

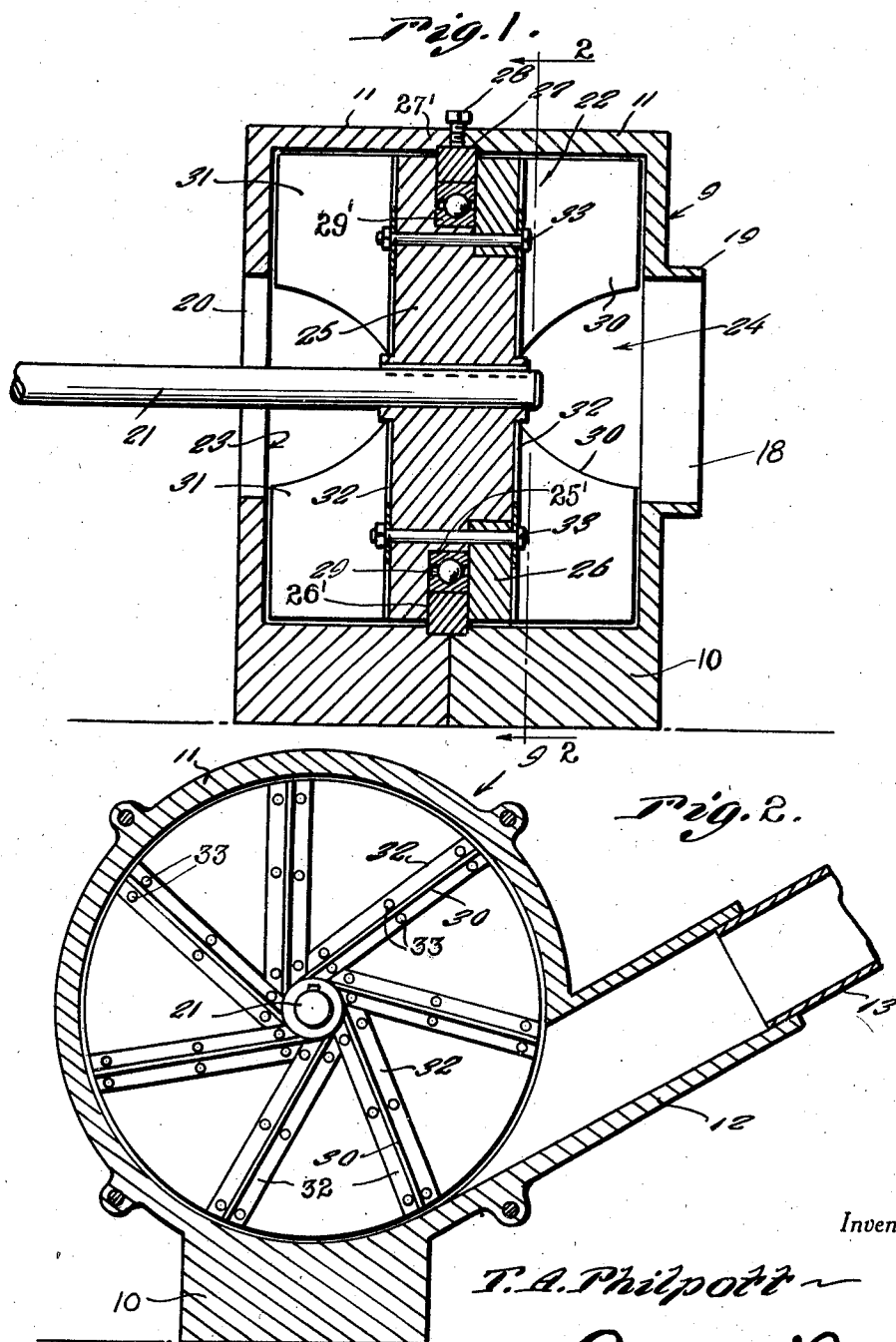
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T. A. PHILPOTT

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DUST AND DIRT COLLECTING AND DISPOSAL MACHINE FOR MINES

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DUST AND DIRT COLLECTING AND DISPOSAL MACHINE FOR MINES

Tyra A. Philpott, Phoenix, Ariz.

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2 Claims. (Cl. 230—128)

This invention relates to a portable blower and suction apparatus for use in coal mines and the like in connection with a vacuum or suction cleaning apparatus to draw dust and dirt therethrough and to discharge the same through a discharge conduit into a suitable storage receptacle.

Briefly stated, the invention seeks to provide an efficient double-acting, power operated fan unit serving in one instance as suction means and in another instance as a blower and in which friction is reduced to a minimum.

Other features and advantages will become readily apparent when the following description and claims are read with reference to the drawing accompanying and forming part of this specification.

In said drawing:—

Figure 1 is a view in vertical central section taken through the apparatus of my invention, and Figure 2 is a view in vertical section taken on the line 2—2 of Figure 1 looking in the direction indicated by the arrows.

Referring to the drawing by numerals, in the preferred embodiment thereof, the apparatus of my invention comprises a substantially circular casing 9 and a base 10 formed of separable companion sections 11. The casing 9 is provided with a peripheral centrifugal discharge neck 12 serving to accommodate an appropriate dust disposal and delivery tube 13 for connection to a discharge storage receptacle not shown.

It will be observed that one side of the casing 9 is provided with an axial inlet opening 18 having an outstanding attaching nipple 19 for attachment to the apparatus of a suction line, not shown, leading from a vacuum cleaner or the like. On the opposite side, the casing 9 is provided with an atmospheric small inlet opening 20 which is also axially arranged and permits passage therethrough of a power shaft 21 for operating the centralized bladed rotor or impeller 22. The central disposition of the rotor 22 divides the casing 9 into separate compartments 23 and 24, respectively, and these register properly with the before-mentioned discharge neck. The rotor 22 embodies a main section 25 having a rabbeted periphery, as at 25', and a supplementary detachable ring, or plate, section 26 so assembled as to form an annular groove, or channel, 26' around the perimeter of the rotor 22 which accommodates anti-friction devices. The latter comprises a relatively fixed annulus 27 countersunk in the inner face of the casing 9 as at 27', and held in place by suitable fastenings 28, said annulus serving to accommodate the outer ball race means

29 opposed to an inner ball race 29' fitting in the groove 26'. The foregoing anti-friction mounting for the rotor 22 provides for reducing friction to a minimum in the operation thereof. A plurality of radial blades are mounted in proper sequence on opposite sides of the rotor 22. The blades on one side are designated by the numeral 30 and those on the other side by the numeral 31. The blades 30 and 31 are formed with attaching flanges 32 having bolts 33 passing there-through into said rotor to maintain the parts in proper assembled relation. It will be observed, upon reference to Figure 1, that the bolt and flange arrangement is such that the same bolts 33 also serve to hold in place the beforementioned supplemental ring, or plate 26. It will also be noted that the inner adjacent ends of the respective sets of blades 30, 31 are properly cut away to facilitate taking in atmospheric air through the opening 20 and dust-laden air through the opening 18.

When the fan and rotor assembly, above described, is set into operation, dust-laden air within the vicinity of the casing 9 is drawn into the same by way of the atmospheric opening 20. Simultaneously the suction set up on the opposite side of the fan and rotor assembly serves to take in dust and dirt through the opening 18. In addition to developing the necessary suction the fan and rotor assembly produces the desired blower action driving out the dust-laden air by way of the neck 12 and tube 13.

The foregoing will, it is thought, suffice to impart a clear understanding of the invention and therefore a more lengthy description is thought to be unnecessary.

Although a preferred embodiment of the invention is shown and described, it is to be understood that modifications falling within the scope of the subjoined claims may be resorted to if desired.

I claim:

1. In a multiple impeller fan, a substantially cylindrical casing, an annular member countersunk in the inner face of said casing to extend inwardly therefrom in the diametrical center thereof, a fan in said casing including a rotor rotatably mounted on said member and dividing the casing into two compartments, said rotor having a rabbeted periphery and including a detachable side plate forming together with said rabbet a circumferential groove in the rotor receiving said member, anti-friction devices in said groove between said member and said rotor, and

blades secured to opposite sides of the rotor for operation in said compartments.

2. In a multiple impeller fan, a casing comprising a pair of substantially cylindrical chambered sections, having an open inner end and an outer end wall, respectively, and being secured together with the open ends thereof opposed in edge-to-edge mating relation, the mating edges of said sections being rabbeted, respectively, to form a circular internal seat around the casing in the diametrical center thereof, an annular mem-

ber fitting into said seat to extend inwardly of the casing, a rotor rotatably mounted on said member and dividing the casing into two compartments said rotor having a peripheral groove therein receiving said member, and blades secured to opposite sides of the rotor for operation in said compartments, the outer end wall of each section being apertured axially to establish communication between said compartments and the outside atmosphere.

TYRA A. PHILPOTT.