

(No Model.)

S. H. BAKER & J. H. VERITY.
MIDDLINGS PURIFIER.

No. 474,354.

Patented May 10, 1892.

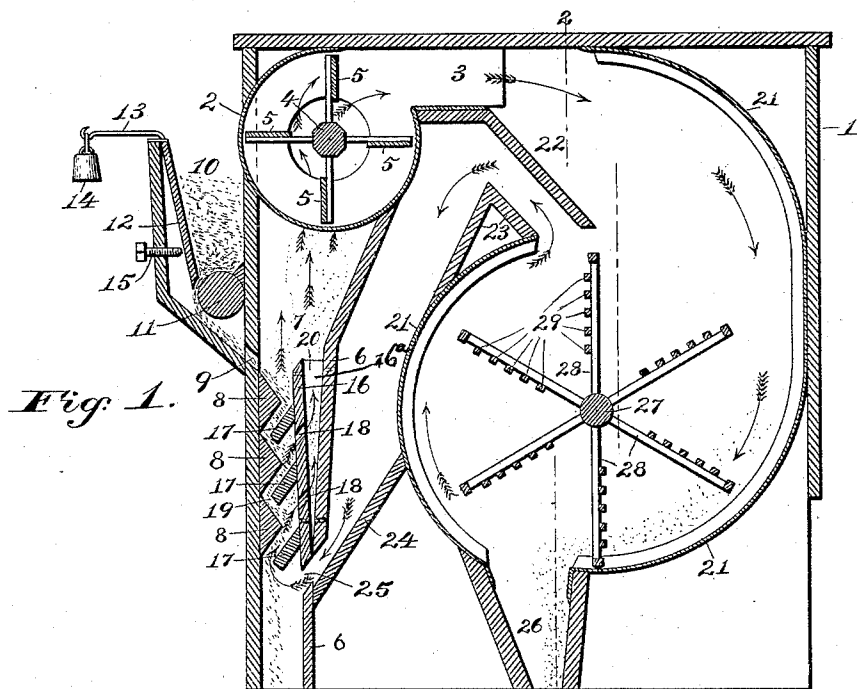
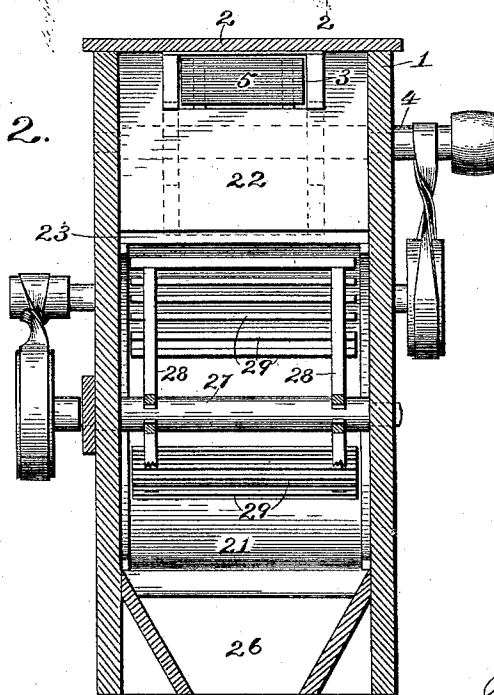


Fig. 2.



Witnesses

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SETH H. BAKER AND JAMES H. VERITY, OF RAPIDAN, MINNESOTA.

MIDDLINGS-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 474,354, dated May 10, 1892.

Application filed June 4, 1891. Serial No. 395,089. (No model.)

To all whom it may concern:

Be it known that we, SETH H. BAKER and JAMES H. VERITY, citizens of the United States, residing at Rapidan, in the county of Blue Earth and State of Minnesota, have invented a new and useful Middlings-Purifier, of which the following is a specification.

This invention relates to middlings-purifiers; and it has for its object to provide a machine of this class by means of which the dust and light particles may be effectually separated from the middlings and gathered in a suitable receptacle without the necessity for resorting to the use of a separate dust-collector for the purpose of purifying the air.

The invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a vertical longitudinal sectional view of a middlings-purifier constructed in accordance with our invention. Fig. 2 is a vertical transverse sectional view taken on the line 2 2 in Fig. 1.

Like numerals of reference indicate like parts in the figures.

In the casing 1 at its upper front corner is mounted a fan-case 2, the discharge spout 3 of which faces in a rearward direction. The fan-case has the usual side openings, and the shaft 4 of the fan 5 is journaled in the sides of the casing 1. The latter is provided with a transverse partition 6, which separates the air or suction trunk 7 from the main body of the casing. Upon the front side of the casing, which also forms the front side of the spout, are mounted a series of triangular steps 8, above which is a slot 9, which forms the inlet. The hopper 10, which is arranged above the said inlet-slot upon the front side of the casing, is provided with the transversely-arranged feed-roller 11, and at the upper front edge of said hopper is hinged the feed-plate 12, having a forwardly-extending arm or lever 13, upon which a weight 14 is mounted, the function of which is to hold the feed-plate against the feed-roller with a suitable degree of pressure. A set-screw 15, which is mounted in the front side of the hopper, is adapted to bear

against the feed-plate, thus regulating the extent to which the latter may be opened or moved away from the feed-roller.

16 designates a plate mounted in the air or suction trunk and secured to the partition 6 and spaced therefrom from its lower end, which meets the same by means of suitable triangular spacing-blocks 16^a between the former and said partition at each side of the main casing. The plate 16 has a series of inclined deflectors 17 extending between the triangular steps upon the front wall of the spout and combining with said steps to form a tortuous or zigzag passage. The plate 16 is provided below the inclined deflectors 17 with slots or openings 18, which connect the tortuous passage 19 with the space 20 between the plate 16 and the partition 6.

Within the main body of the casing 1 is constructed a casing 21, having a spirally or eccentrically disposed rim or outer shell and the outer end of which receives the discharge from the spout 3 of the fan-case. A lip or deflector 22 depends in an inclined position from the spout 3 into the mouth of the spiral casing 21, and to the latter is attached a triangular partition 23. A partition 24 connects the spiral casing 21 with the partition 6, and the latter is provided above the partition 24 and below the plate 16 with a slot or opening 25. A discharge-spout 26 extends downwardly from the spiral casing 21. A shaft 27, which is journaled in the sides of the casing 21, is provided with radially-extending arms 28, forming a reel, said arms being provided with transverse slats 29, and said shaft is located within the casing so that the spiral rim or shell of the same is eccentrically disposed at all points with relation thereto. The shaft 27 is belted to the feed-roller, which in turn is belted to the fan-shaft 4. The latter is to be rotated at a high rate of speed, which is much reduced in its transmission to the feed-roller and further reduced in its transmission to the reel-shaft, which latter is intended to make only about twelve revolutions a minute, the main object of said slowly-revolving reel being to retard the force of the wind directed thereon by the spiral disposition of the rim of the casing 21 to beat and settle the dust down within the discharge therefor and also

to scrape the dust from the bottom of the casing, which portion said reel touches, into said spout.

In operation the middlings are fed into the
 5 hopper 10, where they accumulate until their weight is sufficient to overcome the weight 14 upon the arm or lever 13, attached to the feed-plate 12, when the latter will swing open and the middlings pass between its lower edge and
 10 the feed-roller. The weight 14 is to be made sufficiently heavy to prevent the feed-plate from swinging open until the middlings extend over the entire length of the feed-roller. The middlings passing through the slot 9 will
 15 drop through the tortuous passage of the air or suction trunk. In the meantime suction in an upward direction is created in the air or suction trunk, thus separating the dust and light particles from the middlings, the
 20 dust-laden air passing through the slots 18 and passage 20 into the fan-case, from whence it is discharged into the spiral casing 21. Owing to the shape of the latter, the air is whirled toward the center, and as it impinges upon
 25 the arms of the reel the dust will settle to the bottom of the casing, from which it is swept by the arms of the reel into the exit-spout 26. The air returns through the passage between the lip or deflector 22 and the partition 23,
 30 and through the space between the partition 6 and the spiral casing 21, and through the slot 25 to the lower end of the air or suction trunk 7, through which it again passes upwardly to the fan-case. The purified mid-
 35 dlings escape at the lower end of the slot 7.

It will be seen from the foregoing description that no air is taken from outside the casing or discharged into the room where the machine is located, the air contained in the
 40 casing being forced to continue the circuitous course above indicated, the dust and light particles being first separated from the middlings and afterward from the air by the single operation of our improved machine.

45 Having thus described our invention, what we claim is—

1. In a machine of the class described, the combination of a rotary fan, a casing arranged to receive the discharge from the fan-case and
 50 having a spirally or eccentrically disposed rim or shell, and a beating-reel mounted in the casing eccentrically with relation to the rim or shell thereof, substantially as set forth.

2. In a machine of the class described, the
 55 combination, with a rotary fan, of a casing having a spirally or eccentrically disposed rim or shell extended up and arranged to receive the discharge from the fan-case, passages to reconduct the air to the latter from the
 60 spirally-disposed casing, and a beating-reel eccentrically mounted in said casing, substantially as set forth.

3. In a machine of the class described, the combination of a rotary fan, a casing having a spirally or eccentrically disposed rim or shell arranged to receive the discharge from the fan-case, a reel mounted revolubly in said casing and eccentric with relation to the rim or shell thereof, and passages connecting the casing with the inlet of the fan-case, substantially as and for the purpose set forth.

4. The combination of a rotary fan, an air or suction trunk arranged below the same and having a feed-hopper, a casing having a spirally or eccentrically disposed rim or shell
 75 arranged to receive the discharge from the fan-case, passages connecting the casing with the suction-trunk near the lower end of the latter, and a beating-reel eccentrically mounted in said casing, substantially as set forth.

5. The combination of a rotary fan, the air or suction trunk arranged below the same and having a feed-hopper, a plate mounted in said spout and having inclined deflectors and slots or openings below the same, a spiral
 85 casing arranged to receive the discharge of the fan-case, passages connecting the said spiral casing with the spout below the deflecting-plate, and a beating-reel eccentrically mounted in said casing, substantially as set
 90 forth.

6. The combination of a rotary fan, an air or suction trunk arranged below the same and having a feed-hopper, a casing having a spirally or eccentrically disposed rim or shell arranged to receive the discharge from the fan-case and provided with a discharge-spout, a beating-reel mounted in said casing eccen-
 95 trically with relation to the rim or shell thereof, and passages connecting the casing with the lowermost end of said suction-trunk, arranged below the fan-case, substantially as and for the purpose set forth.

7. The combination of a rotary fan, an air or suction trunk arranged below the same and
 105 having a feed-hopper and a series of triangular steps, a plate mounted in said hopper and having a series of inclined deflectors and slots or openings below the latter, a spiral casing arranged to receive the discharge of the fan-case and provided with a discharge-spout, a reel eccentrically mounted in said casing, and passages connecting the latter with the spout below the deflecting-plate in the latter, substantially as set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

SETH H. BAKER.
 JAMES H. VERITY.

Witnesses:

E. FRANCHERE,
 G. W. FRANCHERE.