May 14, 1929. E. W. SAIBERLICH ET AL 1,713,094

ENSILAGE CUTTER

Filed Oct. 30, 1926 2 Sheets-Sheet 1

Fig. 1.

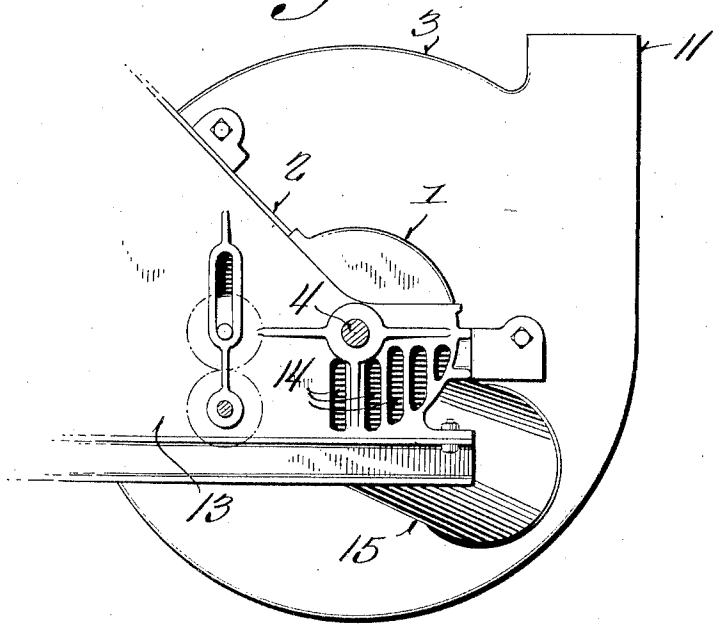
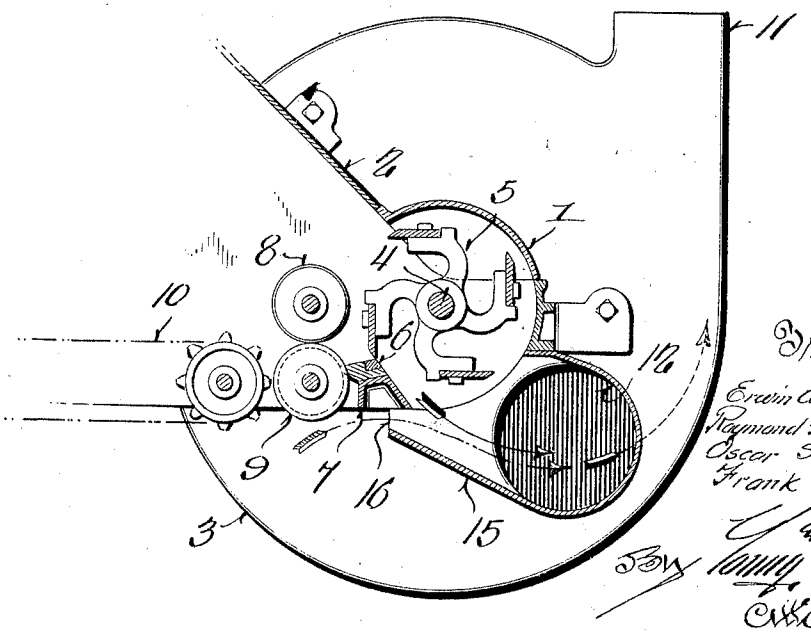


Fig. 2.



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Fig. 3.

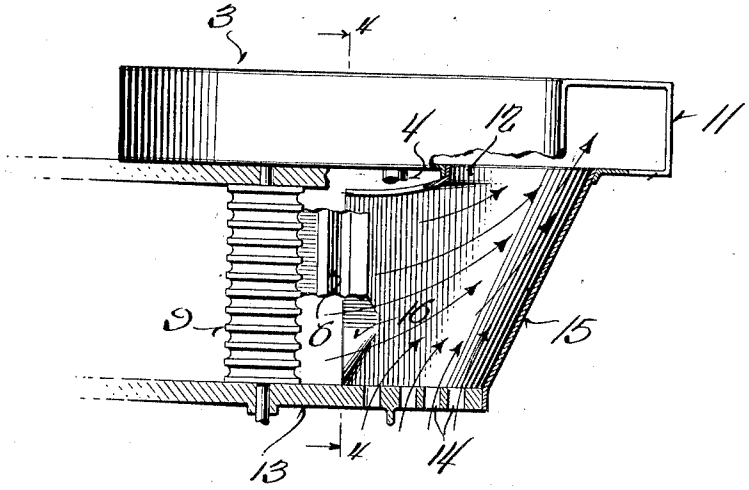
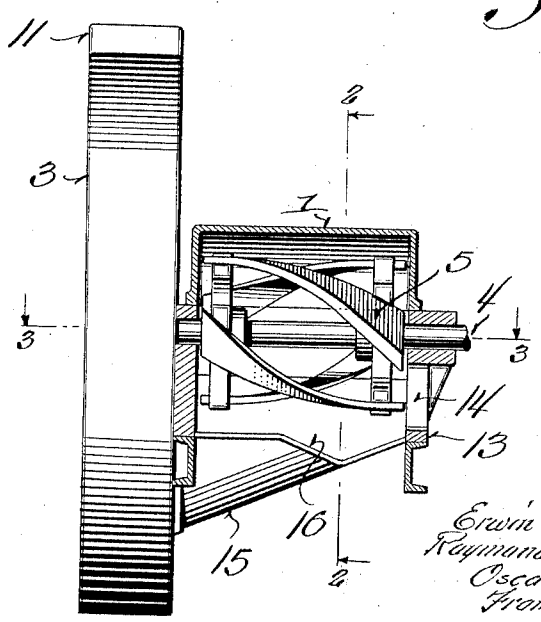


Fig. 4.



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UNITED STATES PATENT OFFICE.

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ENSILAGE CUTTER.

Application filed October 30, 1926. Serial No. 145,222.

This invention relates to ensilage machines.

In ensilage machines as heretofore constructed, it has been the usual practice to have an indirect drive for the blower and in the few instances in which the blower is mounted upon the cutter shaft it has been the usual practice to provide an auxiliary feed or auger for passing the material to the blower.

Further these machines have either required an excessive amount of power or else have failed to give full satisfaction due to the fact that the feed spout frequently clogged.

Further than this in certain types of machines the blower has been so constructed that it produced a number of eddy air currents which caused whirling and unnecessarily consumed power.

This invention is designed to overcome the defects noted above and objects of such invention are to provide a novel form of ensilage machine in which the blower and cutter are directly connected and in which a novel form of feed spout is associated with these two devices and is very short and so constructed that no auxiliary feed is needed and yet in which the possibility of clogging is wholly avoided together with any unnecessary eddy air currents.

Further objects are to provide a novel form of ensilage machine in which a cylinder type of cutter is directly connected to the blower and in which the feed spout is so constructed and associated with these parts that a film of air or layer of air travels inwardly beneath the cut material, and in addition a current of air travels directly through the feed spout, the feed spout itself being relatively small at all points and extremely short, such feed spout opening into the blower at a point intermediate its center and periphery and below the delivery chute.

This invention has for its further object the provision of a very shallow feed spout immediately under the knives and constructed to take air at such point and to converge to a substantially circular opening in the blower casing so that the feed spout has a relatively small cross section at all points and a relatively small opening into the blower or fan casing, thus causing the feed to travel with the least deflection from its natural course.

Further objects are to provide an ensilage machine which is highly efficient and which is of eminently practical construction.

An embodiment of the invention is shown in the accompanying drawings, in which:—

Figure 1 is a side view of the machine.

Figure 2 is a sectional view through the blower, such view corresponding to a section on the line 2—2 of Figure 4.

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

Figure 4 is a sectional view on the line 4—4 of Figure 3, the blower or fan casing being shown in full.

Referring to the drawings, it will be seen that the cutter casing 1 is mounted adjacent the forward end of the main casing 2. This cutter casing is mounted in axial alignment with the blower or fan casing 3 and a single drive shaft 4 extends through the casings. This drive shaft carries the rotary cutter 5 and the fan or blower. The stationary shear bar 6 is indicated in Figure 2 and is carried by a shear bar support 7. The material is fed to the cutter by means of a pair of rollers consisting of an upper roller 8 and a lower fluted roller 9. Any suitable conveyor may be provided for delivering the material to these feed rollers. For example, the endless chain 10 is indicated in Figure 2.

The fan casing or blower casing 3 is provided with a vertical discharge spout 11 and with a circular inlet opening 12 as may be seen particularly from Figure 2. This inlet opening 12 is relatively small and is located below the horizontal diameter of the fan casing and slightly past the vertical diameter through said casing.

Also it is to be noted that this entrance opening is located intermediate the center of the casing and its periphery.

It is to be noted that the outer frame or casing member 13 of the main casing extends outside of the end of the cylindrical cutter and is provided with a plurality of air inlet openings 14 as shown most clearly in Figures 1 and 3. These air inlet openings are located below the horizontal diameter of the cutter.

A very short feed spout 15 extends from the member 13 to the fan casing and converges to the cylindrical opening 12. This feed spout slants downwardly and forwardly as may be seen from the drawings. It is provided with an opening 16 below the cutter, such opening being preferably substantially triangular adjacent its outer side and extending part way across beneath the cutter

particularly beneath the shear bar support 7 as may be seen from Figures 2, 3 and 4.

The fluted roller 9 holds the material, while it is being fed, from lateral displacement and passes it across the shear bar to the rotary cutter. The rotary cutter cuts the material into small lengths and the cut material as it is drawn from the cutter, travels in its natural path from said cutter and is swept along by the inwardly passing streams of air. For example, it travels upon a lower layer of air which enters through the opening 16 and is further urged along by means of a stream of air which enters through the openings 14. The cut material therefore has an extremely short distance to travel and its natural direction of travel is utilized by causing the air streams to travel in the manner described above and indicated by the arrows in the drawings. The cut material therefore cannot under any possibility clog the feed spout but passes through this very short feed spout at a high rate of speed directly into the blower casing. Unnecessary and energy wasting air eddy currents are avoided by this construction and the air is admitted and directed in a manner to conserve the power consumption and to insure against clogging. The small cross section of the feed spout and the very short distances of travel of the cut material insures a very rapid travel of such material and prevents overloading of the fan blades, and as stated above, prevents clogging of the feed spout. Further it is to be noted that the cut material is delivered to the fan at a point between its center and periphery and relatively close to the delivery chute. The fan readily picks up the cut material carried by the air and forces it through the delivery chute.

It will be seen further that a novel form of ensilage machine has been provided by this invention which does not require an auxiliary food or auger between the cutter and the blower or fan and which has a direct connected cylindrical cutter and fan.

It will be seen further that the air currents so enter the novel form of feed spout that clogging of the spout or overloading of the fan is wholly avoided.

It will be seen also that the air currents are so guided or controlled due to the construction described in detail above that power consuming and wasteful eddy currents are wholly avoided.

Further, an excessive speed of the fan is not necessary with this device due to the cooperation between the cutter, the feed spout, and the fan.

Although the invention has been described in considerable detail, such description is intended as illustrative rather than limiting as the invention may be variously embodied and as the scope of such invention is to be determined as claimed.

We claim:—

1. An ensilage machine comprising a cylindrical cutter, a rotary fan having a casing provided with a delivery chute and having an entrance opening intermediate its periphery and center, a housing for said cutter, and a short feed spout leading from the under forward side of said cutter and converging to said entrance opening, said machine having an entrance opening adjacent the end of the spout and below the cutter and extending across said cutter.

2. An ensilage machine comprising a cylindrical cutter, a rotary fan mounted upon said cutter shaft and having a casing provided with a discharge chute and an entrance opening, and a short feed spout extending from the lower forward side of said cutter laterally downwardly and forwardly to said entrance opening, said spout having an air entrance opening below said cutter and extending across said cutter and paralleling the axis of said cutter, whereby the cut material travels generally in its natural direction as it leaves the cutter and is supported by a lower layer of rapidly travelling air while it passes to the entrance opening.

3. An ensilage machine comprising a cutter, a housing for said cutter, a rotary fan, a casing for said fan having an entrance opening and a discharge chute, a short shallow closed feed trough leading from the under forward side of said cutter to said entrance opening and having an air inlet opening below the cutter and extending laterally completely across the cutter and approximately paralleling the axis of said cutter.

4. An ensilage machine comprising a cylindrical cutter and a direct connected rotary fan, a housing for said cutter, a casing for said fan having an entrance opening located in its side towards the cutter and towards the front lower portion of said casing and intermediate its center and periphery, a feed spout extending from below the cutter forwardly and downwardly and converging to said entrance opening, said machine having an air entrance opening adjacent the outer end of said spout and having an air entrance opening below said cutter and extending across the cutter, whereby the cut material is floated by an air stream entering through said last mentioned opening and is driven through said spout by an air stream from the end opening.

In testimony that we claim the foregoing we have hereunto set our hands at Appleton, in the county of Outagamie and State of Wisconsin.

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