This invention relates to blowers and pumps and, more particularly, to rotary type pumps and blowers.

The pump or blower disclosed herein constitutes an improvement over prior such devices by having rotors supported each on a single end of a shaft and, further, having bearings integral with the shaft. An oil breather hole is provided which eliminates the centrifugal pressure of the lubricant in which the gears are bathed. The oil feed is designed to give a visual reference to the level of oil in the gear chamber.

It is, accordingly, an object of the present invention to provide an improved blower or pump.

Another object of the invention is to provide a pump or blower which is simple in construction, economical to manufacture, and simple and efficient to use.

Still another object of the invention is to provide an improved pump.

With the above and other objects in view, the present invention consists of the combination and arrangement of parts hereinbefore more fully described, illustrated in the accompanying drawings and more particularly pointed out in the appended claim, it being understood that changes may be made in the form, size, proportions, and minor details of construction without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:

FIG. 1 is a side view of a pump according to the invention;
FIG. 2 is a cross sectional view taken on line 2—2 of FIG. 1; and FIG. 3 is another side view of the pump according to the invention.

Now with more particular reference to the drawings, the pump shown has a housing 11 with an integral space 27 which may be supported on any suitable support. The housing has journals for bearings 20 and 19 formed therein and has a gear case 30 which communicates with the oil sump 21 and has the impeller chamber 31 on the opposite side of the bearings. The gear case is closed by a plate 32 which is held in place by screws 33 and through the plate 32 extends the drive end of drive shaft 16. A breather hole 26 is formed in the plate 32 generally in alignment with the center of shaft 18. This breather hole eliminates the centrifugal pressure of the lubricant in the gear case.

Impellers 28 and 29 are supported on the impeller drive shaft 17 and impeller shaft 18. These impellers are mounted in the manner shown and they make sliding engagement with the inside walls 33 of the chamber and with each other as shown. The impellers are thus designed so that they draw oil in through the inlet 12 and discharge it through the outlet 13.

Gears 22 and 23 are locked to the shafts 16 and 18 by set screws 24 and 25 and thus, the drive shaft 16 drives the shaft 18 through the gears 22 and 23.

It will be seen that the hole in the gear case through which the shafts 17 and 18 extend are counterbored and these counterbores receive the bearings 20 and 19. Thus, when the bearings with the shaft integral therewith are inserted in the pump from the left hand side of FIG. 2, the plate 34 will be put in place and screws 35 lock it in place. Then when the gears 22 and 23 are put on the shaft and locked thereon, the entire assembly is locked in rigid position.

The filter 36 may be attached to the output of the pump as shown and this filter will filter air as it leaves the pump. The pump can also be used to filter liquid wherein the liquid is forced through the filter shown.

By making the filter of a capacity larger than the pump, the time between changes of the filter can be extended.

The bearings shown have balls 37 which are received in a groove 38 in a shaft and, likewise, balls 39 are received in grooves 41 in the shaft and corresponding grooves on the internal surface of the outer sleeve of the bearings. Thus, the shaft is held rigidly as shown against displacement.

The foregoing specification sets forth the invention in its preferred practical forms but the structure shown is capable of modification within a range of equivalents without departing from the invention which is to be understood is broadly novel as is commensurate with the appended claim.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

An air pump comprising a housing having an impeller chamber and a gear chamber spaced from each other by a partition, said partition having spaced bores therein, bearings in said bores, a shaft in each said bearing, said shafts being supported against angular displacement by said bearings, an impeller on each said shaft, each said impeller engaging the impeller on the other said shaft, means on each said shaft and disposed in said gear chamber connecting said shafts in operative relation with each other, drive means supported on each said shaft, each said bearing comprising a sleeve supported in said partition, spaced internal peripheral grooves in each said sleeve, spaced external grooves in each said shaft underlying said grooves in said sleeve, ball members in each said groove in said shaft engaging a said groove in a said sleeve, one said shaft being supported above the other, a bleed hole in said gear chamber disposed in alignment with the lower of said shafts, said bleed hole connecting the inside of said gear chamber with the outside thereof, and a filter on the output of said pump, said filter having a capacity substantially greater than the capacity of said pump.

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