

Nov. 4, 1952

E. M. PARRISH

2,616,764

WEAR RESISTANT BLOWER SURFACE

Filed May 22, 1948

2 SHEETS—SHEET 1

Fig. 2.

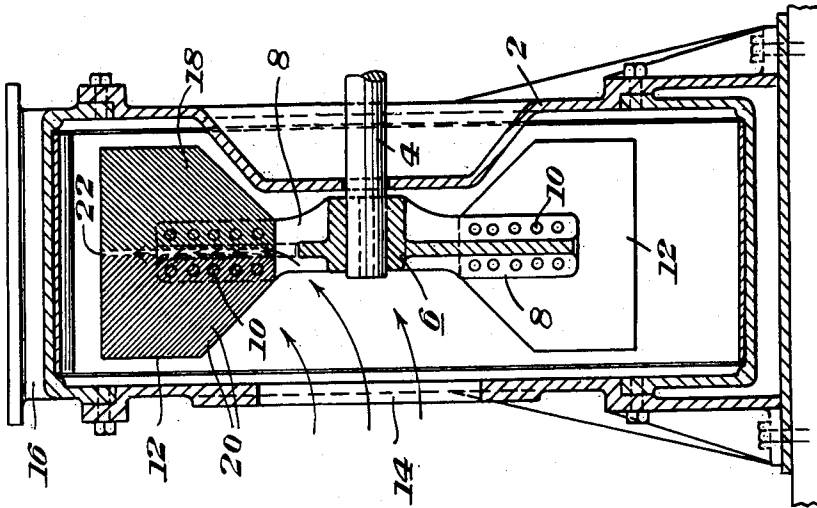
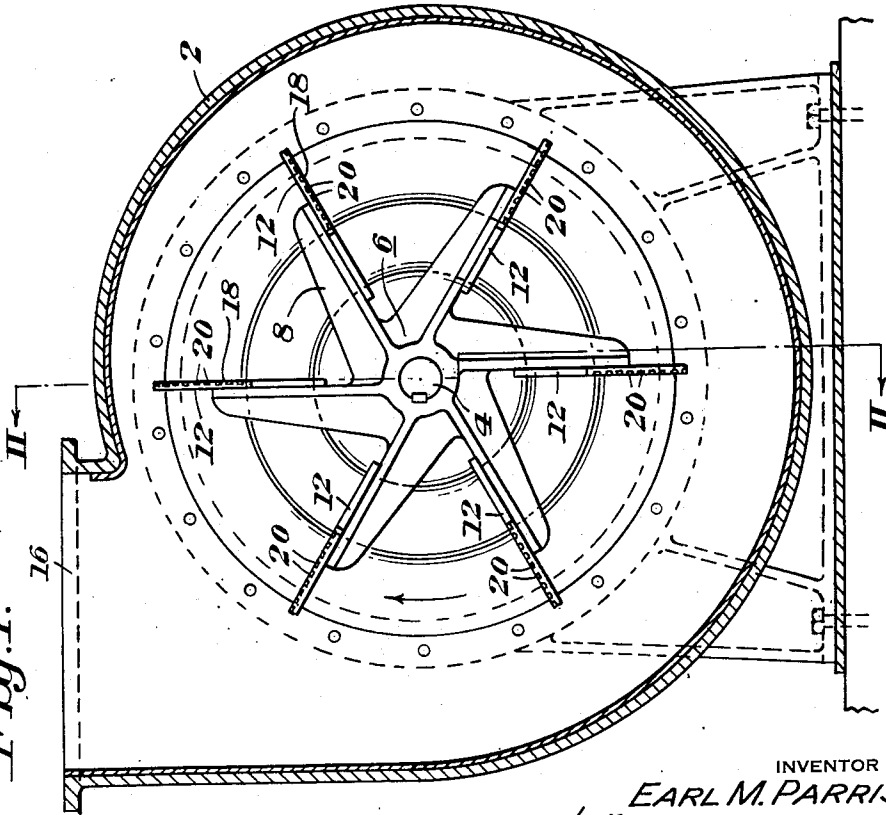


Fig. 1.



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2 SHEETS—SHEET 2

Fig. 3.

Fig. 4.

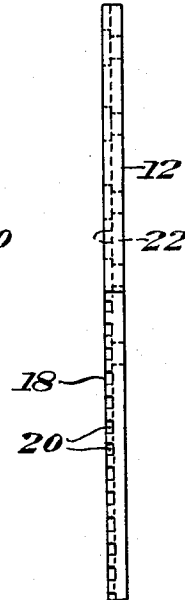
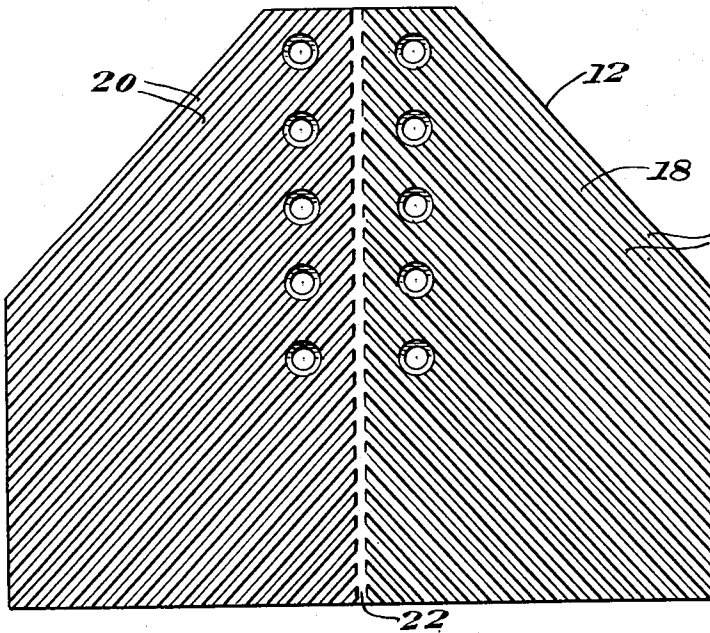


Fig. 5.

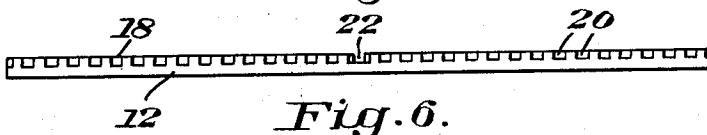
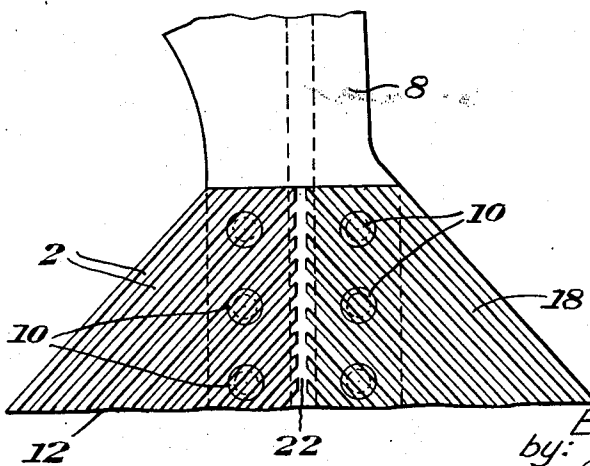


Fig. 6.



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UNITED STATES PATENT OFFICE

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WEAR RESISTANT BLOWER SURFACE

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Application May 22, 1948, Serial No. 28,625

3 Claims. (Cl. 302—37)

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This invention relates to a wear resistant blower surface and more particularly to such a surface on the blade of the rotor element of a blower for handling pulverized coal or other particles suspended in air. It has long been known that certain surfaces, particularly the blade, of blowers handling powdered coal and like material became worn in a relatively short time and have to be replaced. While the cost of the blade itself is not particularly high, the total cost of replacing the blades is because the blower must be taken out of service for the replacement of the blades. For this reason many attempts have been made to protect the surfaces of the blade. It has been suggested that transverse grooves be provided in the blades which will fill with the pulverized coal and increase the life of the blade. It has also been suggested that transverse ribs be provided on the blade and spaced so that the particles will strike the ribs and be thrown outwardly. While these suggestions have increased the life of the blades somewhat, they have not been as successful as desired.

I have found that the life of the blade may be materially increased by arranging grooves therein at an obtuse angle to the path of travel of the particles as they strike the face of the blade with the grooves diverging toward the edges of the blade. The coal does not collect in these grooves, but apparently is distributed over the surface of the blade so that wear is not concentrated on a limited area. Regardless of the reason therefor the blade lasts for a much longer time than the blades formerly used.

It is therefore an object of my invention to provide a blower blade having grooves therein arranged at an obtuse angle to the path of travel of the suspended particles as they strike the blade.

This and other objects will be more apparent after referring to the following specification and attached drawings, in which:

Figure 1 is an elevation, partly in section, of a blower with my invention embodied therein;

Figure 2 is a sectional view taken on the line II—II of Figure 1;

Figure 3 is an enlarged view of the blade of my invention;

Figure 4 is a side view of the blade of Figure 3;

Figure 5 is an end view thereof; and

Figure 6 is an enlarged view showing the blade connected to the arm of the blower.

Referring more particularly to the drawings the reference numeral 2 indicates the housing of a blower. A shaft 4 is rotatably mounted in the

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housing 2. Attached to the shaft 4 for rotation therewith is an impeller 6 having a plurality of substantially radial arms 8. Fastened to each of the arms 8 by means of bolts 10 is a blade 12. A central opening 14 is provided in one side of the housing 2 for introducing air and suspended particles into the housing. The air and suspended particles are discharged from a tangential opening 16 in the housing 2. The path of travel of the air and suspended particles from the opening 14 to the blades 12 is shown by the arrows in Figure 2. The structure so far described is that of a blower of a common type.

The leading face 18 of each of the blades 12 is provided with a plurality of parallel grooves 20 arranged at an obtuse angle to the path of travel of the air and suspended particles which path, in the example shown, is substantially on the longitudinal centerline of the blade. A groove 22 is provided on this longitudinal centerline with half of the grooves 20 diverging therefrom toward one longitudinal edge and the other half diverging toward the other longitudinal edge. The purpose of the groove 22 is to facilitate machining of the grooves 20 and may be omitted if desired. The heads of the bolts 10 are also grooved to match the grooves 20 in the blade 12. As shown, the grooves 20 are arranged at an angle of 45° with the longitudinal edges of the blades.

The arrangement shown above is that found to be particularly suited for the blower described, but in other blowers the arrangement may be different. In any case it is only necessary to determine the path of travel of the particles as they strike the face of the blade and arrange the grooves at an obtuse angle to that path of travel.

While one embodiment of my invention has been shown and described, it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

I claim:

1. A rotary blower including a housing, an impeller rotatably supported therein, said impeller having blades extending outwardly from the center thereof, means for introducing air and suspended particles at the center of said housing adjacent the axis of said impeller, means arranged tangentially of said housing for delivering the air and suspended particles from said housing, each of said blades having a face thereon subject to the abrasive action of the particles, each of said faces having a plurality of closely spaced grooves therein arranged at an obtuse angle to a radial plane adjacent the center of the

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face, the grooves in each blade diverging from said radial plane and the axis of the impeller toward the longitudinal edges of the blade.

2. A blade for a rotor element of a blower adapted to handle particles in suspension comprising a face on said blade subject to the abrasive action of the particles, said face having a plurality of closely spaced grooves therein arranged at an obtuse angle to a radial plane adjacent the center of said blade and diverging therefrom toward the edges of the blade.

3. A blade for a rotor element of a blower adapted to handle particles in suspension comprising a face on said blade subject to the abrasive action of the particles, said face having a plurality of closely spaced grooves therein on

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each side of the radial center line of said blade, the grooves on each side diverging from said center line and the axis of rotation of the rotor toward the adjacent edge and forming an obtuse angle with said center line.

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REFERENCES CITED

The following references are of record in the file of this patent:

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