No. 798,699. PATENTED SEPT. 5, 1905.

J. J. POWER.

ROTARY DISCHARGING APPARATUS.

APPLICATION FILED MAR. 28, 1904.

Fig. 2.

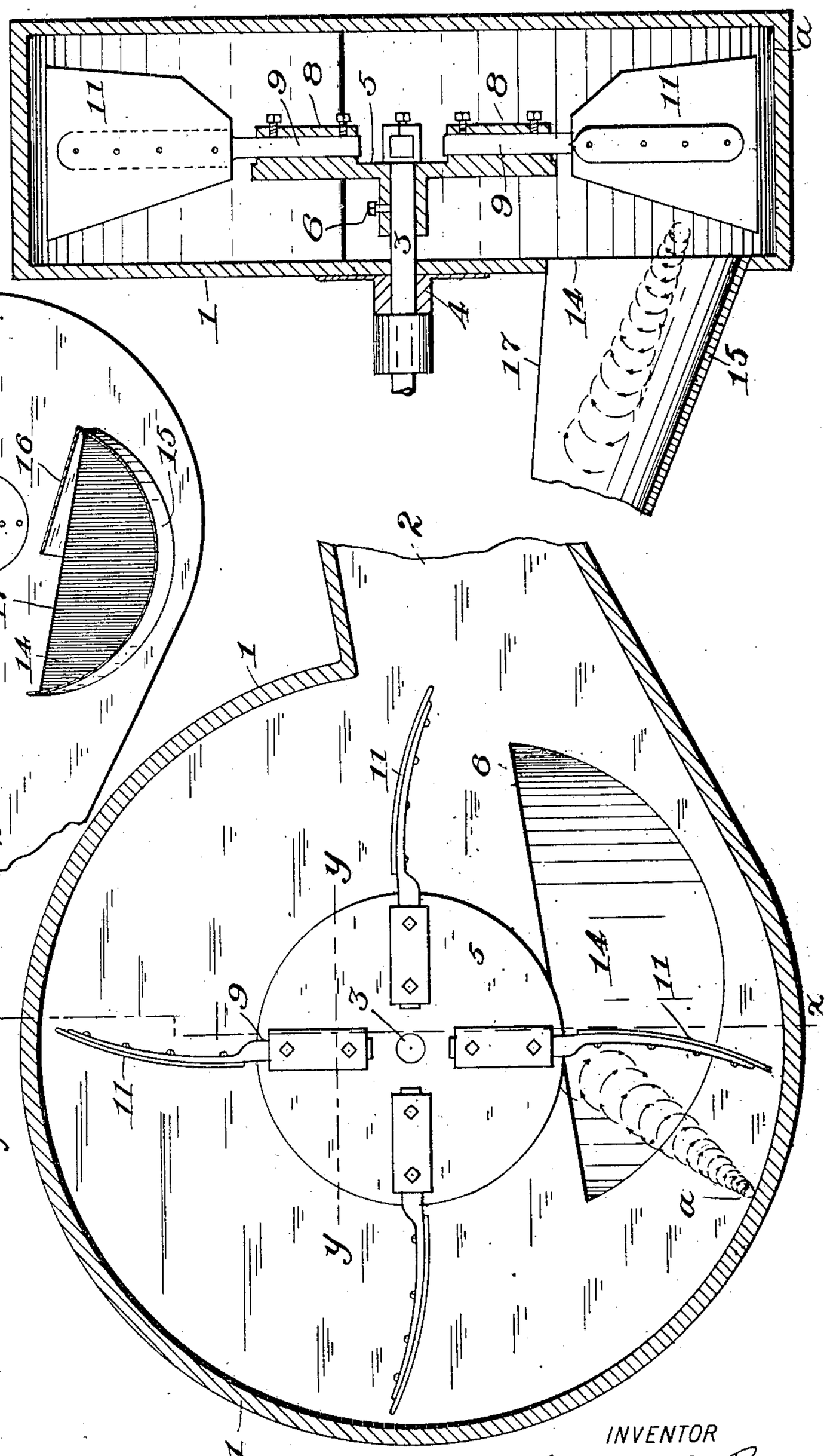

Fig. 3.

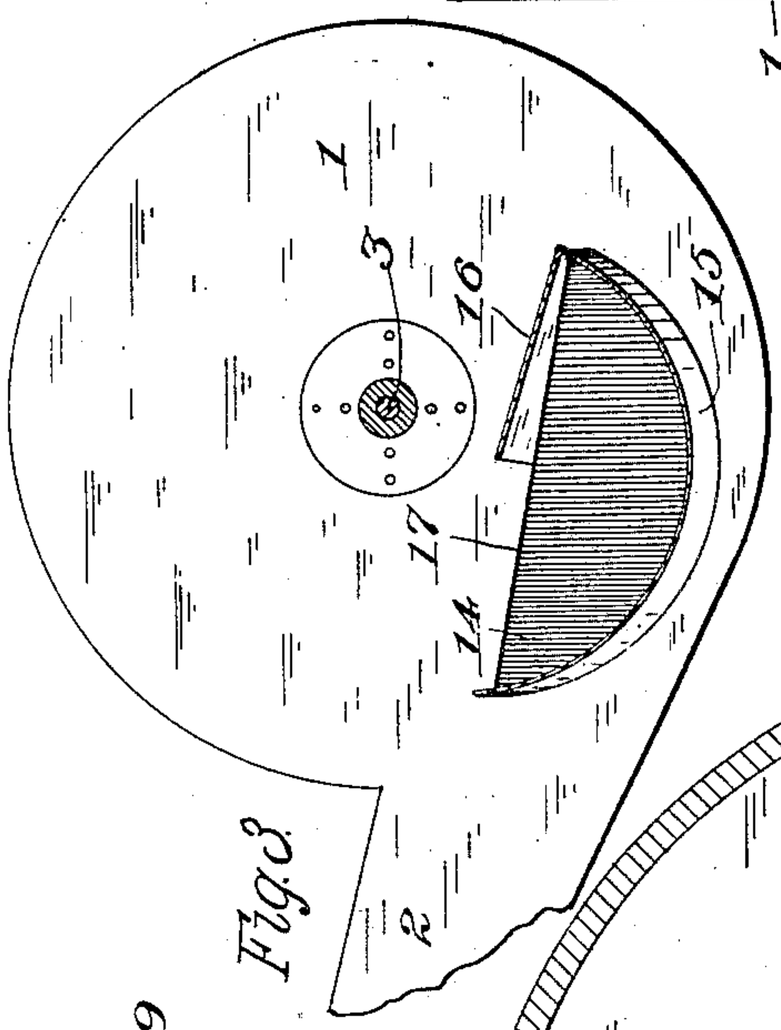

Fig. 4.

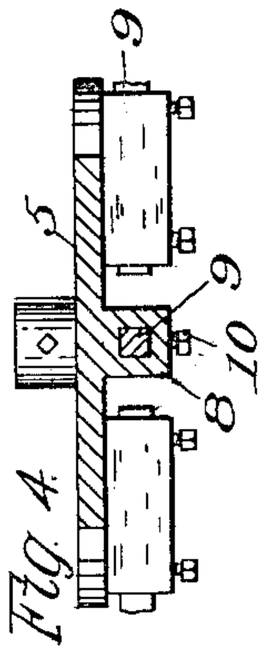

Fig. 1.

WITNESSES:

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ROTARY DISCHARGING APPARATUS.

No. 798,699. Specification of Letters Patent. Patented Sept. 5, 1905.

Application filed March 28, 1904. Serial No. 200,261.

To all whom it may concern:

Be it known that I, JEFFREY J. POWER, a citizen of the United States, residing at Madison, county of Dane, and State of Wisconsin, have invented new and useful Improvements in Rotary Discharging Apparatus, of which the following is a specification.

My invention relates to improvements in rotary discharging apparatus, the same being designed especially for use in discharging shredded cornstalks and leaves from a corn-husking machine or straw from a threshing-machine, although my invention is also adapted and intended to be used in any case where it is desired to deliver air or other material through a pipe or chute by means of revolving wings.

Heretofore blowers have been constructed for such purposes in which the material is delivered through the chute by means of a blast of air produced by the revolving wings. In some of the constructions heretofore used the material is drawn into the blower through an axially-located eye constituting a suction-aperture. In other cases the material is discharged into the air-blast beyond the field of movement of the wings—to wit, in the chute or delivery-passage. In the first class of cases the material and the air drawn into the blower at the eye are carried around and move outwardly by centrifugal force until discharged from the chute. In the second class of cases the air-blast is produced in the same way, but the material is driven through the chute by the force of the blast itself. In either case an extremely high speed is required, as the centrifugal force of the blast itself is relied upon for the discharge of the material.

The object of my invention is to provide a form of construction in which the material may be subjected to the direct action of the rotating wings without being carried around by them, whereby the material is struck or batted by the wings or by a cushion-film of compressed air moving immediately in front of each wing, the material being thus driven through the chute by the direct force of the rebound from the surface of the wing. A considerable reduction of speed and consequent economy of power is thus rendered possible.

In the following description reference is had to the accompanying drawings, in which—

Figure 1 is a side view of my invention with the near wall of the casing removed and showing the inlet-aperture in the remaining side wall. Fig. 2 is a vertical sectional view drawn on line *x x* of Fig. 1. Fig. 3 is a side view showing the shaft and feed-trough in cross-section. Fig. 4 is a sectional view drawn on line *y y* of Fig. 1.

Like parts are identified by the same reference characters throughout the several views.

1 is a casing having a generally cylindrical form and provided with a discharge-chute 2, extending tangentially from the periphery of the casing.

3 is a supporting-shaft extending through bearings 4 in the casing and provided within the casing with a disk 5, which is rigidly secured to the shaft by a set-screw 6 or in any other convenient manner. One face of the disk 5 is provided with projections 8, having radial apertures or sockets in which wing-shanks 9 are adapted to fit. The shanks 9 may be adjusted radially in the sockets and are secured in any desired position of adjustment by set-screws 10. Suitable wings 11 are rigidly secured to the shanks 9.

One side wall of the casing is provided with an inlet-aperture 14, which is located between the axis—*i. e.*, the line of the shaft 4—and a circle in the side wall of the casing parallel with the outer circle of ring rotation. This aperture is also substantially in line with the lower end of the discharge-chute 2, whereby air and other material entering the casing through the aperture 14 may be struck by the wings 11 and thrown through the chute 2 by the rebound. An inclined feed-trough 15 leads to the aperture 14 and is partially covered at 16, leaving a feed-opening at 17, which extends longitudinally from the casing outwardly in that portion of the upper wall of the trough nearest the discharge-chute, so that the material is permitted to enter the trough along its rear upper side—*i. e.*, the upper portion of that part of the feed-trough which is nearest to the discharge-chute.

In operation the air within the casing 1 will be thrown outwardly by centrifugal force, creating a partial vacuum at the center and in the rear of the wings 11. Most of the air which remains in the casing is compressed upon the face or front of the wings, leaving an almost complete vacuum in the rear of the wings where they are first exposed at the front upper corner of the aperture 14, (indicated at *a* in the Fig. 1.) The faces of the wings

carry the air which is being thrown out of the casing, and this air tends to push out laterally into the trough 15 near the rear corner of the aperture 14, (indicated at *b* in Fig. 1.) On the other hand, the vacuum at *a* is extended into the trough under the upper wall or part 16, and the air rushing in through the opening 17 to satisfy this vacuum passes downwardly and forwardly along the curved bottom of the trough toward the point *a* and is deflected by the trough and the light outwardly-moving current at *b*, all of which tend to cause the downwardly, forwardly, and inwardly moving current to rotate spirally in a cyclonic whirl and a direction opposite that of wing rotation. The force and intensity of this whirling current increase as it approaches the inlet-aperture 14, so that the material is not only carried between the wings, but whirled forcibly against the wings and batted by them through the discharge-spout. The aperture 14 is preferably so located that the outer ends of the wings 11 when in normal position will project past such aperture, whereby all the material entering the aperture will be struck by the wings. Experiments which I have conducted in connection with the delivery of shredded cornstalks have demonstrated that a speed of approximately three hundred and fifty revolutions per minute will be sufficient to deliver the material through a chute such as would require a speed of approximately eight hundred revolutions per minute in an ordinary blower having an intake or suction aperture at the eye.

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

1. In a device of the described class, the combination of an inclosing casing provided with a discharge-aperture; a set of revolving wings in said casing; and a feed-trough leading to an aperture in the casing between its periphery and the axis of wing rotation; said feed-trough being partially open to the exterior adjacent to the casing.

2. In a device of the described class, the combination of a set of revolving wings; an inclosing casing therefor, provided with a peripheral discharge-aperture and having an inlet-aperture in its side wall between the axis and a circle parallel with the outer circle of wing rotation; and an inclined feed-trough having a feed-opening along one side and arranged to admit air tangentially and deflect it along a spiral line leading to that portion of the inlet-aperture where the rotary wings are first exposed.

3. In a device of the described class, a set of revolving wings; a casing inclosing the same, and provided with a peripheral discharge-opening; a feed-trough leading to an inlet-aperture in the casing at one side of the path of the wings and between the axis of their rotation and a circle in the side wall of the casing parallel with the circle described by the outer edges of the wings; said feed-trough having a feed-opening in one of its side walls, extending outwardly from a point adjacent to the inlet-aperture of the casing.

4. In a device of the described class, a set of revolving wings; a casing inclosing the same, and provided with a peripheral discharge-opening, a feed-trough leading to an inlet-aperture in the casing at one side of the path of the wings and between the axis of their rotation and a circle in the side wall of the casing parallel with the circle described by the outer edges of the wings; said feed-trough having a feed-opening extending outwardly from adjacent to the inlet-aperture of the casing and in the rear portion of the upper wall of the trough.

5. In a device of the described class, a set of revolving wings; a casing inclosing the same; a discharge-tube, leading tangentially from the periphery of the casing; and a feed-trough communicating with the interior of the casing through an aperture at one side of the axis of the discharge-tube projected within the casing, and between the wing-axis and the outer circle of wing rotation; said feed-trough having a longitudinal opening in that portion of its upper wall nearest the discharge-tube.

6. In a device of the described class, a set of revolving wings; a casing inclosing the same; a discharge-tube, leading tangentially from the periphery of the casing; and a feed-trough communicating with the interior of the casing through an aperture at one side of the axis of the discharge-tube projected within the casing, and between the wing-axis and the outer circle of wing rotation; said feed-trough having a concave bottom and a longitudinal opening in that portion of its upper wall nearest the discharge-tube.

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

JEFFREY J. POWER.

Witnesses:
JAS. B. ERWIN,
LEVERETT C. WHEELER.