

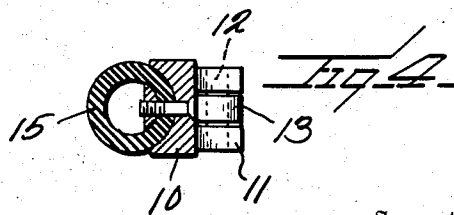
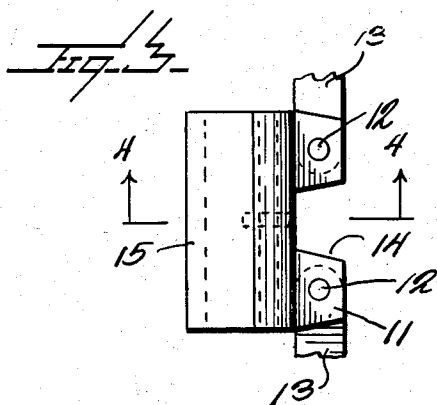
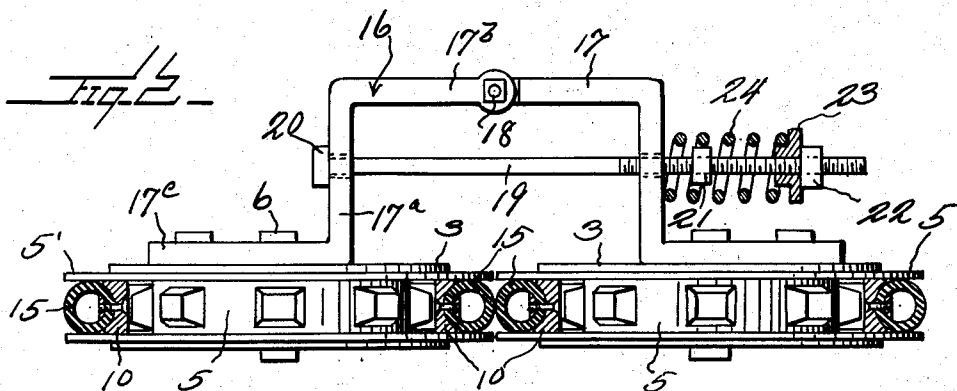
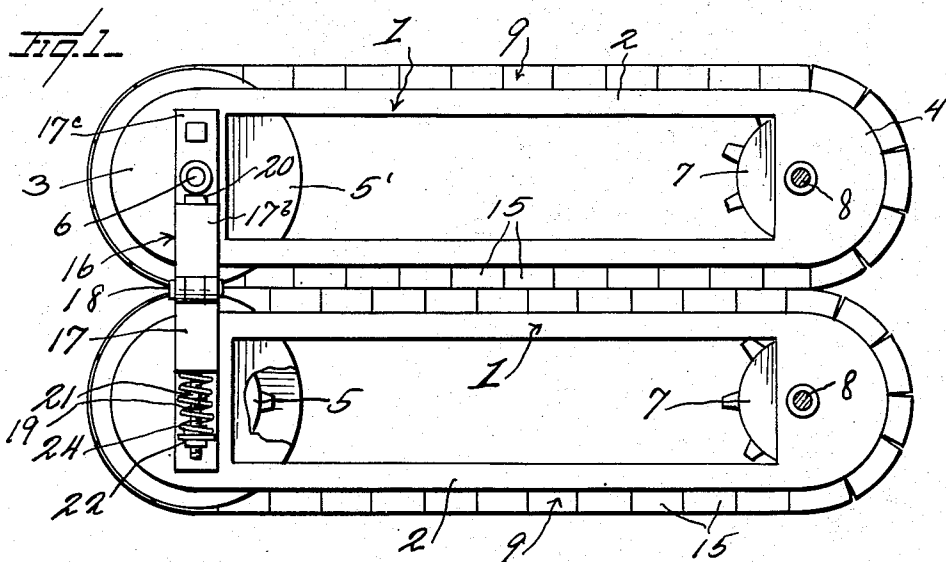
Sept. 29, 1942.

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2,297,295

YIELDABLE CONNECTIONS FOR COOPERATION CONVEYER UNITS

Filed March 27, 1941



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UNITED STATES PATENT OFFICE

2,297,295

YIELDABLE CONNECTIONS FOR COOPERATION CONVEYER UNITS

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Application March 27, 1941, Serial No. 385,551

2 Claims. (Cl. 198—162)

This invention relates to improvements in conveyers and pertains particularly to an improved yieldable connection between two adjacent cooperatively associated units or portions of a conveyer, the subject-matter of this application is in part divided out of application Ser. No. 380,549, filed February 25, 1941.

The present conveyer structure was primarily designed for use upon a beet harvesting machine such as is illustrated and described in my copending prior application above identified wherein the conveyer engages the beet tops after the beets have been loosened from the ground and raises and carries the beets by the tops to a receiver. This conveyer is made up of two side by side cooperating units, each of which includes an endless chain, the said endless chains having adjacent runs between which the beet top is engaged. Cooperating portions of the endless chains are of yieldable material. However, it sometimes occurs that a beet stands higher from the surface of the ground than is customary or a beet may have an extra heavy amount of foliage or top, in which case the cooperating chains of the conveyer are put under strain in order to receive the top or the body of the beet between them.

In view of the foregoing, a primary object of the present invention is to provide a conveyer structure employing two cooperating units of the character stated, wherein the forward ends of the units are yieldably coupled together whereby if an unusually large mass of material enters between the cooperating runs of the units, the units may separate slightly to receive the mass.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing, it being understood, however, that the invention is not to be considered as limited by the specific illustration or description but that such illustration and description constitutes a preferred embodiment of the invention.

In the drawing:

Fig. 1 is a view in plan of a conveyer structure showing the yieldable connection of the present invention between cooperating portions of the conveyer, a portion of the structure being broken away.

Fig. 2 is a view looking toward the front end of the conveyer shown in Fig. 1, with the gripper units and other parts in section.

Fig. 3 is a view in plan of one of the elements of a gripper unit.

Fig. 4 is a section on the line 4—4 of Fig. 3. Referring now more particularly to the draw-

ing, there has been illustrated only the cooperatively associated two portions of the conveyer showing the yieldable coupling between the forward ends thereof, no attempt having been made to illustrate a supporting structure for the conveyer or means for driving the same, since any suitable supporting structure or any suitable driving means may be employed and such supporting structure and driving means have been particularly illustrated and described in the copending application previously referred to.

The conveyer structure here illustrated comprises the two elongated portions or endless guide frames which are indicated generally by the numeral 1, each of said frames having outwardly opening straight side channeled parts 2, which at their ends merge into upper and lower spaced disks or plates, the plates at the forward ends of the portions being indicated by the numeral 3, while those at the rear ends of the portions or at the right end of the conveyer being indicated by the numeral 4. Between the forward plates 3, there is mounted an idler sprocket wheel or toothed wheel 5 rotating about a pivot 6 while between each of the vertically spaced plates 4 at the rear ends of the portions 1, is a toothed or sprocket wheel 7 connected with a shaft 8, through the medium of which a suitable driving connection may be established with a power source for turning the toothed wheel connected therewith.

The forward idler wheels 5 have the spaced relatively wide flanges 5', which flanges come into relatively close relation, as shown in Fig. 2. These flanges function, in the event that the elevator attempts to grip and pick up a beet by its body rather than by the top thereof, to crush off the body and thus prevent the forced separation of the forward end portions of the elevator beyond the limits which such portions are intended to move. It sometimes happens in beet harvesting that a beet will be found which has grown out of the ground to a higher elevation than normal and when this happens, such a beet cannot be properly picked up by the conveyer, therefore, the wide flanges of the forward idler wheels function to crush such beet.

Each of the endless guides carries an endless chain 9 made up of the elongated bodies 10 which are disposed in end to end relation, each of which bodies upon its rear side carries adjacent each end a pair of ears 11 between which extends a pin 12. These bodies are coupled together by link bars 13 engaging the adjacent pins 12 and the recess or space 14 between the

two pairs of ears receives the teeth of the wheels 5 and 7.

The outer side of each body 10 carries a yieldable tubular gripper element 15. These gripper elements are disposed in end to end relation when passing along the straight sides of the channel guides so as to form a substantially continuous tubular gripping strand and these strands are in opposed contacting relation along the inner or opposing sides of the guides so as to grip a beet top or other body between them.

The two elongated endless guide portions 1 are maintained at their rear ends for relative oscillatory movement about the axes of the shafts 8 while the forward ends may be supported in any suitable manner, no specific supporting means being here shown or described since this forms no part of the present invention.

The forward ends of the endless guides are, however, coupled together by the yieldable connecting structure which is indicated as a whole by the numeral 16. This connecting structure or coupling yoke 16 maintains the forward ends of the inner runs of the endless chains in proper working relation one with the other and as shown, it comprises the two portions 17 which are shaped so as to form an arch across the longitudinal center of the conveyer. This arch is effected by the provision in each of the portions 17 of a vertical part 17^a having at its upper end an inwardly extending part 17^b and having at its lower end an outwardly or laterally extending part 17^c. The latter parts 17^c are secured to a top plate 3 of an endless guide portion 1, as shown. The free ends of the inwardly extending part 17^b are joined together above the elevator by a hinge coupling 18, the axis of which extends longitudinally of the conveyer or carrier.

Extending transversely of the conveyer between the two parts 17^a of the yoke structure is a rod or bolt 19 upon one end of which is a head 20 for holding it against movement in one direction with respect to the part 17^a through which it passes. The opposite end of the bolt which passes through the other or opposite vertical portion 17^a is screw threaded and has threadably mounted thereon outwardly of the adjacent portion 17^a the movement limiting nut 21. This nut limits the separatory movement of the two portions of the yoke.

Upon the outer end of the bolt 19 there is threaded a second nut which is spaced from the first nut 21 and which has disposed against its inner side the washer 23. Between the washer 23 and the adjacent portion 17^a of the yoke is an expansion spring 24, one end of which engages the washer while the other end engages the yoke, the spring enclosing the first-mentioned nut 21, as shown.

It will be seen that while the nut 21 limits the separatory movement of the forward ends of the two portions of the conveyer, the spring 24 constantly urges the two portions of the yoke together and consequently constantly urges the forward ends of the two portions of the conveyer together also.

From the foregoing, it will be readily apparent that there has been provided in association with a two-part conveyer structure of the character stated, a novel means of yieldably coupling to-

gether the two portions of the conveyer at the receiving end thereof, so that such portions may be forced apart when necessary to receive an object of larger size than is customarily received between the coacting endless gripping chains forming part of the conveyer.

While as previously stated, the present conveyer structure and coupling means between the forward ends of the two portions thereof was designed primarily for use upon a beet harvesting machine, it is to be understood that the invention is not to be considered as limited to such use, as it may be used in any situation where a device of this kind may be found to be of service.

What is claimed is:

1. An elongated elevator structure, comprising two units each having an endless outwardly opening channel guide and an endless gripper mechanism arranged to move in the channel guide, each of said units at its forward end including an idler wheel around which said endless gripper means passes, said idler wheels having relatively wide flanges in opposed relation and extending beyond the guide channel, and a yieldable coupling between the forward ends of said units by which relative lateral movement between the endless grippers and the opposed flanges of the idler wheels is facilitated.

2. In a conveyer structure, a pair of relatively long endless guides arranged to have two slide portions in spaced parallel relation, an endless gripper chain carried by each endless guide, means connected with the gripper chain of each guide at the discharging end of the conveyer for supporting the guides and for facilitating imparting rotary movement to the endless chain, an arch-like yoke extending across between said guides at the receiving end of the conveyer and formed in two portions, each of said portions comprising a lower transverse part secured to the top of the adjacent guide, an intermediate upwardly extending part integral with the lower part, and an upper transverse part extending in the opposite direction from said lower part, said upper parts having their free ends pivotally coupled together for relative pivotal movement on an axis extending longitudinally of the conveyer, said upwardly extending parts having aligned apertures therethrough, a pin extending through the aligned apertures and having a head upon one end engaging the adjacent upwardly extending part and having screw threads formed about a portion of the opposite end, a pair of nuts threaded upon the screw threaded portion of the pin at the outer side of the other upwardly extending part, the nut nearest the said other upwardly extending part functioning as a stop to prevent excessive separatory movement of the upwardly extending parts, an expansion spring surrounding the pin upon the outside of the said other upwardly extending part and encircling the stop nut and bearing at one end against the adjacent upwardly extending part, and the other one of said nuts providing an adjustable holding means for the other end of the spring whereby said spring constantly urges the two portions of the yoke together to maintain the adjacent runs of the gripper chains in yieldable contact.

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