E. J. STECKLE.

SEPARATING DEVICE.

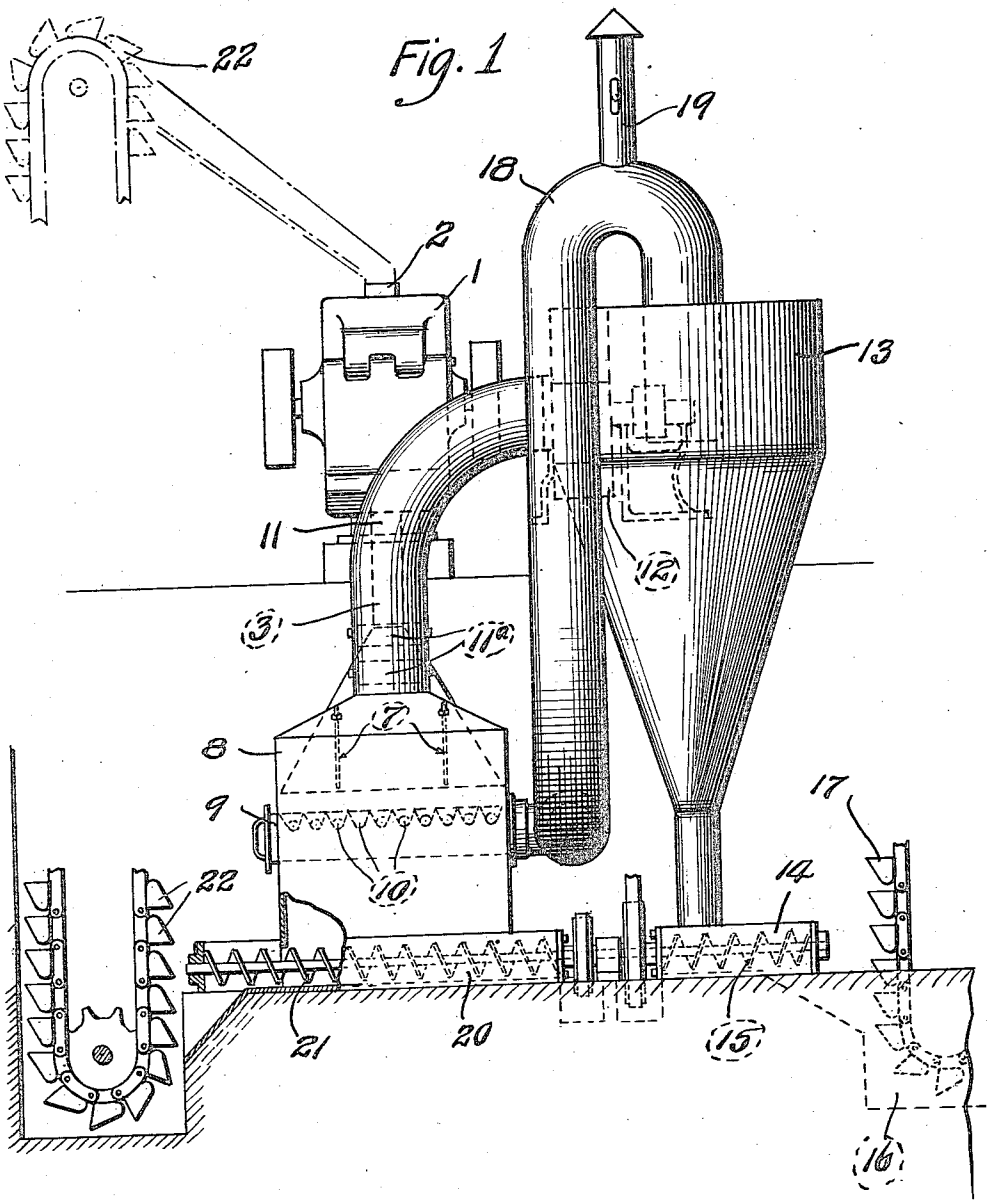
APPLICATION FILED DEC. 30, 1915.

1,210,868.

Patented Jan. 2, 1917.

2 SHEETS—SHEET 1.

Fig. 1



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2 SHEETS—SHEET 2.

Fig. 2

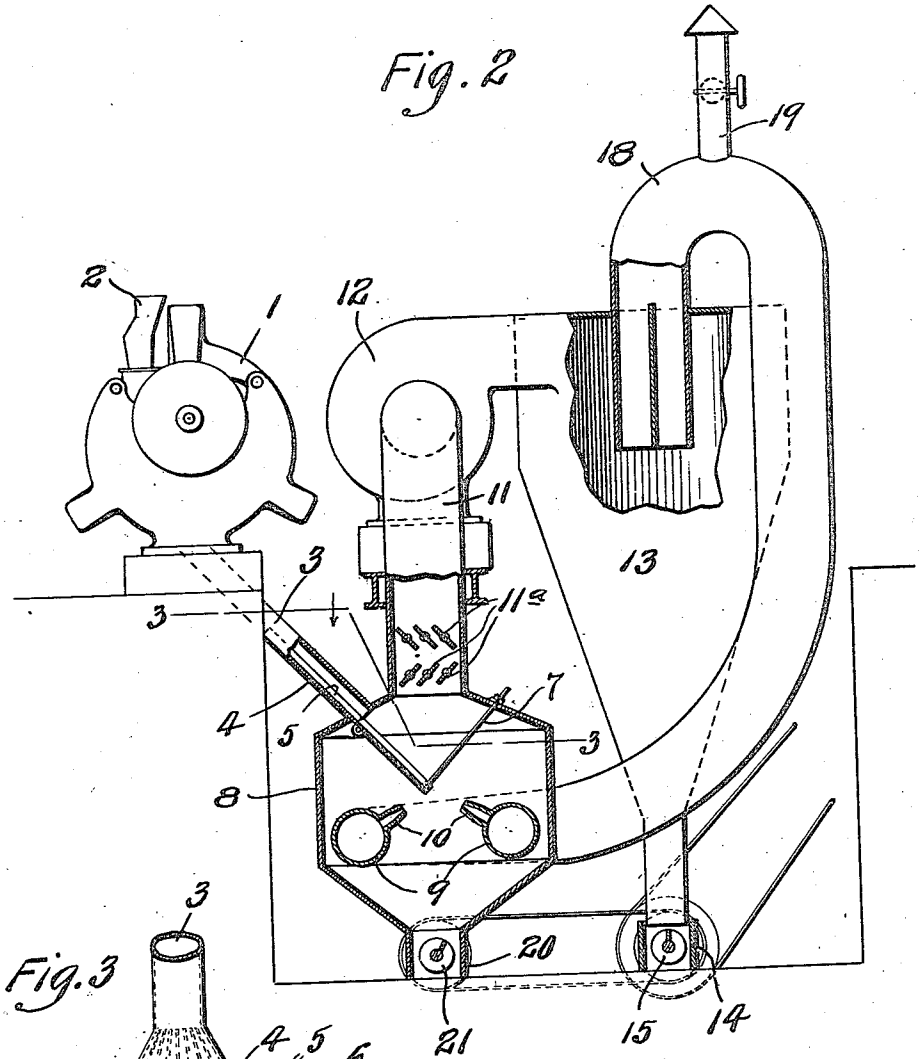
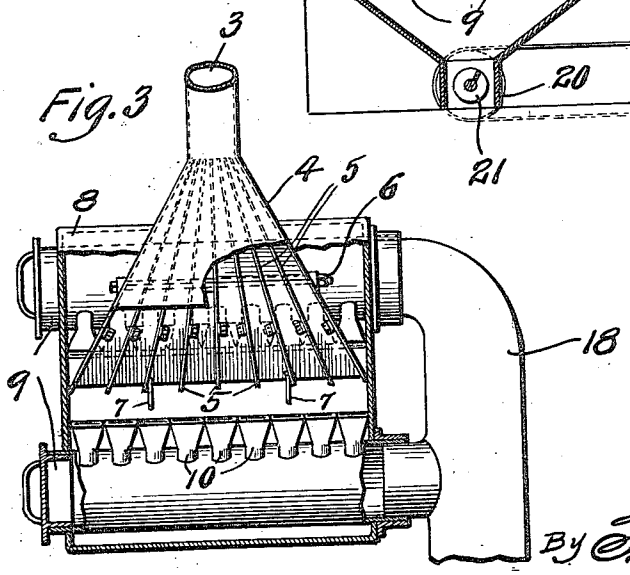


Fig. 3



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UNITED STATES PATENT OFFICE.

EDWARD J. STECKLE, OF DIXON, ILLINOIS.

SEPARATING DEVICE.

1,210,868. Specification of Letters Patent. Patented Jan. 2, 1917.

Application filed December 30, 1915. Serial No. 69,371.

To all whom it may concern:

Be it known that I, EDWARD J. STECKLE, a citizen of the United States, residing at the city of Dixon, county of Lee, State of Illinois, have invented a certain new and useful Improvement in Separating Devices, of which the following is a full, clear, and exact description, 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, forming part of this specification, in which—

Figure 1 is an end elevational view of my improved separating apparatus. Fig. 2 is a side elevational view of the same partly in section. Fig. 3 is a top plan view partly in section on the line 3—3 of Fig. 2.

This invention relates to a new and useful improvement in separating apparatus designed particularly for the separation of particles of material reduced by some sort of reducing machine such as a crusher or pulverizer, the object being to return the coarser particles of material to the mill for further reduction and to collect the finer particles as a finished product.

In the drawings 1 indicates a reducing machine of any well known type into which the material to be reduced is fed through the spout 2. Leading from the bottom of the machine is a pipe or conduit 3 through which the material reduced in the machine 1 passes, said pipe being preferably inclined as shown in Fig. 2. Pipe 3 discharges into a fan shaped spreading member 4, (see Fig. 3) the lower wall of which is provided with diverging ribs 5 and one section of which lower wall, together with its connected diverging ribs, is hinged at 6, such hinged portion being adjustable by means of a threaded bolt 7. Of course the ribs 5 are separated at the hinge point, but are substantially continuations of the diverging ribs attached to the solid portion of this flaring spreading pipe. The hinged portion of the spreading pipe is located in a chamber 8 in which chamber are arranged air inlet pipes 9 each having nozzles 10 whose discharge ends are flattened so as to emit substantially continuous sheets of air directed at an angle to each other meeting practically at the lower edge of the hinged portion of the angularly disposed spreading wall. The pipes 9 with their flattened nozzles 10 are rotatably mounted in the chamber 8 whereby the direction of the blasts of air emitted therefrom can be adjusted. There are removable covers 9^a on the ends of the pipes which enable access to be gained to the interiors thereof from the outside for cleaning purposes. This may be necessary on account of the dust settling in the pipes 9.

The pipe 11 leads from the top of the separating chamber 8 into the eye of a blower fan 12 whence the dust laden air is projected by the blower tangentially into a dust collector 13 of the well known cyclone type. The particles of dust thus drawn from the separating chamber by the fan are collected in the dust collecting chamber 13 and deposited into the trough 14 in which is located a spiral blade 15 for conducting the material into a chamber 16 where it may be elevated by suitable buckets 17 and deposited in a storage bin, not shown. The air pressure in the dust collector 13 escapes through a discharge pipe 18 having a damper controlled pipe vent 19 located at some suitable point in its length whereby pressure in the pipe 18 may be regulated. Pipe 18 leads back to the separating chamber 8 and supplies air to the pipes 9 heretofore referred to.

Only the finer particles of material can be drawn into the pipe 11 by the fan and if any material passes with the air from the dust collector through the pipe 18, it is obvious that such dust laden air will be returned to the separating chamber and will eventually be collected. In order to prevent heavy particles of material from being drawn into the fan, I preferably arrange adjustable baffle plates 11^a in the pipe 11, said plates being inclined in the opposite directions so as to deflect the air and cause the heavier particles of material to be diverted so that they will have an opportunity of falling back into the separating chamber. The heavier particles, or tailings, not drawn up through the pipe 11 fall into the bottom of the separating chamber 8 into a trough 20, where a spiral 21 conveys them to a pit or collecting chamber to be elevated by the buckets 22 and returned by a suitable down spout into the inlet spout 2 of the reducing machine. The screw conveyers 15 and 21 are driven by some suitable means, as shown in Fig. 2, and the bucket chains 17 and 22 also have appropriate driving mechanism, as does the fan 12, and the reducing machine 1, but I do not deem it necessary to

illustrate these features as they form no part of my invention.

The nozzles 10 are directed so that the point of the intersection of the sheets of air emitted therefrom meet substantially at, or slightly below, the point of discharge or lower edge of the hinged wall of the separating or spreading spout. By this arrangement, I am enabled to strike the falling particles on both sides with the result that the finer particles are carried up with the air current and delivered to the dust collector. The troughs 15 and 21 are so constructed that the screw conveyers arranged therein, in forcing the finished product and the tailings, practically form an air seal so that the pressure in the system can not escape at these points, the pressure being regulated by the damper in the vent pipe 19, as well as by the speed of the fan.

What I claim is:

1. A separating apparatus of the character described, comprising a separating chamber having a spreader for conducting the material thereinto, and angularly disposed nozzles for emitting blasts of air on opposite sides of the material as it leaves said spreader.

2. An apparatus of the character described comprising a separating chamber, a pipe leading thereinto, and whose lower end is inclined and substantially fan shaped, the lower wall of said fan shaped portion being provided with spreading means, angularly disposed nozzles for imparting blasts of air throughout the entire width of the separator and on opposite sides of the material as it leaves the spreading means, substantially as described.

3. A separating apparatus of the character described comprising a separating chamber having a spreader for conducting the material thereinto, air pipes arranged below and on each side of said spreader, said air pipes extending substantially parallel to the edge of the spreader and being provided with angularly disposed nozzles for emitting blasts of air on opposite sides of the material as it leaves the spreader, means for supplying air under pressure to said air pipes, and removable caps or covers for closing one end of said air pipes whereby access may be gained to the interior thereof for cleansing purposes.

4. An apparatus of the character described comprising a separating chamber having a spreading inlet pipe for conducting material thereinto, air pipes for directing angularly disposed blasts of air on opposite sides of the material as it leaves the spreader, a discharge pipe leading from said chamber, and adjustable baffle plates arranged in said discharge pipe.

5. A separating apparatus of the character described comprising a separating chamber having a spreader for conducting the material thereinto, and angularly disposed rotatably adjustable nozzles for emitting blasts of air on opposite sides of the material as it leaves said spreader.

6. A separating apparatus of the character described comprising a separating chamber having a spreader for conducting the material thereinto, pipes arranged in said spreader and having angularly disposed nozzles for emitting blasts of air on opposite sides of the material as it leaves the spreader, and removable closures at the ends of said pipes for giving access to the interior thereof for cleaning purposes.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this 27th day of December, 1915.

EDWARD J. STECKLE.

Witnesses:
AUG. GEHANT,
GROVER W. GEHANT.