

Oct. 18, 1932.

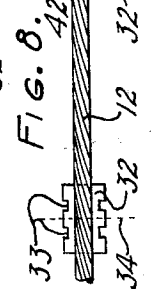
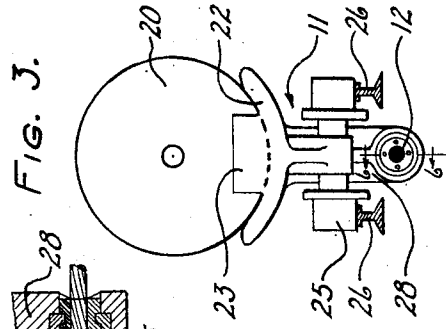
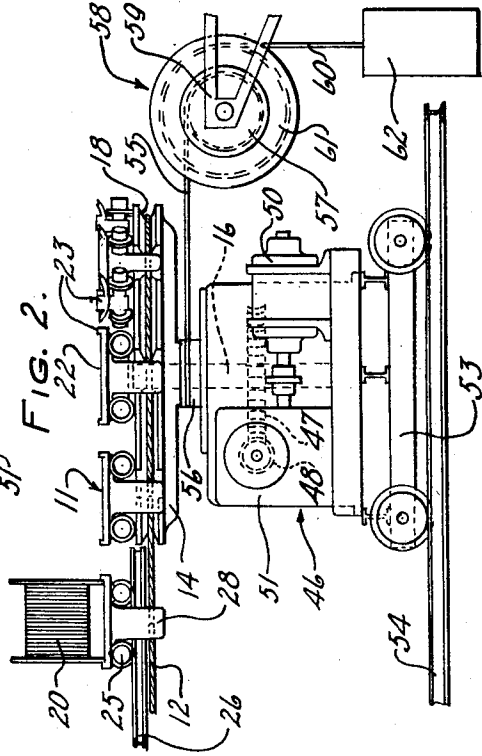
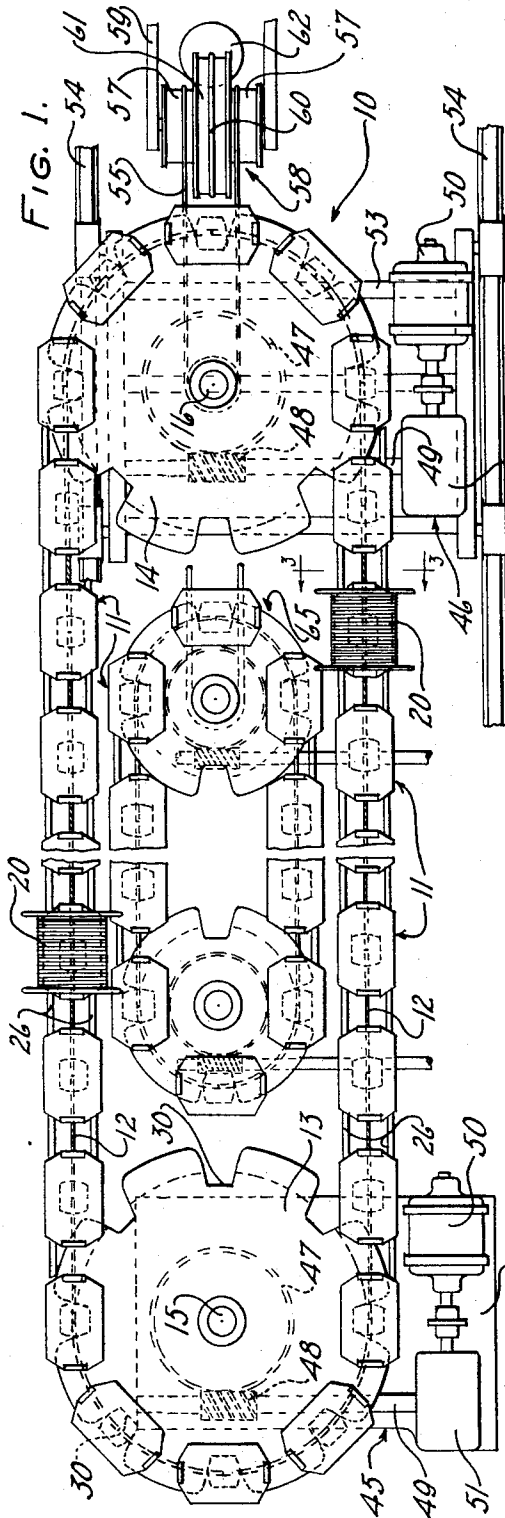
H. SHEEL

1,883,007

CONVEYER

Filed May 10, 1930

2 Sheets-Sheet 1



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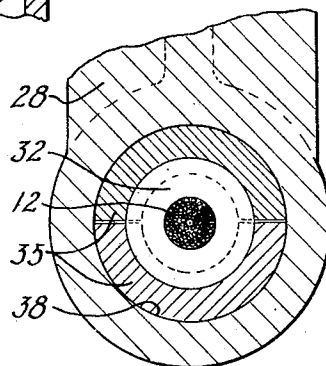
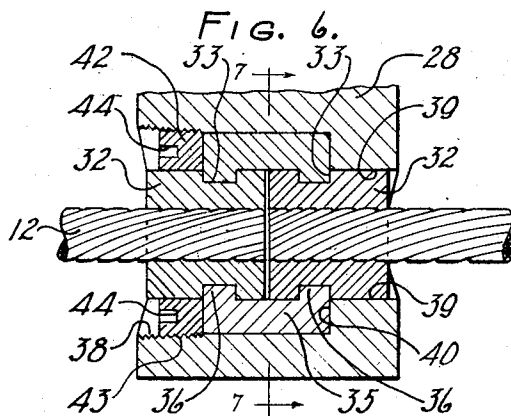
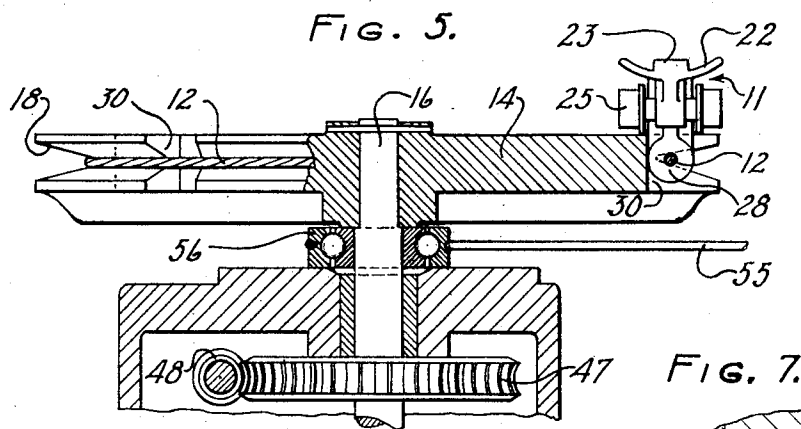
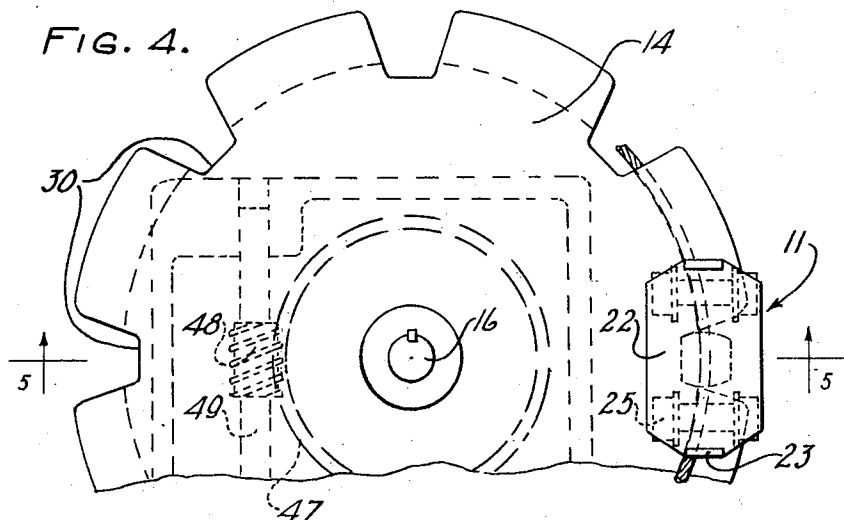
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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CONVEYER

Application filed May 10, 1930. Serial No. 451,286.

This invention relates to conveyers, and more particularly to conveyers of the carousel or endless type.

An object of the invention is to simplify and improve the construction of conveyers of this type.

One embodiment of the invention contemplates the provision of an endless conveyer, wherein a plurality of wheeled carriers or trucks are interconnected by means of an endless wire rope or cable arranged to travel in a horizontal plane around grooved sprocket wheels mounted upon spaced vertical shafts, the carriers being supported and arranged to travel upon the upper faces of the sprockets and upon spaced rails extending between the sprockets. The carriers are rigidly secured to the wire rope or cable by means of gripping sleeves cold flowed upon the cable and having spaced external grooves for accommodating cooperating internally projecting flanges of split bushings adapted to be secured within apertured depending portions of the carriers by means of externally threaded bushings. The carriers are spaced and arranged so that the conveyer is driven through direct engagement of the driven sprockets with the depending portions of the carriers, the wire rope or cable serving to interconnect the carriers. In order to insure flexibility and the required tautness in the conveyer cable at all times, the supporting structure and driving gears of one of the sprockets are mounted upon a wheeled platform connected to a weighted rope or cable in such manner that the sprockets are yieldably urged away from each other under sufficient pull to insure the required tautness in the conveyer cable. The weighted rope is attached to a ball bearing collar surrounding the vertical sprocket driving shaft, which collar serves to counter-act the downward thrust and reduce the wear on the driving shaft bearings. If desired, two separate and independently operated conveyers of the above type may be arranged side by side, or preferably one within the confines of the other, so that in the event that the operation of one of them is temporarily discontinued for the purpose of making repairs or replace-

ments, the other may be quickly placed in service without interrupting the activity of other cooperating apparatus.

It is believed that a complete understanding of the invention will be had from the following detailed description when taken in conjunction with the accompanying drawings, wherein

Fig. 1 is a plan view, partly broken away, schematically illustrating a conveyer embodying the features of the invention;

Fig. 2 is an elevational view of a portion of the structure shown in Fig. 1;

Fig. 3 is an enlarged vertical section, partly in elevation, on line 3—3 of Fig. 1;

Fig. 4 is an enlarged fragmentary plan view of the movable driving sprocket;

Fig. 5 is a fragmentary vertical section on line 5—5 of Fig. 4;

Fig. 6 is an enlarged fragmentary section on line 6—6 of Fig. 3;

Fig. 7 is a fragmentary section on line 7—7 of Fig. 6; and

Fig. 8 is a detail view of a portion of the conveyer cable showing the method of attaching the carriers thereto.

Referring now to the drawings wherein like reference numerals designate corresponding parts throughout the several views, it will be observed that an endless conveyer embodying the features of the present invention is indicated generally by the reference numeral 10, and comprises a plurality of wheeled carriers or trucks 11, 11 which are interconnected by means of an endless wire rope or cable 12 arranged to travel around notched discs or sprocket wheels 13 and 14 mounted upon spaced vertical shafts 15 and 16, respectively. The sprocket wheels are provided with peripheral V-shaped grooves 18 for receiving the cable 12 as more clearly shown in Fig. 5.

The carriers 11 may be of any suitable construction depending upon the particular material or articles to be transported thereby. The conveyer illustrated in the drawings is intended for use in connection with a wire drawing mill for transporting spools or reels of wire 20 to or from the various wire drawing apparatuses, and for this reason the car-

riers 11 are provided with a reel supporting platform 22 of arcuate or concave construction to accommodate the circular heads of the reel 20. The platform 22 is formed with upwardly extending end flanges 23, 23 which engage the heads of the reel and thereby prevent longitudinal displacement thereof.

Each carrier is provided with two or more pairs of flanged wheels 25, 25 adapted to ride upon tracks or spaced parallel rails 26, 26 extending between the sprocket wheels. As the carriers travel around the sprocket wheels the flanges of the wheels 25 engage and ride upon the upper faces of the sprockets. It will be understood that the rails 26 are so positioned with respect to the sprockets 13 and 14 that the carriers are maintained in the same horizontal plane at all times.

The carrier platform 22 is formed with a depending boss or hub portion 28 by means of which the carrier is attached to the conveyer cable in the manner hereinafter described. The carriers are so spaced upon the cable that the hub portions 28 thereof engage correspondingly spaced notches 30, 30 of the driving discs or sprocket wheels, whereby the conveyer is driven through direct engagement of the sprocket wheels with the carriers 11.

In accordance with a feature of the present invention, a simple and improved method is provided for securely clamping the carriers 11 to the conveyer cable. Metallic gripping sleeves 32, 32, preferably composed of soft steel, are inserted around the conveyer cable 12 at spaced positions therealong corresponding to the ultimate positions of the carriers. The gripping sleeves are then swaged, hammered or otherwise subjected to external pressure to cause a "cold flowing" of the metal thereof into the convolutions of the wire cable, as shown in Fig. 6, thus insuring a rigid bond between the cable and the gripping sleeves. It has been found that a steel gripping sleeve attached to a wire cable in this manner has a minimum working load of 75% of the breaking strain of the cable.

The gripping sleeve 32 is formed with spaced external annular grooves 33—33. After the gripping sleeves have been rigidly secured to the cable in the manner above described, the cable and the gripping sleeves may be severed intermediate the annular grooves 33 of each gripping sleeve, as indicated by the dotted line 34 (Fig. 8), thus providing a plurality of cable sections of a predetermined length, each section having one-half portion of a gripping sleeve attached at each end thereof. Any number of these sections may be interconnected and assembled with a corresponding number of carriers 11 to form an endless conveyer of any desired length. This is accomplished by placing the cable sections in end to end relation, as shown in Fig. 6, and then placing a split

bushing 35 around the adjoining ends, the split bushing being formed with spaced internally projecting annular flanges 36—36 adapted to engage the annular grooves 33 of the split gripping sleeve 32. The split bushing 35 is then inserted in a circular aperture 38 provided in the hub portion 28 of a carrier 11, the aperture having a reduced portion 39 to fit the gripping sleeve, thus providing a shoulder 40 against which the split bushing 35 is rigidly clamped by means of an externally threaded collar 42 adapted to engage internal threads 43 formed in the hub portion of the carrier. The locking collar 42 is provided with a plurality of spaced apertures 44, 44 for accommodating a suitable tool for facilitating the threading of the collar into the hub portion of the carrier.

The above described method of assembling the parts of the conveyer provides a simple and rigid construction and permits a quick replacement of the parts whenever necessary without replacing the entire conveyer or conveyer cable.

The sprocket wheels 13 and 14 are driven by individual driving units 45 and 46, respectively, each driving unit comprising suitable reducing gears 47 and 48 through which the sprocket shaft is driven from a shaft 49 which, in turn, is driven by an electric motor 50 through suitable reducing gears mounted in a housing 51. The sprocket wheel 13 and its driving unit 45 are mounted upon a stationary supporting platform 52, while the sprocket wheel 14 and its driving unit 46 are carried upon a wheeled platform 53. The platform 53 is arranged to ride on spaced horizontal rails 54, whereby the sprocket wheel 14 is movable toward and away from the sprocket wheel 13 so as to vary the tension in the conveyer cable 12.

A flexible rope or cable 55 is looped around and secured to a ball bearing collar 56 which encircles the sprocket shaft 16 near the upper end thereof, as best shown in Fig. 5. The ends of the cable 55 are attached to spaced reduced drum portions 57—57 of an idler roller or pulley 58 mounted in a stationary bracket 59. A flexible rope or cable 60 is attached at one end to a central enlarged drum portion 61 of the pulley 58, and is fastened at its opposite end to a weight 62. It will be understood from the construction just described that the wheeled platform 53 and thereby the sprocket wheel 14 is yieldably urged away from the sprocket wheel 13 by the weight 62, whereby the conveyer cable 12 is maintained under a substantially constant predetermined tension at all times. The ball bearing collar 56 serves to counteract any downward thrust and reduces the wear on the driving shaft bearings.

In the present embodiment of the invention, the sprocket wheels 13 and 14 and their

driving units are preferably mounted in a suitable pit or recess in the floor so that the carrier platforms 22 are flush with the floor surface. This arrangement facilitates the loading of the reels upon the carriers.

If desired, a separate and independently operated conveyer 65 of the same construction as the conveyer 10 may be arranged adjacent to and preferably within the confines of the conveyer 10 so that in the event that it is necessary to discontinue the operation of the conveyer 10 for the purpose of making repairs or replacements therein, the reels may be readily and quickly transferred from the conveyer 10 to the conveyer 65 and the transportation of the reels may thus be continued without interrupting the activity of other co-operating apparatus.

It will be understood that the embodiment of the invention herein illustrated and described represents merely one useful form of the invention which is capable of modification and numerous other applications within the scope of the appended claims.

What is claimed is:

1. In a conveyer, a plurality of spaced discs, an endless wire cable arranged to travel around the discs comprising a plurality of connected lengths of cable, metallic gripping members cold flowed upon the cable at spaced positions therealong, and a carrier attached to and enclosing each of the gripping members and having a portion for cooperating with one of the discs to advance the cable and thereby the carriers.

2. In a conveyer, an endless wire cable comprising a plurality of connected lengths of cable, a metallic gripping sleeve cold flowed upon the cable and having spaced annular grooves, a split bushing having spaced internal flanges for engaging the grooves of the gripping sleeve, a carrier having an aperture for receiving the bushing, and means for securing the bushing within the aperture.

3. In a conveyer, an endless wire cable comprising a plurality of mutually similar individual sections, a gripping member cold flowed upon each end of each cable section, a split bushing surrounding the gripping members of adjacent cable sections and cooperating with the gripping members to interconnect the cable sections, a carrier having a recessed aperture for receiving the bushing, and an externally threaded collar for securing the bushing within the aperture.

4. In a conveyer, a plurality of spaced sprockets, an endless wire cable comprising a series of mutually similar longitudinal component units and arranged to travel around the sprockets, metallic gripping members cold flowed upon the cable at each end of each cable unit, a coupling device co-acting with each adjacent pair of the members, and a carrier attached to and enclosing each pair of members and coupling device

and adapted to co-act with one of the sprockets to drive the cable.

5. In a conveyer, an endless wire cable comprising a series of mutually similar longitudinal component units, a metallic gripping sleeve cold flowed upon each end of each unit of the cable and having an annular groove a split bushing having spaced internal flanges for engaging the grooves of an adjacent pair of gripping sleeves, a carrier having an aperture to receive the bushing, and means comprising an externally threaded collar to secure the bushing within the carrier.

6. In a conveyer, an endless wire cable comprising a plurality of sections of cable having irregular outer surfaces, a gripping sleeve cold flowed upon each end of each section and provided with an annular groove, an internally flanged split bushing surrounding a pair of the gripping sleeves and engaging the annular grooves therein, a carrier having a portion provided with an internally threaded recess for receiving and retaining the gripping sleeves and the split bushing, and an externally threaded collar engageable within the recessed portion for securing the split bushing and gripping sleeves.

7. In a conveyer, an endless wire cable comprising a plurality of sections of cable having irregular outer surfaces, a gripping sleeve cold flowed upon each end of each section, and provided with an annular groove, an internally flanged split bushing fitting around a pair of gripping sleeves and engaging the annular grooves therein, a carrier having a recessed portion provided with a shoulder and internal threading for receiving the split bushing and the pair of gripping sleeves, and an externally threaded collar engageable with the threading in the recessed portion to abut the split bushing and maintain it in contact with the shoulder in the recessed portion of the carrier.

In witness whereof, I hereunto subscribe my name this 30th day of April, A. D. 1930.
HAROLD SHEEL.

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