

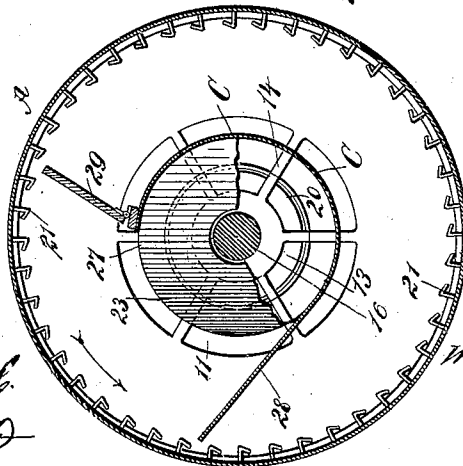
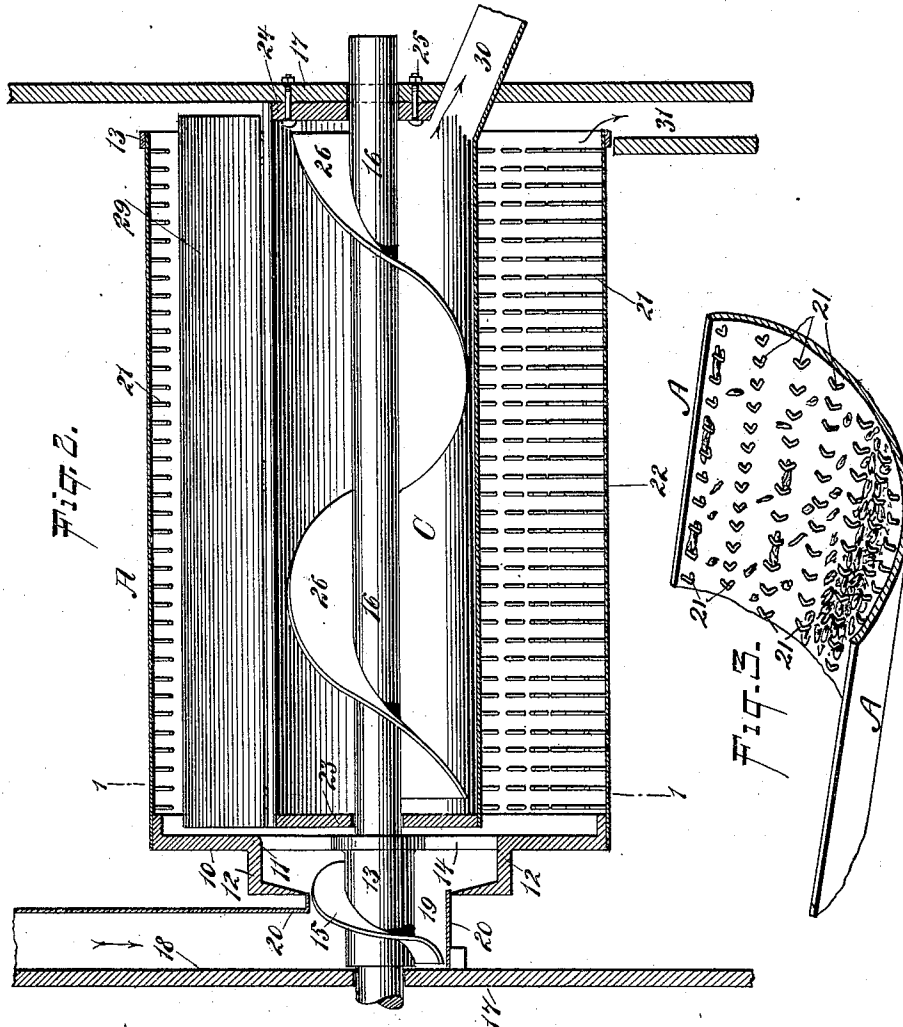
No. 686,593.

Patented Nov. 12, 1901.

W. S. CURRIER.
GRAIN SEPARATOR.

(Application filed Sept. 19, 1900.)

(No Model.)



WITNESSES :

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UNITED STATES PATENT OFFICE.

WILLIAM S. CURRIER, OF ROSEHILL, IOWA.

GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 686,593, dated November 12, 1901.

Application filed September 19, 1900. Serial No. 30,498. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. CURRIER, a citizen of the United States, and a resident of Rosehill, in the county of Mahaska and State of Iowa, have invented a new and Improved Grain-Separator, of which the following is a full, clear, and exact description.

The invention relates to that class of separators in which the grain may be fed continuously to a revolving cylinder and in which long grain is to be separated from short grain—for example, wheat from oats.

The purpose of the invention is to provide the cylinder with longitudinal rows of hooks pointing in direction of the rotation of the cylinder and to so space the hooks that the short grain will pass between them, and, furthermore, to so shape the hooks that in ascending they will receive and retain the long grain and in descending will discharge the grain.

Another purpose of the invention is to provide a conveyer to receive the long grain and a regulating-board at the mouth of the conveyer, which board will insure the long grain being delivered to such conveyer.

A further purpose of the invention is to provide means for separating grain which will be superior to that class of separators in which sieves or screens are used and to so construct the separator that it may be run at low speed, requiring but little power, and so that the separator will not clog with sticks, weeds, or straw.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a transverse section through the cylinder of a separator constructed in accordance with my invention, the section being taken practically on the line 1 1 of Fig. 2. Fig. 2 is a longitudinal vertical section through the cylinder and its supports; and Fig. 3 is a detail view of a portion of the cylinder, showing the grain and the manner in which the hooks make the separation.

The cylinder A may be of any dimensions

and may be constructed of any suitable material. One head 10 of the cylinder—namely, the head at its receiving end—is attached to the cylinder and is provided with a central opening 11, and a flange 12 surrounds this opening 11, extending from the outer face of the head. The flange 12 is preferably angular in cross-section, as shown in Fig. 2. A spider 14 is located in the opening 11 of the head 10, being attached to the wall of said opening or made integral therewith, and an outwardly-extending hub 13 forms an integral portion of the spider, and said hub is provided with a spiral blade 15, adapted as a conveyer and designed to conduct material received thereon to the opening 11 or the spaces between the members of the spider 14.

The cylinder A is supported by means of a shaft 16, which passes through and is attached to the hub 13, and one end of the shaft has bearing in a vertical member of a frame 17, and the other end of said shaft has bearing in a corresponding member of the frame, as shown in Fig. 2. This shaft 16 may be revolved in any suitable or approved manner.

The grain is fed to the conveyer 15 through the medium of a suitable chute 18, formed parallel with the frame at the receiving end of the cylinder, and this chute is provided with horizontal members 20, which connect with or have bearing against the members of the flange 12 which face the spider 14, as is also shown in Fig. 1. These members 20 constitute a chamber 19, in which the hub 13 and its conveyer-blade revolve.

The separation is accomplished by means of parallel hooks 21, secured upon the inner face of the cylinder and running lengthwise of the same. These hooks point or are set in direction of the rotation of the cylinder and are so spaced that as the cylinder revolves the short grain passes between them, while the long grain lodges on the hooks and is carried up and held from falling off by the points of the hooks, which have more or less inclination in direction of the periphery of the cylinder. The long grain is thus held by the hooks until the hooks reach the center at the top of the cylinder, where the points of the hooks begin to face downward, allowing the long grain to drop upon a main conveyer, to be hereinafter described. Any short grain

that may lodge against the long grain on the hooks is caused to drop, since the hooks are of such length that the grain will shift or change position as the cylinder revolves—
 5 as, for example, the long grain will slide from the cylinder toward the points of the hooks, dislodging the small grain before the hooks reach the central top portion of the cylinder. The distance between the rows of
 10 hooks depends upon the kind of grain to be separated. For example, in separating wheat from oats the rows of hooks should be about one-half of an inch apart.

The hooks 21 are preferably made of wire
 15 and their free ends are bent in direction of the periphery of the cylinder in order to prevent the long grain from falling off before passing the center at the top of the cylinder. The cylinder may be provided with perfora-
 20 tions 22, which permit the escape of small seed and dust, the said perforations being shown in Fig. 1.

A receptacle C is formed partially around the shaft 16 between the ends of the cylinder
 25 A, and this receptacle is provided with a head 23 near the receiving end of the cylinder, through which the shaft 16 is loosely passed, while at the opposite end of the said receptacle a second head 24 is formed, through
 30 which the shaft 16 also loosely passes, the head 24, which is at the delivery end of the machine, being secured by bolts 25 or their equivalents to the vertical section of the frame 17 at the delivery end of the machine.
 35 A screw thread or rib 26 is spirally formed on the shaft 16 within the receptacle 17. The ends of the said screw thread or rib, which in connection with the shaft 16 constitutes a conveyer, are stopped short of the heads of
 40 the said receptacle C. It will be observed that this receptacle C is stationary, and it may be otherwise supported than shown. The receptacle usually consists of a sheet of metal or other material which is bent or partially
 45 curved around the shaft 16, as is best shown in Fig. 1, being open adjacent to the upper side of the descending portion of the cylinder, as shown at 27 in said Fig. 1, or that
 50 portion at which the hooks 21 descend to spill the grain carried thereby. The lower wall 28 of the mouth of the receptacle C extends at an upward inclination quite close to the
 descending hooks 21, as is also shown in Fig. 1, and at the upper edge of said mouth a
 55 swing regulating-board 29 is hinged or pivoted. This board may be adjusted at any necessary angle with reference to the mouth of the receptacle C, but is usually inclined to a greater or less extent in an opposite di-
 60 rection to the inclination of the bottom wall 28 of the mouth or in direction of the ascending side of the cylinder, as is shown in Fig. 1, so that should any long grain fall from the hooks 21 just before they reach the
 65 upper center of the cylinder or when they pass such central point the grain will fall upon the board 29 and will be directed to the

mouth of the receptacle C. The bulk of the long grain when dropping from the hooks is received upon the bottom wall 28 of the said
 70 receptacle, and the long grain which is delivered to the receptacle C passes out through the tail end thereof, being conducted by a spout 30, which extends from the contiguous
 75 section 17 of the frame, while the short grain passes out at the tail end of the device through the open end of the cylinder A, falling into a hopper or chute 31, which may be utilized to conduct the short grain to any desired re-
 80 ceptacle.

I desire it to be understood that the flange
 12 at the open end of the cylinder serves to strengthen said cylinder and that the regulat-
 ing-board 29 is designed to afford the best separa-
 85 tion when the grain is damp or in other unfavorable condition which causes the short grain to hang on the hooks until they are carried to the upper portion of the cylinder, where the short grain will be dislodged by the grain
 receiving motion through contact with the
 90 regulating-board. At other times when cleaning grain for seed the regulating-board is shifted forward or back, as desired, to cause either the long or the short grain to be de-
 95 livered perfectly clean, or, to be more explicit, take, for example, a machine for separating wheat and oats. If the grain be damp, it is evident that the short grain or wheat
 will be brought nearer the top of the cylinder because of the moisture causing the grain
 100 to stick together, and by changing the regulating-board over in the direction of rotation of the cylinder the short grain is given more
 time to drop from the hooks, while the long grain or oats for the same reason will hang
 105 to the hooks until the cylinder rotates farther over. With dry grain the regulating-board should be set in the opposite direction, for the reason that the short and long grain will
 110 both drop from the hooks sooner.

In cleaning grain for seed if the wheat is mixed with oats and the wheat is to be used
 for seed and it is desired to get all the oats out the regulating-board is set opposite the
 115 direction of rotation of the cylinder, so as to catch all the oats, and of course some of the wheat will be caught with the oats. If the oats are to be used for seed, the regulating-board is set in the direction of rotation of the
 cylinder, so that no wheat will fall with the
 120 oats and some oats will fall with the wheat. Thus by changing the regulating-board either grain may be obtained perfectly clean of the other. The regulating-board does not touch
 the hooks or the grain till the grain falls from
 125 the hooks.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a grain-separating machine, a cylinder
 130 mounted to rotate, hooks arranged in parallel longitudinal rows upon the inner face of the cylinder, the rows of hooks being spaced apart a predetermined distance and the hooks

of each row being spaced apart a sufficient distance to permit the small grain to pass between them, while the long grain lodges on the hooks, the points of the hooks being disposed in direction of the rotation of the cylinder and the free ends of the hooks being inclined in direction of the periphery of the cylinder, substantially as described.

2. In a grain-separator, a cylinder mounted to rotate, hooks arranged in rows upon the inner face of the cylinder and pointing in direction of the rotation of the cylinder, and a stationary receptacle arranged within the cylinder and having a mouth or opening extending lengthwise of the receptacle, the lower wall of the mouth of the receptacle having an upward inclination and extending close to the hooks on the descending portion of the cylinder, as set forth.

3. In a grain-separator, a rotating cylinder, hooks arranged in rows upon the inner face of the cylinder and pointing in direction of the rotation of the cylinder, a receptacle located within the cylinder adapted to receive the grain carried by the hooks, and a regulating member at the mouth of the receptacle, substantially as described.

4. In a grain-separator, a rotating cylinder, hooks arranged in rows upon the inner face of the cylinder and pointing in direction of the rotation of the cylinder, a conveyer located within the cylinder, adapted to receive the grain carried by the hooks, and a regulating member at the mouth of the conveyer, which regulating member is adjustably connected with the conveyer and approaches the hooks at the upper central portion of the cylinder, and at points at either side of the said upper center, as specified.

5. In a grain-separator, a cylinder mounted to rotate and having interior rows of hook-carriers, a spider arranged at the receiving end of said cylinder and having an outwardly-

extending hub provided with a spiral blade forming a conveyer, a chute leading to said conveyer, a shaft supporting said cylinder and extending through the said hub, the said shaft having bearing at its ends in the frame of the machine, a stationary receptacle extending partially around the shaft and having its mouth or opening adjacent to the upper side of the descending portion of the cylinder, the lower wall of the mouth of the receptacle extending close to the descending hook-carriers, an adjustable regulating-board located at the upper edge of the mouth of the receptacle, and a conveyer-screw on said shaft within the receptacle, substantially as set forth.

6. In a grain-separator, a cylinder mounted to rotate and provided with carriers on its inner surface for the grain, a stationary receptacle arranged within the cylinder, and adapted to receive the grain from the carriers, a conveyer located within the receptacle, and a regulating member at the mouth of the conveyer-receptacle, for the purpose set forth.

7. In a grain-separator, a cylinder mounted to rotate and to which the grain is fed, the said cylinder having an open end, a stationary receptacle within the cylinder and having a mouth or opening, hooks arranged upon the inner face of the cylinder and adapted to carry the long grain and deliver it to said receptacle, the said receptacle having a delivery-opening at one end, and a conveyer located within the receptacle, the short grain passing from the open end of the cylinder, as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM S. CURRIER.

Witnesses:

ROBERT DOAK,
JOHN LIHTER.