April 14, 1931. W. C. BOLDT 1,800,814

CONVEYER

Filed June 20, 1930 2 Sheets-Sheet 1

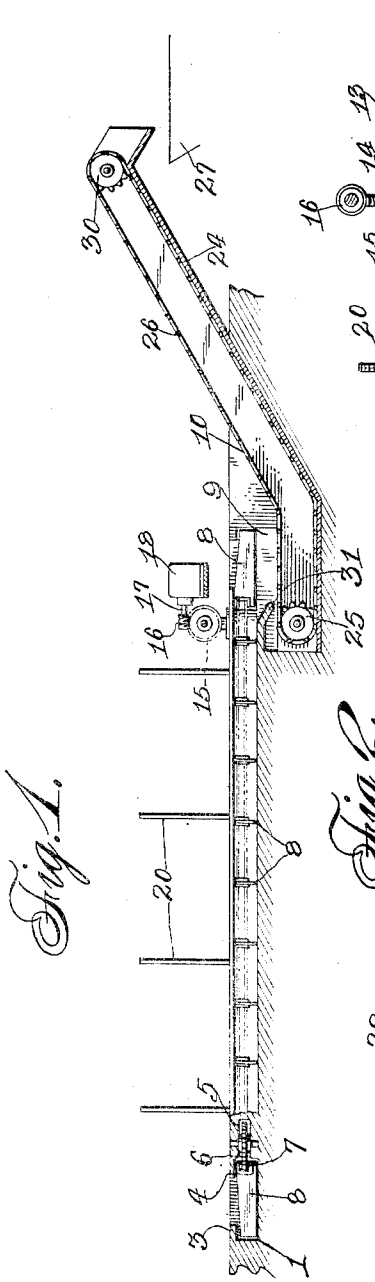


Fig. 1.

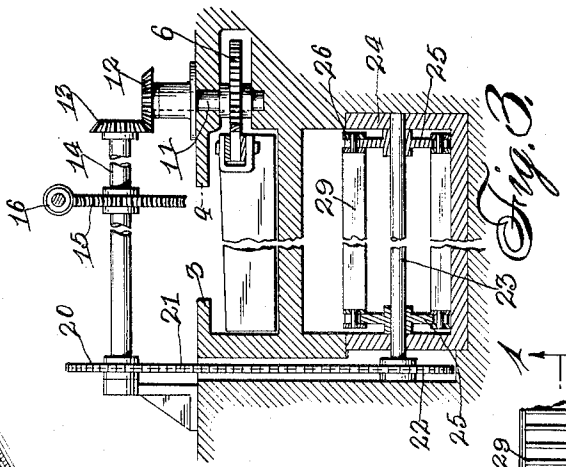


Fig. 3.

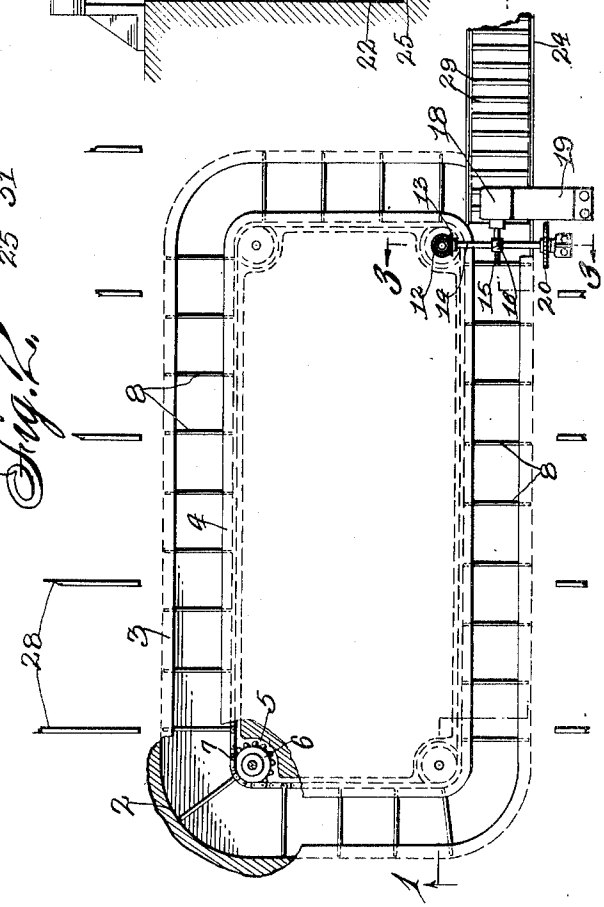


Fig. 2.

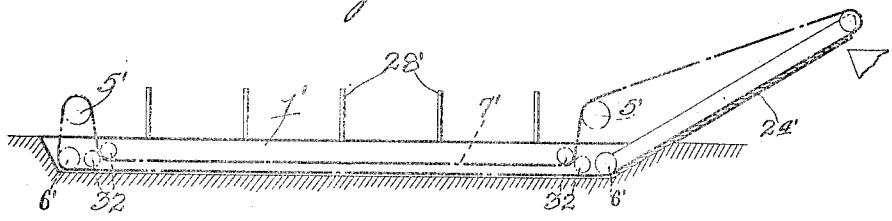
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Fig. 4.



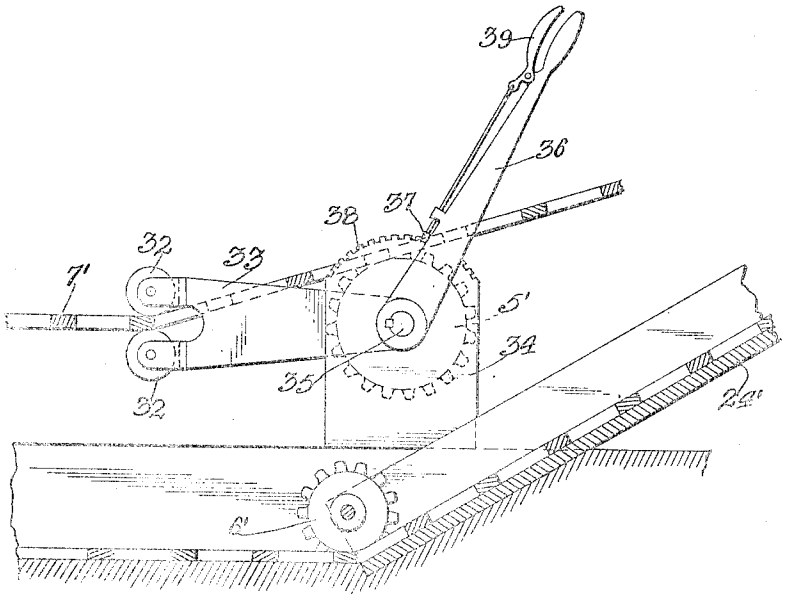


Fig. 5

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UNITED STATES PATENT OFFICE

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CONVEYER

Application filed June 20, 1930. Serial No. 462,672.

This invention relates to improvements in conveyers.

One of the objects of this invention is the provision of a novel type of conveyer adapted to be incorporated in the construction of dairy barns for conveying the refuse from the live stock stalls to the exterior of the building, and is so arranged that the refuse can be readily deposited in a conveyance to be carried off to any predetermined dumping plate, or it can be deposited in a neat pile just outside of the building, so as to facilitate its removal.

In the usual construction of up-to-date dairy barns at the present time, the floors are provided at the rear of the stalls with refuse troughs preferably formed in concrete flooring installed in the barns, and it is another object of this invention to provide a conveyer which can be readily operated through these troughs for conveying the refuse therein to the exterior of the building, and as the conveyer is mechanically operated, it requires only a very short space of time to remove the refuse from these troughs.

A further object of the invention is the provision of a refuse conveyer which is fitted within a suitable endless trough having one corner thereof communicating with what will be termed as a discharge conveyer, so that the refuse in the trough in the barn can be readily moved around and deposited onto the discharge conveyer and then be readily conveyed to the exterior of the building.

With the above and other objects in view, the invention consists in the novel features of construction, the combination and arrangement of parts hereinafter more fully set forth, pointed out in the claim and shown in the accompanying drawings wherein:

Figure 1 is a longitudinal section taken on the line 1—1 of Figure 2, illustrating the application of my improved conveyer;

Figure 2 is a top plan view with parts thereof broken away and illustrated in cross section;

Figure 3 is an enlarged vertical section on the line 3—3 of Figure 2; and,

Figure 4 is a longitudinal section through a refuse trough, illustrating diagrammatically a modified form of conveyer arranged therein;

Figure 5 is an enlarged vertical sectional view, showing the relative position of the endless carrier with respect to the refuse trough.

Referring to the drawings and more particularly now to Figures 1 to 3, it will be noted that the application of my improved conveyer is illustrated in these figures as applied to a barn wherein the refuse trough is formed in a substantially rectangular area, and includes the main channel portion 1, provided with rounded corners indicated at 2, and with an inwardly projecting overhanging flange 3 which extends inwardly from the outer wall of the main channel. It will be noted that projecting inwardly from the inner wall of the main channel is the overhanging flange 4, and set into suitable recesses 5 at each corner of the channel are the sprockets 6, and around these sprockets passes the endless chain 7 which carries a plurality of scraper blades 8, the lower edges of which ride upon the bottom of the channel to engage the refuse therein and move the same forwardly through the channel.

At one corner of the channel there is provided a deposit pit 9 and extending outwardly from this deposit pit is an inclined outlet opening 10. It will be noted that the sprocket 6′ at one corner of the channel 1 has an upwardly projecting shaft 11, supporting at its upper end a bevel gear 12 adapted to mesh with a similar gear 13 on the driven shaft 14.

The shaft 14 carries a worm gear 15 which meshes with the worm 16 on the motor shaft 17 and the motor shaft 17 extends outwardly from the motor 18 mounted upon a bracket 19, supported above the deposit pit 9. While this particular type of connection is disclosed for driving the endless conveyer, it will be apparent that other types of driving means may be used if found desirable.

On the end of the shaft 14 opposite bevel gear 13, there is a sprocket 20 around which passes a sprocket chain 21 which extends downwardly and around sprocket chain 22 on one end of shaft 23. The shaft 23 is mounted within suitable bearings in the side walls of

the discharge trough 24, and mounted upon and rotatable with the shaft 23 are the sprockets 25 around which the chains 26 pass. At this time, I wish to call attention to the fact that the inner end of the trough 24 is deposited upon a substantially horizontal plane, while the outer end thereof projects upwardly on an incline through the outlet opening 10, and the upper end of the trough will extend a sufficient distance to the outside of the barn so that it can be deposited above a carrier of any suitable type which is generally indicated at 27.

In Figures 1 and 2, it will be noted that the stalls are generally indicated at 28 and one side-run of the channel is positioned directly in the rear of these stalls, whereby the cattle arranged in the stalls will have a tendency to deposit the refuse in the channel. Therefore, when it is desired to clean the channels, the motor 18 is started for moving the chain 7 around the sprockets 6, moving the scraping blades 8 through the channel so as to carry the refuse from the run of the channel which is behind the stalls to the deposit pit 9. It will be noted that the chains 26 carry suitable scraping or cross slats 29 which are arranged in spaced relation and the lower run of the conveyer chain rests upon the floor of the trough 24, while the upper run is spaced therefrom, as shown in Figure 1, thus the refuse that is deposited in the pit 9 will drop through the upper run and onto the lower run where it is conveyed upwardly to the outer end of the trough 24 and deposited within a conveyance generally indicated at 27. The chains 26 pass around suitable sprockets 30 at the upper end of trough 24, as illustrated in Figure 1.

When the upper run of the conveyer belt which operates in the trough 24 returns to the deposit pit 9, a downwardly projecting lip 31 is positioned so as to scrape off any loose refuse hanging to this run of the conveyer belt, thus retaining the discharge conveyer in a comparatively clean condition.

It will be apparent from the foregoing that by incorporating in dairy barns a conveyer of this type, the refuse can be quickly and readily removed from the barn in a very short space of time, and thus reduce to a minimum the amount of labor generally utilized for this work. It will also be apparent that by the use of a conveyer of this type, a dairy can be kept in a very sanitary condition, and and the refuse cleaned out several times a day so that it will not be allowed to remain standing in the barn any great length of time.

In Figures 4 and 5, I have illustrated a modified form of the invention where the construction is provided for use in a single line channel, the channel 1′ being arranged behind the stalls 28′ and is provided at one end with an outlet conveyer trough 24′. In this form of the invention, I provide an endless conveyer 7′ which passes along the bottom of the channel 1, as indicated in Figure 5, and is retained in this position by means of the sprockets 6′ arranged at each end of the channel.

When the conveyer chain 7′ reaches the lower end of the discharge conveyer 24′ it passes upwardly over the floor of the conveyer trough, carrying the refuse upwardly to be discharged to the exterior of the building.

The upper run of the conveyer chain 7′ passes over suitable sprockets and through spaced guide pulleys 32. These guide pulleys are arranged at the outer ends of pivoted arms 33 carried by brackets 34 at each end of the channel 1′.

The shaft 35 upon which the arms 33 are mounted is rotatable in the supporting brackets 34 and keyed to the shaft is a hand lever 36, carrying a pawl 37 adapted to engage a rack 38. The pivoted finger piece 39 on the hand lever 36 can be actuated to disengage the pawl 37 from any of the teeth of the rack 38.

From the showing in Figure 5, it will be apparent that when the device is in use for cleansing the refuse from the channel 1′, the arm 33 is raised upwardly to the position shown in Figure 5, so that the upper run of the chain will pass freely over the channel during the time the lower run is removing the refuse from the channel and carrying it up the inclined trough 24′.

However, when the conveyer chain is not in use, the arms 33 are lowered so that the two runs of the chains are arranged in close proximity entirely in the channel 1, as shown in Figure 4. Thus, this upper run of the conveyer chain will be entirely out of the way of the live stock.

This type of conveyer disclosed in Figures 4 and 5, will be very convenient for small dairy barns, and it will be noted that the refuse within the channel 1′ can be quickly and easily removed and the conveyer chain when not in use can be completely housed within the channel 1′.

While I have shown the endless conveyer as made up with chain construction, it will be apparent that cables or other pulling elements can be used equally as well, and the scraping blades or plates can be attached thereto in any well known manner.

I claim:—

A device of the class described including an endless channel in a substantially rectangular area, a deposit pit at one corner of the channel, flanges extending from each side of the channel with their inner edges in spaced relation, sprockets at each corner of the channel, an endless conveyer member passing around said sprockets, a shaft projecting upwardly from one of said sprockets, a bevel gear at the outer end of said shaft,

a horizontal shaft supported above the channel, a bevel gear on one end of the horizontal shaft meshing with the first bevel gear, a worm on the horizontal shaft spaced from the bevel gear, a drive shaft at right angles to the horizontal shaft, a worm on the drive shaft meshing with the worm gear, and means having operative connection with the drive shaft for imparting movement thereto.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, in the county of Milwaukee and State of Wisconsin.

WILLIAM C. BOLDT.