April 15, 1952 H. O. PETRASKE 2,593,340

BARN GUTTER CLEANER

Filed Aug. 26, 1949 3 Sheets-Sheet 1

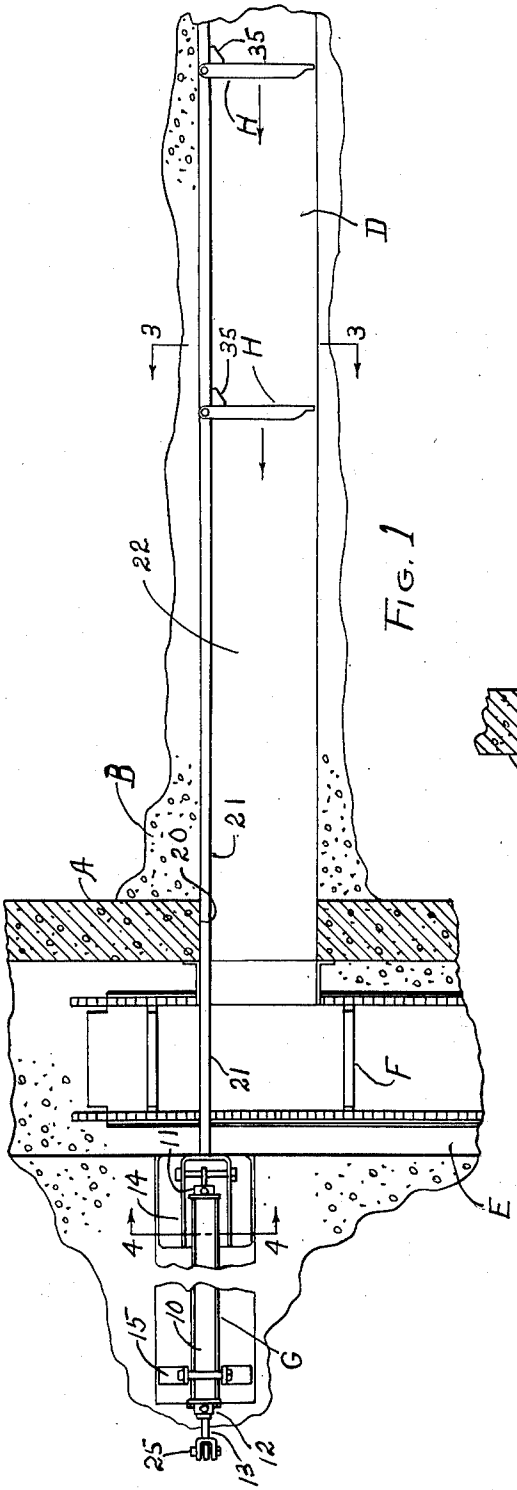


FIG. 1

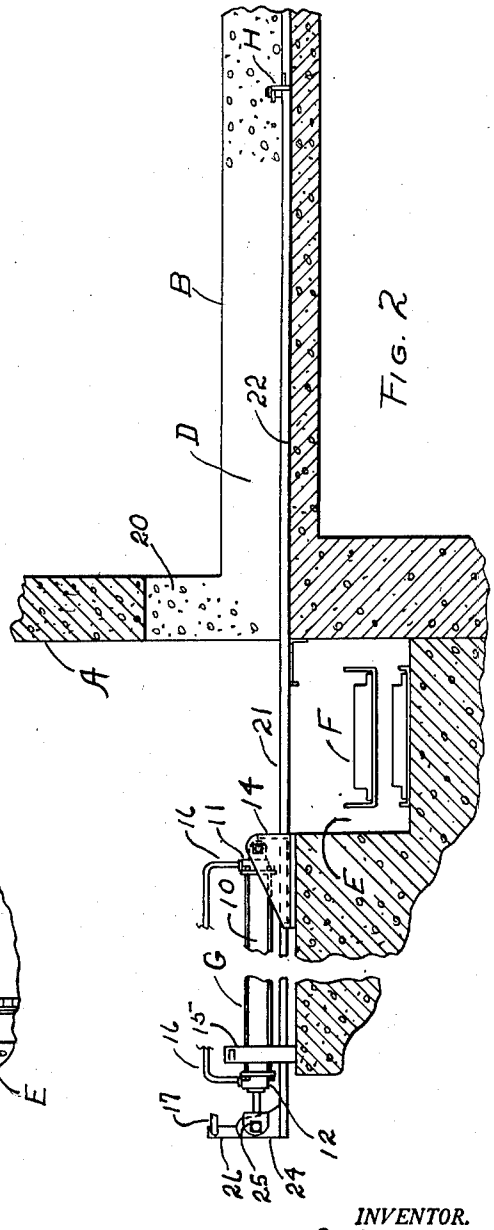


FIG. 2

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BARN GUTTER CLEANER

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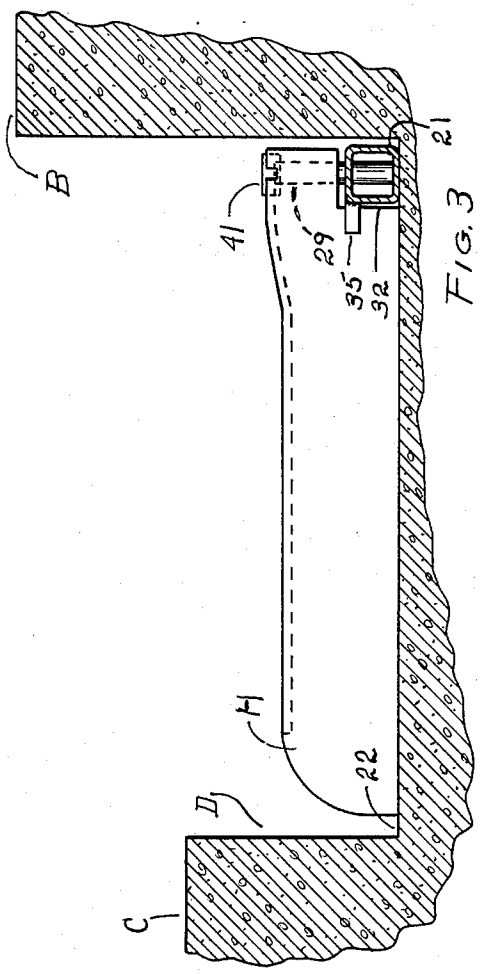


FIG. 3

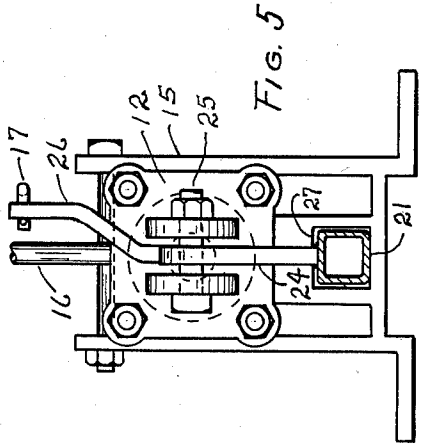


FIG. 5

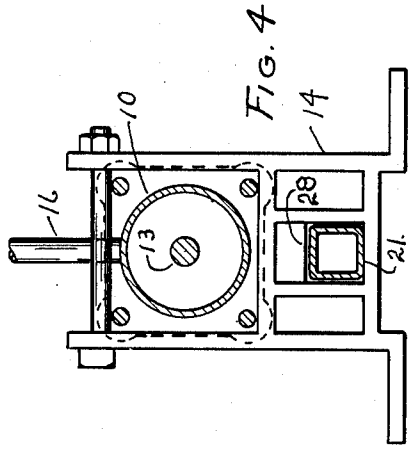


FIG. 4

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BARN GUTTER CLEANER

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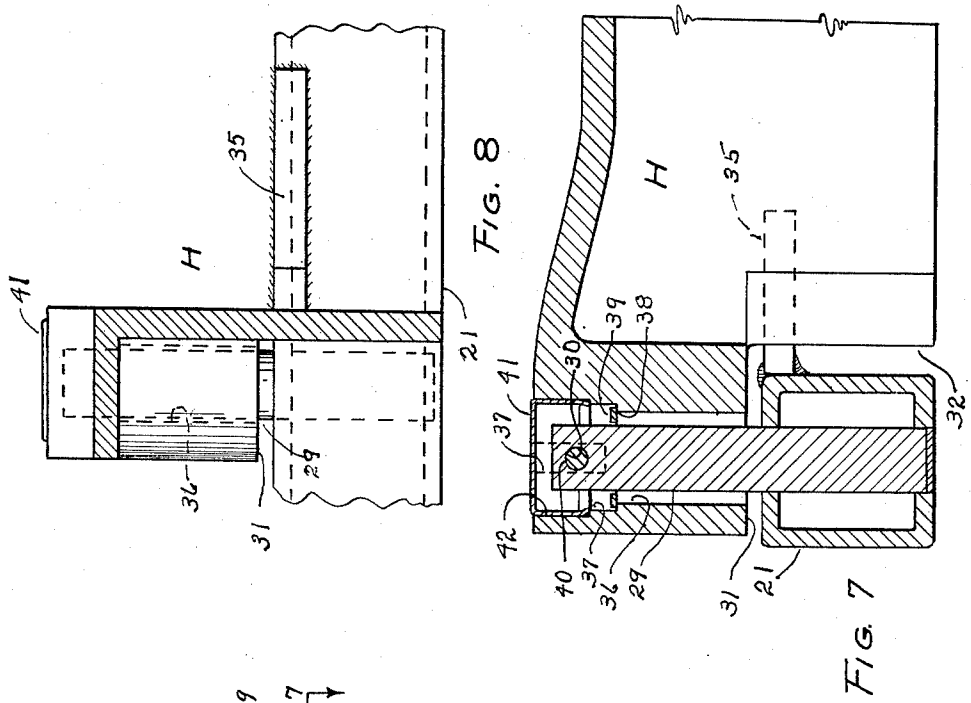


FIG. 8

FIG. 7

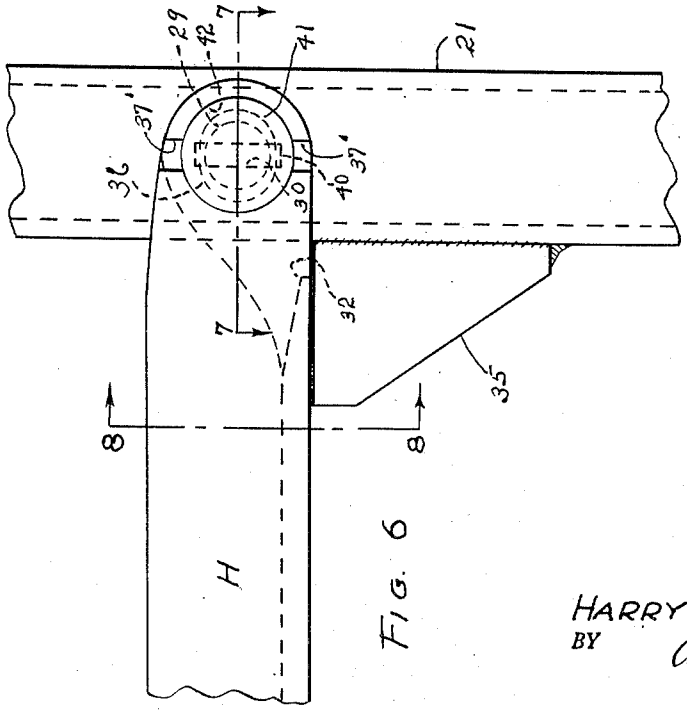


FIG. 6

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UNITED STATES PATENT OFFICE

2,593,340

BARN GUTTER CLEANER

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Application August 26, 1949, Serial No. 112,441

1 Claim. (Cl. 198—224)

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The present invention relates to a barn gutter cleaner which is adapted to be driven preferably by a direct coupled double acting hydraulic ram and arranged to deliver the litter into a trench having a conveyor adapted to convey the litter away from the barn or into a manure spreader.

Generally stated, the present invention contemplates the use of a double acting ram which is supplied preferably by oil pressure from a pump powered by an electric motor or otherwise or by water pressure when the climatic conditions are suitable.

An important object of the present invention is to provide an oscillating gutter bar or tube to which blades are hingedly attached with means, whereby blades rest independently on the bottom of the gutter and having a hinged connection to the gutter bar or tube, with means whereby when the bar moves toward the discharge end of the gutter the blades will be caused automatically to swing to a position at right angles to the bar and whereby when the gutter bar or tube is moved in the other direction the blades will be caused to fold in the opposite direction and toward the bar or tube, with means whereby the blades are automatically stopped in their folding movement at a position whereby when the gutter bar again starts in its movement toward the discharge end of the gutter the blades will be caused to swing outward and at substantially right angle to the bar.

Another important object of the present invention is to move the gutter bar a considerable distance greater than the distance between blades, whereby the blades will by-pass the pile of accumulated litter and stop alongside a clear space so they are free to swing outward when the bar starts again in its forward movement.

Another important object of the present invention is to provide a hinge connection of the blade to the bar having means whereby the contact of the bottom edge of the blade is free to follow unequal surfaces of the bottom of the gutter and without effecting the position of the gutter bar.

In addition to the objects already recited I provide convenient means for hingedly attaching and detaching the blades having means whereby this hinge connection between the bar and blades will be protected against entrance of litter, dirt etc.

A further object of the present invention is to preferably provide means, whereby the gutter extends through the wall of the building and the gutter bar extends a distance from the building, its end having a direct connection to the piston

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of the double acting ram so as to provide as near as possible a direct pull on the end of the gutter bar and also to provide means, whereby when the liquid supply valve is open, the gutter bar will be caused to make full and definite strokes of predetermined length.

The present invention is an improvement over my issued Patent #2,467,988, April 19, 1947, it being the intention to cover by suitable claim, parts and designs not covered by claims in said issued patent.

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 my improved barn gutter cleaner with a transverse gutter and the double acting hydraulic motor positioned on the outside of the barn.

Fig. 2 is a fractional elevational view showing the design as illustrated in Figure 1.

Fig. 3 is a fractional transverse sectional view taken on line 3—3 of Figure 1.

Fig. 4 is a sectional end view of the double acting ram taken on line 4—4 of Figure 1.

Fig. 5 is an end view of the hydraulic ram taken from the left hand end of Figure 1.

Fig. 6 is an enlarged fractional view from the top of the gutter bar and a cleaner blade.

Fig. 7 is a transverse sectional view of the parts as shown in Figure 6 and taken on line 7—7 of Figure 6.

Fig. 8 is a view somewhat similar to Figure 7 but taken on line 8—8 of Figure 6.

As illustrated, the ram or motor is shown as being positioned on the outside of the barn. It will be understood that this ram may be positioned some place along the line of the gutter and in the barn and supported preferably on the floor of the barn with preferably a direct connection to the bar, the ram having preferably a stroke the same as the required stroke of the bar.

For convenience I have designated the barn by reference character A, the barn floor by reference character B and the stall floor by reference character C. The barn gutter is designated by reference character D and the gutter on the outside of the barn for the reception of the litter, is designated by reference character E. This gutter E is generally positioned as shown and having a conveyor F for conveying the litter away from the barn or into a manure spreader. It will be noted that gutter D extends through the wall of the barn and that the hydraulic ram G is posi-

tioned preferably on a foundation on the outside of the barn and adjacent transverse gutter E and for convenience the operating bar of the cleaner is extended to the outer end of the ram as illustrated.

My hydraulic ram G may be of any conventional design comprising a cylinder or tube 10 having heads 11 and 12 and a suitable piston having a piston rod 13 which extends through a stuffing box in head 12, the ram being mounted on brackets 14 and 15, heads 11 and 12 having inlet and outlet connections 16—16 for connection to a conventional reversing valve (not shown) which is operated by the ram as the piston reaches the end of its stroke by means of a rod 17 which is operatively connected to piston 13 as will hereinafter appear.

It will be understood that the reversing valve will be connected to pipes 16 and to any source of hydraulic power and that a return pipe from the reversing valve is connected to the source of hydraulic power, comprising generally a pressure tank and a sump.

A hand operated valve (not shown) must also be used for starting and stopping the motor, therefore the hydraulic ram will reciprocate in opposite directions so long as the hand operated valve is open.

It will be understood that the reversing valve may have its inlet and outlet connections direct to a pump, operated for example by a motor; whereby to operate the ram, all that is necessary is to start the motor and when the gutter has been cleaned, to stop the motor.

I will now describe my barn gutter cleaner and its connection to the hydraulic motor or ram G. Gutter D extends through the wall of the barn as at 20. A bar 21 forms the operating connection between the hydraulic motor and the gutter blades as follows; this bar is positioned in the corner of the gutter as illustrated in Figure 3 and extends to member G having a bracket 24 with an operating connection to piston rod 13 as at 25, this connection having an extension 26 which is operatively connected to rod 17. Thus when piston 13 reciprocates, bar 21 will be reciprocated for the full length of the stroke of the piston. Bar 21 it will be noted, slidably extends through an opening 27 in bracket 15 and also through bracket 14 as at 28. Thus bar 21 will be held in an operating position to lay normally in the corner of the gutter D as illustrated in Figure 3.

It will be understood that gutter D may be any reasonable length, or for example it may be the overall length of all of the stalls that are positioned in a row adjacent the gutter.

I will now describe my novel means for moving the litter from gutter D into gutter E with particular reference to Figures 3, 6, 7 and 8. I provide a number of equally spaced scraper blades H and hinge one end of these blades to bar 21 as follows:

I provide posts 29 which are secured to bar 21 as illustrated having holes 30 in their upper ends. Blades H are formed at their hinged ends as illustrated in Figures 3, 6, 7 and 8 so the enlarged ends extend over bar 21 as at 31 and whereby when the bar and blades are resting on the bottom of the gutter, surface 31 will be a short distance from the bar, the bottom lip of the blades terminating as at 32 and being shaped as shown by dotted lines in Figure 6. I secure stop brackets 35 to bar 21 and position them relative to posts 29 as illustrated in Figure 6. The enlarged ends

of members H have openings 36 which are preferably slightly oblong in shape parallel to the blades, whereby the free end of the blades may move vertically a considerable distance so this movement will cooperate with the space between surface 31 and bar 21 so the blades are free at all times to hug surface 22 of the gutter without interfering with bar 21, but at the same time the blades H will be held in vertical positions. Openings 36 are enlarged as at 37 forming an offset as at 38. I provide a washer 39 which fits freely over posts 29 and is adapted to lie on offset 38, this washer assisting in holding the blades in their vertical positions but leaving them free for movement as just described.

I provide slots 37' through enlarged openings 37 which are extended slightly below holes 30 so a pin or cotter 40 may be inserted in these holes, after which an inverted cap 41 may be pressed into enlarged opening 37 or into a still larger opening 42. Thus cap 41 will prevent pins 40 from moving endwise, and whereby the hinge formed in the head of the blades will be protected against litter and dirt by this cap.

Stops 35 are positioned whereby the blades can swing rearwardly and outwardly at right angles to bar 21 and the inner end of the vertical lip of these blades as illustrated in Figure 6 by dotted lines will permit the blades to swing forward but preferably stop this movement before the blades are parallel to the bar.

Thus the blades will be caused to move outwardly and rearwardly on the hinge when the bar moves toward the outlet of the gutter and when the bar moves in the other direction blades H will be caused to fold forwardly and inwardly and by-pass the pile of litter just left by the next rearward blade. Thus as the bar moves rearwardly and forwardly, each blade will be moved by its frictional contact with surface 22, the stroke of the bar being long enough so when it is at its rearmost position, the free end of the blade will be a short distance past the pile of litter just by-passed.

It will be seen that the bar must move forward a distance greater than the length of the blades before they contact the pile of litter just by-passed.

Clearly blades H will operate automatically to form the litter in bunches or bundles and will move these bunches or bundles forward toward the outlet end of the barn gutter in successive stages and the bundles of litter will finally be discharged into the transverse gutter for delivery to a point a distance from the barn or into a manure spreader.

It will be seen that applicant's means for clearing the barn gutter of litter is very simple and efficient; that the blades will hug the bottom of the gutter at all times and that they may be easily removed from the bar and replaced and that the blade hinge will be protected against foreign matter.

Having thus shown and described my invention, I claim:

A barn gutter cleaner of the character described comprising in combination, a gutter having bottom and side walls adapted for the reception of litter, a bar positioned on the bottom of said gutter and in one corner thereof, blades having one end vertically hinged on said bar and in spaced relation, a two stroke hydraulic ram adapted to provide means for reciprocating said bar a distance considerably greater than the distance between hinges, said hinges comprising

openings in the end of the blades and vertical posts secured to the bar adapted for the free reception of said openings having means whereby the blades will yieldingly rest on the bottom of the gutter, stops secured to said bar adapted to limit the rearward swing of the blades to substantially right angle to the bar, whereby when the bar is moved to its rearmost position, the blades will be adjacent a cleared portion of the gutter, and when the bar moves forward, the blades will automatically swing outward to a position for engaging the pile of litter by-passed during the rearward movement of the bar, the upper end of said opening being enlarged forming an offset, a free washer on said post adapted to lay on said offset, a hole in the top of said posts having a pin, slots through the upper end of said offset, whereby the pin may be inserted into said opening, an inverted cup-shaped

cap adapted to be snugly positioned in the offset opening and extend below the bottom of said slots, to thereby hold the pin in position and prevent litter and dirt from getting into said hinge, said pins being positioned to provide a limited vertical movement of the blade relative to the bar.

HARRY O. PETRASKE.

REFERENCES CITED

The following references are of record in the file of this patent:

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