April 5, 1938. A. E. W. JOHNSON 2,112,911

ENDLESS CONVEYER WEAR PLATE

Filed Feb. 29, 1936

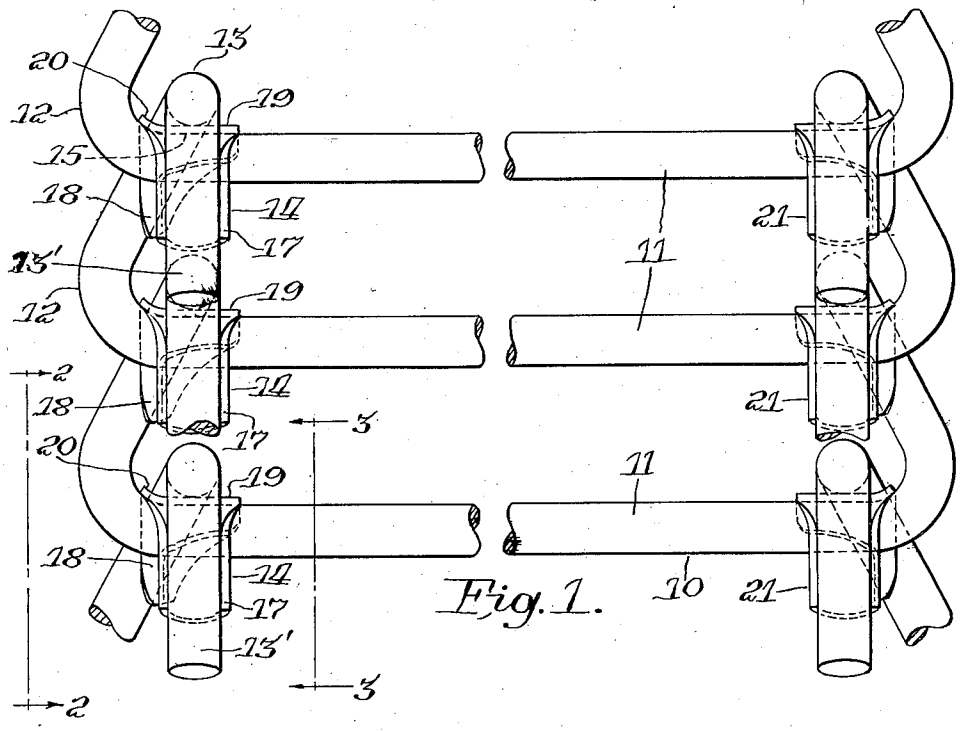


Fig. 1.

Fig. 2.

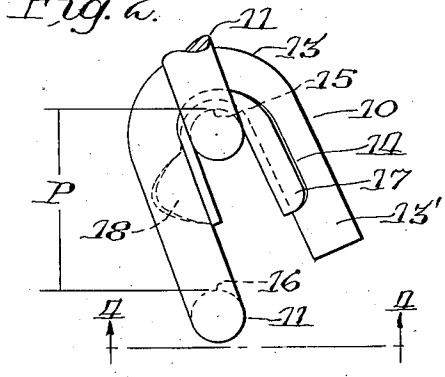


Fig. 3.

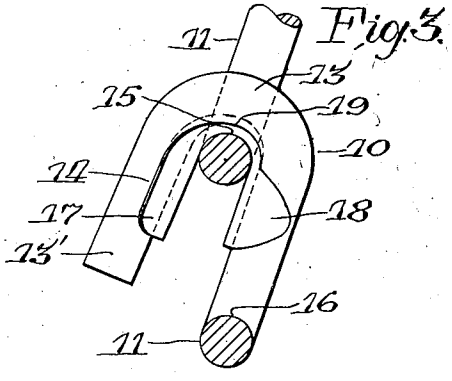
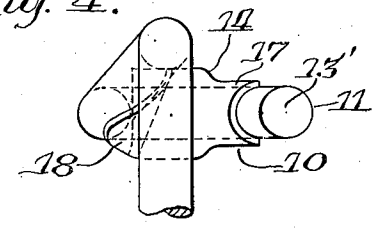


Fig. 4.



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ENDLESS CONVEYER WEAR PLATE

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5 Claims. (Cl. 198—195)

This invention relates to endless conveyers particularly for the type of conveyer used in the potato digger art, as disclosed in the patent to B. Gronke et al., 1,673,193, granted June 12, 1928.

The main object of the invention is to provide a construction for the usual type of conveyers used in potato diggers or in similar types of machinery where potatoes, beets, or other root crops are conveyed from one location to another, which prevents the wearing through of the conveyer links where they are detachably connected to each other.

Another object of the invention is to design detachable wear plates which may be easily connected and detached from each digger link.

Another object of the invention is to design the conveyer so that the sections or links can be quickly and easily attached and detached, so that the elevator aprons may be lengthened and shortened.

Another object of the invention is to construct the detachable wear plate so that the bearing surface between each link and its respective connecting portion is greatly increased, so as to reduce the bearing pressure between the link portions.

Another object of the invention is to construct the links of the conveyer so that the tubers or other crop products are carried in pockets formed by the links, which at the same time allow the discharge of vines, stems, dirt and other undesirable foreign material.

In accomplishing the foregoing objects and other minor objects which will hereinafter be more specifically described and defined in the claims, a preferred form of the improved details of the structure is illustrated in the accompanying drawing, wherein:

Figure 1 is a plan view of an elevator apron showing the link wear plates in position;

Figure 2 is a side elevation, looking in the direction of the arrows, along the section 2—2 of Figure 1;

Figure 3 is a side elevation of the link wear plate, looking in the direction of the arrows, along section 3—3 of Figure 1; and,

Figure 4 is an end view of the link wear plate, looking in the direction of the arrows, on the section 4—4 of Figure 2.

This invention is herein disclosed as embodied in a potato digger or harvester of the type disclosed in the aforesaid patent to B. Gronke et al., in the elevator apron, as used in the potato diggers of this type. The links of these aprons, although heat treated and made of high carbon and manganese steel, last for a limited time, depending on the sort of conditions to which they are subjected. As these digger links carry heavy loads of dirt and are run continuously in dirt, the combined effect of the heavy loads transmitted by one link to another and the grinding action of the dirt, because of the agitation of the elevator aprons, causes the greatest wearing where the links are joined together. The tendency of the links is to cut each other, so that the pitch of the chain is changed, with the result that the apron does not follow the sprockets, jumping off and leaving the elevator links strewn down the field. It is the purpose of this invention, therefore, to improve the wearing quality of the elevator aprons, so that the length of life of this type of apron is greatly prolonged.

As shown in Figure 1, the conveyer apron 10 is made up of a plurality of detachable rods or links 11, which are formed in a well-known manner. These links 11 may have straight, transverse portions in the center, or, as is usual, alternate links may have raised portions through the center, while the other links have depressed portions in their centers to form pockets to better aid in the conveying of the potatoes.

Figures 1 and 2 show a preferred construction of the digger links, in which the ends of the links are sheared straight. The links or rods 11 are bent at both ends, as at 12, inwardly and rearwardly to form angular arms disposed in a common plane. At the pitch of the sprocket, the links are again bent to form a hook portion 13, as best shown in Figure 2, thereby providing a recess to receive the straight portion of another similar link 11. The hook portion 13 extends forwardly in a plane perpendicular to the transverse portion of the link. These links are readily attached to and detached from each other and the conveyers formed from these links may be made into any length desired.

In the disclosed embodiment of the invention, the wear plate 14, as best shown in Figures 1, 2, 3 and 4, is positioned in the hook portion 13 of the link 11. The hook portion 13 is so bent that the thickness of the wear plate 14 is positioned so that the distance measured from the inner edge 15 to the corresponding portion 16 of the transverse portion of the link is equal to the pitch P of the sprocket teeth. The wear plate 14 may be made from strip material, which is cut off into the length desired and then bent to conform to the shape as disclosed in the drawing. The wear plate 14 is U-shaped and has one leg of the U formed as at 17 to conform to the

diameter of the link. The portion 17 is concave in shape and conforms to the under portion of the hook portion 13. The other leg of the wear plate 14 is bent to conform, as best shown in Figures 1 and 3, to the portion 12 of the link and has an ear 18, which assists in securing the plates in position. The U-shaped wear plate is straight where it contacts the transverse portion of the link 11, as at 19. This portion 19 forms the increased bearing surface for the link 11 where it is connected to its successive link. This wearing surface, as at 19, forms a surface contact for approximately one-half the diameter of its successive link, which is a considerable area, thus reducing pressure over the previous point of contact at the links, as disclosed in the patent to Gronke et al. The previous contact surface was that formed by a cylinder contacting a circle. It is, therefore, obvious that the bearing surface between successive lengths has been greatly increased. The bearing surface, as at 19, may also be extended to conform, as shown in Figure 1, to the curved surface of the bent portion 12, as at 20. It is to be understood that the wear plate 21 for the other end of the link is of the opposite hand and cannot be used interchangeably with the wear plate on the other side of the link.

In order to attach the wear plates 14, the portion 17 is first contacted with the portion 13' of the hook portion and must be placed so that the lower portion 18 is positioned inwardly from the portion 13' of the hook portion 13. The wear plate is then swung downwardly and outwardly, so that the portion 18 of the wear plate contacts the bent portion 12 of the link. The wear plate 14 is then moved longitudinally along the portion 13' until the portion 19 contacts the inner curved portion of the hook portion 13. When the wear plate is in position, it is so locked by the curved portion 17 and the contacting portion 18 that it cannot be readily detached unless it is removed in the opposite way from which it was attached. It is to be understood, however, that the wear plate 14 may be welded or otherwise secured to the links 11.

The wear plates 14 may be made out of either soft or hard material, depending upon whether the wear plate or the link is to be worn through first. However, as these wear plates are cheap to manufacture and readily replaceable, it is desirable that these should be made from the material which will wear through first in soils of abrasive character, thus permitting a long life of the links by substituting new wear plates, as they are worn through.

The preferred embodiment of the invention herein described is also capable of certain other modifications without departure from the scope of the invention to be defined in the following claims.

What is claimed is:

1. A wear plate for conveyer links comprising a substantially straight channel-shaped portion of considerable length, an intermediate portion curving away from the base and the sides of the channel, and an end portion extending away from the intermediate portion in spaced relation to the channel-shaped portion and in substantially the same direction as the channel-shaped portion and having a laterally extending ear.

2. A wear plate for conveyer links comprising a U-shaped body of which one leg is of channel shape opening outwardly of the U and the other leg has a laterally extending ear.

3. A wear plate for conveyer links comprising a U-shaped body of which one leg is of channel shape opening outwardly and the base portion is a continuation of the same channel but of lesser depth and the other leg has an outwardly extending lateral ear.

4. In a conveyer, the combination with a plurality of interconnected links having substantially straight body portions and U-shaped end portions extending transversely from the body portions, of wear plates having channel-shaped portions embracing the insides of the legs of the U-shaped end portions of the links away from the body portions of the links, and further portions extending along the insides of the bases and other legs and laterally extending ears in contact with the last mentioned legs.

5. In a conveyer, the combination with a pair of interconnected links, each having a substantially straight body portion and a U-shaped end portion, the body portion of one link extending through the U-shaped end portion of the other link, of a U-shaped wear plate extending along the inside of the U-shaped end portion of the last mentioned link and having one leg of channel shape contacting the leg of the end portion away from the body portion and a laterally extending ear in contact with the other leg of the end portion, said wear plate serving to keep out of contact the body portion of the first mentioned link and the base of the U-shaped end portion of the last mentioned link and being retained on said end portion by contact with the first mentioned link.

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