Oct. 4, 1932. E. DREXLER 1,881,267

CONVEYER ROLLER

Filed April 18, 1930

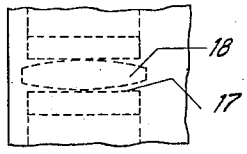



Fig. 3.

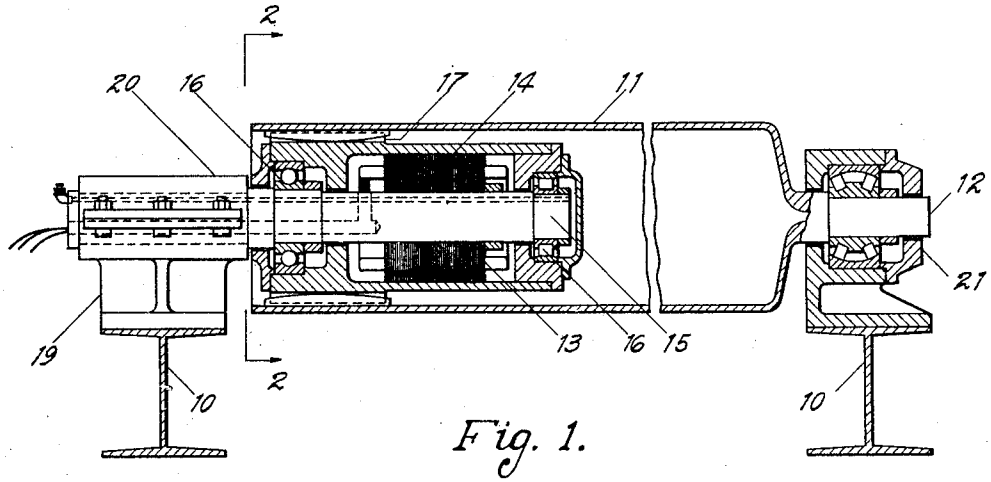



Fig. 1.

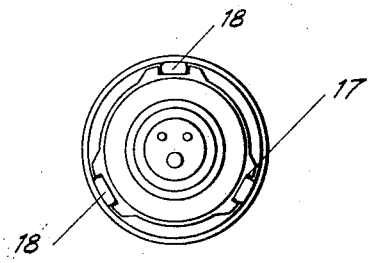



Fig. 2.

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# UNITED STATES PATENT OFFICE

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## CONVEYER ROLLER

Application filed April 18, 1930. Serial No. 445,450.

My invention relates to conveyer rollers of the individual drive type, wherein the roller derives its power from an electric motor housed within the roller, and my object, generally speaking, is to provide a novel, quick detachable connection between the motor and the roller especially designed to enable the roller to be removed from the conveyer without disturbing the motor.

Another of my objects is to provide a connection of the character mentioned which is of such construction as to permit the roller to partake of pivotal movements relative to the motor to facilitate proper alignment of the roller during erection of the conveyer, and to assure of efficient operation of the roller despite any slight disalignment thereof which may develop during use of the conveyer.

With the foregoing and other objects in view, my invention consists of the novel features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawing and defined in the appended claims.

In the drawing, wherein like characters of reference denote corresponding parts in the different views:

Fig. 1 is a longitudinal section through a conveyer roller embodying the novel features of my invention.

Fig. 2 is a transverse section on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary elevation of the roller illustrating by dotted lines the manner of forming the interfitting parts of the detachable connection to permit pivotal movements of the roller relative to the motor.

A conveyer system employing a series of indiviually driven conveyer rollers of the present type may consist of a frame including a pair of spaced I-beams designated in Fig. 1 as 10, 10 upon which the rollers are mounted in spaced, parallel relation.

According to the present invention the roller, designated as 11, is in the form of a hollow cylinder or shell of suitable length and diameter, open at one end and provided in any suitable manner at its other end with a trunnion 12.

The motor consists essentially of a stator element 13 and a rotor element 14. The stator element is fixed to a shaft 15 on which the rotor element is journaled for rotation in any suitable manner, preferably through the instrumentality of ball or other friction bearings 16, said rotor element as shown, preferably being in the form of a hollow shell enclosing the stator element 13.

Formed in the outer face of the rotor element or shell 14 is a plurality of longitudinally extending slots 17 of suitable length, depth and width, spaced, preferably, equidistantly circumferentially of the shell and the side walls of which preferably are disposed parallel to one another.

Formed on or suitably fixed to the inner face of the roller 11 is a plurality of longitudinally extending ribs 18 of suitable length and of a depth and width to be received neatly within the respective slots 17, said ribs corresponding in number to said slots and having the same circumferential spacing as the latter. Thus it is apparent that the roller is engageable with and disengagable from the motor shell or rotor element 14 by relative longitudinal movement between the roller and said shell or rotor element, and that when the ribs of the roller are engaged in the slots of the rotor, relative rotation between the roller and the rotor is prevented.

The side and inner surfaces of the ribs 18, longitudinally thereof preferably are convexly curved as illustrated in Fig. 3 so that said ribs have transverse line contact with the sides of the slots 17 and the roller thus is permitted to partake of pivotal movements relative to the rotor.

In the assembled relation of the motor and the roller, the former is disposed within the latter and a portion of the shaft 15 projects beyond the end of the roller and constitutes in effect a trunnion for mounting the roller upon the conveyer frame. That is to say, a bearing or mounting 19 for the shaft is carried by one of the I-beams 10 and the shaft either is clamped rigidly in this bearing by a removable cap piece 20 for example, or the shaft is non-rotatably but pivotally mounted in said bearing as disclosed, for ex-

ample, in my copending application Serial No. 441,678.

At its other end, the roller is mounted by means of its trunnion 12 for rotation within a bearing 21 carried by the other I-beam 10, said bearing preferably being of a type as disclosed for example in my said copending application, or of any other suitable type effective to hold the roller against longitudinal movement.

From the foregoing description considered in connection with the accompanying drawing, it is apparent that simply by removing the bearing 21 the roller may, by longitudinal movement thereof, be disengaged from the motor and removed from the conveyer without disturbing the motor, and that the same or a substitute roller may be replaced in the same manner. Moreover, it is apparent that when the roller is assembled with the motor, the pivotal movement of which the roller is capable, due to the convex curvature of the sides of the ribs 18, permits ready vertical and lateral adjustments of the bearing 21 to effect proper alignment of the roller. Further, it is apparent that even in the event of any slight disalignment of the roller, the roller will rotate freely and any binding of parts will be avoided by reason of the connection 17—18.

As in the case of my prior application heretofore referred to, passages may be formed in the shaft 15 to accommodate conductors for furnishing current to the motor, and to enable lubricant readily to be supplied to the bearings 16. Also, as in the case of my prior application, and as is manifest, the stator element of the motor is held against rotation by reason of its fixed mounting on the shaft 15, which is held against rotation by the bearing 19, and therefore the roller 11 is rotated with the rotor element 13 due to the splined connection 17—18 between the roller and said rotor element.

While the slots 17 have been illustrated in the present instance as being formed in the rotor 14, and the ribs 18 have been illustrated as being formed on the roller, it is manifest that this arrangement may readily be reversed. Also, it is manifest that while a specific type of quick detachable connection between the roller and the rotor has been illustrated in the drawing, said connection as well as other features of the general structural arrangement shown are capable of various modifications and changes without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. A conveyer roller, a motor inclusive of a stator and a rotor disposed within said roller, and a pivotal connection between said roller and said rotor.

2. A conveyer roller, a motor inclusive of a stator and a rotor disposed within said roller, and a pivotal connection between said roller and said rotor holding them against relative rotation and permitting their disengagement from one another by relative longitudinal movement.

3. A conveyer roller, a motor inclusive of a stator and a rotor disposed within said roller, and formations on said roller and said rotor adapted to be interengaged by relative longitudinal movement between the roller and the rotor and serving when interengaged to interlock the roller and the rotor for unitary rotation.

4. A conveyer roller element, a motor inclusive of a rotor element disposed within said roller, one of said elements having slots formed therein, and projections on the other of said elements adapted to be engaged in said slots by relative longitudinal movement between said elements to interlock the latter for unitary rotation.

5. A conveyer roller element in the form of a hollow shell, a motor inclusive of a rotor element disposed within said shell, one of said elements having slots formed therein, and projections on the other of said elements engaged in said slots and removable therefrom by relative longitudinal movement between said elements.

6. A hollow conveyer roller, a motor inclusive of a rotor disposed within said roller, said rotor being provided with slots, and ribs extending inwardly from the inner face of the roller into said slots.

7. A hollow conveyer roller element, a motor inclusive of a rotor element disposed within said roller element, one of said elements being provided with slots, and projections on the other of said elements disposed within said slots and shaped to permit pivotal movements of the roller element relative to the rotor element.

8. A hollow conveyer roller element, a motor inclusive of a rotor element disposed within said roller element, one of said elements being provided with slots, and ribs on the other of said elements disposed within said slots, said ribs having convexly curved side surfaces.

9. A hollow conveyer roller element, a motor inclusive of a rotor element disposed within said roller element, one of said elements being provided with slots, and longitudinally extending ribs on the other of said elements disposed within said slots, said slots having parallel side walls and each of the longitudinally extending faces of each rib being convexly curved in a direction longitudinally of the rib.

In testimony whereof I affix my signature

ERNEST DREXLER.