Nov. 19, 1963 P. P. DEMAY 3,111,259

CONTINUOUSLY OPERATED COMPRESSORS

Filed March 22, 1961 3 Sheets-Sheet 1

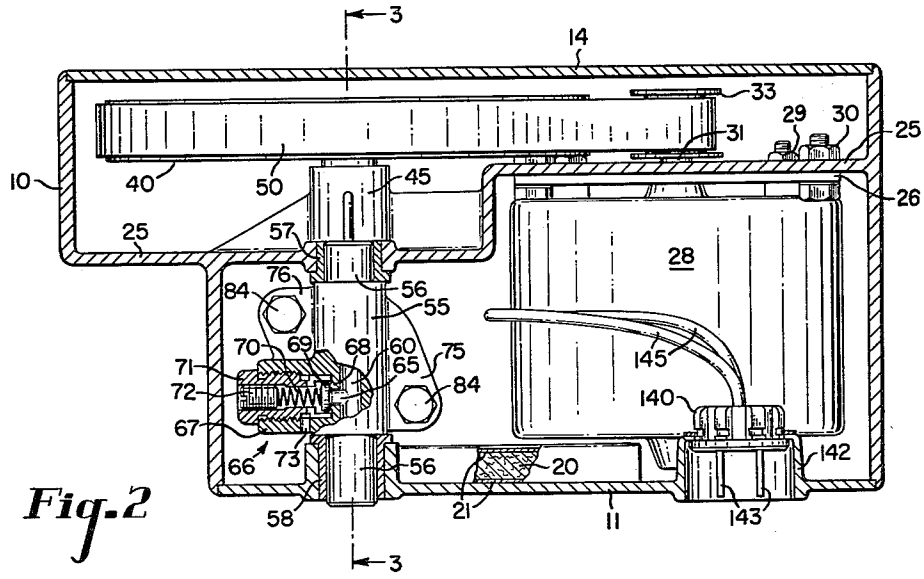


Fig. 2

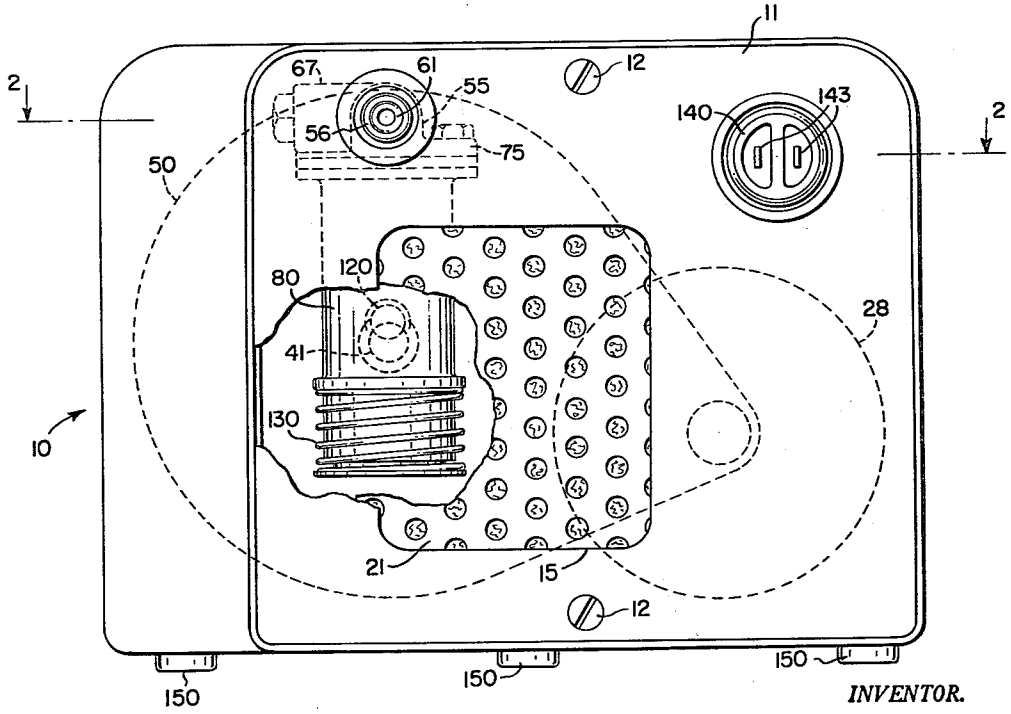


Fig. 1

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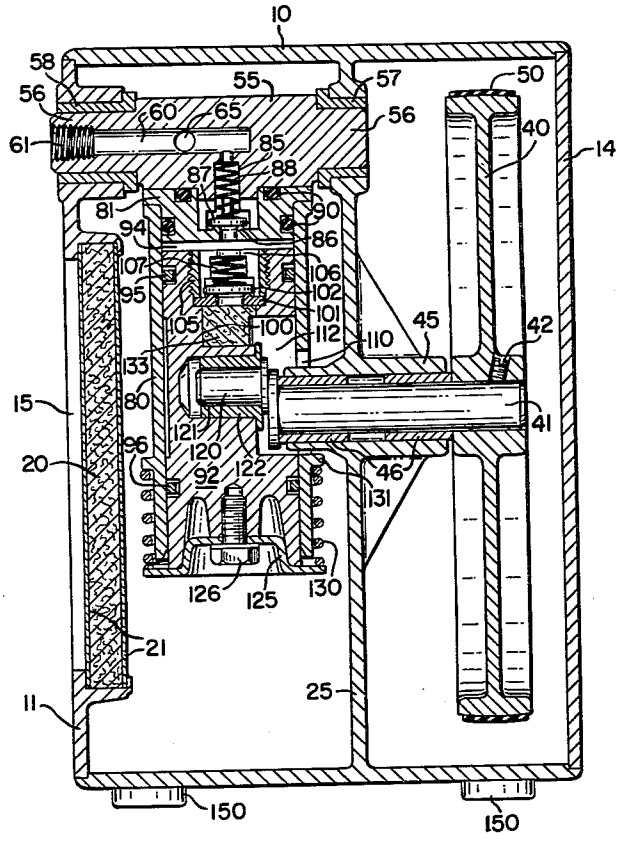


Fig. 3

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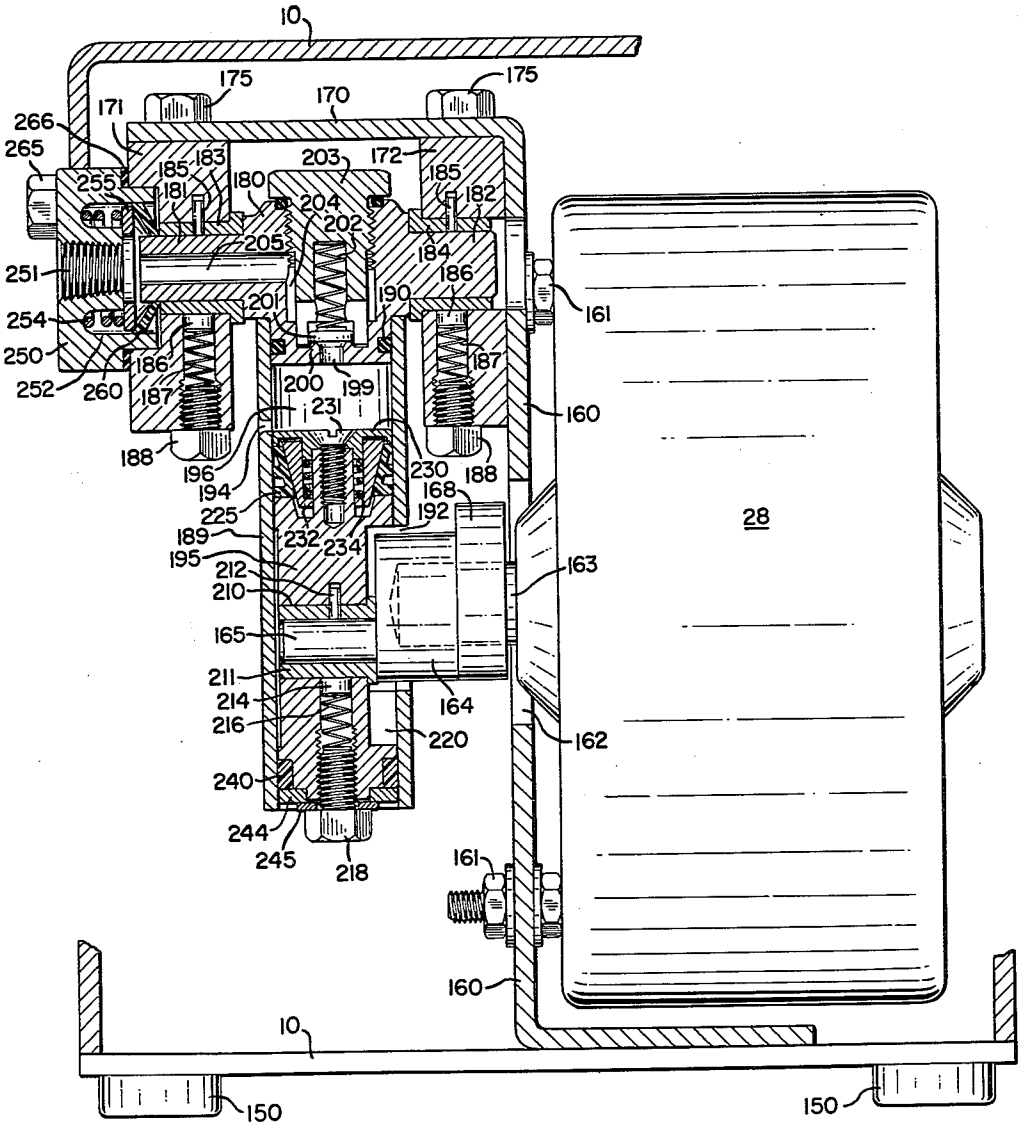


Fig. 4

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United States Patent Office 3,111,259 Patented Nov. 19, 1963

3,111,259

CONTINUOUSLY OPERATED COMPRESSORS

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Filed Mar. 22, 1961, Ser. No. 97,575
12 Claims. (Cl. 230—58)

My invention relates to compressors and more particularly to a small, low-cost, continuously operating compressor suitable for use as a pneumatic supply and control source in the operation of individual pneumatic controls used in small installations such as residential heating and ventilating systems and in similar commerical installations.

Air compressors of this type are known and used. The operating requirements for continuous operation of devices of this type present certain maintenance problems, particularly as to the filters included in the compressor, and because of wear to the moving parts particularly to bearings in eccentrically driven piston type compressors. The present apparatus is directed to an improved compressor design which permits simple maintenance of the air filter and providing filter sizing for adequate inlet air. In addition it provides an eccentric drive to the movable piston of the compressor with provision for oscillating the cylinder and manifold connected thereto to take up side thrust and bearing wear due to the oscillatory motion imparted to the piston by the eccentric drive. Therefore, it is an object of this invention to provide an improved, small, low cost, continuously operated type of air compressor suitable for supplying a pneumatic control source to operate individual controllers in residential and small commercial type pneumatic installations. Another object of this invention is to provide in a compressor of this type an arrangement in which a bracket within a casing mounts the drive motor, transmission, manifold and cylinder for the compressor with an air inlet in a removable portion of the casing and a filter included in the air inlet. A still further object of this invention is to provide a piston type compressor which is mounted on a journalled manifold to take up side thrust and wear in the eccentric driving connection between the piston and the driving means. These and other objects of the invention will be apparent from a reading of the attached description together with the drawings wherein:

FIGURE 1 is a side elevation view of my improved compressor with parts in section,

FIGURE 2 is a sectional view of the compressor of FIGURE 1 taken along the lines 2—2 of FIGURE 1,

FIGURE 3 is a sectional view of the compressor shown in FIGURE 2 taken along the line 3—3 therein, and

FIGURE 4 is a sectional view of another embodiment of the compressor.

My improved compressor is shown in the drawings as housed in a casing generally indicated at 10, the casing being generally boxlike or rectangular in form and having a removable front cover portion or member 11 which is adapted to be suitably secured to the casing through a screw means such as indicated at 12. As indicated in FIGURES 2 and 3 the casing also includes a back cover 14 which is mounted on or otherwise suitably secured to the side portions of the casing and permits assembly of the apparatus that is normally not removable. The casing is designed to be substantially airtight and includes an aperture in the front cover indicated at 15 which, as will be later noted, provides the air inlet to the compressor. Positioned in this aperture is a filter indicated at 20 having a suitable screen portion 21 positioned on either side of the same to hold the filter in position and provide for air passage therethrough.

As will best be seen in FIGURES 2 and 3, there is positioned within the casing a dividing wall or support 25 which extends between the sides of the casing and as will be later noted serves to mount the components of the compressor. Although the divider or support is shown integral with the casing walls herein, it will be recognized that this may be a separate part which is secured to the casing walls. Mounted on this wall or support is plate 26 which mounts the drive motor 28. Motor 28 is secured to plate 26 through connecting means 29 extending through an aperture (not shown) in the supporting wall. The plate in turn is adjustably connected to the wall 25 through nuts and bolts 30, as will be later noted. The operating shaft 31 extends through an aperture in the supporting wall (not shown) and mounts a pinion member 33 which is positioned on the opposite side of the wall from the motor.

Also positioned on this side of the support 25 within the casing and mounted in line with the pinion 33 is a pulley 40 which is mounted on a shaft 41 and suitably secured thereto through a key means indicated at 42. The shaft is journalled in a flange portion 45 on the support member 25 through suitable bearing inserts, indicated at 46, the shaft extending to the opposite side of the support member from that on which the pulley is located. A belt 50 is positioned around the pulley and pinion in a driving connection such that rotation of the motor may be imparted through the pulley to the shaft in a conventional manner. Motor mounting plate 26 is adjustable to provide proper tension on belt 50.

Support member 25 also mounts a manifold 55 for the pump or compressor, the manifold having a pair of bearing or journalled surfaces or trunnions at either extremity thereof as indicated at 56 which fit into a bearing insert 57 in the support wall and a bearing insert 58 positioned in an aperture in the cover 11 to support the manifold and pivot the same between these two structures (see FIGURE 3). The manifold 55 includes an axially extending port or passage 60 having a tapped outer extremity 61 which forms the outlet for the compressor and extends beyond the face of the cover portion 11 of the casing. The manifold also includes a transversely extending port or passage 65 from the outlet passage which is positioned intermediate the trunnion surfaces 56 of the manifold and provides a relief passage terminating in a relief valve indicated at 66 in FIGURE 2. The relief valve is conventional and is housed in a hub portion 67 on the manifold. It includes a valve seat 68 and a valve closure member 69 cooperating therewith which is urged against the seat by means of a spring 70. The spring 70 is held in position and guided by means of a guide member 71 threaded into a tapped aperture in the flange 67 and including an adjusting screw 72 bearing against the extremity of the spring to adjust the tension on the same. A transversely extending passage 73 communicating with the interior of the casing and the chamber between the valve closure member and the spring guide 71 provides an outlet path beyond the check valve.

The manifold 55 also includes flange portions 75, 76 by means of which the manifold mounts the cylinder indicated generally at 80 for the pump. Included in this assembly of parts is an outlet check valve section, indicated at 81, which is held is assembled relationship with cylinder 80 and manifold 55 by means of screw means indicated at 84. Communicating with the outlet port or passage 60 is a transversely extending passage 85 extending through the check valve section 81 in which a valve seat 86 is incorporated. A valve closure member 87 guided in a guide section 89 of manifold 55 cooperates with the valve seat to provide the valving in the passage from the compressor to the outlet port 60. The valve closure member has associated therewith a spring 88 which urges the closure member down on the valve seat, and the valve

housing section 81 is sealed to the manifold and cylinder 80 through suitable sealing means, such as O rings indicated at 90.

Positioned within the cylinder 80 is a piston 92 which is adapted to slide back and forth within the cylinder and forms with the check valve portion 81 of the cylinder and the main body of the cylinder 80 a compression chamber indicated at 94. The piston 92 is sealed to the walls of the cylinder 80 at its upper extremity through a suitable sliding seal or compression ring member 95. A wear ring 96 is included at the lower extremity of piston 92. The interior of the piston includes a passage generally at 100 which extends axially to the compression chamber 94 and includes a recessed portion in which is positioned the valve seat 101 for the inlet check valve member which has cooperating therewith a valve closure member 102. The valve seat is held in position and is retained by means of a threaded valve retainer 105 which fits into a detent portion of the recess and provides a flange portion 106 which serves to provide a support for one end of a spring 107 which bears against the valve closure member 102. The opposite end of this passage extends through an aperture 110 in the cylinder portion 80 into the which extends the flange 45 of the support 25 containing the shaft 41. The aperture or passage 110 and an enlarged portion 112 of the passage 100 in the piston provide clearance for movement of the piston and oscillation of the cylinder portion 80 during the pumping operation with the flange extension 45 and shaft 41 positioned therein. The shaft 41 terminates in a crank or eccentric 120 having a bearing surface 121 which fits into a bearing insert 122 positioned in an aperture in the center of the piston apart from the passage such that the shaft upon rotation of the pulley will cause the crankshaft to oscillate the piston and vary the volume of the compression chamber 94. The passages 110 and 112 also provide air inlet from the interior of the casing through the passage 100 to the inlet check valve and the compression chamber 94. The opposite extremity of the piston 92 mounts a spring retaining brackets 125 which is secured thereto through suitable screw means 126. The flange 125 extends beyond the periphery of the casing 80 and mounts or bears against one end of a helical spring 130, the opposite extremity of which is positioned by an annular flange 131 on the periphery of the cylinder portion 80. The spring 130 imparts a loading to the bearing surfaces between the crankshaft 120 and the piston 92 on the downward stroke of the piston to minimize wear and noise. The rotation of the shaft 41 will impart an oscillatory motion through the crankshaft to the piston causing the piston to slide up and down in the cylinder varying the volume in the compression chamber to compress the air entering through the passages 110, 112, 100 and the check valve 101, 102 to the compression chamber. Side thrust of the crankshaft is taken up by journalling the cylinder through the manifold such that the entire assembly is allowed to pivot minimizing wear and eliminating special linkages between a driveshaft and the sliding piston member. The passage 100 may include a small filter, such as is shown at 133, if desired but the main filtering of the inlet air to the casing which is sealed is obtained through the filter 20 included in the cover portion 11 of the casing 10.

In addition, the cover portion 11 includes an electrical connector indicated at 140 which is mounted in a recessed flange 142 in the casing, such that the prongs or connecting members 143 thereof do not extend beyond the surface of the casing. The electrical wiring is sealed within the plug and extends as indicated at 145 directly to the motor which is adapted to be connected to line voltage power supplies.

The application of this compressor is largely conventional. The unit is adapted to supply small volumes of air flow for control purposes to individual pneumatic controllers or small numbers of the same. The compressor can be connected to an energizing source through a conventional plug-in type electrical cord and will be mounted or positioned on any surface where it will sit on the small mounting lugs 150 on the base of the casing. In addition to the electrical connection to the cover of the casing, the pneumatic output line will be fitted into the tapped aperture 61 at the outlet port and connected through a suitable flexible connection to take up the motion of the manifold and thus supply the pneumatic source to the device to be operated. When energized, the motor 28 will drive the pinion 33 and through the belt 50 cause the pulley 40 to rotate, rotating the shaft 41 in a conventional manner. The shaft drives the camshaft or eccentric 120 positioned within the piston and extending through the wall of the cylinder 80 to oscillate the piston within the cylinder.

Air is supplied to the compressor through the casing or the aperture therein and the filter 20 to the interior of the casing and through the apertures 110 and 112 respectively in the cylinder and piston walls to the passage 100 leading to the inlet check valve in the piston. Thus on the downstroke the inlet air passes through the directional check valve 102, 101 to the compression chamber 94 within the cylinder where it is compressed on the upstroke of the piston through the drive of the eccentric. When a predetermined pressure is reached within the compression chamber, the outlet check valve 86, 87 will open allowing compressed air to enter the outlet passage 60. An over pressure in the outlet, as set by the relief valve 66, will be released to the interior of the casing, thus assuring a predetermined range of outlet pressures from the compressor. The throw of the eccentric will impart an oscillatory motion to the manifold which is journalled by means of the trunnions 56 and bearings 57, 58 positioned within the support member 25 and casing portion 11 to oscillate or pivot the entire assembly to accommodate the sidewise thrust of the eccentric. The piston is loaded by means of the return spring 130 so as to provide uniform loading on the bearing of the eccentric to insure constant wear.

This arrangement of parts provides a simplified small compressor design capable of continuous operation with a minimum amount of maintenance. The filter in the cover is readily removable for cleaning or changing and the drive connection between the piston and crankshaft permits along life of the bearing surfaces. It will be recognized that the radial dimensions of the pinion and pulley are chosen to eliminate gearing such that the driveshaft 41 of the eccentric may be rotated at a desired speed for adequate compressor operation without requiring special or extra gearing on the motor and permitting use of line voltage for excitation of the same.

FIGURE 4 shows another embodiment of my improved compressor with certain of the parts such as the casing, air filter, etc., omitted or broken away for simplicity purposes. The parts of this embodiment which differ from that described in connection with FIGURES 1, 2 and 3 are disclosed in cross-section. Thus casing 10 is shown broken away or with only the base section including the supporting feet 150. In this embodiment the flange is shown separate from the casing 10 as a Z-shaped bracket member 160 which is secured to the base through suitable means such as welding. Mounted on the upstanding portion of this bracket is the motor 28 which is secured to the brackets through suitable connecting means such as nuts and bolts indicated at 161. It will be noted in this embodiment that the pinion, pulley and drive shaft are removed and that the motor extends directly through an aperture 162 in the supporting bracket with the output shaft of the motor 163 mounting an eccentric 164 which includes a drive shaft 165 for the compressor. In this embodiment the coupling in addition to having the eccentrically positioned shaft 165 includes an eccentric flange 168 for balancing purposes.

Mounted on an upper or transversely extending portion 170 of flange 160 is a pair of trunnion blocks 171, 172 which are secured to the flange portion 170 through suit-

able screw means indicated at 175. These trunnion blocks mount and journal the manifold which is shown in its modified form at 180. Manifold 180 includes a pair of bearing surfaces 181, 182 which rest in or ride in a pair of split sleeve type bearings 183, 184 in block 171, 172. It will be seen in the drawing that the upper halves of the split bearings are secured or positioned by keys 185 and hence prevented from rotating, and that the lower halves are engaged by a thrust plate 186 of a biasing spring 187 which includes a screw 188 bearing against free extremity of the spring to load the lower half of the bearing and hence the journalling of the manifold in the trunnion blocks.

In this embodiment the cylinder or casing 189 is again attached to the manifold through suitable means (not shown) and is sealed thereto by means of an O ring sealing member 190. The casing 189 includes the aperture or opening 192 through which the eccentric 164 and the shaft 165 extend. In addition, casing 189 includes a small inlet air opening 194 through which inlet air enters to the cylinder. Piston member 195 is somewhat different in configuration from that of the before mentioned embodiment and defines with the end of the cylinder the compression chamber 196 into which air is directed from the passage 194. The outlet passage from the compression chamber indicated at 199 includes the valve seat 200 for the outlet check valve. Cooperating with the valve seat is a valve closure member 201 and a cooperating biasing spring 202 which is carried in a plug member 203 threaded into a tapped aperture 204 in the manifold which forms part of a passage leading to an outlet conduit 205. This check valve is conventional and in this embodiment the relief check valve is omitted for simplicity, it being understood that it can be included or omitted as desired. The relief valve, if included in the manifold, would, as in FIGURE 2, be positioned in a transversely extending passage to the main outlet passage or port 205 of the device.

Thus, air enters the compression chamber 196 through the passage 194 as distinguished in the first mentioned embodiment in a passage included within the piston. Movement of the piston within the chamber or casing 189 above the port 194 will close the inlet air valving to the compression chamber allowing the air above the piston to be compressed and released as controlled by the check valve 200, 201. This arrangement simplifies the inlet valving as well as the details of the piston. The driving shaft 165 of the piston is located in a recess 210 of the piston in which are positioned the split bearing 211, the upper half of which is keyed as at 212 and the lower half of which includes the bias plate 214 and spring 216 to take up wear and load the bearing surface. The spring and plate 214, 216 are held in position by means of a bolt member 218 threaded into a tapped aperture in the piston. In addition, the piston is sufficiently recessed as at 220 to allow for movement of the eccentric within the piston and the cylinder. At the top of the piston 195 or adjacent the compression chamber is a plastic or composite sealing ring 225 which replaces the conventional split sealing ring shown in the aforementioned embodiment. This plastic sealing ring made up of integral multiple rectangular sections of non-elastic material is slightly deformable and is held in position on the piston by means of an end cap or support 230 connected to the piston through a suitable screw means 231. Backing up the plastic sealing member is a wedge-shaped ring 232 and a spring 234 which wedges the ring against the inner periphery of the sealing member 225 forcing it out against the cylinder walls to provide an airtight seal therebetween. This arrangement permits takeup of wear in the sealing member and assures proper seal of the compression chamber.

The lower extremity of the piston includes a conventional O ring or plastic seal member 240 held in position by means of a support ring 244 which in turn is secured to a piston by means of a connecting and spring adjusting member 218 or bolt which in turn is held or secured from rotation by means of a lockwasher indicated at 245. This lower end of the piston is primarily guided or journalled within the cylinder by the ring member 240 which prevents wear of the piston at this point.

Although not shown, it will be understood that the casing surrounding the bracket, the manifold and motor, cylinder and piston mounted thereon will include the air filter, the electrical connector to the motor and the outlet port. In this embodiment, a stationary connector bracket projects through the casing, such as is indicated at 250, the connector bracket having a tapped aperture 251 therein into which the outlet connections or piping to the device to be actuated is directed. The block 250 includes a recess 252 which houses a spring 254 and backing plate 255 for a cone type plastic seal member 260 which member fits against the extension or journal surface of one half of the manifold concentric with the output passage 205. The opposite peripheral extremity of the member 260 bears against the surface of the block 250 in the cup-shaped recess 252 to provide a seal for air coming from the passage 205 and directed to the output port 251. The block 250 is connected to the trunnion block 171 through suitable means, such as metal bolts 265, and is sealed therein by means of gasket material 266. The casing includes an aperture through which this stationary block member 250 extends to provide for access to the tapped outlet port 251 from without the casing.

This embodiment of the compressor operates substantially in the manner of that described in connection with FIGURES 1, 2 and 3. One of the changes incorporated is a direct connection of the motor to the shaft of the compressor. In addition, the manifold 180 is journalled in separate trunnion blocks connected to the flange or support for the compressor, with the bearings being split and biased to provide for wear takeup at this point. Similarly, the piston is so journalled on the output shaft with spring loading on a split bearing to take up wear at this point. The upper end of the cylinder in this embodiment includes a special compression seal in the form of a deformable plastic ring which is continually biased by means of a wedge ring against the cylinder walls insuring a positive seal and wear compensation. This embodiment of the invention also eliminates the special valving and filtering within the piston and relies on piston position for controlling the opening or closing of a passage in the wall of the cylinder which permits the flow of inlet air to the compression chamber 196. The details of the output check valve are conventional and special sealing is provided between a stationary part and the movable manifold to permit connection at the cover to a stationary part of the device.

As indicated above, much of the parts directly similar to the aforementioned embodiment are omitted herein, such as the air filter and the enclosing casing. As in the aforementioned embodiment, air is directed through the removable filter in the casing cover portion to the interior of the casing and the inlet to the cylinder. Energization of the motor through the connector located on the casing will cause motor rotation and will drive the eccentric to oscillate the piston within the cylinder. Wear takeup in this embodiment as mentioned above is permitted in the special journalling of the manifold.

In considering this invention it should be remembered that the present disclosure is intended to be illustrative only and the scope of the invention should be determined only by the appended claims.

I claim as my invention:

1. In a compressor, a casing, a support included within said casing, a motor and a pulley mounted on said support within said casing, driving means connected between said motor and pulley for transmitting rotation of said motor to said pulley, a manifold section including a pair of cylindrical trunnions mounted on said support within

said casing, a thin walled cylinder having an aperture therein secured to said manifold section and adapted to be pivoted therewith on said trunnions, a piston having a journal slideably positioned within said cylinder, an eccentric shaft means connected to said pulley and extending through said aperture in the wall of said cylinder being journaled in said piston, a passage in said piston connecting with the aperture in the wall of said cylinder and to a compression chamber formed between said piston and said cylinder, check valve means included in said passage, outlet and relief ports included in said manifold section, a second passage included in part in said cylinder and in part in said manifold section connecting said outlet and said relief ports leading to said compression chamber, outlet check valve means included in said second passage, a flange on said piston, spring means connected between said cylinder and the flange on said piston and adapted to load said journal connection between said eccentric shaft means and said piston, a removable cover portion on said casing including a second aperture therein, filter means included in said second aperture in said cover portion, means connecting said cover portion to said casing and limiting the flow of air therethrough except through said filter means, a third aperture included in said cover portion, said outlet port cooperating with said third aperture in said cover portion to be accessible from outside of said casing, and electrical terminal means included in said cover portion and connected to said motor.

2. In a compressor, a casing, a support included within said casing, driving means mounted on said support, a manifold including a pair of cylindrical trunnions mounted on said support within said casing, a cylinder secured to said manifold and adapted to be pivoted therewith on said trunnions, a piston slideably positioned within said cylinder, an aperture in said cylinder, eccentric shaft means connected to said driving means and said piston, means included on said shaft means and said piston for journaling said piston, a compression chamber formed between said piston and said cylinder, an air inlet flow control means controlling flow of air to said compression chamber included in part in said aperture in said cylinder and in part in said piston being controlled by the movement of said piston, an outlet port and a second passage included with said manifold and connected to said compression chamber, outlet check valve means included in said second passage, a removable cover portion on said casing including an air intake opening therein, and filter means included in said air intake opening in said cover portion.

3. In a compressor, a casing, a support included within said casing, a motor mounted on said support within said casing, driving means connected to said motor for transmitting rotation of said motor thereto, a manifold section including a pair of cylindrical trunnions mounted on said support within said casing, a cylinder having a first aperture therein secured to said manifold section and adapted to be pivoted therewith on said trunnions, a piston slideably positioned within said cylinder, an eccentric shaft means connected to said driving means and extending through said first aperture in said cylinder being journaled in said piston, a passage in said piston connecting with the aperture in said cylinder and to a compression chamber formed between said piston and said cylinder, check valve means included in said passage, outlet and relief ports included in said manifold section, a second passage leading to said compression chamber, outlet check valve means included in said last named passage, spring means connected between said cylinder and said piston being adapted to load said journaled connection between said eccentric shaft means and said piston, a removable cover portion on said casing including an aperture therein, and filter means included in the aperture in said cover portion, said cover portion on said casing limiting the passage of air therethrough except through said filter means.

4. In a compressor, a casing, a support included within said casing, a motor mounted on said support within said casing, driving means connected to said motor for transmitting rotation of said motor thereto, a manifold including a pair of cylindrical trunnions mounted on said support within said casing, a cylinder having an aperture therein secured to said manifold and adapted to be pivoted therewith on said trunnions, a piston slideably positioned within said cylinder, an eccentric shaft means connected to said driving means and extending through the aperture in said cylinder and being journaled in said piston, a compression chamber provided by said piston within said cylinder, air inlet flow control means included in part in said piston and in part in said cylinder to control flow of air to said compression chamber, an outlet passage included in said manifold connected to said compression chamber, outlet check valve means included in part in said last named passage, spring means included with said piston adapted to bias the journaled connection between said eccentric shaft means and said piston, a removable cover portion on said casing including a filtered air inlet aperture therein, exhaust port means connected with said outlet passage and extending through said cover portion, and electrical terminal means included in said cover portion and connected to said motor.

5. In a compressor, a casing, a support included within said casing, a motor mounted on said support within said casing, driving means connected to said motor and transmitting rotation of said motor thereto, a manifold including a pair of cylindrical trunnions mounted on said support within said casing, a cylinder having an aperture therein secured to said manifold and adapted to be pivoted therewith on said trunnions, a piston slideably positioned within said cylinder, an eccentric shaft means connected to said driving means and extending through said aperture in said cylinder being journaled in said piston, a passage in said piston connecting with the aperture in said cylinder, a compression chamber formed between said piston and said cylinder, said passage being connected to said compression chamber, check valve means included in said passage, a second passage in said manifold, outlet and relief ports included in said manifold and connected to said second passage and said compression chamber, outlet and relief check valve means included in said second passage, a removable cover portion on said casing including an air inlet aperture therein, and filter means included in the air inlet aperture in said cover portion, said cover portion on said casing limiting the flow of air therethrough except through said filter means.

6. In a compressor, a casing, a support included within said casing, driving means mounted on said support, a manifold including a pair of trunnions mounted on said support and said casing, a cylinder having an aperture therein secured to said manifold and adapted to be pivoted therewith on said trunnions, a piston slideably positioned within said cylinder, an eccentric shaft means connected to said driving means and extending through said aperture in said cylinder being journaled in said piston, a first passage including inlet check valve means in said piston connecting with the aperture in said cylinder, a compression chamber formed between said piston and said cylinder and connected with said first passage inlet check valve means in said first passage, outlet and relief ports included in said manifold, and connected to a second passage in said manifold leading to said compression chamber, outlet check valve means included in said second passage, spring means connected between said cylinder and said piston being adapted to load said journaled connection between said eccentric shaft means and said piston, a removable cover portion on said casing including an air inlet aperture therein, filter means included in the air inlet aperture in said cover portion, said cover portion of said casing limiting the flow of air therethrough except through said filter means, said outlet port extending through said cover

portion, and electrical terminal means included in said cover portion and connected to said motor.

7. In a compressor, a casing, a support included within said casing, driving means mounted on said support, a manifold including a pivot means mounted on support for movement relative thereto, a cylinder having an aperture therein secured to said manifold and adapted to be pivoted therewith, a piston slideably positioned within said cylinder, an eccentric shaft means connected to said driving means and extending through said aperture in said cylinder being journaled in said piston, a first passage in said piston connecting with the aperture in said cylinder, a compression chamber formed between said piston and said cylinder, and connected to said first passage, inlet check valve means included in said first passage, an outlet port and a second passage included in said manifold and connected to said compression chamber, outlet check valve means and relief valve means included in said second passage, a removable cover portion on said casing including an air inlet aperture therein, and filter means included in the air inlet aperture in said cover portion, said cover portion on said casing limiting the flow of air therethrough except through said filter means, said outlet port extending through said cover portion of said casing.

8. In a compressor, a casing, a support included within said casing, driving means mounted on said support, a manifold including pivot means mounted on said support and adapted to pivot relative thereto, a cylinder having an aperture therein secured to said manifold and adapted to be pivoted therewith on said support, a piston slideably positioned within said cylinder, an eccentric shaft means connected to said driving means and extending through said aperture in said cylinder being journaled in said piston, a first passage in said piston connecting with the aperture in said cylinder to a compression chamber formed between said piston and said cylinder, connected to said first passage, inlet check valve means included in said first passage, an outlet port and a second passage included in said manifold and connected to said compression chamber, outlet check valve means included in said second passage, and a removable cover portion on said casing including a filtered inlet aperture therein, said cover portion on said casing limiting the flow of air therethrough except through said filtered aperture.

9. In a compressor, a casing, a support included within said casing, a motor mounted on said support, driving means connected to said motor, a manifold including a pair of trunnions mounted on said support in said casing, a cylinder secured to said manifold and adapted to be pivoted therewith on said trunnions, a piston slideably positioned within said cylinder, an eccentric shaft means connecting said driving means to said piston, a passage in said cylinder, a compression chamber formed between said piston and said cylinder connected to said passage, inlet valve means included in said passage and controlled by movement of said piston, an outlet passage in said manifold connected to said compression chamber, outlet check valve means included in said outlet passage, a removable cover portion on said casing including an air inlet aperture therein, and filter means included in the air inlet aperture of said cover portion.

10. In a compressor, a casing, a support included within said casing, a motor mounted on said support, driving means connected to said motor, a manifold including a pair of trunnions mounted on said support in said casing, a cylinder secured to said manifold and adapted to be pivoted therewith on said trunnions, a piston slideably positioned within said cylinder, eccentric shaft means connecting said driving means to said piston, a passage in said cylinder, a compression chamber formed between said piston and said cylinder, and connected to said passage, inlet valve means included in part in said passage and controlled by the movement of said piston, an outlet passage in said manifold connected to said compression chamber and including an outlet check valve means, and a removable cover portion on said casing including an air inlet aperture.

11. In a compressor, a casing, a support included within said casing, a motor mounted on said support, driving means connected to said motor, a manifold including a pair of trunnions mounted on said support in said casing, a cylinder secured to said manifold and adapted to be pivoted therewith on said trunnions, a piston slideably positioned within said cylinder, eccentric shaft means, means connecting said driving means through said shaft means to said piston, for operation of said piston, an air inlet passage in said cylinder, a compression chamber formed between said piston and said cylinder and connected to said inlet passage, inlet valve means included in part in said piston and controlled by the movement of said piston, an outlet passage in said manifold connected to said compression chamber and including an outlet check valve means, spring biased bearing means included in part with said piston and loading the connection between said shaft means and said piston, a removable cover portion on said casing including an air inlet aperture, and filter means included in said air inlet aperture of said cover portion.

12. In a compressor, a casing, a support included within said casing, a motor mounted on said support, driving means connected to said motor, a manifold including a pair of trunnions mounted on said support in said casing, a cylinder secured to said manifold and adapted to be pivoted therewith on said trunnions, a piston slideably positioned within said cylinder, a grooved sealing member of non-elastic deformable material mounted on said piston and sealing the sliding engagement of said piston with said cylinder, bias means connected to said piston and positioned within said sealing member to urge and deform it against the wall of said cylinder, eccentric shaft means connecting said driving means to said piston, a passage in said cylinder, a compression chamber formed between said piston and said cylinder, connected to the passage, inlet valve means formed by said passage and said piston and controlled by the movement of said piston, an outlet passage in said manifold connected to said compression chamber and including an outlet check valve means, a removable cover portion on said casing including an air inlet aperture, and filter means included in said air inlet aperture of said cover portion.

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