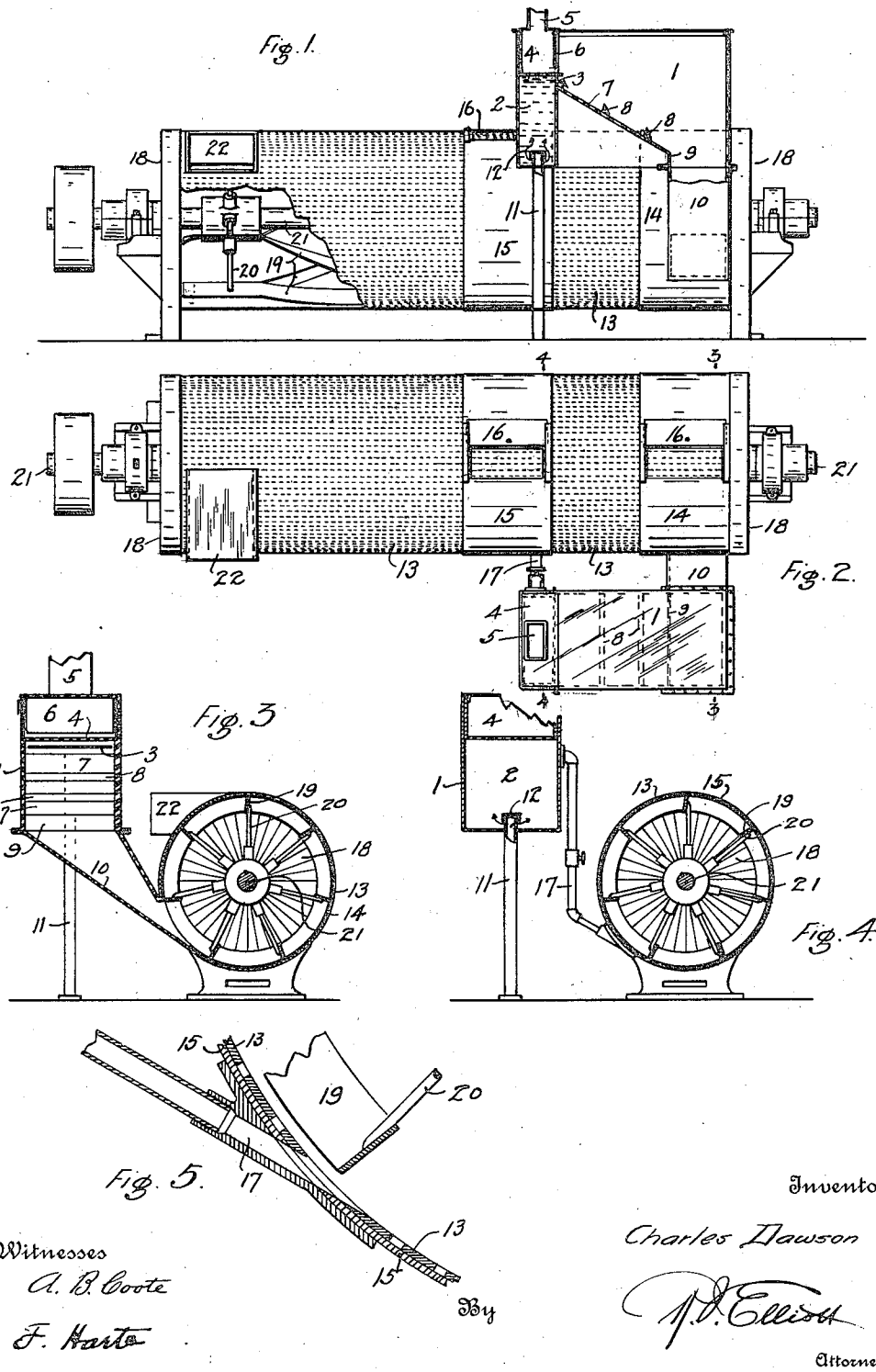


C. DAWSON.
WHEAT WASHING, RINSING, AND DRYING MACHINE.
APPLICATION FILED FEB. 25, 1915.

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CHARLES DAWSON, OF TACOMA, WASHINGTON.

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Specification of Letters Patent. Patented June 26, 1917.

Application filed February 25, 1915. Serial No. 10,417.

To all whom it may concern:

Be it known that I, CHARLES DAWSON, a citizen of the United States, residing at Tacoma, in the county of Pierce, State of Washington, have invented certain new and useful Improvements in Wheat Washing, Rinsing, and Drying Machines, of which the following is a specification.

This invention relates to machines for washing wheat to free it from smut and other impurities therein. The objects of the invention are to improve the construction of the wheat-conditioner; and to provide means whereby the wheat may be thoroughly scoured, then the dirty water removed therefrom, then rinsed in clean water, and then dried. A further object is to produce a self-contained machine in which the said operations are successively and automatically carried on.

I attain these and other objects by the devices, mechanisms and arrangements illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved machine, showing however the conditioner in vertical longitudinal section and showing a portion of the perforated cylinder broken away to reveal the interior thereof; Fig. 2 is a plan thereof; Fig. 3 is a vertical cross-section on the line 3—3 in Fig. 2; Fig. 4 is a similar section on the line 4—4 in Fig. 2; and Fig. 5 is a section of a portion of the machine showing the rinsing water delivery connection.

Similar numerals of reference refer to similar parts throughout the several views.

The wheat conditioner comprises an inclosure 1, having a water tank 2 at one end, said tank having an overflow slot 3 near its upper end; a wheat box 4 into which the wheat supply pipe 5 leads, said box 4 having one side 6 slightly raised above the bottom of the box and hinged to the sides, whereby the flow of wheat under the said side 6 may be controlled, said box being positioned directly above the water overflow slot 3; a riffle board 7 leading from below the slot 3 downward at an angle of about 30 degrees, and having one or more riffles 8 secured thereto, whereby stones, nails, etc., are collected and separated from the wheat; a fall at 9, leading to the inclined race 10 which conducts the flowing mass of wheat and water from the fall 9 in another direction and into the lower end part of the

scouring portion of the machine. Water is conducted into the tank 2 by means of a pipe 11 which is provided with a suitable deflecting cap 12 so that the surface of the water in the tank will lie level and feed uniformly through the overflow slot 3 on the riffle board 7. The stream of wheat issuing from under the side 6 falls into the water stream below it and becomes mixed therewith. As it passes down the board 7 the heavier foreign particles sink and are collected by the riffles 8. The flowing mass then falls vertically at 9 and meets the race 10 which is inclined in another direction from the incline of the board 7, thus causing the mass to be effectually mixed so as to become of uniform consistency throughout.

The wheat from the race 10 is received into the lower portion of the washing and drying cylinder, at one end thereof. This cylinder may be made either of a single or continuous sheet of metal 13 which is perforated uniformly from end to end and which has two or more bands 14 and 15 extending around it, one at its receiving end and one removed therefrom and nearer the center section of the cylinder, or it may be made of a sheet of metal which is perforated uniformly except at such places as fall within the spaces of the two said bands 14 and 15. The former of the above constructions is preferred, however, because it allows the relative sizes and positions of the bands to be changed with the least possible expense, in order to make the machine the most efficient for the particular character of the wheat being cleaned, and because it provides a rough inner surface at said banded portions which aids the scouring action on the wheat without the addition of separate abrasive materials. The bands 14 and 15 may extend entirely around the cylinder, but I prefer to provide perforated spaces therein, said spaces being provided with adjustable closures 16, as shown, whereby they may be opened, or partly or entirely closed as desired. The location and axial length of the bands 14 and 15 are largely a matter of choice but I prefer to have the band 14, within which the first scouring of the wheat is performed, at the receiving end of the cylinder and extending about one-sixth of its length, then I prefer to leave a space of the perforated cylinder 13 between the said band 14 and the second band 15 of substantially the same length, and the second

band 15, within which the wheat is rinsed and scoured a second time, would also be of about the same length. The second band may, however, be found to act better at some other position with certain kinds of wheat, and I therefore do not confine it to the said position, the only essential being that the said band be separated from the first band 14 by a sufficient length of perforated cylinder 13 to enable the mass to free itself of the major portion of the very dirty water with which the wheat is mixed. This dirty water carries away with it the greater part of the dirt from the wheat but if the wheat be then dried some of the dirt from the water will remain on it. To remove this dirt I inject a supply of clean fresh water through the pipe 17, which may preferably lead from the tank 2, above described, to the lower part of the second band 15, and this water becomes mixed with the wet mass which is thereby rinsed while it is being agitated by the blades, hereinafter described, and scoured by the inner surface of the cylinder 13, and then passes to the drying portion of the cylinder where the water is removed through the perforations in the cylinder. If necessary, additional bands for rinsing may also be provided, each acting in a way similar to that above described.

The cylinder 13 is, otherwise, constructed and operated in a similar manner to my Patent No. 1,116,572 dated November 10th, 1914, and has an inward acting fan 18 at each end, said fans preventing any of the wheat and water from escaping from the cylinder through them, but forcing a large volume of air into the cylinder. This air is continuously passing through the agitated wet mass in escaping through the perforations of the cylinder and therefore aids materially in drying the wheat from which the water is being removed by centrifugal action. A rotating spiral agitator and conveyor is mounted in the cylinder 13. This conveyor consists of a plurality of blades 19 positioned near the inner surface of the cylinder 13 and mounted on suitable spokes 20 by which they are secured to the rotating shaft 21, each of said blades 19 being inclined backward from the radial line and each being, in the main, spiral in form except at their ends which are turned parallel with the axis of rotation and are slightly bent at their tips as described in the said patent.

I prefer to make the cylinder of such length that the wheat is completely dried after leaving the rinsing portion, and is delivered through the spout 22 in proper condition, but, if so desired, the machine may be made shorter than would thus be necessary and a second cylinder may be provided in which the drying is to be completed, said cylinders being preferably mounted one

above the other in a manner similar to that shown in the said patent. It is evident, then, that, if desired, the first cylinder may be entirely devoted to the washing and rinsing actions above described and that the second cylinder may be used for removing the water from the wheat and for drying it: or, a portion of the rinsing action may be performed in the second cylinder. Further, some wheat may not need much scouring when it is being rinsed, and in that case the second band 15 may be partially or entirely eliminated, the rinsing water being admitted directly into the perforated cylinder at a sufficient distance from the end of the first unperforated band to allow some of the dirtiest water to escape.

It will be noticed that the race 10 and the rinsing water pipe 17 are substantially tangential to the direction of motion of the blades 19 at the point at which the streams therefrom engage the blades. This construction reduces the power needed to drive the shaft and also makes the action of the blades on the wet mass more uniform than would be the case otherwise. Also attention is called to the fact that the connection between the casing 1 of the conditioner and the race 10 may be reversed so that the said conditioner may be positioned in another place than as shown.

Having described my invention, what I claim is:—

1. In a machine of the class described, the combination with an unperforated cylinder, having a screened opening in its wall, said cylinder being adapted to receive a mass of water and wheat; an adjustable closure slidably mounted on said cylinder and adapted to partially or wholly close said opening; a cylinder having a perforated wall and adapted to free the mass of a portion of the dirty water; a second unperforated cylinder; means for admitting a supply of fresh water to said last unperforated cylinder to be mixed with the mass therein; a second perforated cylinder adapted to free the mass of the water therein; and means for conveying the mass in succession to, through, and from each of said cylinders.

2. In a machine of the class described, the combination with an unperforated cylinder adapted to receive a mixed mass of water and wheat; a cylinder having a perforated wall and adapted to free the mass of a portion of the dirty water; a second unperforated cylinder, having a screened opening in its wall; an adjustable closure slidably mounted on said cylinder and adapted to partially or wholly close said opening; means for admitting a supply of fresh water to said last unperforated cylinder to be mixed with the mass therein; a second perforated cylinder adapted to free

the mass of the water therein; and means for conveying the mass in succession to, through, and from each of said cylinders.

3. In a machine of the class described, the combination with an unperforated cylinder, having a screened opening in its wall, said cylinder being adapted to receive a mass of water and wheat; an adjustable closure slidably mounted on said cylinder and adapted to partially or wholly close said opening; a cylinder having a perforated wall and adapted to free the mass of a portion of the dirty water; a second unperforated cylinder, having a screened opening in its wall; an adjustable closure slidably mounted on said cylinder and adapted to partially or wholly close said opening; means for admitting a supply of fresh water to said last unperforated cylinder to be mixed with the mass therein; a second perforated cylinder adapted to free the mass of the water therein; and means for conveying the mass in succession to, through, and from each of said cylinders.

4. In a machine of the class described, the combination with an unperforated cylinder, having a screened opening in its wall, said cylinder being adapted to receive a mass of water and wheat; a cylinder having a perforated wall and adapted to free the mass of a portion of the dirty water; a second unperforated cylinder; means for admitting a supply of fresh water to said last unperforated cylinder to be mixed with the mass therein; a second perforated cylinder adapted to free the mass of the water therein; and means for conveying the mass in succession to, through, and from each of said cylinders.

5. In a machine of the class described, the combination with an unperforated cylinder adapted to receive a mixed mass of water and wheat; a cylinder having a perforated wall and adapted to free the mass of a portion of the dirty water; a second unperforated cylinder, having a screened opening in its wall; means for admitting a supply of fresh water to said last unperforated cylinder to be mixed with the mass therein; a second perforated cylinder adapted to free the mass of the water therein; and means for conveying the mass in suc-

sion to, through, and from each of said cylinders.

6. In a machine of the class described, the combination with an unperforated cylinder, having a screened opening in its wall, said cylinder being adapted to receive a mass of water and wheat; a cylinder having a perforated wall and adapted to free the mass of a portion of the dirty water; a second unperforated cylinder, having a screened opening in its wall; means for admitting a supply of fresh water to said last unperforated cylinder to be mixed with the mass therein; a second perforated cylinder adapted to free the mass of the water therein; and means for conveying the mass in succession to, through, and from each of said cylinders.

7. In a machine of the class described, the combination with a wheat receiving receptacle; an adjustable outlet therefrom; a water tank positioned below the wheat receptacle; an outlet from said tank positioned below the wheat outlet whereby the wheat will fall into the stream of water issuing from the tank; a riffle box having an inclined riffle board leading from below the said outlets; an inclined race box; and a vertical wall joining the lower end of the riffle board with the upper end of the race whereby the mass of water and wheat flowing thereover will fall vertically from the board to the race.

8. In a machine of the class described, the combination with a wheat receiving receptacle; an adjustable outlet therefrom; a water tank positioned below the wheat receptacle; an outlet from said tank positioned below the wheat outlet whereby the wheat will fall into the stream of water issuing from the tank; a riffle box having an inclined riffle board leading from below the said outlets; an inclined race box leading in a different direction than said riffle board; and a vertical wall joining the lower end of the riffle board with the upper end of the race whereby the mass of water and wheat flowing thereover will fall freely from the board to the race.

CHARLES DAWSON.

Witnesses:

M. F. McNEIL,
E. VASS.