R. H. HAYWARD & C. W. BROWN.

GRAIN ELEVATOR.

APPLICATION FILED DEC. 4, 1916.

1,289,756. Patented Dec. 31, 1918.

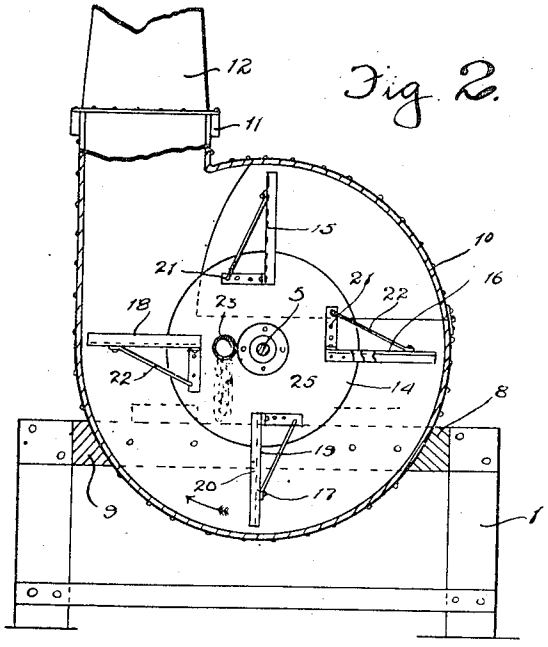


Fig. 2.

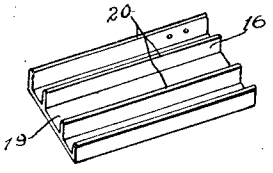


Fig. 4.

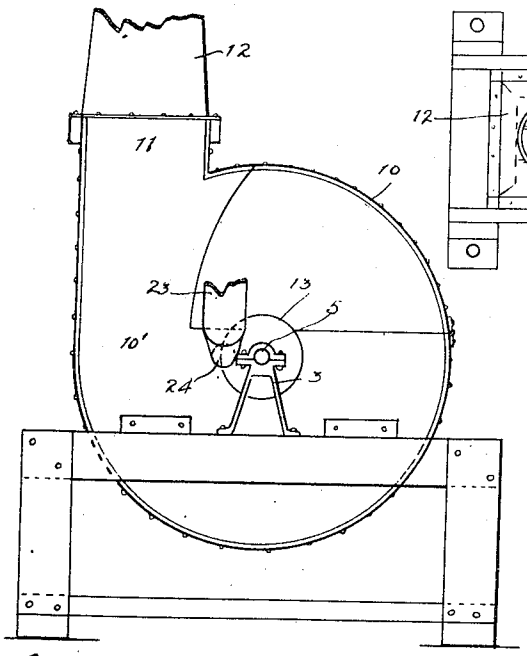


Fig. 1.

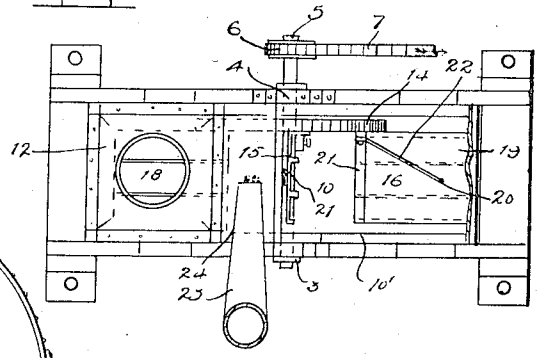


Fig. 3.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ROBERT HENRY HAYWARD AND CHARLES WARD BROWN, OF WINNIPEG, MANITOBA, CANADA.

GRAIN-ELEVATOR.

1,289,756. Specification of Letters Patent. Patented Dec. 31, 1918.

Application filed December 4, 1916. Serial No. 135,018.

To all whom it may concern:

Be it known that we, ROBERT HENRY HAYWARD and CHARLES WARD BROWN, both of the city of Winnipeg, in the Province of Manitoba, Canada, have invented certain new and useful Improvements in Grain-Elevators, of which the following is the specification.

The invention relates to an improvement in grain elevators and the object of the invention is to provide a device for elevating grain in an easy, quick and efficient manner, and it consists essentially in the arrangement and construction of parts hereinafter more particularly described and later pointed out in the appended claim, reference being had to the accompanying drawing in which:—

Figure 1 represents a side view of the elevator.

Fig. 2 is a vertical sectional view through the elevator.

Fig. 3 is a plan view with part of the casing removed to expose interior parts.

Fig. 4 represents a perspective view of one of the wings.

In the drawing like characters of reference indicate corresponding parts in each figure.

1 and 2 represent side sills on which we mount a pair of standards 3 and 4, the standards being fitted with suitable bearings which receive rotatably a cross shaft 5. This shaft is fitted with a chain wheel 6 by means of which it can be driven such as by an endless chain indicated at 7.

The side sills are connected by cross supports 8 and 9 and these supports, together with the sills, carry a cylindrical casing 10 mounted concentric to the shaft 5.

An outlet chute 11 is formed as part of the casing and it passes vertically tangentially to the casing at the top side.

12 is a delivery spout communicating with the chute.

One of the sides of the casing, indicated at 10′, is supplied with an air inlet opening 13 arranged concentric to the shaft 5.

On the shaft, at the opposite side of the casing and within the same, we mount a disk 14 which has a diameter somewhat larger than the diameter of the opening 13, and to this disk we attach, in the present instance, four similar wings 15, 16, 17 and 18 constructed as now described.

Each wing consists of a more or less substantially rectangular plate 19 having spaced, parallel, lengthwise extending ribs 20 on the the one face thereof. Each wing is secured to the disk by means of an angle brace 21 permanently fastened to the back face of the wing and to the inner side of the disk. An inclined brace rod 22 is inserted also between the back side of the wing and the end of the angle brace attached to the disk.

All of the wings are fastened in the above manner so that their inner ends are equal distance from the shaft and so that the plates 19 pass radially outwardly from the shaft and are grouped in opposing pairs. Further, the inner ends of the wings are located such that in the turning of the disk, in the rotation of the shaft, the inner ends of said wings rotate in a circle having a diameter somewhat greater than the diameter of the air inlet opening. The outer tips of the wings just nicely clear the inner wall of the casing.

23 is a feed spout for feeding grain into the casing. This feed spout can be supported in any suitable manner. The discharge end of the spout enters the interior of the casing in a location between the circle containing the inner ends of the wings and the air inlet opening and in a position horizontally opposite the shaft and to the left hand side thereof. Actually, the discharge end of the spout is set into the edge of the opening 13 by cutting away a part of the side 10′ of the casing, as shown at 24 in Fig. 1 of the drawing, the notch or cut being made in a location horizontally opposite the shaft 5 and to the left hand side.

From the above it is obvious that upon the shaft being driven the wings will be rotated around the inner or discharge end of the feed pipe, the inner end of which discharges the grain to the center of the casing, as best shown in Fig. 3 of the drawing, where it will be observed that the inner end of the spout terminates centrally between the opposing walls of the casing.

This elevator is to be driven at a high rate of speed through the chain 7 and in the direction indicated by the applied arrows Figs. 2 and 3.

As the grain indicated by the reference numeral 25 (see Fig. 2) falls from the delivery end of the spout, it will be caught by the wings and discharged up the chute 11

to the spout 12. As the machine is rotated at a high rate of speed there will be an inrush of air through the opening 13 which is discharged at a high velocity through the chute 11. This air carries with it the grain introduced by the feed pipe so that the said grain is discharged up the chute and further, owing to the special arrangement and construction of this machine the grain is not only swept up by this current of air but is thrown or projected off the outer tips of the wings at a high velocity. To explain,—if one refer to Fig. 2, it will be obvious that the grain in initially dropping from the inner end of the pipe will be primarily caught on the inner end of the then lowermost wing and before it escapes from that wing it will be slid bodily over the wing from the inner end to the outer end thereof. Owng to the high rate of speed at which the wings are traveling the grain will accordingly be projected from the outer tip of the wing at a high velocity and in the actual machine the arrangement is such that at the instant the grain has reached the outer tip of the wing the said wing has reached the chute 11 so that the grain is thrown off the wing upwardly into the chute. The combined effect of this throwing action of the grain from the wings together with the velocity of the air up the chute gives us a very efficient grain elevator.

We have provided the wings with upstanding ribs to prevent the grain from crowding over to the edge of the wings and to cause it to travel in straight paths when being slid over the wings from the inner to the outer ends as above explained. It will be obvious that if no such ribs were provided the grain could crowd to the sides and drop down between the sides of the casing and the edges of the wings. This would be detrimental, as will be readily appreciated.

What we claim as our invention is:—

In a grain elevator the combination with a cylindrical casing and a rotatably mounted cross shaft passing centrally through the casing, of a disk permanently secured to the shaft and located adjacent the inner side of one of the ends of the casing and a plurality of radially disposed wings secured to the disk and operative within the casing and having their front faces fitted with longitudinally extending ribs, said ribs being located at the free edges and at intermediate points of the wings as and for the purpose specified.

Signed at Winnipeg, this 22 day of November, 1916.

ROBERT HENRY HAYWARD.
CHARLES WARD BROWN.

In the presence of—
GERALD S. REXBURGH,
K. B. WAKEFIELD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."