April 9, 1946. E. N. MICHNA 2,398,148

CONVEYER MECHANISM

Filed June 30, 1943 2 Sheets-Sheet 1

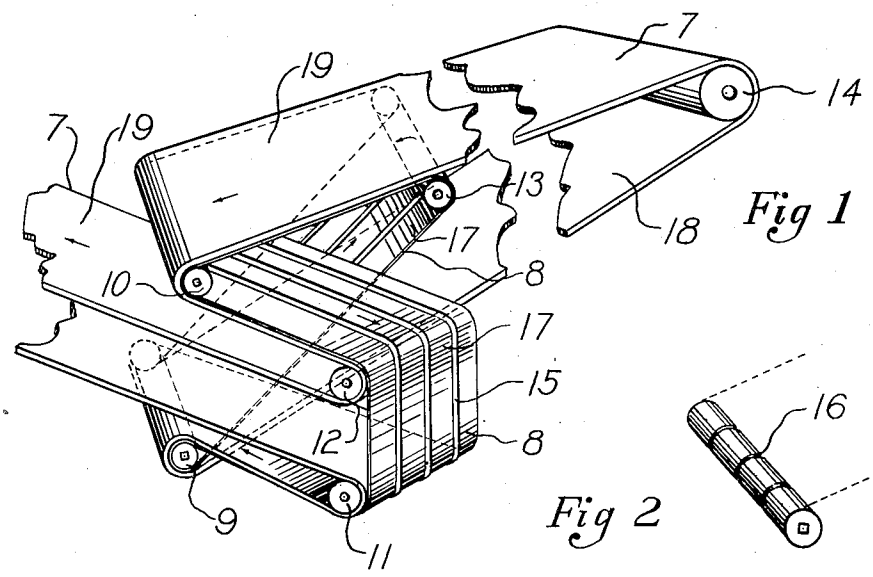


Fig 1

Fig 2

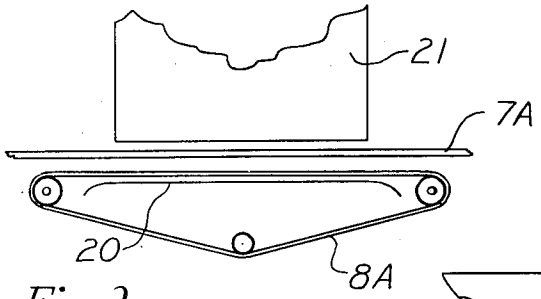


Fig 3

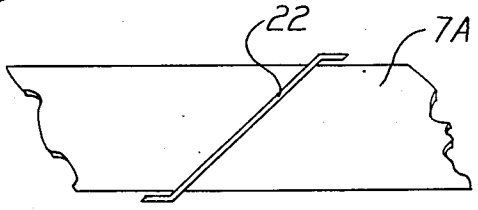


Fig 4

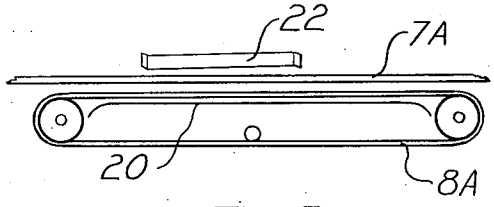


Fig 5

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CONVEYER MECHANISM

Filed June 30, 1943 2 Sheets-Sheet 2

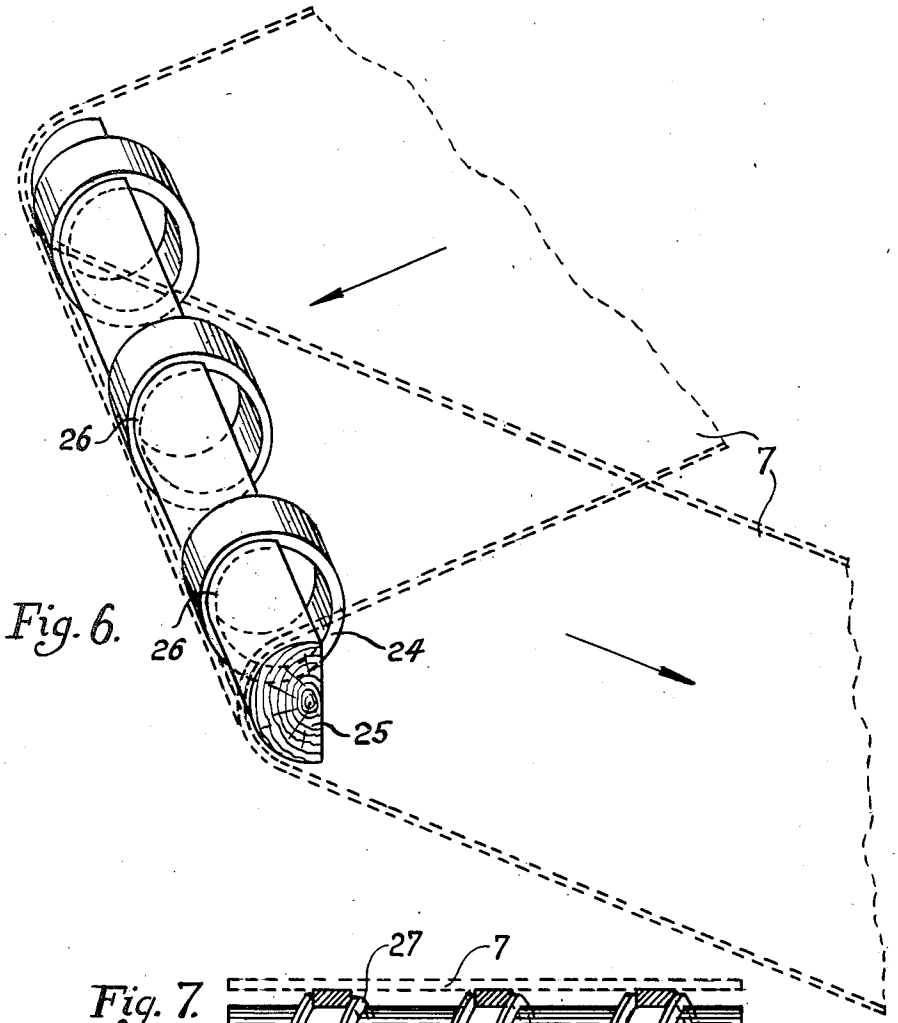


Fig. 6.

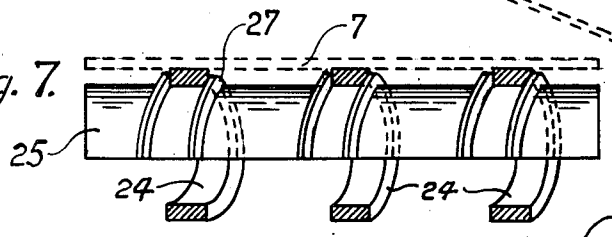


Fig. 7.

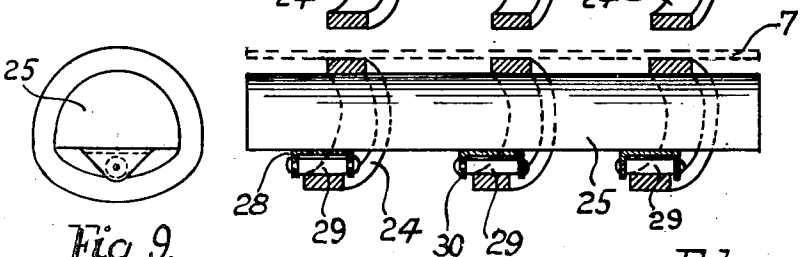


Fig. 8.

Fig. 9.

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UNITED STATES PATENT OFFICE

2,398,148

CONVEYER MECHANISM

Edward N. Michna, Detroit, Mich.

Application June 30, 1943, Serial No. 492,880

2 Claims. (Cl. 198—184)

This invention relates to belt conveyers and has particular reference to devices such as disclosed in my co-pending application, S. N. 470,721, filed December 31, 1942, of which this may be considered a continuation in part.

In my co-pending application referred to above, I disclosed the manner in which I propose to make directional changes in endless belt conveyers. In practicing that invention I have encountered problems of friction and wear in certain applications of the invention. It is to the solution of those problems that this disclosure is directed.

It is, therefore, an object of this invention to provide a device of the character referred to in which the factors of friction and wear are reduced to a minimum.

It is another object of the invention to provide means for lubricating the endless conveyer belt, as it passes over the directional change elements or other elements under load.

Another object of the invention is the provision of means for controlling the tendency of the endless conveyer belt to spiral on the directional change elements.

Another object of the invention is the provision of means, for tuning or aligning the complete conveyer.

The foregoing objects and other advantages of the invention will become more apparent as the description proceeds, reference being made from time to time to the accompanying drawings, in which:

Fig. 1 is a fragmentary perspective view of a device embodying my invention.

Fig. 2 is a detail of one of the grooved members employed.

Fig. 3 is a diagrammatical view showing the manner of employing my lubricating belt between a conveyer belt and a bed plate beneath a hopper.

Figs. 4 and 5 are views similar to Fig. 3, except a plow instead of a hopper is indicated.

Fig. 6 is a modified form of my device in which I employ a plurality of short belts in place of a single secondary belt.

Fig. 7 is another modified form in which I employ channel members to guide the small belts over the surface of the direction change member.

Figs. 8 and 9 illustrate a further modification in which I employ roller supporting brackets as guides for the short belts.

Referring now more particularly to the drawings, it will be understood that in the embodiment herein disclosed my improved device consists of the endless conveyer belt 7, which may be mounted and driven as disclosed in my co-pending application indicated above.

In this embodiment I interpose a secondary or lubricating belt 8, between the conveyer belt 7, and the directional change elements, 9 and 10, and the rollers 11 and 12. The roller 13, is mounted by any suitable means, near the directional change elements, 9 and 10, and serves the purpose of helping to support the secondary belt 8, in a fore shortened position, so that it is not necessary for the secondary belt 8 to extend to the drive roll 14.

The secondary belt 8, may be provided with longitudinal ribs 15, which are adapted to engage suitable grooves 16 (Fig. 2) formed in the peripheries of the members 9 and 10, or the member 13, and serve to help prevent the spiraling of the belts, and act as means to tune or align the entire conveyer while in operation.

The secondary belt 8 is lubricated on the surface 17, which comes in contact with the members 9 and 10 and 13, and is caused to move with the conveyer belt 7, by reason of the contact of its opposite surface with the surface 18, of the conveyer belt 7. In this manner of operation the carrying surface 19, of the conveyer belt 7, is always free of lubricant, yet the conveyer belt is permitted to ride over the elements 9 and 10, with a minimum of friction and wear. It is obvious that the lubricated belt 8, will last longer than the conveyer belt 7 would last if permitted to directly contact the members 9 and 10. By the same token it is less expensive to replace the short secondary belt 8, when worn, than to replace the conveyer belt 7.

In Fig. 3 I illustrate the manner in which my lubricating belt 8A may be employed between a bed plate 20 and the conveyer belt 7A, as the latter passes beneath a loading hopper 21.

In Figs. 4 and 5 I show an arrangement similar to that shown in Fig. 3, except a plow 22, is substituted for the hopper 21 in Fig. 3.

In Fig. 6 I illustrate a modified form of my invention in which I employ a plurality of short belts 24, in place of the single secondary belt 8, to carry the endless conveyer belt 7 over the direction change member 25. In this embodiment the direction change member 25, is provided with lubricating grooves 26 in which the belts 24 travel in the direction of flow of the conveyer belt 7. It will be noted that the upper length of each groove 26 takes one direction and the lower length of the same groove takes an angular direction with reference thereto, so that the short belts 24 have the same angular travel disposition as has

the large belt 7, as it passes over the direction change member 25.

In Fig. 7 I illustrate a modification in which the belts 24 are arranged to travel in metallic channel members 27, which serve as guides instead of the grooves 26 of Fig. 6.

In Figs. 8 and 9 I illustrate still another method of guiding the belts 24. In this embodiment brackets 28 are supported beneath the member 25 and are adapted to support the rollers 29. The ends of the brackets 28 are extended as at 30 to serve as guides for the belts 24. Otherwise, the belts 24 are free to travel over the surface of the member 25 without guidance. In each of these modifications the undersides of the belts 24 may be lubricated. In each instance however, the endless conveyer belt 7, is eased in its travel over the direction change member 25, and is held in alignment and held against spiraling by reason of frictional contact with the guided secondary belts 24.

Having described my invention what I claim and desire to secure by Letters Patent is:

1. In a device of the character described, including an endless belt conveyer trained over principal pulleys, the combination of direction change means angularly positioned with respect to the principal pulleys of said conveyer, an independent secondary belt interposed between said conveyer belt and said direction change means, supporting means for said secondary belt, grooves in said direction change means, and continuous longitudinal strips on said secondary belt adapted to engage said grooves.

2. In a device of the character described, including an endless belt conveyer, the combination of direction change means for said belt, said means comprising pairs of cylindrical elements, one pair being positioned in angular relation to another pair, peripheral grooves on said one pair of cylindrical elements, and an independent secondary belt adapted to travel over said cylindrical elements and between said endless belt and said cylindrical elements, said secondary belt having continuous longitudinal ribs adapted to travel in said grooves.

EDWARD N. MICHNA.