April 19, 1949. H. O. PETRASKE 2,467,988

BARN GUTTER CLEANER

Filed Feb. 20, 1946

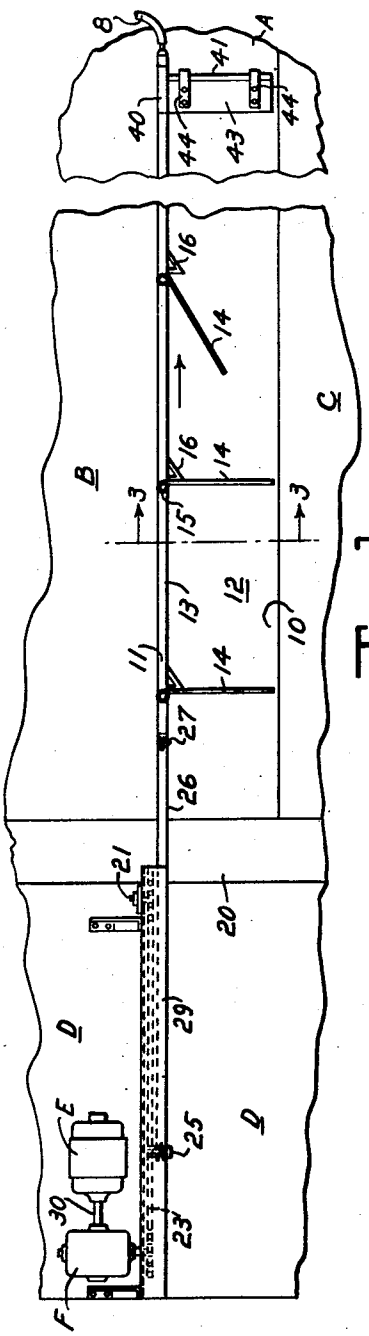


Fig. 1.

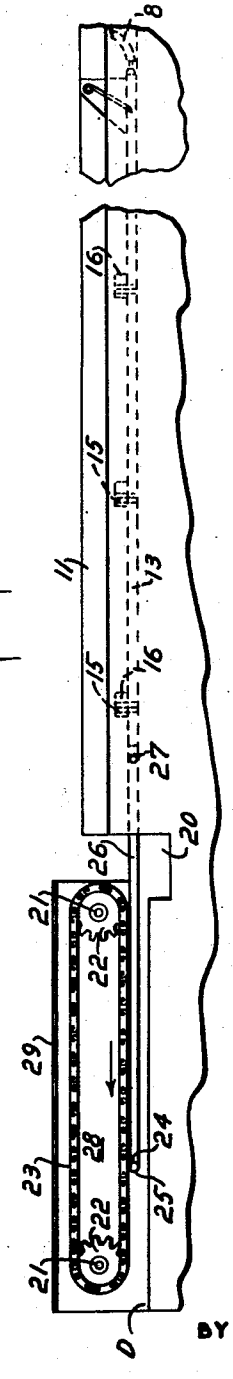


Fig. 2.

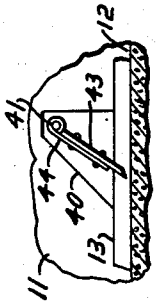


Fig. 5.

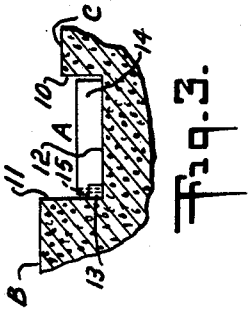


Fig. 3.



Fig. 4.

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Patented Apr. 19, 1949 2,467,988

UNITED STATES PATENT OFFICE

2,467,988

BARN GUTTER CLEANER

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Application February 20, 1946, Serial No. 649,081

8 Claims. (Cl. 198—224)

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The present invention relates to gutter cleaners for use largely in dairy barns, for cleaning the gutter positioned in rear of the stalls by means of an electric motor or power otherwise furnished.

The principal object of the present invention is to provide a gutter cleaner which is extremely simple, light in weight and easily manufactured and installed at low cost.

The present invention relates to a gutter cleaner which is adapted to be driven preferably by an electric motor and arranged to deliver the litter into a trench having a conveyor, the conveyor being adapted to move the litter to a conveyance or into a pile a distance from the barn.

An object of the present invention is to provide a gutter cleaner wherein water may be used for cleaning the gutter and for assisting the conveyor while in operation, and whereby the cleaner may be operated by the attendant by simply closing a switch and wherein the trench conveyor may be operated in the same manner or simultaneously with the gutter cleaner by the use of a single switch.

In the present invention it will be seen that the switch for operating the cleaner and conveyor may be controlled by means of a clock whereby at certain predetermined periods the cleaner and conveyor will be automatically operated.

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 top view of my invention, the major part of the trench and parts therein being cut-away.

Fig. 2 is a side elevational view of the invention as shown in Figure 1.

Fig. 3 is a sectional view through the gutter taken on line 3—3 of Figure 1.

Fig. 4 is a bottom view of a fraction of the oscillating member if made from a rectangular in cross section tube, showing a fraction of the water hose connected.

Fig. 5 is a side elevational view of a modification.

In the drawing the gutter is designated by reference character A; the barn floor in rear of the gutter is designated by reference character B; the floor for the stalls is designated by reference character C and a floor between the stalls and the end or side of the barn or some other part of the barn is designated by reference character D. The motor of my device is designated in its entirety by reference character E and the transmission by reference character F. Gutter A has a front wall 10, a rear wall 11 and a bottom 12. This gutter extends for the width of all of the stalls and is positioned relative to the stalls in a manner too well known to require further description or illustration.

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I provide a member 13, preferably a rectangular in cross section tube, which lays preferably on the rear lower corner of gutter A and is adapted to be reciprocated as will hereinafter appear. Blades 14 are hinged to bar 13 as at 15 so they are free to turn forward when bar 13 is moved in the direction of the arrow in Figure 1, but these blades are prevented from turning further than right angle to bar 13 by means of brackets 16. Thus members 14 are free to pass any litter collected in the gutter as bar 13 is moved to the right; blades 14 and the stroke of bar 13 are designed for this purpose. In other words a stroke of bar 13 must necessarily be considerably greater than the distance between blades. By causing the bar 13 in its stroke to move a distance considerably greater than the distance between the blades 14, it will be evident that after a blade has pushed a pile of litter along the gutter that retrograde movement of the blade, when it folds toward the bar 13, will cause the outer swinging edge of the blade to be free of and spaced rearwardly of the pushed pile of litter and in position to gather and push additional litter. As illustrated in Figure 3, the blade 14 frictionally rests on the bottom wall of the gutter A so that when the blades 14 are in folded position adjacent the bar 13, such as shown by the third blade in Figure 1, frictional engagement of the lower edge of the blade 14 with the bottom wall of the gutter will cause the blade to swing outwardly to a position at right angles to the bar 13 and be limited in such movement by the stop 16.

I provide preferably a transverse trench 20 at the delivery end of gutter A into which the litter is dumped when the nearest blade 14 is moved to the edge of trench 20.

It is customary to provide a conveyor in this trench which is adapted to move the litter to a conveyance outside the barn or to a pile a distance from the barn, this trench conveyor being generally operated by an electric motor which is caused to operate every time motor E is operated, thus to keep trench 20 clear of litter. Such conveyor and mode of operation are too well known to require further description.

I provide means for operating bar 13 as follows: Spaced shafts 21—21 have sprockets 22—22 around which a suitable chain 23 passes, one of

the links of the chain having a bracket 24 into which a pin 25 is rotatably mounted. Pin 25 is secured to a connecting rod 26 which is hingedly connected to bar 13 as at 27. Thus when the chain is operated in the direction of the arrow in Figure 2, because of connecting rod 26, bar 13 will be reciprocated a distance equal to the travel of pin 25. Thus blades 14 will be moved back and forth and caused to move the litter into transverse trench 20.

It will be noted that the pull of connecting rod 26 is in alignment with bar 13, thus to prevent lifting the delivery end of this bar. The right hand shaft 21 on which a sprocket is mounted is rotatably mounted on a bracket or on an L or U shaped plate 28, the top 29 of which is arranged to cover the chain and protect it from falling dirt, etc. The left hand shaft 21 extends through transmission F, the transmission comprising preferably a worm gear and a worm pinion (not shown). The pinion is mounted on a shaft 30 which is an extension of the shaft of motor E. Thus sprockets 22 will be turned at a speed considerably lower than the speed of motor E.

In the drawings floor D is shown as being slightly below the plane of the bottom of trench A, so member 26 will not contact the floor on its working stroke. Thus it will be seen that I have provided a very simple, easily installed, light gutter cleaner which can be manufactured and installed at low cost and that the device is always in full view of the operator.

In Figure 4 I illustrate a bottom view of a fraction of member 13 when this member is made from a square tube. I provide a number of spaced holes 9 in the bottom of the tube. The end of this tube is adapted for the reception of a garden hose 8 so that if desired when the cleaner is operated water pressure may be supplied, the water being discharged through holes 9 so as to assist members 14 in cleaning the gutter and make the gutter more sanitary.

In Figure 5 I illustrate a modification, wherein a post 40 is secured to the bar and having secured thereto a shaft or tube 41. I provide a cleaner plate 43 which is hinged to member 41 by means of spaced straps 44. Member 43 is positioned at a suitable angle so it will move freely over the bottom of the gutter without catching. For this purpose the bottom edge may be slightly rounded.

Having thus shown and described my invention I claim:

1. A barn gutter cleaner of the character described, comprising a gutter having a bottom and side walls, the gutter cleaner having all of the parts thereof resting on the bottom wall of the gutter and including a bar positioned in one corner of said gutter, blades vertically hingedly mounted at one end to the bar in spaced relation and adapted on their lower edges to lie on the bottom of the gutter, a connecting rod hingedly secured at one end to one end of said bar, a receiving trench at one end of said gutter, rotatably mounted spaced shafts having sprockets, a chain operatively connecting said sprockets and means for driving the shafts, said connecting rod at its other end being pivotally connected to a link of said chain, whereby said bar is reciprocated by the chain, the distance between said blades being considerably less than the stroke of the bar, said blade hinges having means whereby the blades may fold and pass around the litter on one stroke of the bar and engage the litter on the return stroke of the bar, and means whereby the blades

are prevented from moving past an approximate right angle to the bar on the return stroke of the bar.

2. A device as recited in claim 1 including, said bar being hollow and closed at one end, the other end having a hose connection to a water supply, spaced openings in said bar and positioned whereby water pressure supplied to the hose will act to loosen the bar and blades if seized and cooperate with the blades and bar when the bar is reciprocated to clean the gutter.

3. A barn gutter cleaner of the character described comprising, a gutter, a bar positioned in one corner of said gutter, having a bottom and side walls, the gutter cleaner having all of the parts thereof resting on the bottom wall of the gutter and including blades hingedly mounted on said bar in spaced relation and adapted on their lower edges to normally lie on the bottom of the gutter, a connecting rod hingedly secured at one end to one end of said bar, a receiving trench at one end of said gutter, rotatably mounted spaced shafts having sprockets, a chain operatively connecting said sprockets, and means for driving the shafts, said connecting rod at the other end being pivotally connected to a link of said chain, whereby the bar is reciprocated by the chain, the distance between said blades being considerably less than the stroke of the bar, said blade hinges having means whereby the blades may fold and escape the bunched litter on one stroke of the bar and engage the litter on the return stroke of the bar, thereby to move the litter by stages into said receiving trench.

4. A device as recited in claim 3 including, said bar being hollow and closed at one end, the other end having a hose connection to a water supply, spaced openings in said bar and positioned whereby water pressure supplied to the hose will act to loosen the bar and blades if seized and cooperate with the blades and bar when the bar is reciprocated to clean the gutter.

5. A barn gutter cleaner of the character described comprising, a gutter having a bottom and side walls, the gutter cleaner having all of the parts thereof resting on the bottom wall of the gutter and including a bar slidably positioned in one corner of the gutter, spaced blades vertically hingedly mounted at one end to the bar and adapted at their lower edges to rest on the bottom of the gutter, operating means associated with said bar adapted to reciprocate the bar a distance considerably greater than the distance between the blades, said blade hinges having means, whereby they may fold in opposite direction to the direction of travel and by-pass the litter and move at right angles to the bar and engage the litter on the return stroke of the bar.

6. In a barn gutter cleaner, an elongated gutter having a bottom and side walls, the gutter cleaner having all of the parts thereof resting on the bottom wall of the gutter and including a reciprocable bar located entirely within the gutter and in constant engagement with the bottom wall of the gutter at one side thereof, spaced blades hingedly mounted with respect to said bar and movable therewith and adapted at their lower edges to rest on the bottom of the gutter, operating means engaged with one end of the bar below the upper edge of the gutter adapted to shift the bar a distance greater than the distance between said blades, and said blades adapted to scrape the gutter in one direction of movement of the bar and escape the litter during the opposite direction of movement of the bar.

7. In a barn gutter cleaner, an elongated gutter having a bottom and side walls, the gutter cleaner having all of the parts thereof resting on the bottom wall of the gutter and including a reciprocable bar located entirely within the gutter and in constant engagement with the bottom wall of the gutter at one side thereof, spaced blades hingedly mounted with respect to said bar and movable therewith and adapted at their lower edges to rest on the bottom of the gutter, operating means engaged with one end of the bar below the upper edge of the gutter adapted to shift the bar a distance greater than the distance between said blades, and said blades adapted to scrape the gutter in one direction of movement of the bar and escape the litter during the opposite direction of movement of the bar, the blades being hingedly mounted at one end to swing in horizontal planes with the blades normal to the longitudinal axis of the bar when scraping the gutter.

8. In a barn gutter cleaner, an elongated gutter having a bottom and side walls, the gutter cleaner having all of the parts thereof resting on the bottom wall of the gutter and including a reciprocable bar located entirely within the gutter and in constant engagement with the bottom

wall of the gutter at one side thereof, spaced blades hingedly mounted with respect to said bar and movable therewith and adapted at their lower edges to rest on the bottom of the gutter, operating means engaged with one end of the bar below the upper edge of the gutter adapted to shift the bar a distance greater than the distance between said blades, and said blades adapted to scrape the gutter in one direction of movement of the bar and escape the litter during the opposite direction of movement of the bar, the hinge mountings for the blades being horizontal and at the upper edges thereof with the free swinging lower edges of the blades contacting the bottom wall of the gutter.

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