March 16, 1937. C. C. GRAY ET AL 2,073,792

FEED MECHANISM

Original Filed May 24, 1930

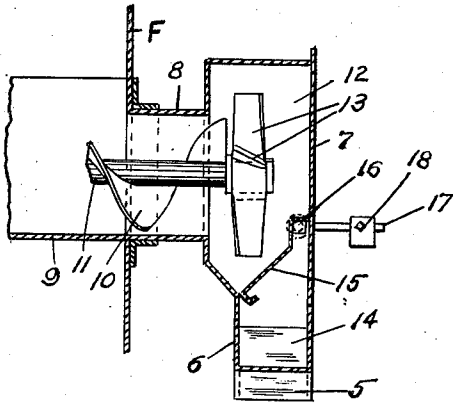


Fig. 3.

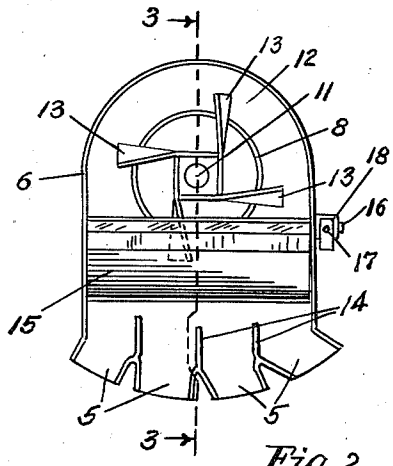


Fig. 2

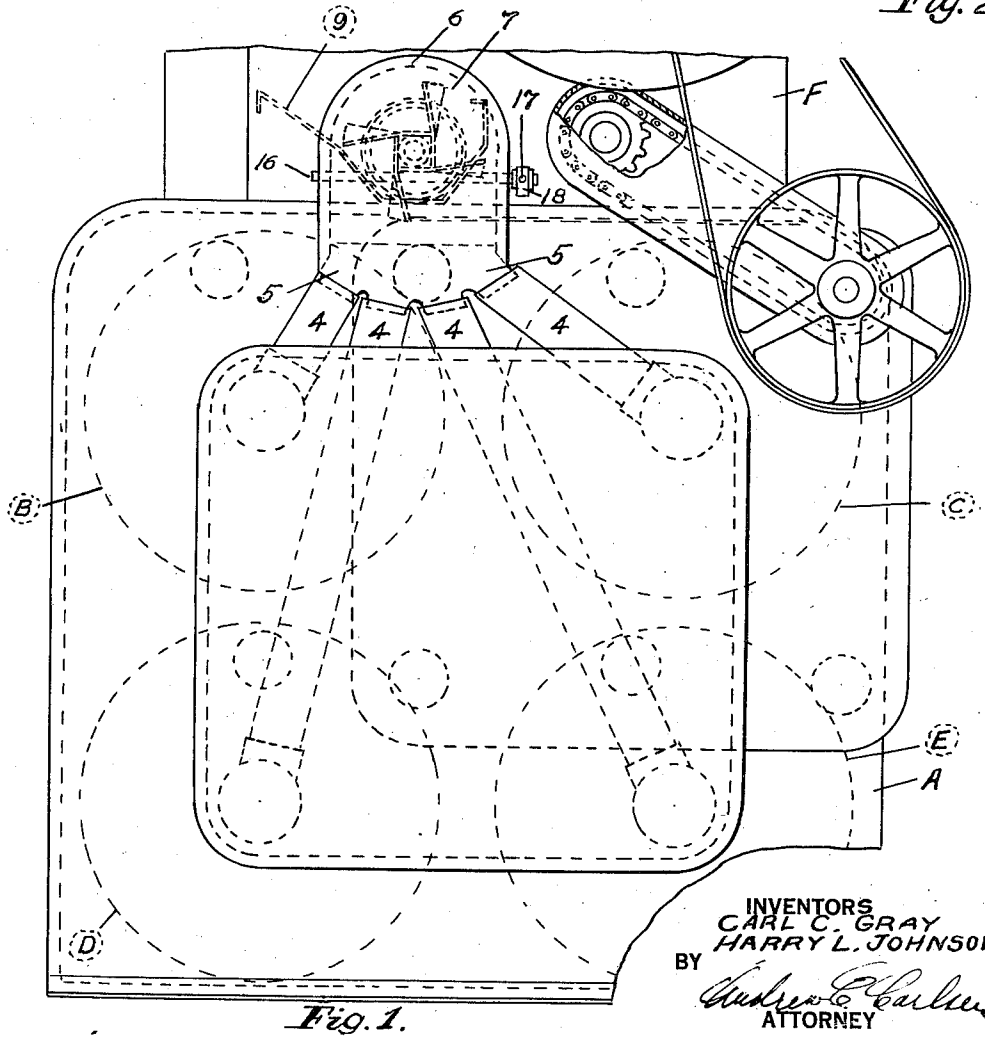


Fig. 1.

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FEED MECHANISM

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Original application May 24, 1930, Serial No. 455,233. Divided and this application October 24, 1932, Serial No. 639,284

5 Claims. (Cl. 83—44)

This invention relates to grain feeding and distributing mechanism for scalping, cleaning, separating or other grain treating machines, and the primary object is to provide such a mechanism that is particularly adapted for the purpose of effecting an even distribution of grain from one source of supply, such as a primary treating unit to two or more other units which are to individually effect secondary treatment at spaced locations. A further object is to provide means in conjunction with said distributing mechanism for imparting a mixing action to the grain prior to distribution thereof, to completely offset or destroy any partial separation that may have taken place in the grain body as it approaches the point of distribution, thus insuring the provision of identical classes of grain materials to the secondary treating mechanisms. These and other more detailed and specific objects will be disclosed in the course of the following specification, reference being had to the accompanying drawing, wherein:

Fig. 1 is an end view of a grain treating machine showing our improved feed and distributor mechanism applied thereto, fractional portions of the machine being broken away to economize on space.

Fig. 2 is an enlarged detail elevation of our improved unit, removed from the machine and with the front cover plate taken off.

Fig. 3 is a sectional elevation on the line 3—3 in Fig. 2.

This application is a division of our co-pending application Ser. No. 455,233, filed May 24th, 1930, now Patent Number 1,966,443, issued July 17, 1934 for Grain scalping and aspirating machine, and it may here be noted that the present Fig. 1, corresponds generally to the structure shown in Fig. 1 of the drawings in the parent application except for the broken out portions which are not here deemed essential to a full understanding of the present invention.

Referring to the machine parts by specific reference characters, A designates a main frame and housing of a grain treating machine having a plurality of separator units or cylinders B, C, D, and E, indicated by dotted lines, and these may be of any suitable design or character, although they are preferably identical as to size and structural features with a result that it is highly desirable that they be simultaneously provided with supplies of material to be treated that will be similar as to volume and nature so that they may function with similar effects and results. The units B—E are supplied by pipes or tubes 4 which communicate, respectively, with spouts 5 of a housing 6.

This housing 6 has a front cover plate 7, and at its rear, is provided with a tubular section 8 that supportably connects it to a larger housing or casing F which encloses the primary treating mechanisms, and a full disclosure of which is presented in the aforementioned parent application Ser. No. 455,233. It is sufficient here to note that the primary treating mechanism incorporates a trough 9 which receives the initially treated grain, and a feed screw 10, mounted on a shaft 11, for impelling or feeding the grain in the trough therefrom and out through the tubular member 8 and into the receiving chamber 12 defined by the upper part of the housing 6. The feed screw 10 preferably extends through the member 8, and at its outer end the shaft 11 is provided with propeller-like mixing paddles 13.

Short partitions 14 are disposed between the spouts 5 in the lower end of the housing 6, and these are arranged to equally divide the housing, transversely (as in Fig. 2), into receiving openings for the respective spouts 5. Above these partitions, but below the agitator 13, is an inclined gate or retarder plate 15 mounted upon a shaft 16 which is journaled in the housing 6 and projects at one end therethrough to support a lever arm 17, normally extending in a horizontal direction.

The arm 17 is provided with a weight 18, tending to press the lower edge of the gate 15 against the inner wall of the housing, to thereby resist the downward flow of grain in the chamber 12, and the weight is preferably adjustable on the arm so that the resistance referred to may be increased or decreased as occasion may require.

The operation of the device may be briefly described as follows:

As the grain delivered from the primary treating mechanism accumulates in the trough 9 it is gradually delivered therefrom by the action of the feed screw 10 which impels it through the tubular section 8 and into the chamber 12 of the housing 6. As the grain is thus conveyed to the chamber 12 it accumulates therein upon the gate 15 until such time as the pressure upon the gate causes it to open against the resistance of the weight 18; and as the gate opens the grain will of course drop down in a curtain-like formation or stream to the spouts 5. Before the gate 15 will open, however, there will be a substantial accumulation of grain in the chamber 12, and this grain is constantly agitated and mixed up

by the action of the mixing or agitating members 13.

These members 13 thus not only tend to thoroughly mix the grain in the chamber 12 so as to counteract any tendency of partial separation under the action of gravity or otherwise, but will also serve to keep the grain body spread over the entire length of the gate 15 so that when the latter does open there will be a uniform flow of grain past the entire length of its delivery edge, and as a result there will be an equal supply of material fed to each of the spouts 5 and delivery tubes 4.

In addition to the functions and advantages above referred to it may also be noted that the described construction also serves to immediately cut off the supply of grain to the secondary treating unit B—E as soon as the primary treating mechanism should for any reason be stopped. In other words, the shaft 11 is preferably connected with other parts of the primary treating mechanism so as to be operated therewith, and immediately such primary treating mechanism is for any reason stopped then the screw 10 and agitator 13 will also be stopped and the grain remaining in the chamber 12 will be held until the upper machine is again set in motion.

It is understood that suitable modifications may be made in the structure as disclosed, provided such modifications come within the spirit and scope of the appended claims. Having now therefore fully illustrated and described our invention, what we claim to be new and desire to protect by Letters Patent is:

1. A mechanism of the character described comprising a receiving trough of a primary grain treating mechanism, a chamber arranged at one end of and communicating with the trough, a conveyor screw in the trough, an agitator in the chamber, a series of outlets at the lower end of the chamber for supplying grain to a series of secondary treating mechanisms, a yieldably closed retarder plate disposed under the agitator and having a swingable edge cooperating in constant parallelism with an adjacent chamber part to provide an elongated grain distributing opening above said outlets.

2. A mechanism of the character described comprising a receiving trough of a primary grain treating mechanism, a chamber arranged at one end of and communicating with the trough, a conveyor screw in the trough, an agitator in the chamber, a series of outlets at the lower end of the chamber for supplying grain to a series of secondary treating mechanisms, a yieldably closed retarder plate disposed under the agitator and having a swingable edge cooperating in constant parallelism with an adjacent chamber part to provide an elongated grain distributing opening above said outlets, the lower ends of said chamber having partitions dividing it into equal spaces communicating with the respective outlets.

3. In a grain treating machine the combination with a primary grain treating mechanism and a plurality of secondary treating mechanisms, of a chamber having a plurality of outlets for providing separated supplies of grain to the respective secondary treating mechanisms, means conveying a continuous supply of grain from the primary treating mechanism into the chamber, means in said chamber for affecting an even distribution of grain therein to each of said outlets, said means including an agitator movable in the grain to prevent a partial separation of grain in the chamber, and a tiltable plate disposed transversely in the chamber above the outlets to support a body of the received grain above itself and having a swinging edge cooperating to form a variable closure with an adjacent fixed portion of the chamber and movable downwardly to effect a grain discharge opening under the action of weight pressure by the grain body.

4. A distributor unit for receiving grain from a primary treating mechanism and delivering it to a series of secondary treating mechanisms, comprising a housing, a tiltable gate disposed transversely within the housing for yieldably supporting a body of grain above and upon itself, an inlet opening above the gate, a feed screw for conveying grain through the opening to supply said grain body, a series of discharge openings below the gate and communicating separately with the respective secondary treating mechanisms, and an agitator for operation in said grain body above the gate.

5. A distributor unit for receiving grain from a primary treating mechanism and delivering it to a series of secondary treating mechanisms, comprising a housing, a horizontally extending tiltable gate in the housing for yieldably supporting a body of grain therein and upon the plate, an inlet opening above the gate, a series of discharge openings below the gate and communicating separately with the respective secondary treating mechanisms, a feed member operating in said inlet opening, and an agitator for operation in said grain body above the gate, said agitator being an element separate from the feed member but operated simultaneously therewith.

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