapted to be driven in order to transfer a textile can 6 from said belt to a corresponding conveyor device.

Thus, with the disclosed arrangement, for each roving frame supplying textile can row, a reserve textile can row can be provided.

Accordingly, for each empty textile can, a reserve full textile can will be available, which affords the possibility of immediately splicing the head portion of a new web to the tail portion of a preceding web, which splicing operation can be carried out either manually or automatically by means of known web splicing devices.

In this connection, it should be apparent that the replacement of the textile cans can also be performed with the roving frame in operation since during the time in which an empty can row is replaced, the web will be taken by the corresponding full can row.

During the operation, as in a row there are only empty textile cans, the driving means are actuated which corresponds to the related conveyor, so as to transfer the coming full cans to said conveyor.

Each single can driving-pushing operation, as it should be apparent, will cause, at the opposite end of the conveyor, an empty can be displaced on the portion 1' of the endless conveyor belt arranged downstream of the roving frame.

Further pusher means 7 and 8 are moreover provided for transferring empty textile cans to the roving frame, from the conveyor device 1', and full textile cans from said roving frame to the endless conveyor device or belt 1.

In order to obtain a continuous type of operation, that is in order to prevent two conveyors from being simultaneously occupied by empty textile cans, it is provided to arrange, at the starting of the

operation, on one of the conveyor devices of each pair, a row of cans holding different amounts of web.

By way of example, and with reference to the accompanying drawing in which four adjoining conveyor device pairs are provided, the cans will be arranged in the following order: a row of completely full cans, a row of three-quarter full cans, a row of half-full cans and a row of 1/4 full cans.

The system according to the invention further comprises a full can 6 waiting portion 16, extending between the drawing frame and the driving or pushing means 5, upstream of the drawing frame, on a conveyor device, which has such a storing capability as to hold a number of cans corresponding to the cans to be arranged on a roving frame web supply row 4 or 4'.

The system further comprises another conveyor or belt portion 17 which supplies empty cans 6' to the roving frame 8 and which has such a capability to receive a number of empty cans 6' corresponding to the cans arranged on a can supply row 4 or 4'.

With reference to figure 2 of the accompanying drawings, it should be apparent that suitable gaps 10, 11, 12, 13, 14, 15 and so on are herein provided, following a set number of cans, so as to allow for an operator to pass through and to facilitate the removal of one or more full cans from the conveyor device or the locating of one or more empty cans thereon.

From the above disclosure, it should be apparent that the invention fully achieves the intended aim and objects.

While the invention has been disclosed and illustrated with reference to a preferred embodiment thereof, it should be apparent that the disclosed embodiment is susceptible to several modifications and variations all of which will come within the spirit and scope of the appended Claims.

Claims

1- A system for automatically transferring textile cans from a drawing frame to a roving frame, characterized in that said system comprises an endless conveyor belt extending from said drawing frame to said roving frame, therewith driving means cooperate for driving full textile cans on corresponding conveyor devices, for example of the roller type, while simultaneously discharging empty textile cans, arranged at the opposite end portions of said conveyor devices on the downstream portion of said conveyor belt, said conveyor devices being arranged, in adjoining pairs, in parallel to the supply front of the web of said roving frame and being adapted to bring, at the start of said system opera-

tion, full textile can rows to set levels.

2- A system according to claim 1, characterized in that said endless conveyor belt is provided with can entraining members and extends along the front wall of said roving frame, said belt including two belt portions perpendicular to said roving frame and cooperating therewith to define a supply space therein are arranged said adjoining conveyor pairs parallel to said roving frame.

3- A system according to claims 1 and 2, characterized in that said system comprises a can waiting portion included between said drawing frame and said driving or can pushing means, adapted to hold a number of cans corresponding to those in a supply row.

4- A system according to one or more of the preceding claims, characterized in that said system further comprises a conveyor portion supplying textile cans to said drawing frame and holding a number of textile empty cans corresponding to those in a supply row.

5- A system according to one or more of the preceding claims, characterized in that, at one end of each said conveyor device, there are provided driving or pushing means, arranged at said endless conveyor belt, and adapted to transfer full textile cans from said belt to said conveyor device.

6- A system according to one or more of the preceding claims, characterized in that said system comprises further driving means for transferring empty textile cans from said endless belt to said drawing frame and full textile cans from said drawing frame to said endless belt.

7- A system according to one or more of the preceding claims, characterized in that between set textile can assemblies there are provided preset interspaces or gaps.

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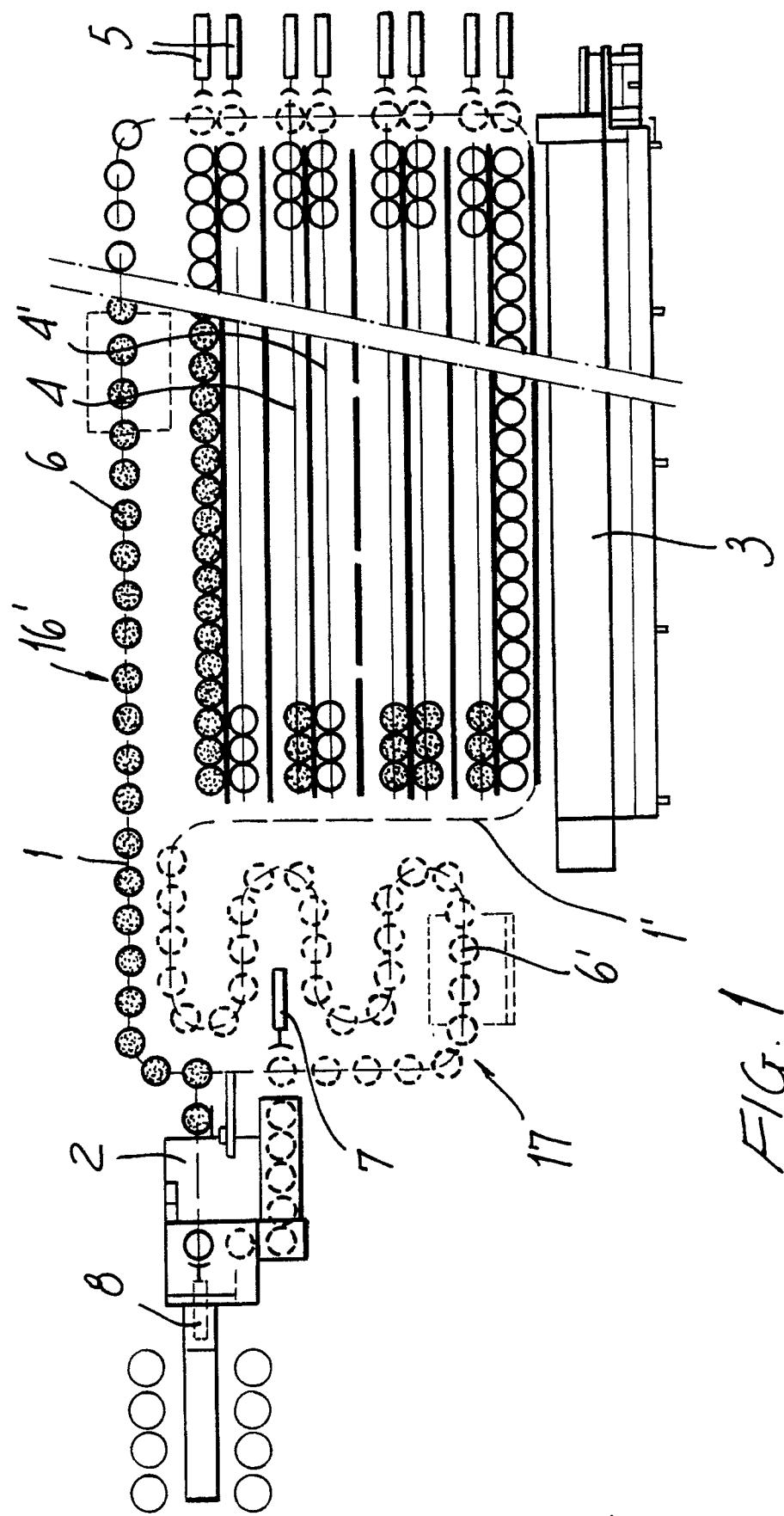
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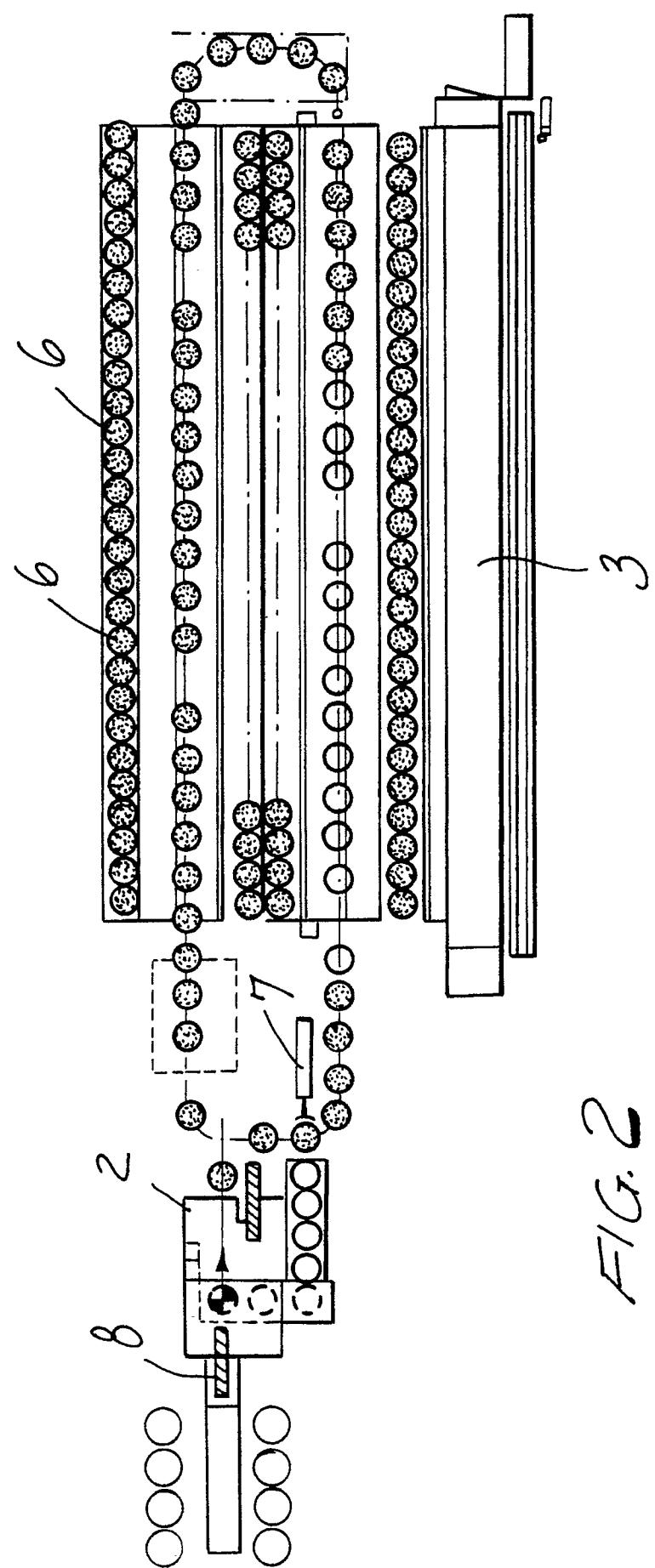


FIG. 2



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)
A,D	DE-A-3 707 080 (MASCHINEN- UND STAHLBAU JULIUS LIPPERT) * the whole document * - - -	1	B 65 H 67/04
A	GB-A-2 104 924 (HEBERLEIN HISPANO) * the whole document * - - -	1	
A,D	EP-A-0 220 945 (HOWA MACHINERY) * abstract; figure 1 * - - - - -	1	
TECHNICAL FIELDS SEARCHED (Int. Cl.5)			
B 65 H			

The present search report has been drawn up for all claims

Place of search	Date of completion of search	Examiner
The Hague	13 February 91	RAYBOULD B.D.J.
CATEGORY OF CITED DOCUMENTS		
X: particularly relevant if taken alone	E: earlier patent document, but published on, or after the filing date	
Y: particularly relevant if combined with another document of the same category	D: document cited in the application	
A: technological background	L: document cited for other reasons	
O: non-written disclosure	
P: intermediate document	&: member of the same patent family, corresponding document	
T: theory or principle underlying the invention		