

(No Model.)

F. PRINZ.
MACHINE FOR WASHING GRAIN.

No. 583,082.

Patented May 25, 1897.

Fig. 1.

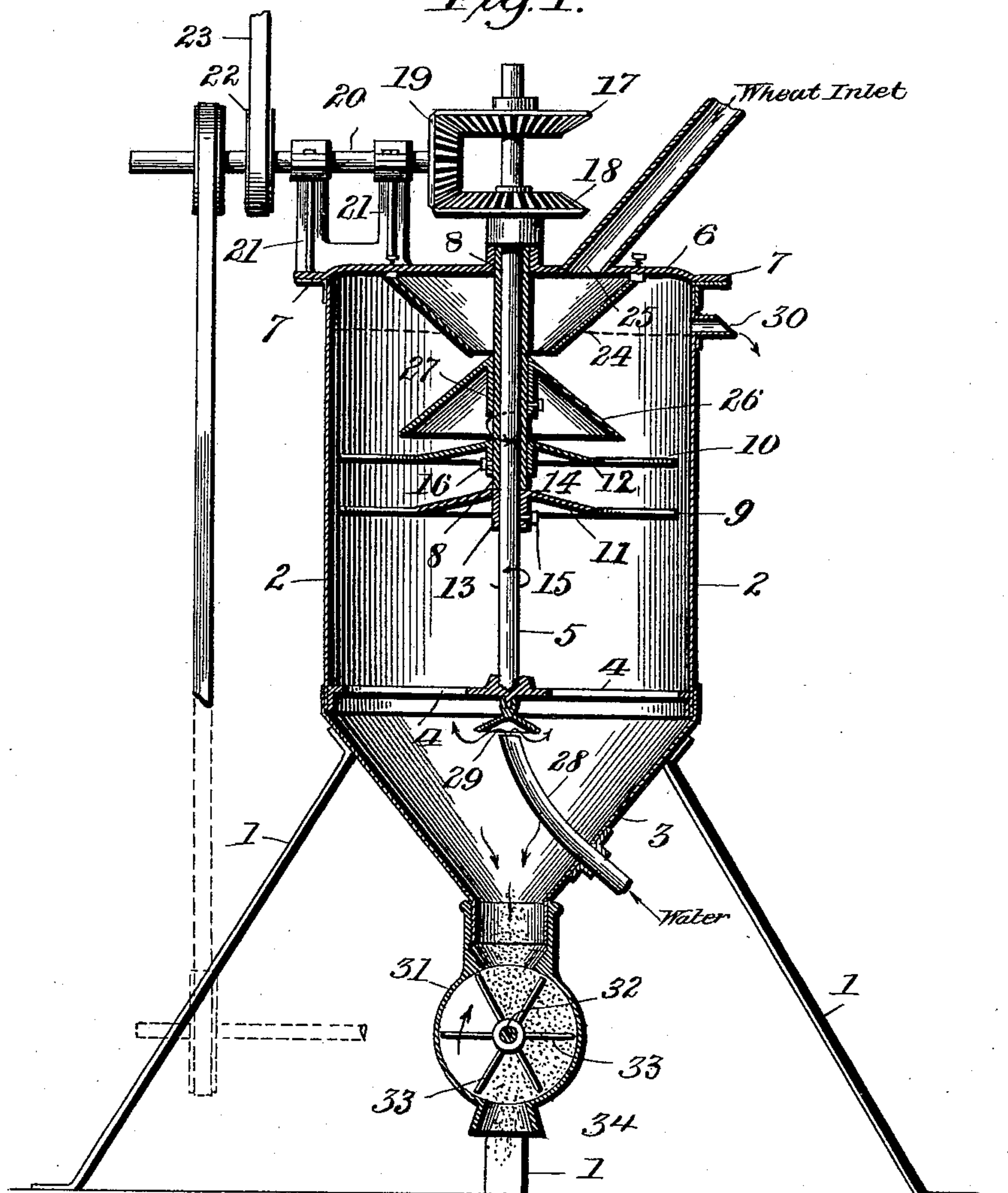
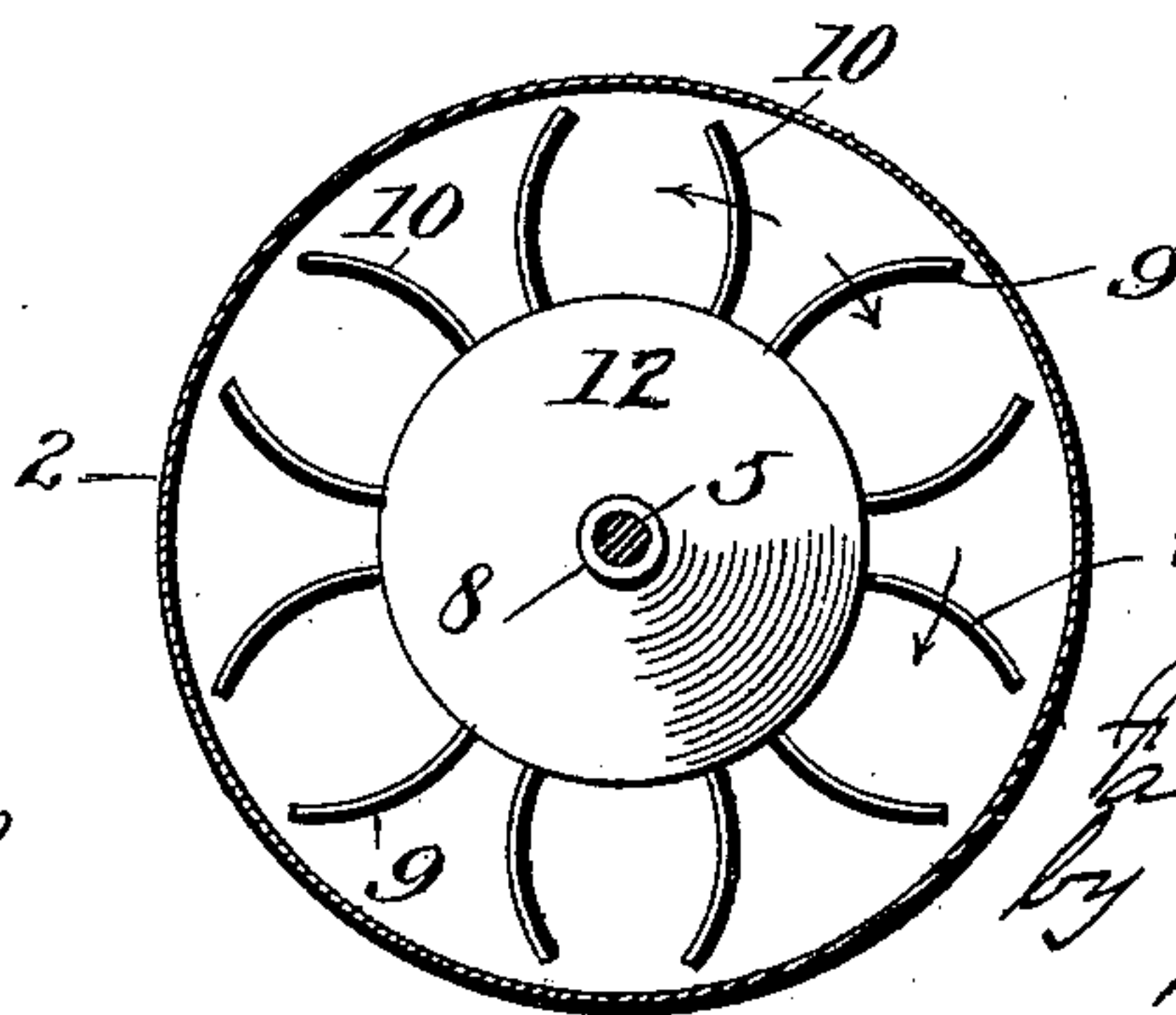


Fig. 2.



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UNITED STATES PATENT OFFICE.

FAUSTIN PRINZ, OF MILWAUKEE, WISCONSIN.

MACHINE FOR WASHING GRAIN.

SPECIFICATION forming part of Letters Patent No. 583,082, dated May 25, 1897.

Application filed April 3, 1896. Serial No. 586,097. (No model.)

To all whom it may concern:

Be it known that I, FAUSTIN PRINZ, a subject of the Emperor of Germany, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Machines for Washing Wheat and other Grain; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to machines for washing grain, more particularly wheat; and it has for its objects to provide a machine in which the grain will be introduced at the upper portion and as it travels downward will be subjected to the action of agitators revolving in opposite directions, so as to thoroughly agitate and open up the body of grain in order that it may be more effectively subjected to an upward flowing or directed current of water designed to wash the grain and carry off the impurities at the upper part of the machine.

It has further for its object to provide a simple and efficient construction for carrying out the above operation, and also to provide a regulating-valve at the lower part of the machine for discharging the washed grain without the escape at that point of more than the minimum amount of water from the chamber in which the washing takes place.

To the accomplishment of the foregoing and such other objects as may hereinafter appear, the invention consists in the construction and also in the combination of parts hereinafter particularly described and then sought to be specifically defined by the claims, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 is a vertical section through the machine; and Fig. 2, a cross-section through the machine, taken on a line above the top agitator, the upper portion of the machine and its parts being omitted.

In the drawings, the numeral 1 designates the standards of the machine, which may be

of any preferred form, but preferably converge toward each other from their lower to their upper ends. These standards support a chamber or cylinder 2, which has an inclined or funnel-shaped bottom 3. The body and the bottom of this cylinder might be made in one piece, but preferably are formed of two parts, the lower end of the body portion fitting into the bottom portion and being riveted or otherwise secured thereto. In the lower part of the chamber or cylinder is a cross-bar or spider 4, which supports a vertical shaft 5, adapted to turn in its bearing on the cross-bar or spider. The top of the chamber or cylinder is provided with a cap or cover 6, which may be bolted to a flange 7, around the upper end of the cylinder. The shaft 5 passes through the cover of the cylinder, as does also the hollow shaft 8, which encircles the shaft 5. The shaft 5 and the hollow shaft 8 are each provided with agitator-arms 9 and 10, respectively. These arms are preferably made to extend from the periphery of the inclined or conical-shaped plates 11 and 12, respectively, which plates are connected to the hubs 13 and 14, respectively, the hub 13 being secured by a set-screw 15 to the shaft 5 and the hub 14 by a set-screw 16 to the hollow shaft 8, or otherwise, so that the two plates and their agitator-arms will revolve with the two shafts. The arms 9 and 10 are curved and arranged so that the arms 9 will curve in the opposite direction to the arms 10. The shafts 5 and 8 are revolved in opposite directions by means of the bevel-gears 17 and 18, connected, respectively, to the shafts 8 and 5, and a bevel-pinion 19, which meshes with the two bevel-gears and which is carried by shaft 20, supported by standards 21, resting on the cap or cover 6 and revolved by a pulley 22 and belt 23 or other means connected with a suitable source of power.

A hopper 24 is supported inside the chamber or cylinder 2, preferably from the cap or cover thereof, and receives the grain or wheat through a suitable opening 25 in the cap or cover. Beneath the discharge end of the hopper 24 is an inclined or conical-shaped plate 26, provided with a hub 27, which is secured by a set-screw or other means to the hollow shaft 8, so that the plate will be revolved

with that shaft. The lower edge of the plate 26 terminates over the curved agitator-arms 10, so that the grain or wheat will be distributed directly from the lower edge of the plate 26 over the agitator-arms. The inclined faces of the plates 11 and 12, which carry the agitator-arms 9 and 10, will cause any of the wheat or grain that may work itself in from the agitator-arms to slide back toward the agitator-arms and thus be brought to the point where it may be acted on by the agitator-arms, so as to be more thoroughly agitated than otherwise. This also keeps the mass of grain or wheat in the chamber or cylinder in a state of constant motion and prevents it from lodging next to the rotating shafts, and as a consequence the water has a better opportunity to act on all parts of the grains of wheat.

The water for washing the grain or wheat is admitted in the bottom of the chamber or cylinder through a pipe 28, which preferably is made to discharge at a central point, say at a point in line with the shaft 5, and above the discharge end of this inlet-pipe is preferably placed a deflecting-plate 29, so as to deflect laterally the water which discharges from the inlet-pipe and thus cause it to be distributed across the lower portion of the cylinder. This water passes upward and through the body of the grain and is discharged at the upper portion of the chamber or cylinder through an outlet-pipe 30, carrying off with it the foreign matter washed from the grain.

The lower end of the inclined bottom 3 of the cylinder opens into a valve-casing 31, in which is a rotating valve composed of a shaft or hub 32 and a series of radial wings 33. In the rotation of this valve as the spaces between its wings are brought in succession beneath the discharge of the cylinder-bottom said spaces are filled with the grain passing from the cylinder and the grain is carried around in the valve and discharged through the outlet 34. It is obvious that this valve will allow only a certain quantity of the wheat to pass out at a time and will prevent the escape of the water, except so much thereof as may fill the spaces between the radial arms or wings not occupied by the grain. The grain as discharged from this valve will be directed to a grain-scourer, which may serve as a centrifugal drier for the grain, which scourer, however, is not illustrated, as it forms no part of this invention.

Under the arrangement of parts described the wheat or grain is distributed to the agitators toward all sides of the chamber or cylinder from the inclined plate 26 and is delivered at a point directly over the agitators, so that the latter may exert their full action upon the grain. By revolving the agitators in opposite directions the grain is thoroughly agitated, so that the water may have an opportunity to act upon all parts of the same

and thus more thoroughly cleanse or wash the grain than would be the case if the agitators revolved in only one direction or if only one set of agitators were used. The water is also introduced at a point where it will be most effective in reaching the greater volume of the grain, and by being made to flow in the opposite direction to the movement of the grain the foreign matter as removed from the grain is carried to the top of the cylinder and there discharged, so that when the grain is discharged from the bottom of the cylinder it is more thoroughly washed than would otherwise be the case.

I have illustrated and described with particularity what I consider to be the best construction and arrangement of the several parts, but it is obvious that changes can be made therein and certain features of my invention be still employed.

Having described my invention and set forth its merits, what I claim is—

1. In a machine for washing wheat and other grain, the combination of a chamber or cylinder, agitator-arms rotatable in opposite directions therein, means for introducing water into the chamber at the opposite end to where the grain is introduced, and an outlet for the water at the end where the grain is introduced, whereby the grain and water are caused to move in opposite directions and in opposition to each other, and the grain is retarded and opened up in its passage through the water, substantially as and for the purposes described.

2. In a machine for washing wheat and other grain, the combination of a chamber or cylinder, agitator-arms rotatable in opposite directions therein, an inclined plate for directing the wheat or grain to said agitator-arms, means for introducing water into the chamber at the opposite end to where the grain is introduced, and an outlet for the water at the end where the grain is introduced, whereby the grain and water are caused to move in opposite directions and in opposition to each other, and the grain is retarded and opened up in its passage through the water, substantially as and for the purposes described.

3. In a machine for washing wheat and other grain, the combination of a chamber or cylinder, agitator-arms curved in opposite directions to each other and rotatable in opposite directions in the chamber, means for introducing water at the discharge end of the chamber, and an outlet for the water at the opposite end of the chamber, where the grain is introduced, whereby the grain and water are caused to move in opposite directions and in opposition to each other, and the grain is retarded and opened up in its passage through the water, substantially as and for the purposes described.

4. In a machine for washing wheat and other grain, the combination of a chamber or cylinder, oppositely-rotatable shafts each car-

rying an inclined plate arranged one above the other and provided with agitator-arms extending beyond the periphery of the plates, means for introducing water into the chamber at the opposite end to where the grain is introduced, and an outlet for the water at the end where the grain is introduced, substantially as and for the purposes described.

5. In a machine for washing wheat and other grain, having a water inlet and outlet, the combination of oppositely-rotatable shafts each carrying an inclined plate arranged one above the other and provided with agitator-arms extending beyond the periphery of the plates, an inclined plate connected to one of said shafts for distributing the grain over the agitator-arms, and a hopper for delivering the grain to said distributing inclined plate,

substantially as and for the purposes described.

6. In a machine for washing wheat and other grain, the combination of a chamber or cylinder having an inclined bottom and provided with a water-inlet at the bottom and outlet at the top, oppositely-rotatable shafts each carrying agitator-arms, and a discharge-valve at the discharge end of the chamber for delivering the grain therefrom and restricting the escape of water with the grain, substantially as and for the purposes described.

In testimony whereof I affix my signature in presence of two witnesses.

FAUSTIN PRINZ.

Witnesses:

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