April 8, 1930. M. J. P. MOORE 1,753,936

BLOWER FOR POWDERED FUEL

Filed June 17, 1926

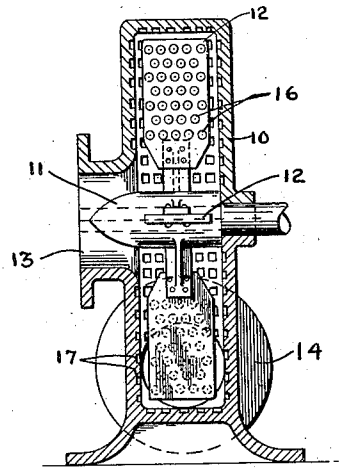


Fig. 1.

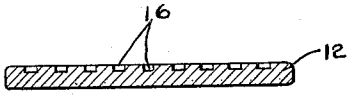


Fig. 2.

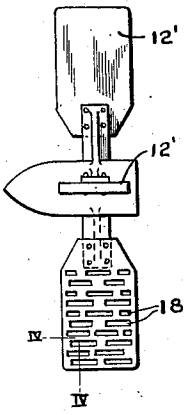


Fig. 3.

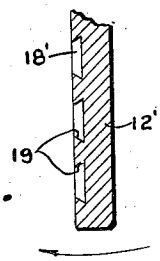


Fig. 4.

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WITNESSES:

Patented Apr. 8, 1930 1,753,936

UNITED STATES PATENT OFFICE

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BLOWER FOR POWDERED FUEL

Application filed June 17, 1926. Serial No. 116,626.

My invention relates to apparatus for handling pulverulent material in a suspended state, more particularly to a blower apparatus for handling pulverized coal, and has for its object the provision of apparatus of the character designated which shall be sturdy of construction and capable of running for long periods of time without renewal of parts.

Apparatus embodying features of my invention is illustrated in the accompanying drawings forming a part of this specification in which:

Fig. 1 is a vertical sectional view of a blower embodying features of my invention;

Fig. 2 is a transverse sectional view through a rotary blade of the blower, drawn to a larger scale than Fig. 1;

Fig. 3 is a view showing a modified form of my invention; and

Fig. 4 is a partial vertical sectional view.

In blower apparatus for handling pulverent material, such as powdered fuel and the like, difficulties have been encountered due to the rapid wearing away of the blade and casing of the blower resulting from impact and abrasive action of the pulverulent material therewith. This rapid wearing away results in frequent renewal of parts entailing considerable expense and withdrawal of a unit from service while being repaired.

I have discovered that this difficulty may be overcome by roughening the surfaces of the moving blades and the interior of the casing of the blower apparatus, such as by means of indentations or recesses in which the pulverulent material lodges and packs hard. The material thus filling the recesses bridges over between the recesses so as to form a solid incrustation over the blades and over the surface of the interior of the casing. Due to this mode of construction, the parts of the apparatus subject to impact and abrasive action of the pulverulent material have scarcely any wear, the incrusted material on the blades and casing forming wearing surfaces for the material moving through the apparatus.

Referring now to the drawings for a more detailed description of my invention, I show, in Fig. 1, a blower of the centrifugal type for pulverulent material and embodying a casing 10 and a rotating element 11 having fan blades 12—12 mounted thereon. The pulverulent material passing through the apparatus enters through an inlet 13 and is discharged by action of the rotating element 12 through an outlet 14.

In order to protect the wearing surfaces of the blades 12—12 of the blower, I provide said wearing surfaces, or the forward surfaces thereof in the direction of rotation, with a plurality of recesses as shown at 16—16. Likewise, the interior of the casing is provided with a plurality of recesses 17—17 in its inner surface. In operation, the pulverulent material being subjected to the action of the rotary element 12, packs into the indentations or recesses 16—16 of the blades and into the recesses 17—17 of the casing. This action has been found to be especially true of powdered coal which contains a certain amount of moisture and which moisture assists in retaining the particles together in the recesses. After the apparatus has run for a short period of time, the material in the recesses protrudes outwardly and bridges over the spaces between adjacent recesses so that an incrustation of the material covers practically the entire wearing surfaces of the blades and the interior of the casing.

The roughened surfaces of the blades and of the interior of the casing may be produced in any desired manner. The recesses may be formed by punching or stamping the blades or the casing. If cast blades or casings are employed, they may be cast with the recesses therein.

In Figs. 1 and 2, I show the recesses of the fan as being round in construction while those of the casing are shown as being square in cross section. Obviously they may be modified in many ways.

In Fig. 3, I show blades 12′—12′ having elongated recesses 18—18 therein extending axially of the blade and in staggered relation to each other. This form I have found very desirable for certain materials.

The form of the indentations may be further modified so as to increase their adaptability to retain the pulverulent material by un-

dercutting the recesses. Thus the recesses 18—18 of the blade 12′ are shown as being undercut at 19—19 in Fig. 4. The direction of rotation of the blade 12′ is indicated by the arrow. Inasmuch as the back of the blade, considered in the direction of rotation, is not subject to the abrasive action of the pulverulent material, no recesses are shown therein. If any type of construction should be employed wherein both sides of the blades are subject to the abrasive action of the pulverulent material, both sides should be provided with recesses.

From the foregoing it will be apparent that I have devised an improved form of blower apparatus for pulverulent material embodying blading and a casing having roughened surfaces whereby an incrustation of the material to be handled forms over the blades and casing.

While I have shown my invention in several forms it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various other changes and modifications, without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are imposed by the prior art or as are specifically set forth in the appended claims.

What I claim is:

1. In a blower apparatus for handling pulverulent material, a rotor element having blades with indentations therein on the side thereof subject to the abrasive action of said material, said indentations having undercut sides.

2. A blade for a rotor element of a blower adapted to handle pulverulent material in suspension, the said blade having a face subject to the abrasive action of the pulverulent material and said face of the blade having indentations with undercut sides formed therein adapted to receive and to permit the pulverulent material to be packed therein.

3. In a blower for handling pulverulent material, the combination with a casing having inlet and outlet openings, of a rotor within the casing for imparting movement to the pulverulent material and including a blade having a face subject to the abrasive action of the pulverulent material, the face being provided with a plurality of closely spaced indentations or recesses, each of which is defined by closed side walls and the longest dimension of each recess being substantially less than the width of the blade, whereby, when operating, the pulverulent material will pack within the indentations and eventually form an incrustation over the wearing face of the blade thereby protecting the latter.

In testimony whereof, I have hereunto subscribed my name this 11th day of June, 1926.

MORTIMER J. P. MOORE.