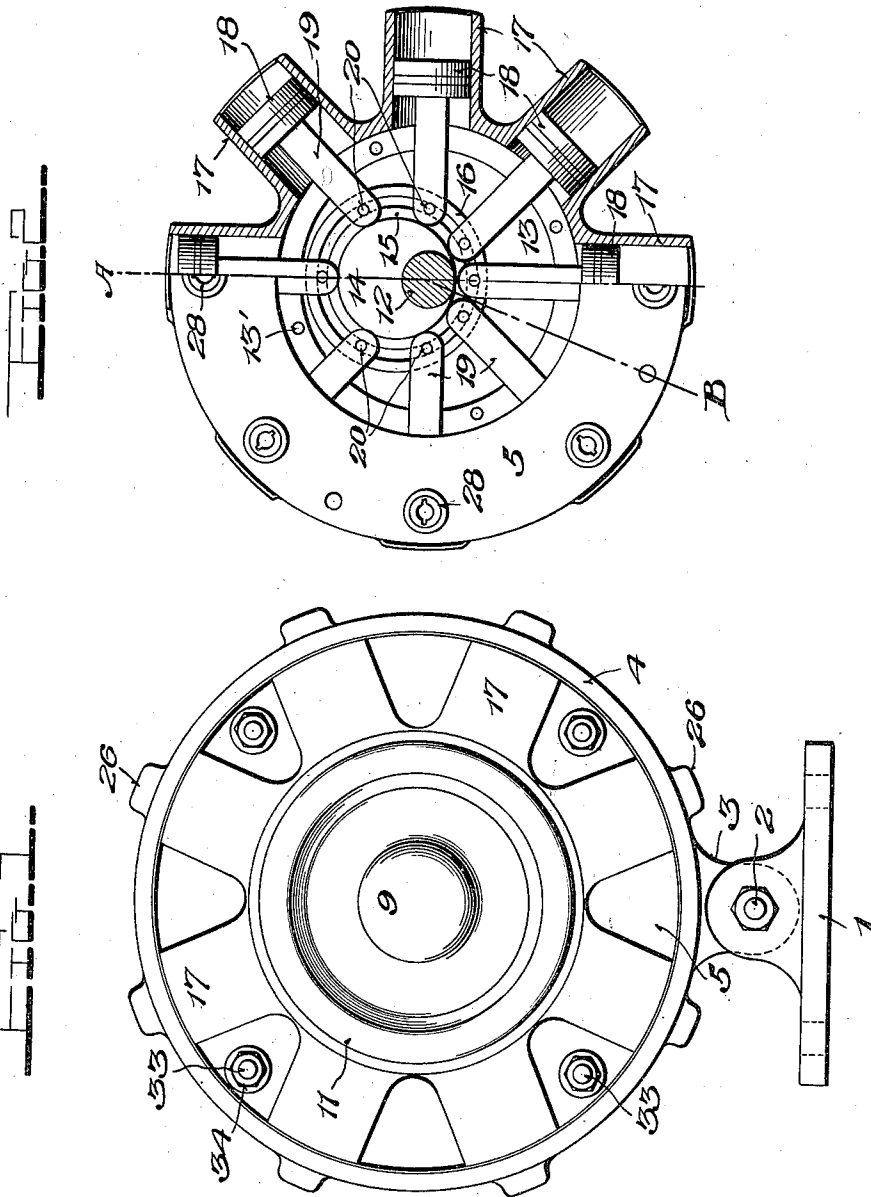


J. NOGUERA AND J. DOVAL.
 ROTARY AIR COMPRESSOR.
 APPLICATION FILED MAY 1, 1919.

1,320,792.

Patented Nov. 4, 1919.
 2 SHEETS—SHEET 1.



Witness

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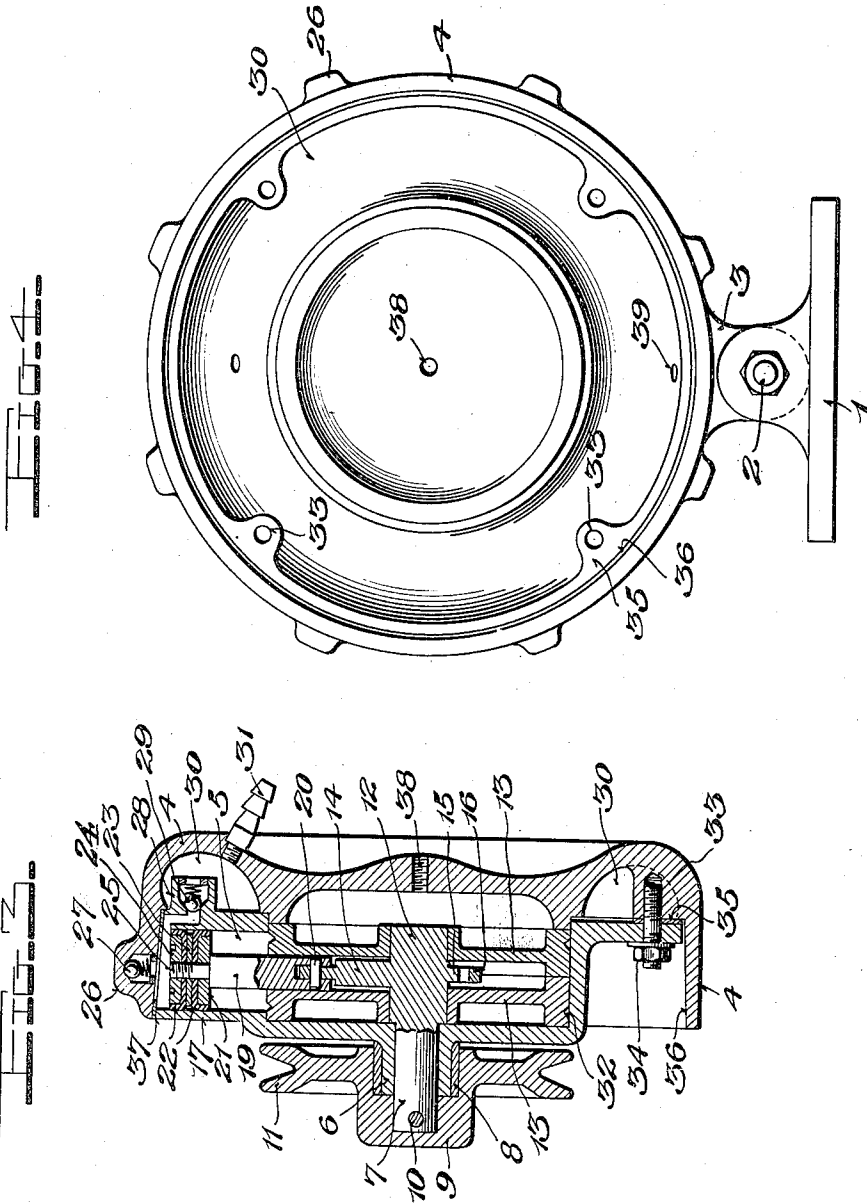
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JUAN NOGUERA AND JESUS DOVAL, OF BUENOS AIRES, ARGENTINA.

ROTARY AIR-COMPRESSOR.

1,320,792.

Specification of Letters Patent.

Patented Nov. 4, 1919.

Application filed May 1, 1919. Serial No. 293,920.

To all whom it may concern:

Be it known that we, JUAN NOGUERA and JESUS DOVAL, subjects of the King of Spain, residing at Tacuari 372, Buenos Aires, Argentina, have invented certain new and useful Improvements in Rotary Air-Compressors, of which the following is a specification.

This invention relates to a rotary air compressor and has for its essential object an apparatus of the said kind in which compression will be performed continuously, the objections which heretofore rendered impossible the practical use of such apparatus having been eliminated therefrom.

In order that the invention may be readily understood and conveniently carried into practice, a preferred embodiment of the same has been shown by way of example in the accompanying illustrative drawings, in which:

Figure 1 is a front elevation looking toward the apparatus, of the side on which the cylinders are arranged.

Fig. 2 is a partial vertical section, illustrating the structure of the apparatus and the operation of its cylinders.

Fig. 3 is a section on the broken line A—B of Fig. 2 and finally,

Fig. 4 is an interior view of the rear part of the apparatus, all operative parts having been removed therefrom.

In all the said views, the same numbers of reference indicate like or corresponding parts.

In the particular embodiment illustrated, the apparatus is supported on a pedestal or base 1 secured in any suitable manner, as by means of screws, to a convenient part of an automobile, when the apparatus is intended for inflating the air chambers of the tires thereof. The body of the device is secured by means of a lower ear 3 to the said pedestal by means of a screw and nut 2, which connection allows of adjusting the apparatus to any suitable incline and at the same time this connection facilitates the coupling thereof to the driving element.

5 is a casting of circular shape within which is radially and symmetrically arranged, so as to protrude therefrom, a plurality of radial cylinders 17—eight in the case under consideration. The casting is also provided with a bearing 6 within which rotates the axle 7 which operates the apparatus and on the outer end of which is keyed a pulley 11

formed with a cap which entirely surrounds the end of said axle, said pulley being retained in position by means of a pin 10 or the like, so that it will rotate together with the axle 7. Around the bearing is mounted an antifriction sleeve 8, around which rotates the said pulley. The axle 7 extends through the central recess or cavity of the casting wherein it is provided with an enlargement 12 on which is mounted the cam 14, provided at its periphery with a web or rim 15 of reduced section, to which are connected the forked ends of the rods 19 of the pistons 18, operating in the interior of the cylinders 17. Around the cam or eccentric is mounted a ring 16 of larger diameter and between the outer rim of the eccentric and the said ring is left a circular space or track in which travel the pins 20 which extend through the forked ends of the rods 19. In the interior of the central recess of the aforesaid casting 5 are mounted, so as to snugly fit therein, two disks 13 which serve to guide the piston rods 19 in their reciprocating movement and also constitute a bearing for the enlarged part 12 of the axle. The said disks 13 are secured one to the other by means of bolts 13' and are arranged to form the closure for the lower ends of the cylinders.

The piston of each of the cylinders consists of a metallic inner plate 21 on which are placed a leather washer 22 and an outer metallic plate 24, constructed like a nut, with a leather washer 22 on its inner surface. Between the two leather washers 22 is placed an intermediate metallic washer 23. The nut plate 24 is screwed on the narrow threaded end 25 of the stem 19. It will thus be seen that to the washers 22 and the intermediate part 23 the required degree of compression may be imparted in order to assure the tightness of the joint and hence, the perfect operation of the cylinders. At the outer end or head of each of the cylinders is arranged a casing 26 within which is mounted the air inlet valve 27, normally held in its closed position by the action of a spring. At the end of each of the cylinders near the head thereof, is arranged the casing 28 of the outlet valve 29, also normally retained in its closed position by the action of a spring.

The body 5 of the cylinders is inserted with its rear face into a metallic casing 4, also formed by casting, which being conically ad-

justed, serves to close the same, forming the air chamber 30 into which open the valve ports 29 and which communicates with the outer air by means of the nipple 31, to which latter is connected the tube by which the compressed air is led to the tire to be inflated, or to any other point where said compressed air may be needed.

On the periphery of the guide disks 13 are formed continuous grooves or passages 32 by means of which the outer ends of all the cylinders 17 are made to communicate with each other. The particular arrangement of the said grooves is a factor of much importance in this device, as otherwise, by the movement of the pistons within each of the cylinders, variations of pressure would occur in the same which would interfere with the satisfactory working of the apparatus, while in the actual arrangement the variations of pressure of any one or more of the cylinders will always be compensated for by those occurring in the remainder of them with which they are in communication, so that and the pressure existing in the interior of the entire series of cylinders will always be constant.

The fitting of the part or body 5 which supports the cylinders, with the cover or casing 4, is made conical, as shown at 36, so that by the insertion of leather washers 35 or similar means a perfectly tight joint is obtained, without necessitating a very exact machine finish of the contacting surfaces.

Besides, the joint is also secured by means of the bolts 33, affixed to the cover and on which are screwed the nuts 34 so that the body will be rigidly held in position.

As may be seen by inspecting the drawings, the upper cover of the cylinders 17, provided with the valves for the admission of air to said cylinders, forms part of the said casing or cover 4, being cast in one piece with the same. The joint between the said cover and the top of the cylinders which is also of conical shape, is preferably provided with leather washers 37, in order to make the joint air tight.

The cover 4 is provided at its center with a threaded hole 38 which allows of securing thereto a suitable lubricating device (not shown). Said cover is also provided at the air chamber 30 with a second hole or port 39, normally held closed by any suitable means, said hole being intended for cleaning the air chamber.

It will be evident that into the above described embodiment of the invention, several modifications of details may be introduced without departing from the scope of this invention and for the purpose of adapting the same for the several uses to which it may be applied.

The apparatus according to the form of construction shown, works in the following manner: The pulley 11 is coupled to a mo-

tor or any other suitable source of power and transfers motion to the axle 7—12 and in consequence to the eccentric 14 connected, as shown, to the rods of the pistons of the cylinders 17 which will successively move to and fro, as will be clearly understood by referring to Fig. 2 of the accompanying drawings.

The receding movement of the pistons opens the inlet valves 27, causing the air from outside to enter into the interior of the cylinders 17, in front of the pistons, while the air behind the pistons is caused to pass by the ducts 32 to another or others of the said cylinders where the movement of the piston or pistons will have formed a vacuum. The outward motion of the said pistons will cause the inlet valves to close while the outlet 29 are opened, thereby allowing of the discharge of the air which has accumulated within the chamber 30 from which it is withdrawn under the required degree of pressure by the nipple 31.

We now declare that what we claim as new and desire to secure by Letters Patent, is:

1. In a rotary air compressor, the combination of a body formed with a plurality of radially and symmetrically arranged cylinders; a piston working in each cylinder and having its rod extending radially inward toward the axis of the body; an axially-disposed driving shaft extending into said body; an eccentric fixed to said shaft; a ring encircling said eccentric and spaced therefrom to provide a circular track, the inner ends of the piston rods being engaged in said track for actuation by said eccentric; a pair of guide disks mounted on said shaft within said body at opposite sides of said piston rods and arranged to close the inner ends of the cylinders; and a cover for said body secured thereto and arranged to close the outer ends of the cylinders, said cover co-acting with said body to form an interposed, annular compressed air chamber; each cylinder being provided at its outer end with a valve-controlled air inlet, and at its side with a valve-controlled outlet for the compressed air which communicates with said chamber, the latter having means for discharging the compressed air therefrom.

2. In a rotary air compressor, the combination of a body formed with a plurality of radially and symmetrically arranged cylinders; a piston working in each cylinder and having its rod extending radially inward toward the axis of the body; an axially-disposed driving shaft extending into said body; an eccentric fixed to said shaft and operatively connected with the inner ends of the piston rods; a pair of guide disks mounted on said shaft within said body at opposite sides of the piston rods, said disks

having their peripheries arranged to close the inner ends of the cylinders and formed with circumferential grooves to provide communication between said cylinders; and
 5 a cover for said body secured thereto and arranged to close the outer ends of the cylinders, said cover co-acting with said body to form an interposed, annular compressed air chamber; each cylinder being provided
 10 at its outer end with a valve-controlled air inlet, and at its side with a valve-controlled outlet for the compressed air which communicates with said chamber, the latter having means for discharging the compressed air
 15 therefrom.

3. In a rotary air compressor, the combination of a body formed with a plurality of radially and symmetrically arranged cylinders; a piston working in each cylinder and
 20 having its rod extending radially inward toward the axis of the body; an axially-disposed driving shaft extending into said body; an eccentric fixed to said shaft and operatively connected with the inner ends
 25 of the piston rods; guide disks for said piston rods; and a cover for said body secured thereto and having a tight, conical fit therewith, said cover being arranged to close the outer ends of the cylinders and co-acting
 30 with said body to form an interposed, annular compressed air chamber; each cylinder being provided with valve-controlled inlet and outlet openings, the latter communicating with said chamber, and the chamber
 35 having a discharge outlet for the compressed air.

4. In a rotary air compressor, the combination of a body formed with a plurality of radially and symmetrically arranged cylinders; a piston working in each cylinder and
 40 having its rod extending radially inward toward the axis of the body; an axially-disposed driving shaft extending into said

body; an eccentric fixed to said shaft; a ring encircling said eccentric and spaced 45 therefrom to provide a circular track, the inner ends of the piston rods being engaged in said track for actuation by said eccentric; a pair of guide disks mounted on said shaft within said body at opposite sides of said 50 piston rods and arranged to close the inner ends of the cylinders; and a cover for said body secured thereto and providing a compressed air chamber; each cylinder being provided with valve-controlled inlet and 55 outlet openings, the latter communicating with said chamber, and the chamber having a discharge outlet for the compressed air.

5. In a rotary air compressor, the combination of a body formed with a plurality of 60 radially and symmetrically arranged cylinders; a piston working in each cylinder and having its rod extending radially inward toward the axis of the body; an axially-disposed driving shaft extending into said 65 body; an eccentric fixed to said shaft and operatively connected with the inner ends of the piston rods; a pair of guide disks mounted on said shaft within said body at opposite sides of the piston rods, said disks 70 having their peripheries arranged to close the inner ends of the cylinders and formed with circumferential grooves to provide communication between said cylinders; and a cover for said body secured thereto and 75 providing a compressed air chamber; each cylinder being provided with valve-controlled inlet and outlet openings, the latter communicating with said chamber, and the chamber having a discharge outlet for the 80 compressed air.

In testimony whereof we affix our signatures.

JUAN NOGUERA.
 JESUS DOVAL.