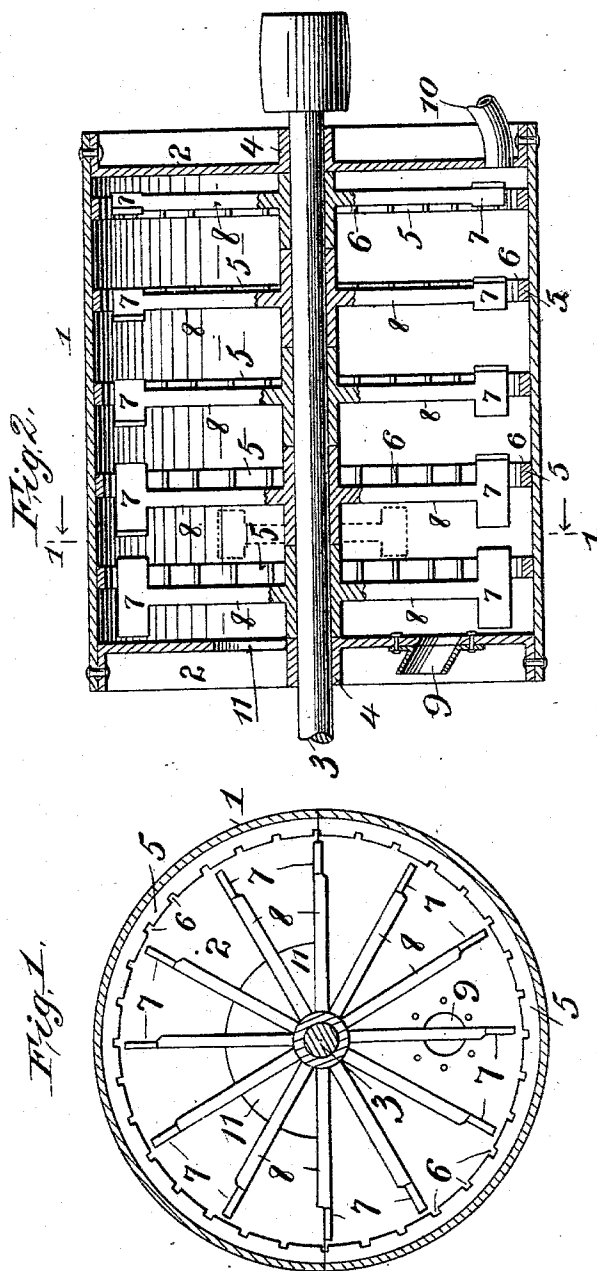


(No Model.)

H. C. WITMER.
PULVERIZER AND BLOWER.

No. 561,744.

Patented June 9, 1896.



WITNESSES:

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HENRY C. WITMER, OF UNION HILL, NEW JERSEY.

PULVERIZER AND BLOWER.

SPECIFICATION forming part of Letters Patent No. 561,744, dated June 9, 1896.

Application filed September 26, 1895. Serial No. 563,707. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. WITMER, of Union Hill, Hudson county, New Jersey, have invented certain new and useful Improvements in Pulverizers and Blowers, of which the following is a specification.

My invention relates to improvements in the class of pulverizers which have rotative blades or bats within a casing, which blades or bats are arranged to strike fuel or other material to pulverize it.

The object of my invention is to cause large particles or pieces of fuel or other material to be pulverized to be retarded from being carried around by the blades or bats and to be quickly broken into finer pieces; and to this end the invention consists in a casing having interior ribs provided with a series of notches or corrugations in combination with a rotative shaft and a series of blades or bats carried by said shaft, whereby as the blades or bats are carried around the large particles or pieces of fuel or other material within the casing will be caught between the blades or bats and the notches on the ribs, and said notches will retard said large particles or pieces of fuel or material from being carried around, and will also, in conjunction with the blades or bats, cause said fuel or material to be broken into finer particles or pieces.

Reference is to be had to the accompanying drawings, forming part hereof, wherein—

Figure 1 is a cross-section of a pulverizer embodying my improvements on the line 1 1 in Fig. 2, and Fig. 2 is a central longitudinal section of the pulverizer.

In the accompanying drawings, in which similar numerals of reference indicate corresponding parts in the several views, 1 indicates a hollow casing having heads 2 2 suitably connected thereto. The casing 1 is made in two or more sections to permit access to its interior. 3 is a shaft passing longitudinally through the casing and journaled in suitable bearings thereon, and rotated by any desired means, such as pulley and belt.

Within the casing 1 are a series of annular ribs 5, which on their inner faces are provided with a series of notches or corrugations 6, as shown. Any suitable number of these ribs 5 can be used, and the notches 6 are placed at

short distances apart—say one and one-half inches—the notches 6 being quite shallow—say one-eighth of an inch deep.

7 are blades or bats within the casing 1, which blades are shown carried by arms 8, suitably secured to the shaft 3, so as to be carried around with said shaft. There are any suitable number of these arms 8 arranged radially around the shaft in spider form, the blades or bats 7 being arranged in series around the shaft. The outer edges of the blades 7 lie within the arc described by the inner face of the ribs 5, so as to encounter material that may lie on said ribs. By preference the series of blades or bats are placed at gradually-increasing angles relatively to the axis of the shaft, from one end of the casing 1 to the other end, or, in other words, the first series of blades or bats 7 at the left in Fig. 2 is placed parallel, or nearly so, to the axis of the shaft, and the next series of blades is set at an angle to the axis of the shaft, the next series being at a greater angle, and so on throughout all the series. By this means the fuel or other material to be pulverized that enters the casing 1 through an inlet 9 is struck by the first series of blades, and it is gradually fed forward through the casing by the rotation of the blades, which, by their peculiar angular arrangement relatively to the shaft, cause a current of air to develop within the casing, which travels toward the outlet 10, and the last series of blades, or the ones near the outlet 10, cause the pulverized material to be forced from the casing. When comparatively large pieces of fuel or other material enter the casing, they will be caught by the rotating blades, and as such pieces fall on the ribs 5 the edges of the notches 6 encounter the pieces and retard them from being carried around by the blades, and the blades and notches together act on such pieces of material to break them into smaller pieces, somewhat of a grinding action taking place. The rotation of the blades also causes a fine pulverization of the fuel or other material as it is tossed about within the casing, and this pulverization is also produced by the attrition of the particles of material one upon another.

11 is an inlet for air whereby the rotative blades will cause a free circulation of air

through the casing, these blades that pulverize the fuel also acting to mix the fuel or material with the air and to force said mixture of fuel and air out through the outlet 10.

5 My improved pulverizer is particularly adapted for use for supplying a mixture of pulverized fuel and air to the combustion-chamber of a furnace, as it will properly pulverize the fuel, mix it with air, and force the
10 proper quantity of the mixture of air and fuel to the furnace. The notched or corrugated ribs assure that large particles or pieces of fuel will not be delivered from the casing; but of course the pulverizer can be used to pulverize other suitable materials.

15 It is evident that the blades or bats 7 can be suitably arranged as regards size, quantity, and position. For instance, one series of blades can be carried on long arms 8, and
20 another series on shorter arms, as in dotted lines in Fig. 2, to strike the fuel that may drop toward the shaft, and also to create a cross rotary air-current within the casing to retard the flow of pulverized material from
25 the casing.

Having now described my invention, what I claim is—

1. In a pulverizer, a casing having interior annular ribs which project from the inner working surface of the casing, the inner surfaces of which ribs are notched or corrugated, in combination with a rotative shaft within said casing and series of blades or bats carried by said shaft, the outer edges of said blades or bats lying within a circle described by the inner faces of said ribs, substantially as described. 30 35

2. In a pulverizer, a casing having interior annular ribs the inner surfaces of which are notched or corrugated, in combination with a rotative shaft within said casing and series of blades or bats carried by said shaft and placed at gradually-increasing angles relatively to the shaft and arranged to coact with the notched ribs to break pieces of material to be pulverized. 40 45

HENRY C. WITMER.

Witnesses:

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