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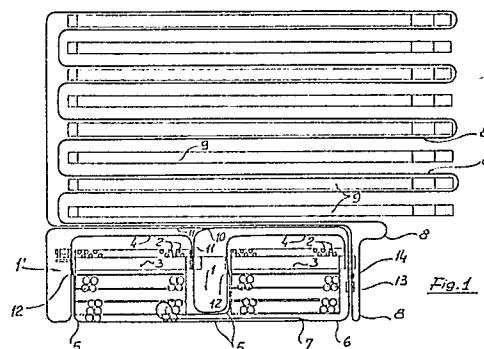
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54 Improved structure for supplying a spinning frame with full bobbins for replacing exhausted bobbin in a random way.

57 The invention relates to a bobbin supply system adapted to simplify the random replacing operation of completely exhausted bobbins to be replaced by completely full bobbins on a spinning frame.

This supply system comprises at least a first path (1) coming from a bobbin frame and adapted to transfer a bobbin assembly or train arranged near a second path (1') which extends on the perimeter of the parts constituting a spinning frame.

The mentioned first path is provided with a conveyor belt driven with a substantially reciprocating motion, whereas the second path is provided with a conveyor belt having a substantially continuous motion, the system further comprising means for transferring individual bobbins (2) between the conveyor belts of the first and second paths (1, 1').



Description

IMPROVED STRUCTURE SYSTEM FOR SUPPLYING A SPINNING FRAME WITH FULL BOBBINS FOR REPLACING EXHAUSTED BOBBIN IN A RANDOM WAY

BACKGROUND OF THE INVENTION

The present invention relates to an improved structure system for supplying a spinning frame with full bobbins to be substituted for empty or exhausted bobbins.

As is known roving bearing bobbins, formed on roving frames, are processed by suitable spinning frames.

These spinning frames comprise a plurality of devices including a plurality of elements supporting a corresponding plurality of bobbins therefrom the roving is taken to be subjected to spinning and the like operations.

For a proper operation of a spinning frame, the empty bobbins must be continuously replaced by full bobbins, in a time as short as possible.

To carry out this bobbin replacing operation transfer apparatus are already known which operate so as to transfer all of the bobbins, formed on a roving frame, to the spinning frame.

More specifically, each single bobbin set or train, taken from the roving frame, may be used for replacing a corresponding empty bobbin set.

Such a system is conventionally called the set by set replacing system.

However, because of very different reasons, the bobbins of a given set do not exhaust at the same time or within a given short period of time.

Accordingly, this type of bobbin supplying system does not afford the possibility of exploiting in an optimal way the efficiency capabilities of the spinning frame, with a consequent increase of the operating cost.

Another system is to supply the bobbins to the spinning frame by sets or trains and, in this system, the bobbins are changed individually, that is upon sensing each single empty bobbin.

This second system, on the other hand, requires comparatively long operating times, which negatively affect the efficiency of the spinning frame.

SUMMARY OF THE INVENTION

Accordingly, the task of the present invention is to overcome the above mentioned drawbacks by providing a spinning frame supplying system able of causing the spare full bobbins to be displaced in a continuous way along the front sections of the spinning frames.

Another object of the present invention is to provide a spinning frame supplying system which is adapted to greatly facilitate the replacing of empty bobbins by completely full bobbins.

Still another object of the present invention is to provide a bobbin supplying system which is very reliable in operation.

According to one aspect of the present invention the above mentioned objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by an improved system for supplying spinning frames with completely full bobbins, characterized in that it comprises at least a first bobbin supplying path deriving from a roving frame and adapted to transfer a full bobbin set or train to a second path extending through the perimeter of a spinning frame, said first path being provided with a reciprocating conveyor belt and the second path being provided with a continuous motion conveyor belt, means being moreover provided for transferring bobbins between said conveyor belts.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the system for supplying spinning frames with full bobbins according to the present invention will become more apparent hereinafter from the following detailed description of a preferred embodiment of said system which is illustrated, by way of an indicative but not limitative example in the figures of the accompanying drawings, in which:

figure 1 is a schematic top view illustrating the supplying system according to the present invention; and

figure 2 is a cross-sectional view illustrating a spinning frame

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the drawing figures, the improved system for supplying spinning frames with full bobbins according to the present invention preferably comprises two supplying circuits or paths, indicated generally at the reference numbers 1 and 1' including two conveyor belts and adapted to take up all of the bobbins 2 formed on corresponding roving frames 3.

More specifically, each said circuit or path comprises a first portion 4 associated with the corresponding roving frame and a second portion 5 adapted to transfer the full bobbin sets, sent from either roving frame, to a third common portion 6 so as to reach a switching device 7.

The mentioned third portion 6 adjoins a portion of a further circuit or path 8 which perimetricaly extends with respect to the roving frames 9 and defines, through a switching device 10, two further portions 11 meeting, through corresponding switching devices 12, with the mentioned first portions 4.

At the adjoining portions of the first and second circuits or paths there are moreover provided an interexchanging apparatus 13 and a sensor 14 which will be discussed in a more detailed way hereinafter.

More specifically, the conveyor belt 15, defining the path 8 and carrying both full and empty bobbins is provided with a continuous motion and is stopped as the sensor 14 detects, near the apparatus 13, the presence of an empty bobbin, while a bobbin train

coming from the path 1 or from the path 1' is arranged on a side of the mentioned apparatus 13.

The operation of replacing an empty bobbin by a full bobbin, in particular, is very easy.

In fact as an empty bobbin is sensed by the sensor 14, the operation of the path 8 will be interrupted so as to arrange an empty tube on a side of the apparatus 13, which will exchange this empty tube with a full bobbin, by supplying the bobbin to the path 8 and the empty tube to the path or circuit 1.

As the train arranged in a rest condition at a side of the mentioned apparatus 13 exclusively comprises empty tubes, the operation of said train will be started again so as to locate at said side another full bobbin train.

The empty tube train, in turn, will be sent, through the switching device 10, to the roving frame for forming new full bobbins.

In this connection it should be pointed out that the legs of the path 8 preferably laterally extend in an alternate way, one of this leg being sufficient to supply two adjoining roving frames.

From the above disclosure it should be apparent that the invention fully achieves the intended 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 come within the spirit and scope of the appended claims.

Claims

1. An improved system for supplying spinning frames with completely full bobbins (2), characterized in that it comprises at least a first bobbin supplying path (1) coming from a roving frame (3) and adapted to transfer a full bobbin set or train to a second path (1') extending through the perimeter of said roving frame (3), said first path (1) being provided with a reciprocating conveyor belt and the second path (1') being provided with a continuous motion conveyor belt, means being moreover provided for transferring bobbins between said conveyor belts.

2. An improved system according to the preceding claim, characterized in that said first path (1) is preferably formed by two paths comprising respective conveyor belts and adapted to take up all of the bobbins (2) formed by corresponding roving frames (3) each said path comprising a first portion (4) associated with the respective roving frame (2) and a second portion (5) adapted to transfer said bobbins to a third common portion (6), through a switching device.

3. An improved system according to the preceding claims, characterized in that said third portion (6) adjoins a portion of said second path, which extends on the perimeter of said roving frames (9) and is successively split, through a switching device (10), in two converging portions (11), through corresponding other switching devices (12), said converging portions (11) converging into said first portions (4).

4. An improved system according to one or more of the preceding claims, characterized in that at the adjoining portions of said first and second path there are provided an interexchanging apparatus (13) and a sensor (14), said interexchanging apparatus being substantially adapted to replace an empty bobbin by a full bobbin and to transfer the full bobbin to said second path and the empty bobbin to said first path.

5. An improved system according to one or more of the preceding claims, characterized in that said sensor (14) is adapted to detect the passage, to said second path, of a full bobbin of an empty bobbin so as to cause, in the latter case, the second path to stop at a set position.

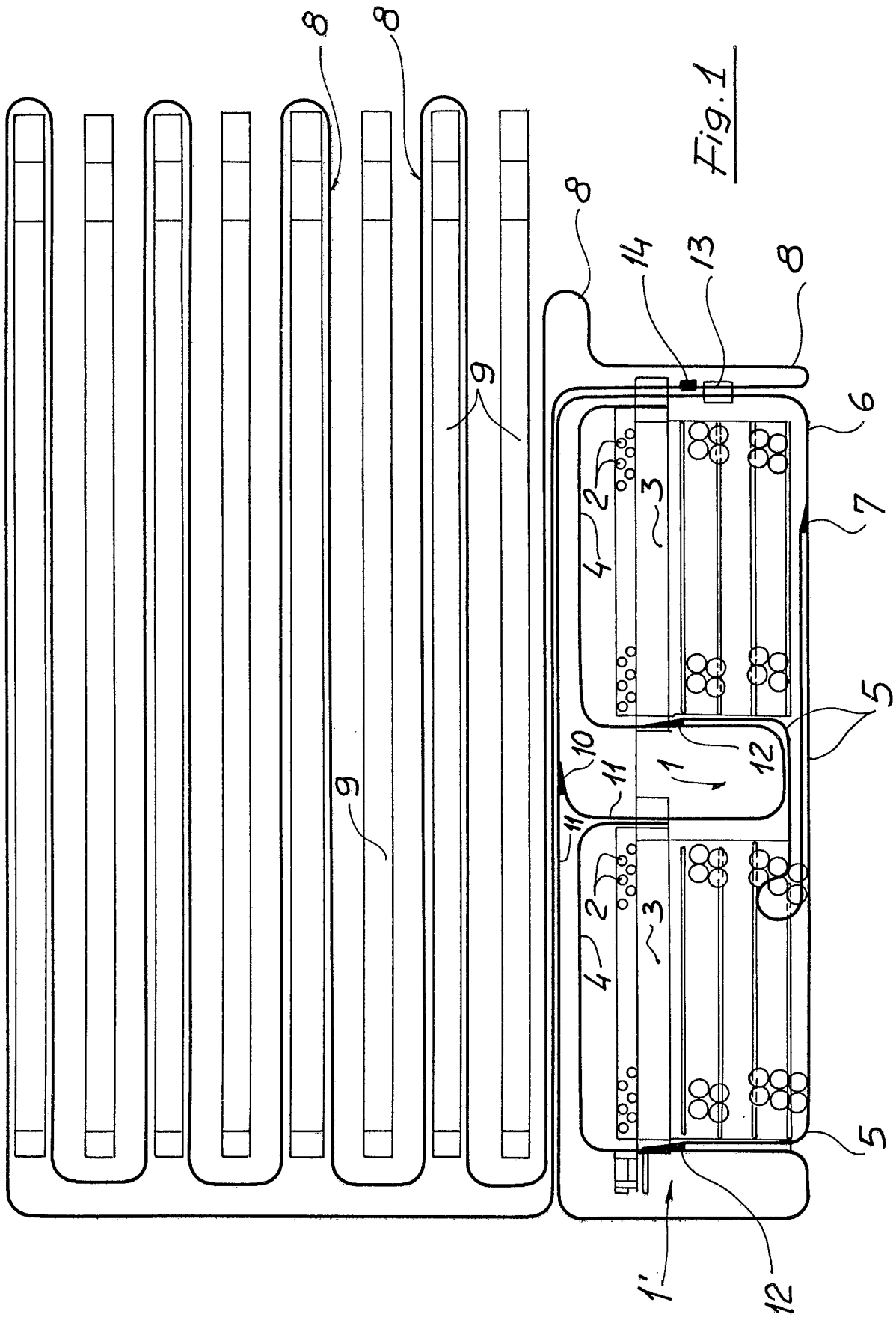
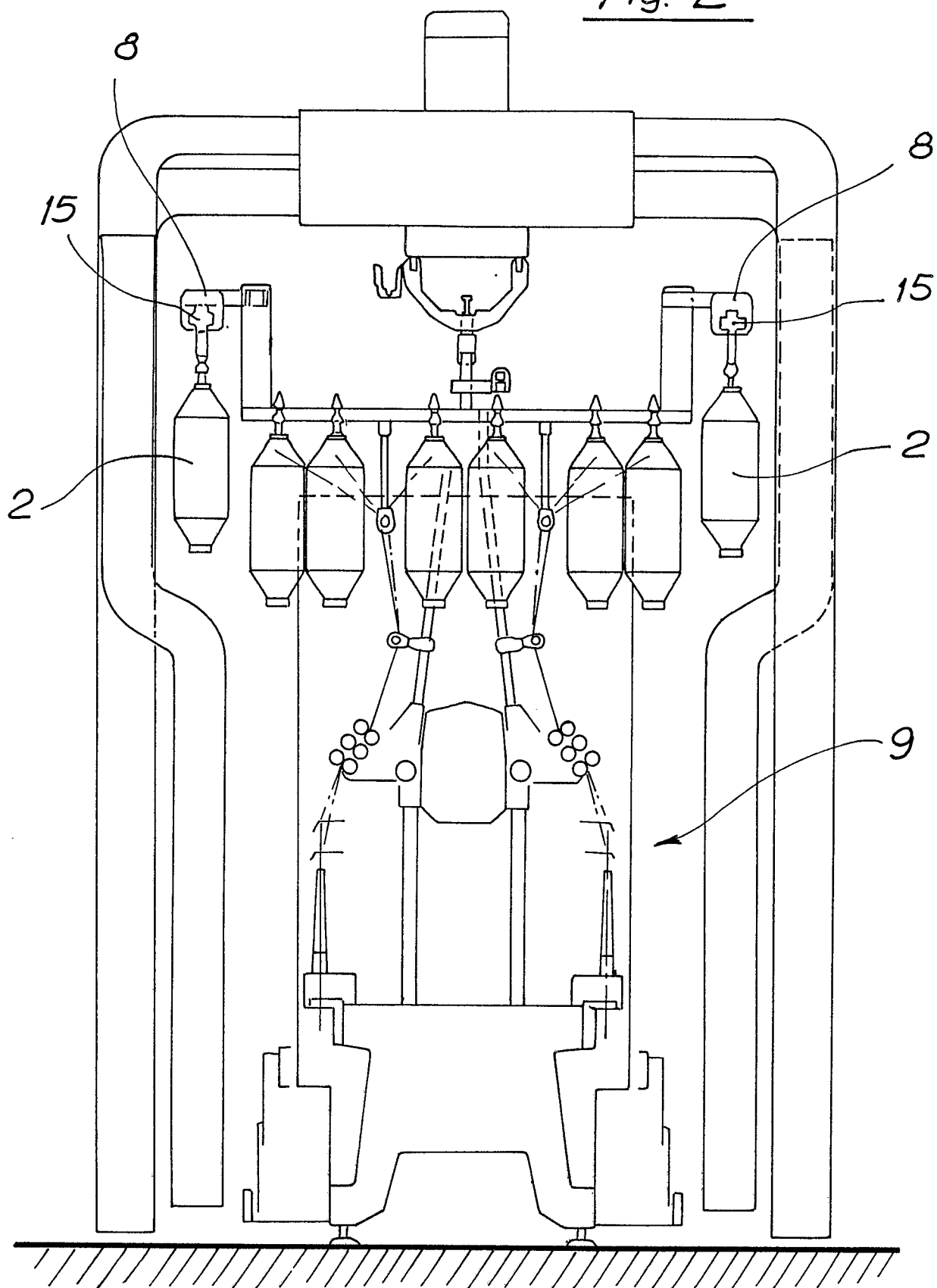


Fig. 2





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 88 83 0305

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.4)
A	DE-A-3601832 (ZINSEK TEXTILMASCHINEN GMBH) * claims 1, 2; figure 1 * ---	1,4	D01H9/18
A	US-A-3828682 (K.KLEIN) ---		
A	PATENT ABSTRACTS OF JAPAN vol. 11, no. 262 (C-442) 2709 25 August 1987, & JP-A-62 62932 (HOWA MACH LTD) * see the whole document * ---		
A	PATENT ABSTRACTS OF JAPAN vol. 11, no. 53 (C-404) 2500 19 February 1987, & JP-A-61 215726 (TOYODA AUTOM LOOM WORKS LTD) * see the whole document * ---		
A	PATENT ABSTRACTS OF JAPAN vol. 11, no. 30 (C-400) 2477 29 January 1987, & JP-A-61 201030 (HOWA MACH LTD) * see the whole document * -----		
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			D01H B65H
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 17 FEBRUARY 1989	Examiner HOEFER W.D.
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 I : document cited for other reasons & : member of the same patent family, corresponding document			