

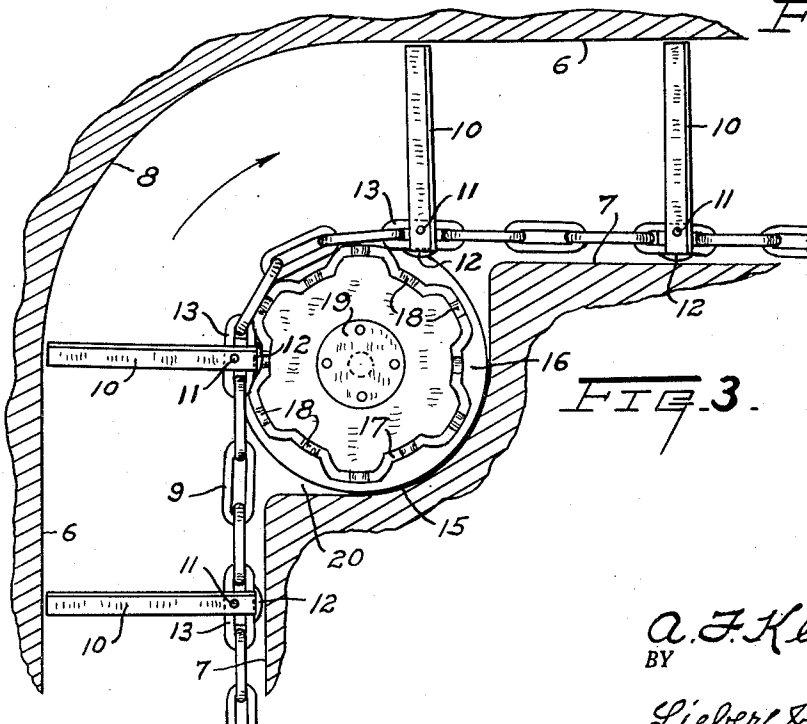
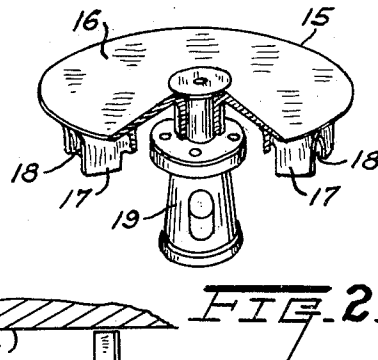
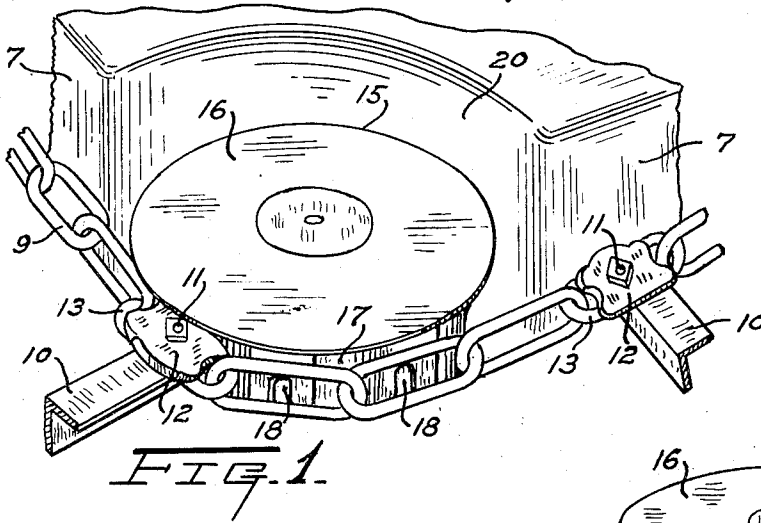
Jan. 21, 1958

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2,820,540

GUIDE WHEEL FOR BARN FLIGHT CONVEYORS

Filed May 21, 1956



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2,820,540

GUIDE WHEEL FOR BARN FLIGHT CONVEYORS

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Application May 21, 1956, Serial No. 586,224

4 Claims. (Cl. 198—171)

This invention relates to improvements in the construction and operation of guide wheels for conducting the flight carrying chains of barn gutter cleaners around corners, and the present application is a continuation-in-part of application Serial No. 385,158, filed October 9, 1953, now Patent No. 2,768,734, granted October 30, 1956.

The primary object of the invention is to provide an improved guide wheel assemblage for effectively guiding the conveying chains which carry the gutter cleaning flights to barn cleaners or the like, along curved and irregular paths.

It is common practice in the art of removing debris from the animal stalls of cattle barns and the like, to provide a circuitous gutter extending behind opposed stalls and having therein a continuously advancing endless conveyor chain which carries a series of laterally projecting flights extending across and adapted to be propelled by the chain along the gutter so as to remove the debris deposited within the latter. These debris collecting gutters are preferably horizontally disposed and normally have a series of relatively sharp corner curves therein in order to provide continuity, so that the continuous flight conveying chain which normally hugs one side wall of the gutter must be properly guided to travel around these corners. While it has heretofore been attempted to utilize sprockets rotatable about vertical axes and having teeth extending into alternate chain links, in an effort to guide such chains around sharp gutter corners, these prior sprockets would become clogged with sticky debris and straw and cause the chain to bulge outwardly while rounding the adjacent corners and to move the free ends of the flights into contact with the opposed gutter wall thereby frequently damaging both the flights and these gutter walls and also vastly increasing the tension in the conveying chain.

It is therefore an important object of my present invention to provide an improved guide wheel for barn cleaner flight conveying chains which is self cleaning and eliminates all of the objectionable features of the prior sprockets and other corner guides.

Another important object of the invention is to provide an improved rotary idler wheel for effectively guiding a longitudinally advancing conveyor chain around relatively sharp corners with minimum power consumption and attention.

A further important object of this invention is to provide an improved barn gutter corner cleaning assemblage which is capable of automatically handling various kinds of manure without danger of clogging or jamming.

Still another important object of the present invention is to provide an improved protective device for the flight carrying conveyor chain of a barn cleaner, wherein objectionable accumulation of litter at the direction curvature of the chain is positively eliminated and smooth operation is assured at all times.

These and other more specific objects and advantages

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of the invention will be apparent from the following detailed description.

A clear conception of the improved features constituting the present invention, and of the construction and operation of a typical commercial unit embodying the same, may be had by referring to the drawing accompanying and forming a part of this specification in which like reference characters designate the same or similar parts in the various views.

Fig. 1 is a fragmentary perspective view of one of the improved corner flight carrying conveyor chain guides for a barn cleaner or the like, showing how the guide wheel cooperates with a gutter turn and with the conveyor chain and flights;

Fig. 2 is a perspective view of one of the corner guide wheel assemblages alone, a portion of the wheel having been broken away to more clearly reveal its mounting; and

Fig. 3 is a bottom view of one of the corner guide wheel units also showing the manner in which it cooperates with the adjacent gutter and with the conveyor chain and flights.

While the invention has been shown and described as having been embodied in a corner guide assemblage especially applicable to barn cleaners having gutters of a particular type, the improvements are obviously applicable to other conveyor systems for handling similar unruly materials; and it is also contemplated that specific descriptive terms employed herein be given the broadest possible interpretation consistent with the disclosure.

Referring to the drawings, the type of installation to which the present improved guide wheel is particularly applicable, comprises in general, an elongated horizontal gutter normally formed in the floor of a barn rearwardly of the animal stalls and having inner and outer side bounding walls 6, 7 respectively and local arcuately curved corners 8; and a debris conveyor chain 9 movable longitudinally along the outer gutter wall 7 and carrying a series of debris advancing flights 10 extending transversely of the chain and across the gutter. The conveyor chain 9 has a succession of vertical and horizontal links and the adjacent ends of the flights 10 are firmly secured to selected horizontal links 13 by means of bolts 11 and clamps 12 which extend somewhat beyond the sides of these links 13 toward the adjacent gutter bounding wall 7 of the gutter, but the outer free ends of the flights 10 are adapted to travel in rather close proximity to the gutter wall 6.

The improved guide assemblage for conducting the chain 9 and flights 10 without obstruction around the gutter corner 8 consists primarily of a wheel 15 rotatable about a vertical axis and having a circular top flange 16 and a continuous depending wall or apron 17 provided with downwardly open notches 18 spaced at intervals along its lower free edge. The apron wall 17 is formed with a series of undulations adapted to snugly engage the successive vertical and horizontal chain links, while the notches 18 and the adjacent depressed undulations are shaped to receive the clamps 12 and the adjacent ends of the flights 10 while permitting debris to drop freely into the corner curve 8 of the gutter. The wheel 15 is freely rotatable about a standard 19 the base of which is adapted to be embedded in the floor of the barn, and the guide wheel is confined within a pocket 20 and may be lifted off this standard in an obvious manner.

When the improved guiding units have been properly constructed and installed in the corner pockets 20 of the gutter, the chain 9 with its flights 10 attached thereto by the bolts 11 and clamps 12 may be easily applied to the removable wheels 15 in an obvious manner, whereupon the installation is ready for practical use. During normal

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operation of the barn cleaner, the chain 9 and flights 10 are constantly advanced along the gutter in a well known manner, and whenever the successive flights 10 approach a corner idler wheel 15 their inner ends and the adjacent clamps 12 enter the adjacent depressed portions of the apron undulations as illustrated in Fig. 3 so that the chain 9 will ride smoothly about the corresponding curve 8 without causing the free flight ends to move outwardly into engagement with the gutter wall 6. Any litter which tends to accumulate at the idler wheels 15 while rounding the curves 8 will drop freely from the revolving apron 17 through the downwardly open notches 18 and will not accumulate upon the periphery of this apron, while the top flange 16 of the wheel 15 prevents lifting of the chain 9, thus insuring snug engagement of the chain links with the undulations of the apron at all times.

From the foregoing detailed description it will be apparent that the present invention in fact provides a simple but highly effective flight conveyor chain guiding assemblage which is automatically self cleaning so as to eliminate debris accumulations thereon. The improved chain guiding unit is especially adapted for use in barn cleaners where sticky litter is handled, and the annular undulated apron is entirely devoid of radial teeth which enter and tend to compress debris into the chain link openings as in the prior idler sprockets. The apron undulations insure smooth guiding of the chain at all times with minimum power consumption, and the wheel 15 may be conveniently lifted from its journal pedestal 19 at any time for inspection and cleaning. The invention has gone into highly satisfactory and successful commercial use, and eliminates all of the difficulties previously encountered with corner guide wheels and sprockets.

It should be understood that it is not desired to limit this invention to the exact details of construction and operation of the chain guiding assembly herein shown and described, for various modifications within the scope of the appended claims may occur to persons skilled in the art.

I claim:

1. For use in combination with a litter conveyor having a series of debris conveying flights successively movable along a gutter provided with angular corners, an endless chain having vertical and horizontal links for advancing the conveyor flights along the gutter and around the corners, and a guide wheel at each of said corners having a top flange for preventing lifting of said chain and also having an annular apron depending from

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said flange and provided with a continuous undulated outer surface formed with crests and intervening valleys coacting laterally with the inner side surfaces only of said vertical and horizontal chain links respectively.

2. For use in combination with a conveyor having a series of material advancing flights successively movable along a horizontal gutter provided with at least one sharply curved corner, a flight advancing chain movable along the gutter and around the corner, and a guide wheel for said chain rotatable about an upright axis and having a top flange revoluble over said chain and also having an annular apron extending downwardly from said flange and provided with a continuous undulated outer surface formed with alternate crests and valleys coacting only with the adjacent innermost side surfaces of the chain links.

3. For use in combination with a conveyor having a series of material advancing flights successively movable along a horizontal gutter provided with at least one sharply curved corner, a flight advancing chain movable along the gutter and around the corner, and a guide wheel for said chain rotatable about an upright axis and having a top flange revoluble over said chain and also having an annular undulated apron extending downwardly from said flange and coacting only with the adjacent side surfaces of the chain links, said apron having a series of downwardly open notches therein for preventing debris from collecting on its undulations.

4. For use in combination with a conveyor having material advancing flights successively movable along a horizontal gutter provided with at least one sharply curved portion and with a pocket adjoining the curved portion, a flight advancing chain movable along the side of said gutter having the corner pocket therein, and a guide wheel freely rotatable within said pocket about an upright axis, said wheel having a top flange for preventing lifting of said chain and also having a depending undulated apron cooperable with the chain links and provided with downwardly open material escape notches.

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