Aug. 27, 1929. F. J. HALLER 1,726,435

COMMINUTING MACHINE

Filed April 12, 1928

Fig. 1.

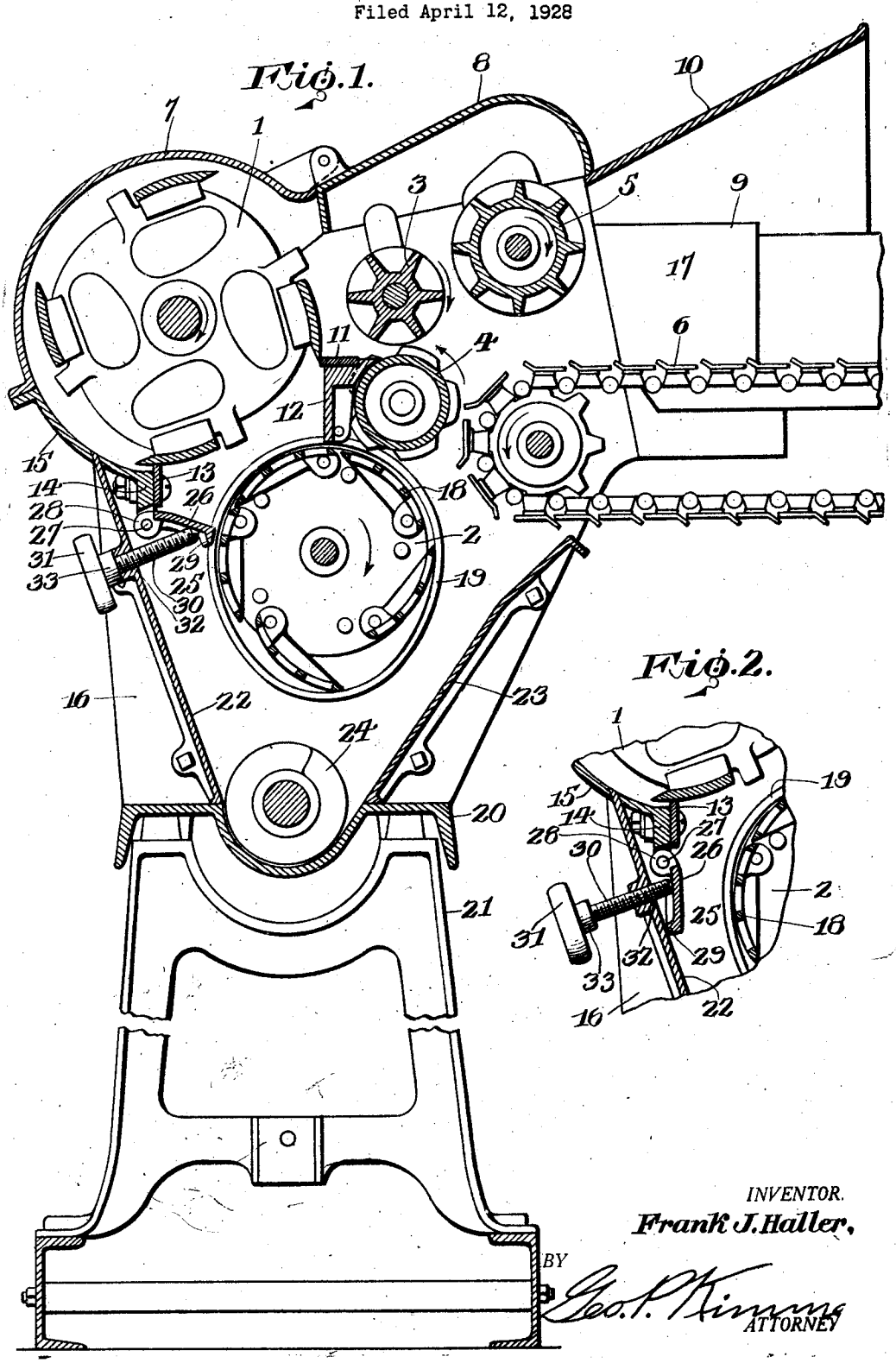


Fig. 2.

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COMMINUTING MACHINE.

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This invention relates to comminuting machines for rapidly reducing alfalfa and the like to form a stock feed and of that type including a comminuting head and a grading cylinder or screen for the passage of the finer particles of the feed, and the invention has for its object to provide, in a manner as hereinafter set forth, a machine of the class referred to having means to permit of the passage of coarser particles of the feed to a point of discharge when it is not desired to have a fine ration, as would be had if the fine particles of the feed alone have passed to the point of discharge.

A further object of the invention is to provide, in a manner as hereinafter set forth, a machine of the class referred to including adjustable means for permitting of the passage of coarser particles of feed to a point of discharge when desired.

A further object of the invention is to provide, in a manner as hereinafter set forth, a machine of the class referred to including means in the form of an adjustable by-pass for increasing the capacity of the machine.

A further object of the invention is to provide, in a manner as hereinafter set forth, a machine of the class referred to with an adjustable by-pass for the feed for use when the farmer does not care to have as fine a ration as would be obtained providing it was run all through the cylinder or screen and further whereby the capacity of the machine is increased when the by-pass is open.

Further objects of the invention are to provide, in a manner as hereinafter set forth, an adjustable by-pass for use in comminuting machines of the class referred to and which is simple in its construction and arrangement, strong, durable, thoroughly efficient in its use, readily installed in the machine, conveniently opened and closed, as well as adjustable, and comparatively inexpensive to set up.

With the foregoing and other objects in view the invention consists of the novel construction, combination and arrangement of parts as hereinafter more specifically described, and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which fall within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:

Figure 1 is a vertical sectional view of a comminuting machine, of that type including a grading cylinder and further illustrating an adjustable by-pass, in accordance with this invention, positioned relative to the comminuting head and grading cylinder and with the by-pass closed.

Figure 2 is a fragmentary view in section illustrating the by-pass open.

An adjustable by-pass, in accordance with this invention, is shown as installed in a comminuting machine of that type illustrated by Letters Patent 1,190,499, July 11, 1916, in which a rotatable grading cylinder for the passage of the finer particles of the feed forms a part thereof, but it is to be understood that an adjustable by-pass, in accordance with this invention, may be installed in any type of comminuting machine for which the by-pass is found applicable and whether the grader is in the form of a rotatable cylinder or stationary screen.

It is thought unnecessary to specifically describe the elements of the machine, as such specific details can be ascertained by reference to Letters Patent aforesaid, and such elements will be referred to generally and in this connection 1 indicates a rotatable comminuting element, 2 the rotatable grading cylinder or sifter arranged below the element 1, 3, 4 center and lower feed rolls respectively arranged adjacent to the element 1 and cylinder 2; 5 upper feed roll, 6 feeding means for stock, 7 cover for the element 1; 8 covers for rolls 3, 5; 9 feed throat, 10 cover for throat 9, 11 upper ledger plate, 12 upper ledger plate holder, 13 lower ledger plate, 14 lower ledger plate holder, 15 lower section of hood 7, 16 main frame or housing, 17 feed throat side, 18 perforated, pivoted segmental sections of the cylinder 2; 19 guide for controlling the sections 18 of cylinder 2; 20 main frame, 21 support for frame 20; 22 front tie bar plate, 23 rear tie bar plate and 24 discharge conveyor or worm arranged in the top of frame 20 and below the lower ends of plates 22, 23. The plates 22, 23 are disposed at opposite inclinations with respect to each other and between the upper portions of the plates 22, 23, as well as spaced therefrom is the guide 19.

It will be stated that two guides are employed, one at each end of the cylinder 2. The foregoing elements are illustrated so that the adaptation of an adjustable by-pass in accordance with this invention and for the purpose referred to can be shown in co-operative relation with respect to the comminuting element 1 and the grading cylinder 2.

As illustrated the cylinder 2 is arranged a substantial distance below and spaced from the comminuting element 1 and said cylinder 2 is further spaced from the front plate 22 whereby a passage 25 is provided normally closed by a pivoted plate 26 carried by the lower ledger plate holder 14. The plate 26 is pivoted at its outer side, to the plate 14, as at 27. The plate 26 is provided on its outer side with apertured ears 28, only one of which is shown and through which extends the pivot 27, the latter also extending through or connected with the bottom of the plate 14. The plate 26 is of a length substantially the same as the length of the element 1 and cylinder 2 and said plate 26 constitutes a gate for closing the passage 25 and will be hereinafter termed a gate. The gate at each end and at its inner side is formed with a depending flange as indicated at 29. The width of the gate 26 is such that when it is in a position to close the passage 25 it will extend into close proximity to and between the guides 19.

The opening movement of the gate 26 is adjusted, and the means for adjusting the gate 26 also provides for not only retaining it in adjusted position, but also retaining the gate 26 in closed position for shutting off communication between the upper portion of the passage 25 and the lower portion thereof. The means coacting with the gate 26 for the purpose of retaining it in closed position as well as in adjusted position, consists of a screw 30 having its inner end riding against the lower face of the gate 26. The outer end of the screw 30 is provided with an enlarged head 31 to provide for the convenient shifting of the screw. The plate 22 is formed with an opening 32 having a threaded wall with which engages the screw 30. The plate 22 is also provided with a boss on its outer face and adapted to be engaged by the reduced inner part 33 of the head 31.

When the gate 26 is in closed position the comminuted material will be caused to pass solely through the cylinder 2, but the comminuted material must be of such size as to pass through the openings in the sections 18. If it be desired to permit of the discharge of the coarser feed which cannot pass through the sections 18, the gate 26 is adjusted to the desired extent to open the passage 25 whereby the said coarse material can pass between the gate and the cylinder 2 to the point of discharge which is the conveyor or worm 24.

The gate 26, when adjusted in position to close the passage 25, as illustrated in Figure 1, is slightly inclined in a downward direction from its pivoted end to its free end, and as the screw 30 is withdrawn from the passage 25 by the rotation of the screw, the gate 26 is actuated by gravity in the same direction as the direction of travel of the feed particles through the passage. By only partially withdrawing the screw 30 from the passage 25, the gate 26 may be adjusted at the desired inclination to close any predetermined portion of the passage.

In some instances the farmer does not desire a ration formed of the finest particles of the feed, that is to say those particles which pass through the sections 18 of the cylinder and if such be the case the gate 26 is opened to the desired extent so that the coarser particles, not passing through the cylinder 2, will be permitted to pass between the gate 26 and the cylinder 2 to the conveyor or worm 24 where the coarser particles would mix with those finer particles which have passed through the cylinder 2, or if none of the finer particles are at the conveyor or worm 24, then there will be no admixture of the coarser particles with the finer particles. The opening of the gate 26 increases the capacity of the machine.

The gate 26, in connection with the adjusting screw 30 and passage 25 provides a by-pass whereby the machine can be controlled so that the coarser particles of the feed will be permitted to pass to a point of discharge. The gate 26 can be so adjusted that finer particles and coarser particles can be simultaneously supplied to the conveyor or worm 24, the finest particles passing through the cylinder 2 and the other particles between the gate 26 and the cylinder 2.

It is thought the many advantages of a comminuting machine of the class referred to provided with a by-pass, in accordance with this invention, can be readily understood, and although the preferred embodiment of the invention is as illustrated and described, yet it is to be understood that changes in the details of construction can be had which will fall within the scope of the invention as claimed.

What I claim is:

1. In a machine for comminuting feed and of that type including a comminuting element and a grader means arranged adjacent thereto to provide for the passage of the finer particles of the feed to a point of discharge, the combination therewith of means to provide a by-pass for the simultaneous passage of the coarser particles of feed to the point of discharge and located adjacent said grader means, and an adjustable gate for normally closing said by-pass and for controlling the flow of the coarser particles of feed through said by-pass.

2. In a machine for comminuting feed and

of that type including a comminuting element and a grader means arranged adjacent thereto to provide for the passage of the finer particles of the feed to a point of discharge, the combination therewith of means to provide a by-pass for the simultaneous passage of the coarser particles of feed to the point of discharge, a hinged gate, and adjustable means for engaging the gate for shifting it to close said by-pass and further for adjusting it to control the flow of the coarser particles of the feed through said by-pass to the point of discharge.

3. In a machine for comminuting feed, a grader means for passing the finer particles of feed to a point of discharge, means to provide a by-pass for the simultaneous passage of the coarser particles of the feed to the point of discharge, a hinged gate, and adjustable means for shifting said gate to close said passage and further for adjusting the position of said gate for controlling the passage of said coarser particles to the point of discharge.

4. In a machine for comminuting feed, a comminuting element, a discharge element, a grader element for separating the finer particles of feed and passing the same from said comminuting element to said discharge element, and means for simultaneously passing coarser particles of feed from said comminuting element to said discharge element, said means including means to provide a passageway between said comminuting and discharge elements, and an adjustable gate for closing a predetermined portion of said passageway.

5. In a machine for comminuting feed, a comminuting element, a discharge element, a grader element for separating the finer particles of feed and passing the same from said comminuting element to said discharge element, and means for simultaneously passing coarser particles of feed from said comminuting element to said discharge element, said means including means to provide a passageway between said comminuting and discharge elements, an adjustable gate for closing a predetermined portion of said passageway, said gate operating from closed to open position by gravity in the direction of travel of the coarser feed particles through said passageway.

In testimony whereof, I affix my signature hereto.

FRANK J. HALLER.