Feb. 6, 1951 L. E. JOHNSON, JR 2,540,266

SLATTED BELT CONVEYER

Filed March 2, 1949

Fig. 1.

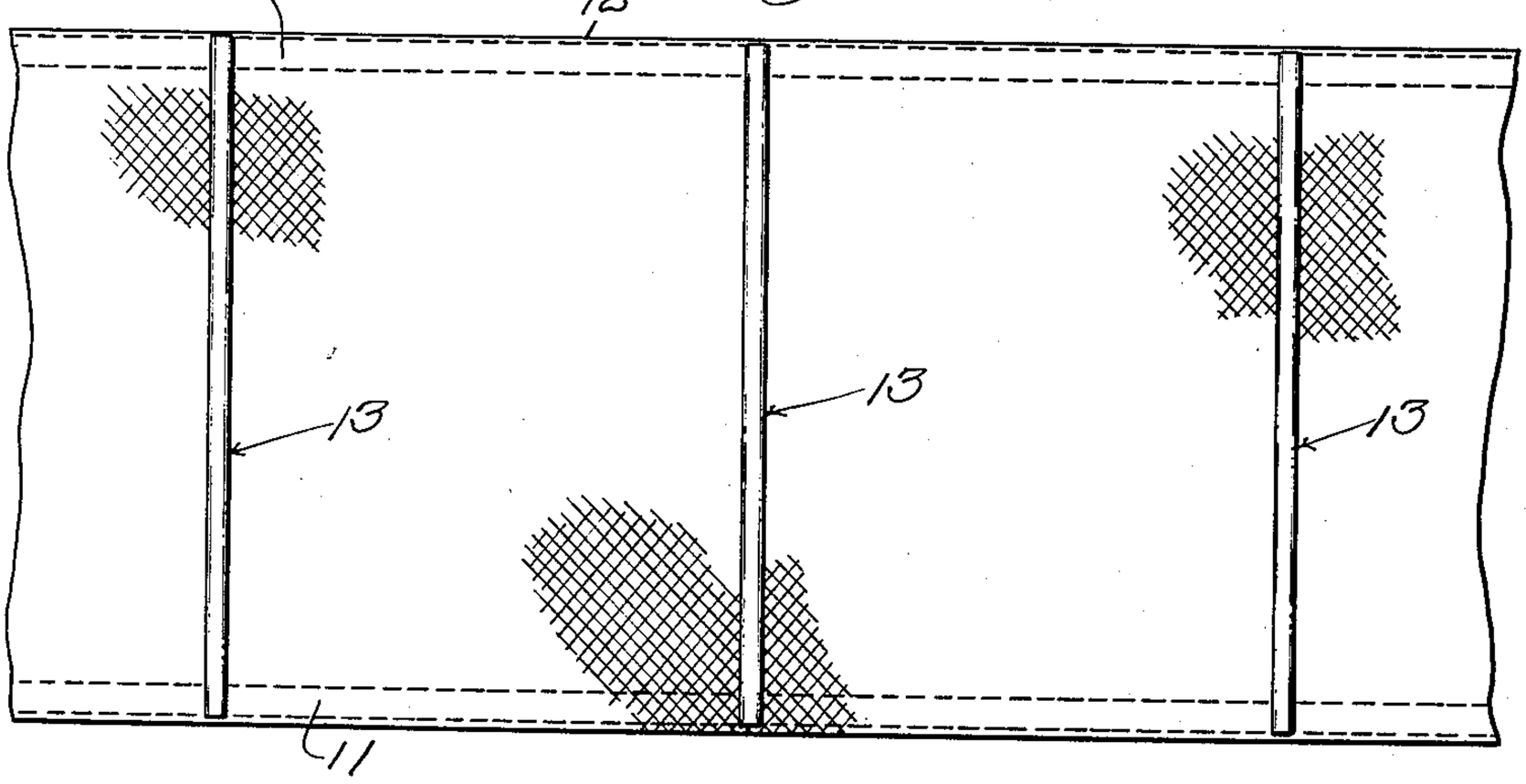

Fig. 2.

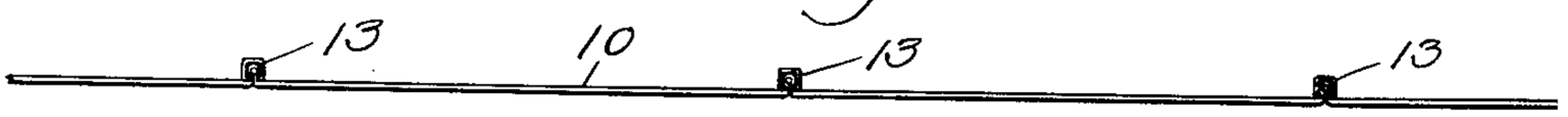

Fig. 3.

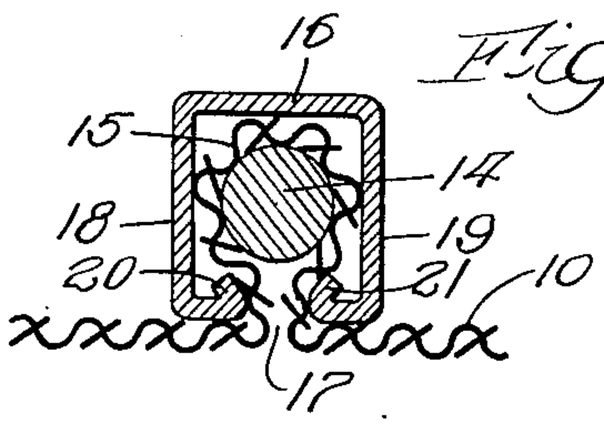

Fig. 4.

Fig. 5.

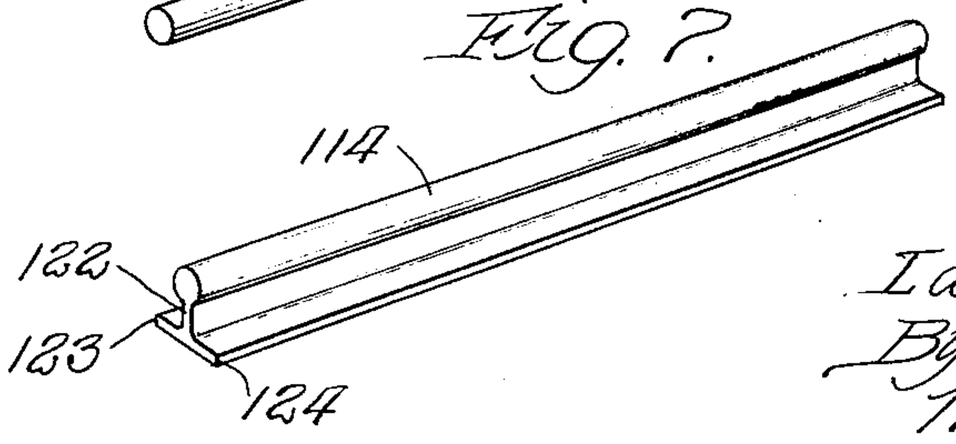

Fig. 6.

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SLATTED BELT CONVEYER

Lawrence E. Johnson, Jr., Hinsdale, Ill.

Application March 2, 1949, Serial No. 79,222

4 Claims. (Cl. 198—199)

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This invention relates to an improvement in flexible belting for conveyors of the type in which the belting is provided with spaced transverse slats which assist in moving material on a conveyor.

Flexible conveyor belts may be formed of fabric, rubber, or rubberized fabric. Many such belts are made of a heavy grade of canvas, and are used in the conveyors of harvesters or threshing machines. For such use, the belt is commonly provided with a plurality of spaced transverse slats which, when the belt is in place, are upon its outer surface and serve to push the grain, straw, or the like along the conveyor and prevent the produce from sliding rearwardly where the conveyor is steeply pitched.

The principal object of the invention is to provide canvas belting having an improved slat which costs little to attach to the fabric and which is very strongly secured thereto.

A number of expedients have been adapted for securing the slats to the canvases used in conveyors. Thus, it has been common practice to rivet or staple the slat to the surface of the canvas, or in some cases, a combination of rivets and staples have been used. This has been a generally unsatisfactory way of fastening the slats to the canvas, because grain or straw is readily pushed between the canvas and the slat, and eventually tears the slat loose from the canvas. Furthermore, very expensive machinery is required for the heavy stapling or riveting.

Another method has been to use rubber slats, vulcanized to a rubber or rubberized frabric belt. This avoids the tendency of the slats to pull off, but is quite expensive both as to material cost and cost of processing.

It has also been known to place a protective canvas flap over the slat to prevent the entry of straw or other material between the slat and the canvas belt. This requires several extra stitching operations in the vicinity of each slat and furthermore, the canvas protective strip does not lie close against the upright side of the slat, and accordingly much of the effectiveness of the slat as a propelling bar is lost.

A somewhat more satisfactory arrangement has been developed in which a slat is placed beneath the canvas which is then held snugly on the slat by a U-shaped metal overlay having outwardly flared lower edges. The bar, canvas and overlay are riveted together with rivets extending through the superposed elements from top to bottom. Even with this arrangement, there is some tendency for material to work its way between the canvas and the overlay and begin the loosening of the slat.

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Pursuant to the object heretofore stated, and in an effort to remedy the defects in the prior art devices, I have found that the problem can be completely solved by using a rod or bar which is laid against the lower surface of the canvas and about which the canvas is passed to form a loop. A longitudinally split tube may then be slid over the loop of canvas and the bar, and pressed onto the canvas and the bar to clamp them strongly together. The bar thus serves as a locking member which holds the canvas in the split tube, and the bar and tube together form a slat. This way of forming the slat and securing it to the canvas permits the use of very inexpensive assembling machinery—a simple press is practically the only equipment necessary—and secures the slat and the canvas together in such a way that material cannot work in between them so as to pull the slat from the canvas.

The invention is illustrated in a preferred embodiment in the accompanying drawings in which:

Fig. 1 is a plan view of a section of flexible belting embodying the invention; Fig. 2 is a side elevation thereof; Fig. 3 is an enlarged sectional view of the improved slat construction; Fig. 4 is a perspective view of the split tube; Fig. 5 is a perspective view of the locking bar; Fig. 6 is an enlarged sectional view of an improved slat using a modified form of locking bar; and Fig. 7 is a perspective view of the modified form of locking bar.

While there is shown in the drawings and herein described in detail a preferred form of the invention in flexible belting for conveyors, it is not intended to limit the invention to the particular belting or arrangement shown. The scope of the invention will be pointed out in the appended claims.

A section of flexible material is hemmed along its longitudinal edges at 10 and 11 to form a belt 12 of suitable width. Preferably, the flexible material is canvas, although it may be a rubberized fabric. At regular intervals along its length the belt is provided with transverse slats, indicated generally at 13, and it is the manner in which the slats 13 are constructed and joined to the belt 12 which forms the subject matter of this invention.

As best seen in Fig. 3, a locking rod or bar 14 is placed against the underside of the belt 12, and the material is passed about the locking bar 14 to form a loop 15. The locking bar 14 is prefer-

ably substantially incompressible so as to hold the loop of material in shape, even against considerable pressure. Accordingly, it is suitably a metal or plastic rod, bar or tube, or may be a rope, or cable.

A tubular member 16 is longitudinally slit along one of its sides at 17, and its outer surface serves as the surface of the slat. Preferably the tubular member 16 is rectangular in cross-section so as to provide upright side walls which furnish a substantially perpendicular interruption to the upper surface of the belt in order to be as effective as possible in carrying produce along on it. As is well known to the workers in the art, the height of the slat should not exceed approximately 5/8 of an inch, because of the rather small clearances adjacent the driving and idler rollers of most of the machinery upon which such belt conveyors are used.

The split tube 16 may be slid endwise over the fabric loop 15 and locking bar 14, and may then be pressed together by squeezing its upright side walls 18 and 19 so that the canvas will be clamped tightly between said side walls and the surface of the locking bar 14. Preferably the slit 17 is wide enough that the edges of the tube do not grip the fabric 10 even when the tube has been pressed in place, the gripping action being between the side walls 18 and 19 of the tube and the surface of the locking bar 14. If the gripping action were by the margins of the slit 17, it would cause excessive wear of the fabric along those lines. Likewise, if the tube 16 is of thin material the edges thereof forming the margins of the slit 17 may be rolled, as at 20 and 21, to prevent cutting of the fabric.

In the alternative embodiment shown in Fig. 6, the elements are similar to those in the preferred embodiment except for the locking bar. In this form, fabric 110 is passed about a locking bar 114, which has a shape generally like a railroad rail, to form a loop 115 and is held in place by the clamping action of a split tube 116. The rail-shaped locking bar has a longitudinal rib or stem 122 which extends below the loop 115 in the material and has oppositely directed flanges 123 and 124 forming a foot at its lower end. The foot made by flanges 123 and 124 form a protective strip beneath the loop 115, so as to eliminate wear at the sharply turned portion of the canvas forming the lower extremity of the loop as the canvas passes over the driving and idler rollers of a conveyor mechanism.

I claim:

1. Flexible belting for conveyors comprising: a length of flexible material; a transverse locking bar against the underside of said flexible material, about which the material is passed to form a loop, said locking bar having a longitudinal rib extending below the loop in the material with oppositely directed flanges at its lower end to form a protecting strip beneath the loop; and fastening means gripping the generally upright portions of said loop of material against the locking bar to secure the material thereto and form a transverse ridge projecting above the plane of the upper surface of the belting.

2. Flexible belting for conveyors comprising: a length of flexible material; a transverse locking bar against the underside of said flexible material, about which the material is passed to form a loop, said locking bar having a longitudinal rib extending below the loop in the material with oppositely directed flanges at its lower end to form a protecting strip beneath the loop; and rigid clamp means embracing said loop in the material and clamping it securely to the locking bar to form a transverse ridge projecting above the plane of the upper surface of the belting.

3. Belting according to claim 2 wherein the clamp means comprises a longitudinally split tube pressed about the material and the locking bar.

4. Flexible belting for conveyors comprising: a length of heavy canvas of suitable width to form a conveyor belt; a transverse rail-shaped locking bar extending across the underside of said canvas, about which the canvas is passed to form a loop, the stem of the rail-shaped locking bar projecting below the loop in the canvas so that the foot of the rail may serve as a protective strip for the lower margin of the loop; and a rectangular longitudinally split tube embracing the loop in the material and pressed thereon to secure said loop to the locking bar, the proportions of said tube and of the locking bar being such that the canvas is gripped by the upright side walls of the tube and is not gripped by the margins of the split in the tube.

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