Jan. 15, 1952 H. H. JOHANNING 2,582,335

BARN GUTTER CLEANER

Filed Aug. 9, 1948 2 SHEETS—SHEET 1

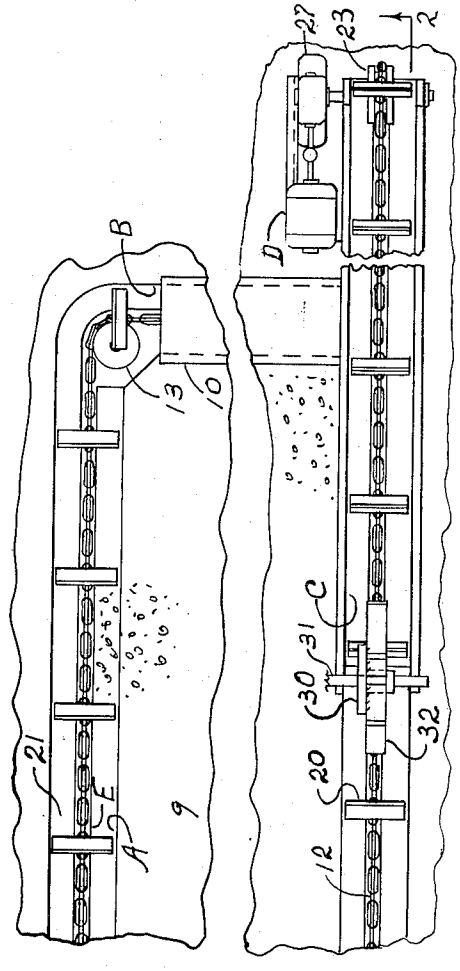


FIG. 1

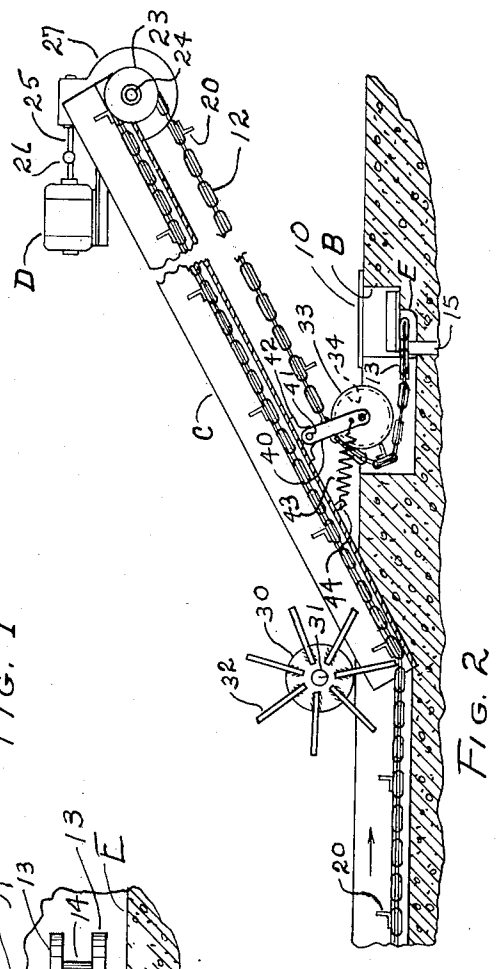


FIG. 2

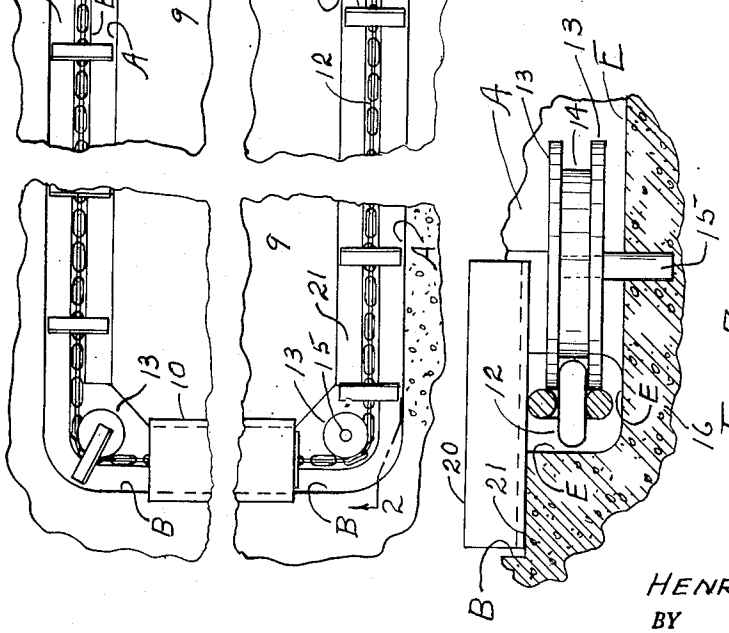


FIG. 7

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BARN GUTTER CLEANER

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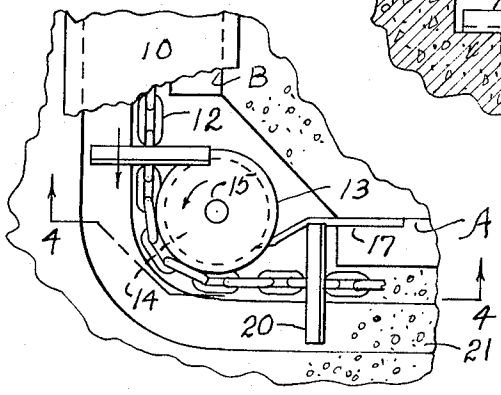


FIG. 3

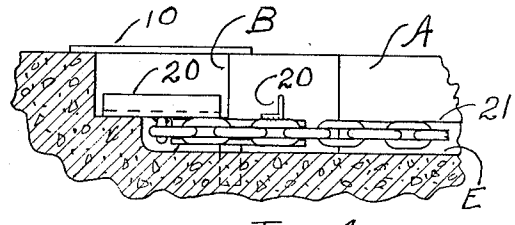


FIG. 4

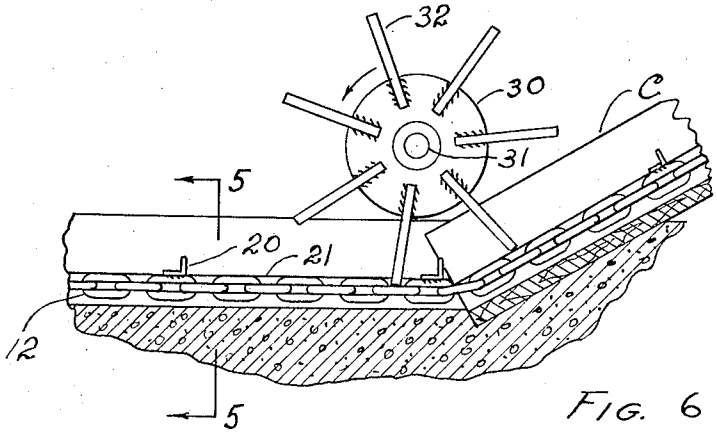


FIG. 6

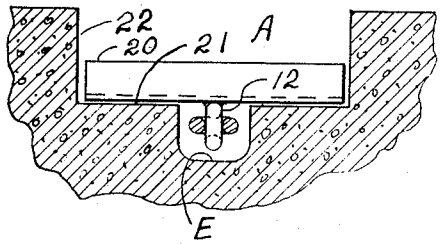


FIG. 5

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BARN GUTTER CLEANER

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3 Claims. (Cl. 198—173)

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The present invention relates particularly to means for keeping dairy barn gutters clean and for delivering the material into a wheel conveyance or for delivering the material into the tub of an overhead conveyor so the material may be dumped a distance from the barn.

Objects of my invention generally stated are to provide a very simple, easily manufactured at low cost device of the character, which can be easily installed and easily understood and safely operated by an attendant of ordinary intelligence.

Other objects of my invention are to provide novel means for driving the conveyor and for holding the conveyor in the trench where the ascending trench leaves the gutter.

An important object of my invention is to use a log chain type conveyor and use spaced discs as a carrying means for the chain at intersecting corners of the gutters.

Another object of my invention is to provide and position a driving motor operatively connected to a chain hoist type sprocket for carrying and driving the chain conveyor at the delivery end of the device.

To these and other useful ends, my invention consists of parts, combinations of parts or their equivalents and mode of operation, as hereinafter described and claimed and shown in the accompanying drawings in which:

Fig. 1 is a fractional top view of the preferred form of my device.

Fig. 2 is an elevational view taken from the elevator side of the device as shown in Figure 1 and sectioned on line 2—2 of Figure 1.

Fig. 3 is a top view at one corner of the device illustrating the disc supporting means for the chain and a cleaner blade for the discs.

Fig. 4 is a sectional view taken on line 4—4 of Figure 3.

Fig. 5 is a transverse sectional view through one of the gutters illustrating the conveyor chain and scraper blade in position in the gutter and taken on line 5—5 of Figure 6.

Fig. 6 illustrates my preferred means for holding the conveyor in position in the horizontal and ascending gutter at their point of contact.

Fig. 7 is an enlarged elevational view of the chain carrying means and illustrating the chain in transverse section and how it is carried on the discs of the chain carrying means.

As thus illustrated the longitudinal gutters which are generally positioned parallel to each other are designated by reference character A. B designates the connecting or transverse gutters or trenches. C designates in its entirety the ascending gutter. D designates in its entirety the driving means for the device and E designates the chain trench.

As shown in Figure 1 there is a narrow floor space 9 between gutters A. Trenches B form a

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connection between the ends of gutters A and have preferably cover plates 10, thus forming a convenient passageway for the attendant or animals or for conveying straw and other material onto wheeled trucks.

By scrutinizing Figures 1 and 2 it will be seen that almost any arrangement or combination of gutters and trenches may be used. The gutters and trenches need not even be in parallel relation, and for example, trenches B may be long enough to serve one or more stalls and then they may be considered gutters. In fact both trenches B may be long enough to serve several stalls with a space left having cover plates 10 for a passageway as recited in the next above paragraph.

It will be understood that the chain used as the conveying means is preferably of the "log chain type" having large links so the driving sprocket may be made to operate successfully, and whereby corner disc wheels may be used as carrying means for the chain and the gutter blades may be easily and effectively secured to links of the chain. Gutter C is preferably made from planks, having the same inside shape as that illustrated in Figure 5, the upper end being high enough so the material can be delivered into a wheeled conveyance, manure spreader or an elevated tub conveyor.

The log chain is designated by numeral 12 and is adapted to extend loosely through trench E. At the intersecting corners of the gutters, I provide spaced discs 13 having a hub 14 which is rotatably mounted on a vertical shaft 15, the shaft being firmly set in the cement 16 from which are preferably also formed gutters A and B, the chain extending around discs 13 as clearly illustrated in Figures 1 and 7. Chains of the type may be considered self cleaning, however I provide scrapers 17 (see Figure 3) at each corner for keeping the discs and space therebetween clear.

Referring especially to Figure 5, I provide scraper blades 20 which may be made from flat stock or from L irons as illustrated in the figures. These blades are adapted to lie on the bottom 21 of the gutter, their ends being positiond close to the side walls 22 of the gutters, and they are each preferably electric welded to a link in spaced relation on the chain about as indicated in Figures 1 and 2.

It will be seen that some weight will be added to blades 20 by chain 12 so the blades will effectively keep the gutters clean and clearly the chain will keep trench E clear because the chain at times will be comparatively loose between blades 20 and will contact the bottom or sides of trenches E.

Gutter C may be positioned in either direction and from either of the two gutters A. Gutter C is generally positioned far enough from one end

of a gutter and at an angle so there will be room provided under the upper end of this gutter (see Figure 2) for a wheeled vehicle, manure spreader or the like for catching the material as it is delivered.

Chain 12 at the delivery end of gutter C winds around a chain hoist type sprocket 23 having projections which mesh certain links in the chain so as to provide suitable means for carrying and driving the chain at this point. Member 23 is mounted on a shaft 24 which has a suitable operating connection to motor D, the operating connection being preferably a worm gear (not shown) which is mounted on shaft 24 and having a connection to motor D by means of a worm pinion (not shown) mounted on a shaft 25, the shaft having preferably a universal joint connection 26 to the motor shaft. Generally the worm gear and pinion are enclosed in a housing 27. Thus it will be seen that I have provided simple means for driving the conveyor.

Obviously there will be a tendency for the chain to lift at the connection between gutters A and C. I prevent this by mounting a flanged hub 30 on a shaft 31 which is rotatably mounted in suitable bearings, the hub having mounted thereon in spaced relation, radially positioned bars 32, the bars having a suitable length and being positioned apart a suitable distance, whereby their ends contact certain chain links so the chain will be held in position and member 30 caused to turn by its contact with the links. I provide means for guiding the chain from the delivery end of gutter C into the adjacent end of trench B as follows:

I rotatably mount preferably a drum 33 in the position shown in Figure 2, the drum having considerable width preferably the length of scraper blades 29. This drum has a groove 34 for the reception of the conveyor chain 12, the drum being driven by the chain and the chain being generally held in alignment with the drum by groove 34.

The mounting of drum 33 comprises two depending arms 40 (one not shown) which are keyed to a shaft 41, the shaft being hingedly mounted on a bracket 42 which is secured to member C. I provide a spring 43 which is secured to one of the depending arms 40 and anchored at the other end to member C as at 44. Thus the spring will act to keep chain 12 taut.

I find that it is not necessary or desirable to provide openings in drum 33 for the reception of blades 29. These blades are permitted to lift the chain and ride over the surface of the drum, the chain winding around the drum generally in groove 34. The drum is positioned whereby the chain will be guided between discs 13 so the chain will turn and be guided into trench B.

Thus it will be seen that I have provided a very simple gutter cleaner which is strong, efficient and easily manufactured and installed at low cost; that I have provided means for delivering the material from an elevated position for reasons herebefore described and that the device lends itself to clean the gutters of different sized and shaped buildings; that the device will be kept clear of an accumulation of material and is adapted to operate efficiently and for an indefinite period without breakdowns or requiring more than casual attention of the attendant.

Having thus shown and described my invention, I claim:

1. A barn gutter cleaner of the character described comprising, four gutters connected together at their ends, a relatively small trench in the bottom of the gutters and in the transverse center thereof, wheels positioned at the intersection of said gutters, comprising spaced discs and a hub, and being rotatably mounted on a downwardly extending shaft, one of said gutters being cut out for a distance intermediate the ends thereof and having an ascending gutter connected to its delivery end, its upper end being a considerable distance above the floor of the building, and having a chain carrying and driving sprocket, and driving means operatively connected thereto, another wheel positioned under said ascending gutter and near the lower end thereof, an endless log chain adapted to lie in said trenches and be carried by said wheels and other wheel and sprocket, scraper blades secured to said log chain in spaced relation and adapted to lie on the bottom of said gutters and assist in carrying the chain, guiding means at the intersecting ends of the ascending gutter and the delivery end of its gutter adapted to hold the chain from lifting out of the trench.

2. A device as recited in claim 1 including, said guiding means comprising a rotatably mounted hub having spokes, the ends of the spokes being adapted to contact certain chain links, as and for the purpose specified.

3. A barn gutter cleaner of the character described comprising, a number of gutters having intersecting ends, relatively small trenches in the bottoms of said gutters and midway the sides thereof, chain carrying wheels at the intersecting ends of the gutters, a chain adapted to be carried by said chain carrying wheels and positioned in said trenches, scraper blades secured to said chain in spaced relation and adapted to ride on the bottom of said gutters and assist in supporting the chain, one of said gutters having an ascending portion operatively connected thereto, the upper end being positioned a distance above the floor of the building, a sprocket at the upper end of said ascending gutter around which said chain extends, driving means operatively connected to said sprocket, a chain guide wheel positioned below said ascending trench and near the lower end thereof, the chain extending thereabout and to the adjacent carrying wheel, to thereby form a continuous endless conveyor and elevator, adapted to discharge the material at the upper end of the ascending trench, rotating means adapted to contact and engage certain links of the chain adjacent the connection between the gutter and its ascending trench connection and being adapted to hold the chain from raising out of its trench.

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