

Sept. 23, 1969

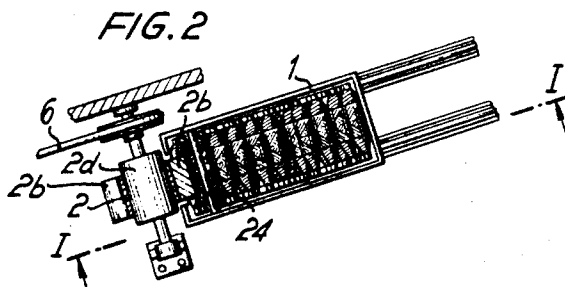
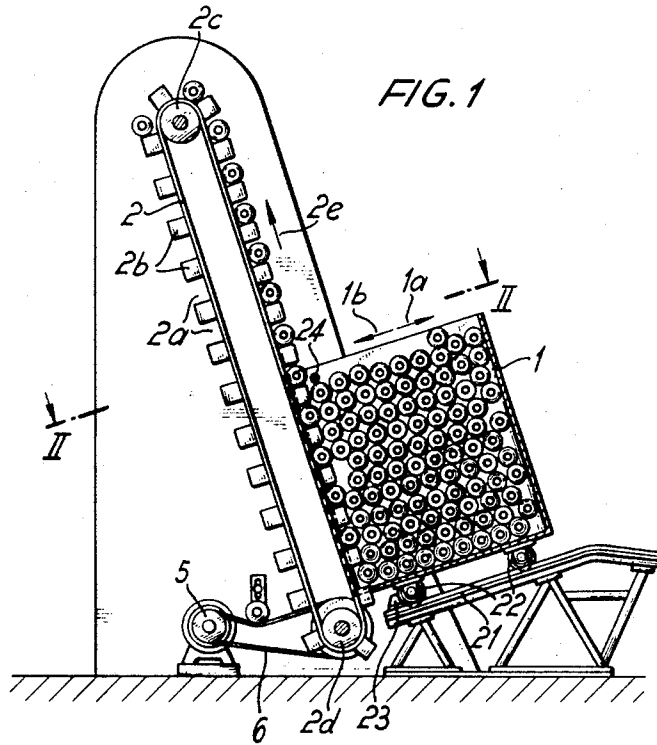
S. FÜRST

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DEVICE FOR UNLOADING A TRANSFER CASE CONTAINING TEXTILE COILS

Filed May 2, 1967

3 Sheets-Sheet 1



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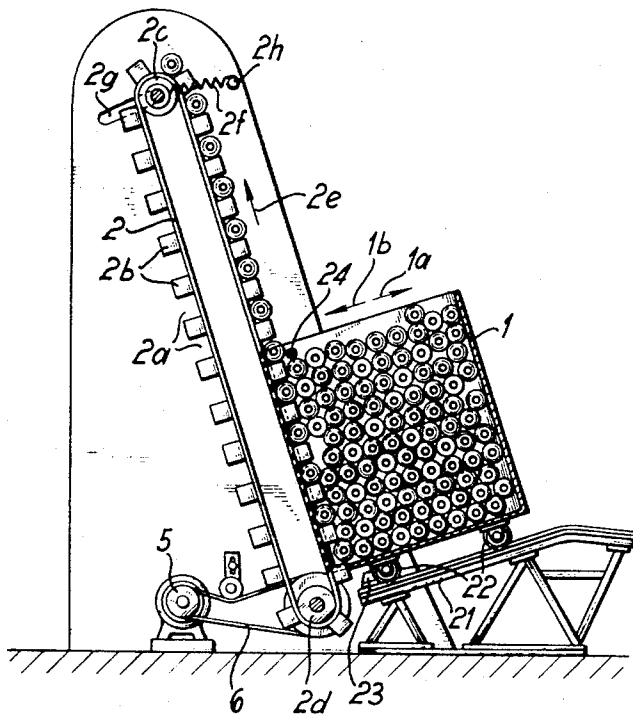
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FIG. 3



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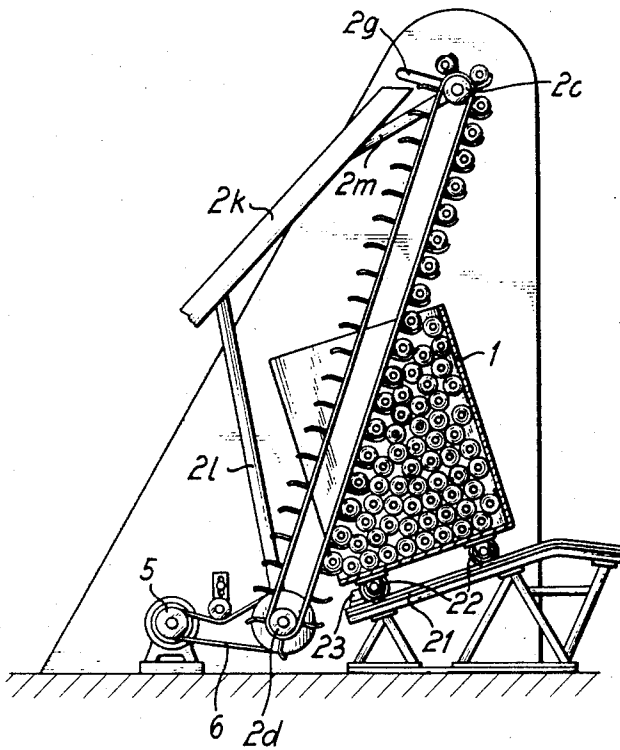
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DEVICE FOR UNLOADING A TRANSFER CASE CONTAINING TEXTILE COILS

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FIG. 4



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DEVICE FOR UNLOADING A TRANSFER CASE CONTAINING TEXTILE COILS

Stefan Fürst, Monchen-Gladbach, Germany, assignor to
Walter Reiners, Monchen-Gladbach, Germany

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U.S. Cl. 198—53

7 Claims

ABSTRACT OF THE DISCLOSURE

Device for unloading a transfer case having an opening through which textile coils contained therein are removed therefrom, including a conveyor having a travel direction substantially along a side of the transfer case past the opening thereof, the conveyor being provided with a plurality of coil-receiving troughs periodically disposed in the transfer case as the conveyor travels, the conveyor and the transfer case being mounted so as to be yieldable relative to one another in a direction transverse to the travel direction of the conveyor.

My invention relates to device for unloading a transfer case containing textile coils, and more particularly to such a device which includes a conveyor located below a discharge opening formed in the transfer case, and provided with troughs for receiving the coils.

In German Patent 1,174,662 there has been described a device for unloading transfer cases containing textile coils which comprises a conveyor band, provided with troughs for receiving the coils, that is passed lengthwise below the discharge opening of each transfer case. Another type of movable conveying apparatus provided with troughs for receiving the coils and located below the discharge opening of the transfer case is disclosed for example, in the Swiss Patent 367,420, wherein the conveying apparatus comprises so-called divider or distributing discs.

In all types of conveyor apparatus provided with troughs for receiving the coils, the coils will often become jammed and thereby prevent further movement of the conveyor band. Such jamming of the coils can occur, for example, when they do not fall properly sidewise into a respective trough but rather land instead tip or foot-first in the trough or are wedged between the conveyor band and a part of the transfer case such as, for example a support rod located in the vicinity of the discharge opening of the case and serving for stabilizing the case, or the like. In order to avoid damage to the coils or to the drive mechanism of the conveyor apparatus caused by the jamming of a coil, it has been suggested in my copending application Ser. No. 611,942, filed Jan. 20, 1967, to provide an overload protector in the drive mechanism of the conveyor apparatus which shuts off the conveyor drive mechanism and then produces a temporary relative motion between the transfer case and the conveyor in a direction opposite to the normal conveying direction of the conveyor. This not only requires additional control equipment, however, but also results in a time loss which can lead to poor coil supply or delivery.

It is accordingly an object of my invention to provide device for unloading textile coils from a transfer case which avoids the aforementioned disadvantages of the heretofore known devices of similar type and, more particularly, prevents in the simplest manner possible any obstruction to the movement of the conveyor belt without requiring removal of any edging or jamming produced by improper positioning of the textile coils by hand or by producing a temporary relative motion between

transfer case and conveyor belt opposite to the normal conveying direction of the conveying belt.

With the foregoing and other objects in view, I provide in accordance with my invention device for unloading a transfer case having an opening through which textile coils contained therein are removed therefrom, comprising a conveyor having a travel direction substantially along a side of the transfer case past the opening thereof, the conveyor being provided with a plurality of coil-receiving troughs periodically disposed in the transfer case as the conveyor travels, the conveyor and the transfer case being mounted so as to be yieldable relative to one another in a direction transverse to the travel direction of the conveyor.

In accordance with further features of my invention, the coil-receiving troughs travel in a direction along and spaced from a side of the transfer case past the opening thereof, the conveyor and the transfer case being mounted so as to be yieldable toward one another in the space therebetween.

If the movement of the conveyor is obstructed by one or more jammed textile coils, either the transfer case or the conveyor or both can yield so that the spacing therebetween is temporarily increased. The jam is thereby loosened and the original spacing between transfer case and conveyor is automatically restored.

Other features which are considered as characteristic for the invention are set forth in the appended claims.

Although the invention is illustrated and described herein as embodied in device for unloading a transfer case containing textile coils, it is nevertheless not intended to be limited to the details shown since various modifications and structural changes may be made therein without departing from the spirit of the invention and within the scope and range of equivalents of the claims.

The construction and method of operation of the invention, however, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

FIG. 1 is a longitudinal sectional view of the device of my invention taken along the line I—I in FIG. 2 in the direction of the arrows;

FIG. 2 is a cross-sectional view of FIG. 1 taken along the line II—II in the direction of the arrows;

FIG. 3 is a modified form of the embodiment of FIG. 1; and

FIG. 4 is a longitudinal sectional view comparable to that of FIG. 1 of another embodiment of the invention.

In the illustrated embodiments, similar members are identified by the same reference numerals.

Referring now to the drawings and first particularly to FIGS. 1 and 2 thereof, there is shown a transfer case 1 containing textile coils or cops, as it is being delivered, for example, from a spinning machine to a coil winding machine. The textile coils are removed from the transfer case 1 by means of an endless conveyor band or belt 2 driven by a motor 5 over a chain or belt transmission 6, the conveyor belt or band being moved about the reversing rollers 2c and 2d in the direction of the arrow 2e along a side of the transfer case 1 below the discharge opening thereof. The textile coils then drop into the conveyor troughs 2a formed by projections or extensions 2b of the conveyor belt 2 and are delivered by the conveyor belt 2, for example to a non-illustrated intermediate magazine.

The transfer case and the conveyor apparatus shown in FIG. 1 are mounted so as to be yieldable toward one another in the space therebetween. To this end, the transfer case is mounted so that it is slidable or movable on a plane 21 that is inclined with respect to the conveyor apparatus and forms an angle of between 10 and 45°

with a horizontal plane. As is particularly apparent from FIG. 2, the extensions 2*b* of the conveyor band 2 extend with clearance into the discharge opening of the transfer case 1. It is therefore advantageous to provide a support rod 24 for stabilizing the transfer case 1. It is accordingly desirable to locate the support rod as close as possible to the conveyor apparatus 2 for reasons of stability. If a so-called cop or coil bridge is then formed between the support rod 24 and the conveyor device, i.e. if one or more coils or cops become clamped between the support rod 24 and the conveyor apparatus, a force develops having a component which displaces the transfer case 1 in the direction of the arrowhead 1*a* so that the spacing between the transfer case 1 and the adjacent side of the conveyor apparatus 2 is increased. The jam is thereby loosened and the transfer case 1 can return to its original position by the action of gravity force in the direction of the arrowhead 1*b*. The angle which is formed by the plane 21 and the horizontal, is of such dimension that sufficient steepness is provided on the one hand to permit the case 1 to roll back in the direction of the arrowhead 1*b* yet on the other hand, however, does not require too great a force to move the case 1 in the direction of the arrowhead 1*a*.

Mounting of the transfer case and the conveyor apparatus so that they are yieldable relative to one another in order to achieve an adjusting motion can be effected, however, in other ways besides that shown in the embodiment of FIGS. 1 and 2. Thus, it is for example possible to achieve the yieldable mounting of the transfer case 1 by employing a stored force different from that of gravity force, such as for example a spring force, for moving the transfer case 1 in a direction toward the conveyor belt 2. In the modified embodiment of FIG. 3, the conveyor belt 2 is mounted for movement in a direction toward the transfer case 1, transversely to the travel direction of the conveyor belt, under the action of a stored force. Thus, the shaft of the upper reversing roller 2*c* in FIG. 3 is guided in a slot 2*g* formed in the support frame for the conveyor so that the entire conveyor belt 2 can pivot about the shaft of the lower reversing roller 2*b* secured to the conveyor apparatus support frame. A spring 2*f* secured to a bolt or pin 2*h*, which is in turn mounted on the support frame of the conveyor apparatus, is attached to and acts on the shaft of the upper reversing roller 2*c*. The spring 2*f* is a tension spring which biases the upper reversing roller 2*c* so that it tends to pivot clockwise about the shaft of the lower reversing roller 2*b* until it comes into engagement with the right-hand edge of the slot 2*g* as shown in FIG. 3. When jamming of a textile coil occurs, the conveyor belt 2 can then yield so that the shaft of the upper reversing roller 2*c* moves toward the left-hand edge of the slot 2*g* as viewed in FIG. 3 against the action of the spring, so that the jam is thereby loosened.

In the embodiment of FIG. 4, the conveyor belt is not disposed parallel to the discharge opening of the transfer case 1, but rather is guided in a direction inclined thereto, and more particularly from the bottom left-hand to the upper right-hand side of FIG. 4 instead of from the lower right-hand side to the upper left-hand side as shown in the embodiments of FIGS. 1 and 3. The upper reversing roller 2*c* of the embodiment of FIG. 4 is also guided in a slot 2*g*. Due to gravity force, the shaft of the upper reversing roller 2*c* of the embodiment of FIG. 4 also is located at the right-hand edge of the slot 2*g*. When a jam occurs, the reversing roller 2*c* and the entire conveyor belt therewith can pivot toward the left-hand side, as shown in FIG. 4. In order to obtain a trouble-free removal of the coils advanced to the top of the conveyor

as shown in FIG. 4, a slide or chute 2*k* is provided which is mounted by means of support arms 2*l* and 2*m* on the shafts of the upper and lower reversing rollers 2*c* and 2*d* respectively, and can therefore pivot with the conveyor belt.

It is, of course, also possible to yieldably mount the transfer case and conveyor belt so that they are both able to pivot away from one another when a jam occurs.

Thus, by means of the device of my invention, jamming of the textile coils which obstruct the movement of the conveyor belt is automatically corrected by the adjusting motion of the transfer case or the conveyor device or both without requiring contact by hand or the production of a relative movement between the transfer case and the conveyor apparatus opposite in direction to the conveying motion of the conveyor belt.

I claim:

1. Device for unloading a transfer case having an opening through which textile coils contained therein are removed therefrom, comprising conveyor means having a travel direction substantially along a side of the transfer case past the opening thereof, said conveyor means being provided with a plurality of coil-receiving troughs periodically disposed in the transfer case as said conveyor means travels, and means for mounting said conveyor means and the transfer case so that they are yieldably movable relative to one another in a direction transverse to said travel direction of said conveyor means.

2. Device according to claim 1, wherein the transfer case is displaceably mounted on a surface located in a plane inclined to said conveyor means and forming an angle of between substantially 10° and 45° with a horizontal plane.

3. Device according to claim 1, including spring means for yieldably urging said conveyor means toward the transfer case.

4. Device according to claim 1, wherein said conveyor means extends through the transfer case.

5. Device according to claim 1, wherein the transfer case is open at the top thereof and along said side thereof adjacent said conveyor means.

6. Device according to claim 1, wherein said conveyor means comprises an endless band supported on end reversing rollers and pivotable about the shaft of one of said rollers.

7. Device according to claim 6, including a support frame for said endless conveyor band, said support frame being formed with a slot in which the shaft of the other of said rollers is slidable as said conveyor band pivots about the shaft of said one roller.

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RICHARD E. AEGERTER, Primary Examiner

U.S. Cl. X.R.

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