

July 3, 1945.

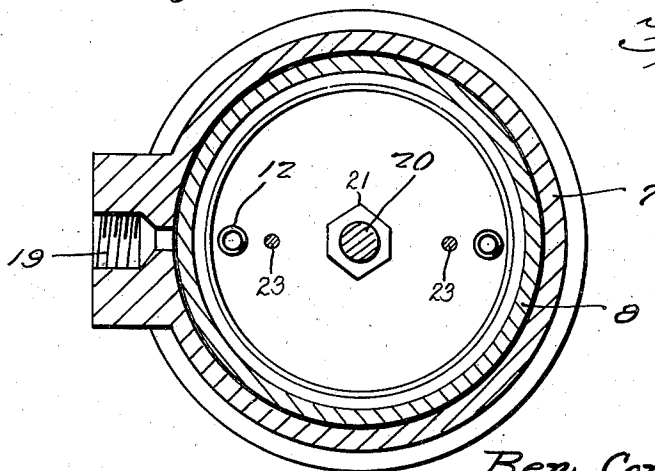
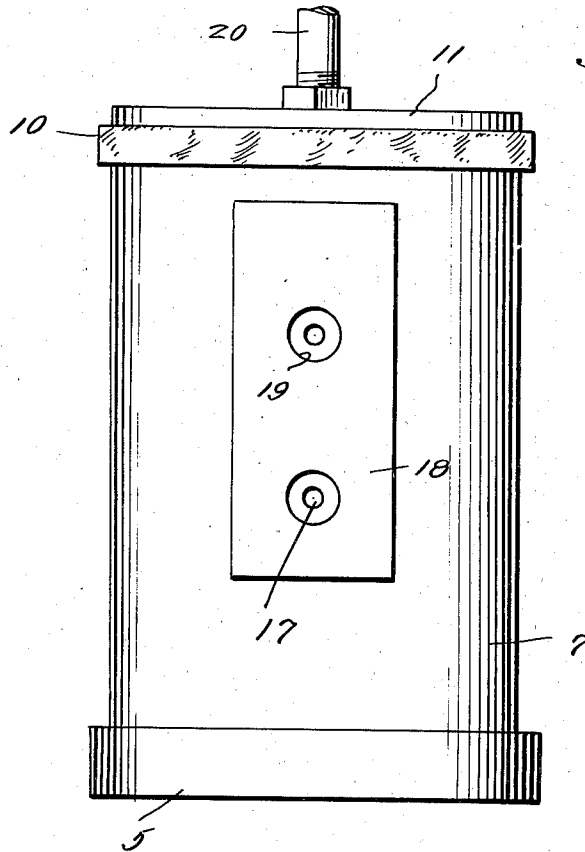
B. CONES

2,379,683

AIR MOTOR

Filed June 24, 1943

2 Sheets-Sheet 1



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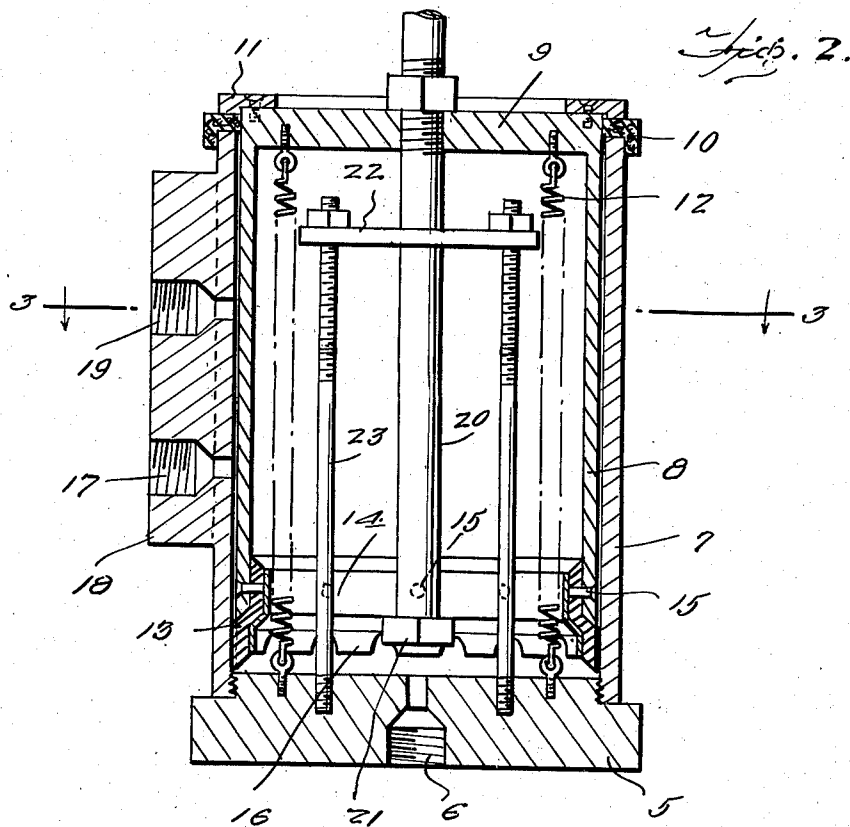
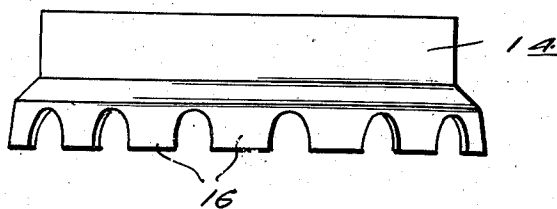


Fig. 4.



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UNITED STATES PATENT OFFICE

2,379,683

AIR MOTOR

Ben Cones, Indianapolis, Ind.

Application June 24, 1943, Serial No. 492,099

1 Claim. (Cl. 121—38)

The present invention relates to new and useful improvements in air motors and has for its primary object to provide a non-diaphragm type motor embodying a pair of telescoping cylinders having a novel air seal on the inner cylinder which has a tendency to cushion the movement of the inner cylinder and thus produce more gradual movement of a shaft damper, valve or other mechanism to which it may be connected.

A further object is to provide a device of this character of simple and practical construction, which is efficient and reliable in performance, economical to operate, relatively inexpensive to manufacture and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like reference numerals refer to like parts throughout, and in which—

Figure 1 is a side elevational view.

Figure 2 is a vertical sectional view.

Figure 3 is a transverse sectional view taken on a line 3—3 of Figure 2, and

Figure 4 is a side elevational view of the spring ring for the sealing ring.

Referring now to the drawings in detail wherein for the purposes of illustration I have disclosed a preferred embodiment of my invention, the numeral 5 designates a base having a threaded tap 6 adapted for attaching an air line thereto. An outer cylinder 7 rises from the base which is open at its top and in which an inner cylinder 8 or piston is arranged for working movement. The inner cylinder is open at its bottom and closed at its top as shown at 9. A felt packing ring 10 is positioned on the upper edge of the outer cylinder 7 and a ring 11 is secured to the top 9 and projects beyond the walls of the inner cylinder to strike the felt ring 10.

A pair of coil springs 12 connects the base 5 with the top 9 to retract the inner cylinder.

A flexible sealing ring 13 is secured to the inner wall of the inner cylinder adjacent its lower edge by rivets 15 and projects below the lower edge of the inner cylinder. The ring 13 may be constructed of any suitable material which is impervious to moisture and oil and heat resistant. A spring steel ring 14 is positioned within the sealing ring and is flared at its lower edge and scalloped to produce fingers 16 adapted to expand under the influence of air pressure entering the cylinder to compress the sealing ring 13 against the inner walls of the outer cylinder.

A lower threaded tap 17 is formed in a block 18 secured to the outer wall of the outer cylinder and which communicates with the interior thereof for attaching an exhaust pipe and a second threaded tap 19 is also formed in the block and likewise communicates with the outer cylinder above the tap 17.

A connecting rod 20 is threaded into the top 9 and extends through the top 9 into the inner cylinder with a nut 21 on its inner end adapted to engage a cross bar 22 secured on the upper ends of studs 23 rising from the base 5 to limit outward movement of the inner cylinder. The rod 20 may be connected to a lever, valve, damper or other mechanism to be operated by the air motor.

The air outlets 17 and 19 may be connected to auxiliary motors or valves (not shown) to utilize the exhausted air for operating the same.

The several elements forming the invention may be assembled in any practicable manner, as, for instance, first attaching the studs 23 and cross bar 22 to the base 5, then inserting the rod 20 through the top 9 of the piston 8 and downwardly through the cross-bar 22 after which the nut 21 may be attached to the lower end of the rod 20 while the piston is held upwardly away from the base. The upper ends of the springs 12 are attached to the underside of the top 9 of the piston 8 before the piston is placed over the studs 23, and after the rod 20 has been secured in position, the piston may be held upwardly above the base a sufficiently distance to permit a person's hand to grasp the lower ends of the springs and pull the same downwardly for hooking the lower ends of the springs in the screw-eyes carried by the base.

The cylinder 7 is then placed over the piston and threaded on the base, after which the ring 11 is secured on top of the piston.

It is believed the details of construction, operation and manner of use of the device will be readily understood from the foregoing without further detailed explanation.

Having described the invention, what is claimed as new is:

An air motor comprising an outer cylinder having a fluid inlet at its bottom and open at its top, a hollow piston working in the cylinder and open at its bottom and closed at its top, spring means retracting the piston, said cylinder having a discharge port in its side wall, a piston rod extending into the piston and adjustably secured therein, a stop in the cylinder, and means on the inner end of the rod engaging the stop to limit outward movement of the piston.

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