J. S. SPANGLER.

ENSILAGE CUTTER.

APPLICATION FILED JULY 20, 1914.

1,121,684.

Patented Dec. 22, 1914.

2 SHEETS—SHEET 1.

Fig. 2.

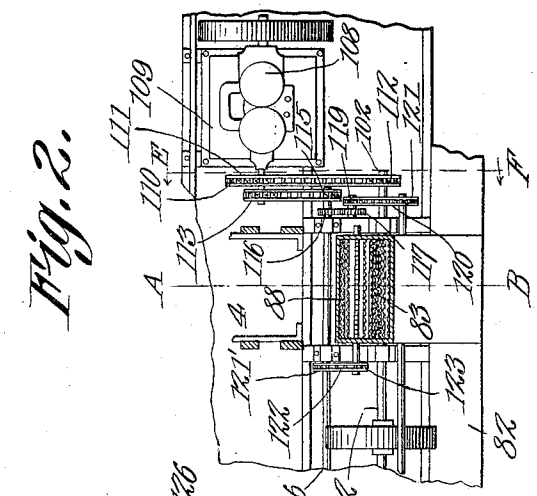
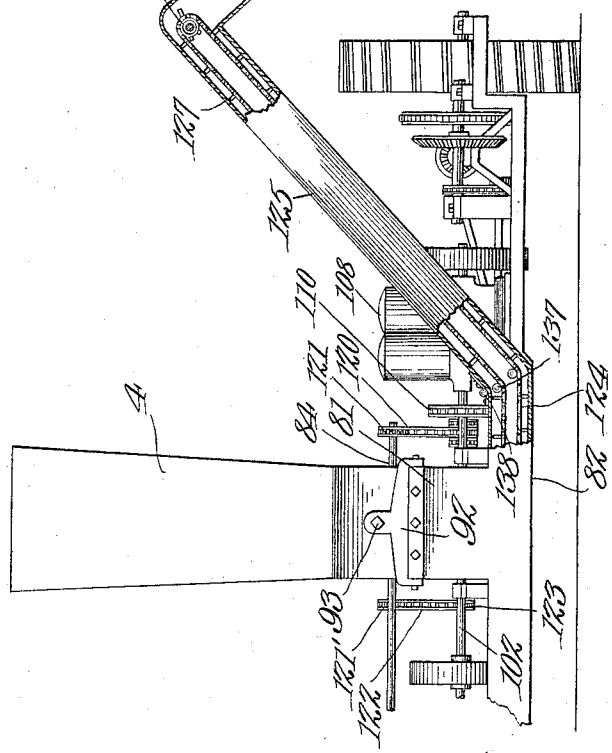


Fig. 1.



Witnesses

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2 SHEETS—SHEET 2.

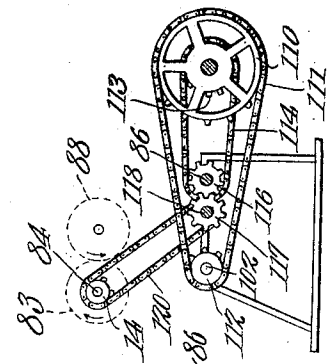


Fig. 4.

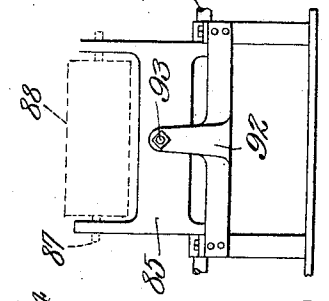


Fig. 6.

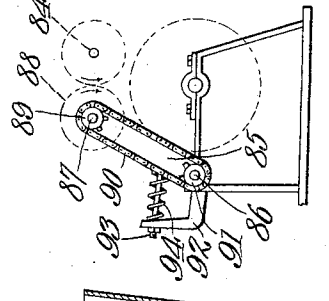


Fig. 5.

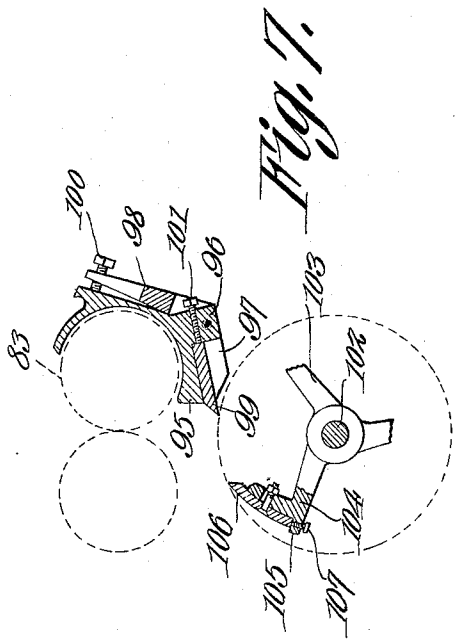


Fig. 7.

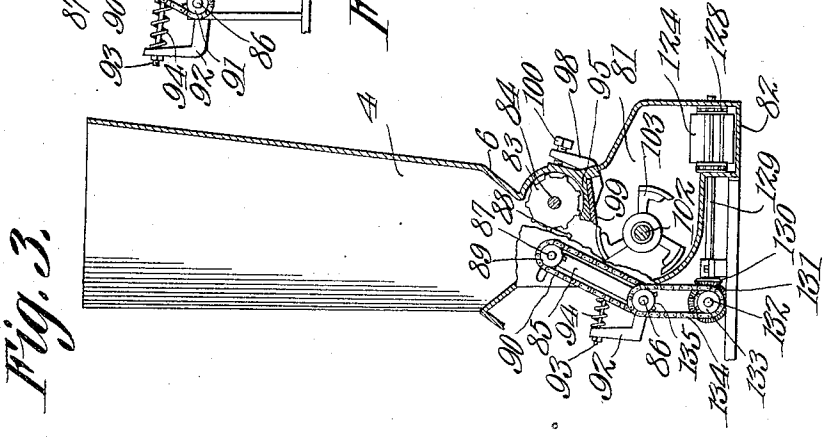


Fig. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

JAMES S. SPANGLER, OF CLINTON, MISSOURI.

ENSILAGE-CUTTER.

1,121,684. Specification of Letters Patent. Patented Dec. 22, 1914.

Application filed July 20, 1914. Serial No. 852,038.

To all whom it may concern:

Be it known that I, JAMES S. SPANGLER, a citizen of the United States, residing at Clinton, in the county of Henry and State of Missouri, have invented a new and useful Ensilage-Cutter, of which the following is a specification.

This invention relates to machines especially designed for cutting ensilage and it constitutes a division of an application filed in the United States Patent Office on January 20, 1914, Serial No. 813,254.

One of the objects of the invention is to provide a novel arrangement of adjustable fixed and movable cutting elements whereby the ensilage supplied thereto is quickly reduced to a finely comminuted state.

Another object is to provide simple means whereby material is fed to the cutting members.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is an elevation of an ensilage cutter and elevator embodying the present improvements. Fig. 2 is a plan view, parts being broken away. Fig. 3 is a section on line A—B Fig. 2, parts being broken away. Fig. 4 is a section on line E—F Fig. 5. Fig. 5 is a side elevation of the mechanism employed for transmitting motion to the movable feed roll. Fig. 6 is a front elevation of the structure shown in Fig. 5. Fig. 7 is an enlarged section through a portion of the ensilage cutter.

Referring to the figures by characters of reference 4 designates a receiver open at its top and front and having a hopper-like bottom 6. A compartment 81 is arranged under the receiver 4 and the bottom of this compartment opens into a transversely extending trough 82. Fitted within the upper portion of the compartment 81 and close to the hopper-like bottom 6 of the receiver is a corrugated feed roll 83 secured to a revoluble shaft 84. A supporting plate 85 is pivotally mounted at its lower end upon a transverse shaft 86 extending adjacent one wall of the compartment 81 and journaled in the upper portion of this plate is the shaft 87 of a movable feed roll 88. A sprocket 89 is secured to the shaft 87 and is engaged by an endless chain 90 receiving motion from a sprocket 91 secured to the shaft 86. A bracket 92 is fixedly connected to the wall of the compartment 81 and slidably engaging this bracket is a rod 93 extending from the plate 85 and having a spring 94 thereon which bears against the bracket and against the plate and serves to press the roll 88 yieldingly against the roll 83, while at the same time permitting said roll 88 to move away from the roll 83.

A structure preferably in the form of a concave 95 is extended under the feed roll 83 and has a depending ear 96 to which are pivotally connected jaws 97 having an arm 98 extending therefrom and outside of the compartment 81. A cutting blade 99 is clamped between the jaws 97 and the bottom of the concave 95 and the jaws are held tightly against this blade by a set screw 100 which extends through the arm 98 and bears against the wall of the compartment 81, as shown particularly in Fig. 7. An adjusting screw 101 extends through the ear 96 and bears against the blade 99 so that, by means of this screw, the said blade can be shifted beyond the concave 95 to any extent desired. As shown in the drawings, more than one of these screws 101 can be used.

It will be noted that the concave fits close to the adjacent feed roll and has one end so disposed as to constitute a combined guarding and guiding portion whereby the material when moving away from the feeding rolls is guided by the end of the concave to the cutting blade 99. If, however, any portion of the material should adhere to the feed roll 83 which coöperates with the concave, the said guarding and guiding portion of the concave would tend to strip said adhering material from the feed roll. It will be noted furthermore that the concave extends continuously along the periphery of the feed roll through approximately one-half the circumference thereof. This is advantageous for the reason that should material in any manner pass the combined guiding and guarding portion of the concave, it would be prevented from being thrown outwardly by the rotating roll 83 and would, instead, be guided so as to pass

over the roll and down into position between the two feed rolls so that the proper feeding thereof to the knife is insured.

Coöperating with the blade 99 is a revoluble cutter including a shaft 102 having arms 103 each of which is provided with a head 104, there being an outstanding rib 105 along the back edge of each head. An arcuate cutting blade 106 is bolted or otherwise secured upon each head and these blades are eccentrically arranged with relation to the shaft 102, their advancing or cutting edges traveling close to the free edge of the blade 99. Adjusting screws 107 may be mounted in the ribs 105 and may be used for shifting the blades 106 upon the heads 104.

A motor 108 may be supported by a platform 109 on the frame 1, this motor transmitting motion, through a sprocket 110, and a chain 111, to a sprocket 112 secured to the shaft 102 of the revoluble cutter. Another sprocket 113 is driven by the motor and transmits motion through a chain 114 to a sprocket 115 secured to the shaft 86. A gear 116 rotates with shaft 86 and meshes with a gear 117 secured to a short shaft 118 on which is secured a sprocket 119. Motion is transmitted from this sprocket through a chain 120 to a sprocket 121 secured to the shaft 84 of the roll 83. A sprocket 121′ is secured to shaft 86 adjacent each of the compartments 81 and transmits motion through a chain 122 to a sprocket 123 secured to the shaft 87 of roll 88.

From the foregoing it will be seen that when the motor is operated, motion will be transmitted therefrom through the various chains, sprockets and gears to the rolls 83 and 88 so that, when the stalks are deposited in vertical or substantially vertical positions upon these rolls, they will be fed downwardly to the coöperating fixed and movable cutters and thus quickly reduced to a comminuted state, the particles being directed downwardly into the compartment 81. As the blades become worn they can be readily adjusted by the means described, as will be obvious.

For the purpose of removing the ensilage produced, an endless conveyer 124 is mounted within the trough 82 and extends through an upwardly and laterally inclined casing 125 to a discharge spout 126. This elevator is in the form of an endless belt made up of chains connected by cross cleats 127. The said chains engage sprockets 128 secured to a shaft 129 journaled within the sides of the trough at one end thereof. A gear 130 rotates with shaft 129 and meshes with a gear 131 secured to a shaft 132. This shaft has a sprocket 133 which receives motion, through a chain 134, from a sprocket 135 secured to the shaft 86. Sprockets 136 are supported in the upper end portion of the casing 125 and are engaged by the chains of the conveyer. Any suitable means, such as idler sprockets 137, can be provided for engaging the chains of the conveyer where the upper flights thereof pass into the casing 125 from trough 82. Furthermore the casing 125 can be hingedly connected to the trough, as shown at 138 so that, when the conveyer is not being used, the casing 125 can be folded upwardly out of the way. It will be understood of course that when the ensilage is deposited upon the conveyer it will be carried longitudinally in the trough 82 and thence into casing 125 and finally deposited into the outlet spout 126 from which it can be received by a wagon alongside the machine.

What is claimed is:—

1. In an ensilage cutter, the combination with a concave having angularly disposed faces, and a rotary cutter, of a blade, an angular clamping member supported by the concave and having one end portion coöperating with one of the faces of the concave to clamp the blade against movement, means carried by the other end portion of said clamping member and coöperating with another face of the concave for holding the clamping member in gripping position, and means for adjusting said blade between the clamping member and the concave and relative to the path of movement of the rotating cutter.

2. In an ensilage cutting machine, the combination with a cylindrical feeding means, of a concave member extending partly around said feeding means to direct under sized material around and over said feeding means, said concave member having one end constituting a guarding and guiding portion to prevent over sized material from entering between the feeding means and the concave member and to guide material below the said member, said concave member having a cutter seat on the outer under surface of said concave member contiguous to the guarding and guiding end thereof, clamping means mounted upon the exterior convex portion of said concave member and projecting over said seat, and means operating on said exterior portion for moving said clamping member to clamp a cutter in said cutter seat.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JAMES S. SPANGLER.

Witnesses
JOHN A. GILBREATH,
ARTHUR T. DUNCAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."