P. L. BOWSER.

ROTARY COMPRESSOR OR ROTARY ENGINE.

APPLICATION FILED MAY 13, 1920.

1,419,915.

Patented June 20, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

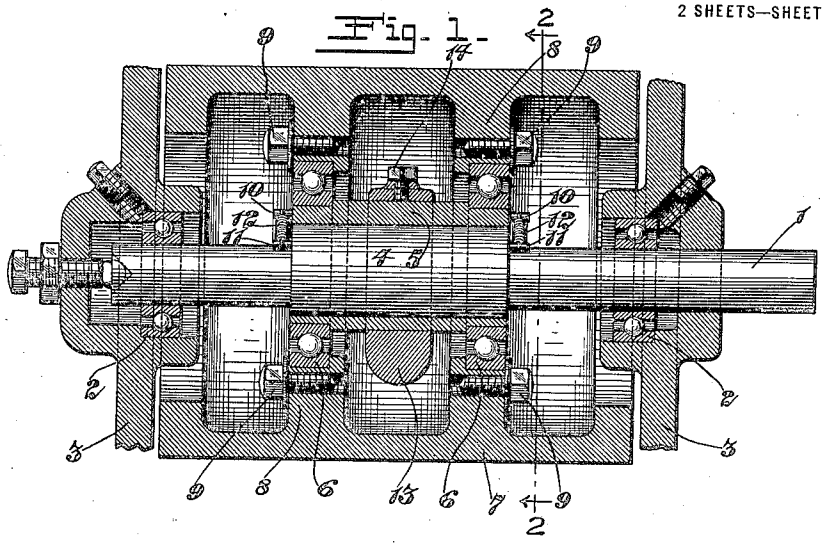
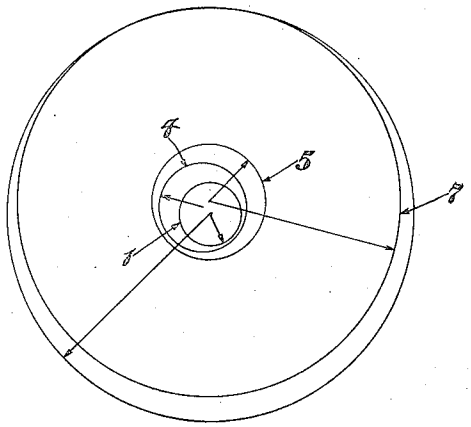


Fig. 2.



Attest.

Charles A. Becker.

Inventor.

Percy L. Bowser,

by Rippey, Kingsland & Mills Attorneys.

P. L. BOWSER.

ROTARY COMPRESSOR OR ROTARY ENGINE.

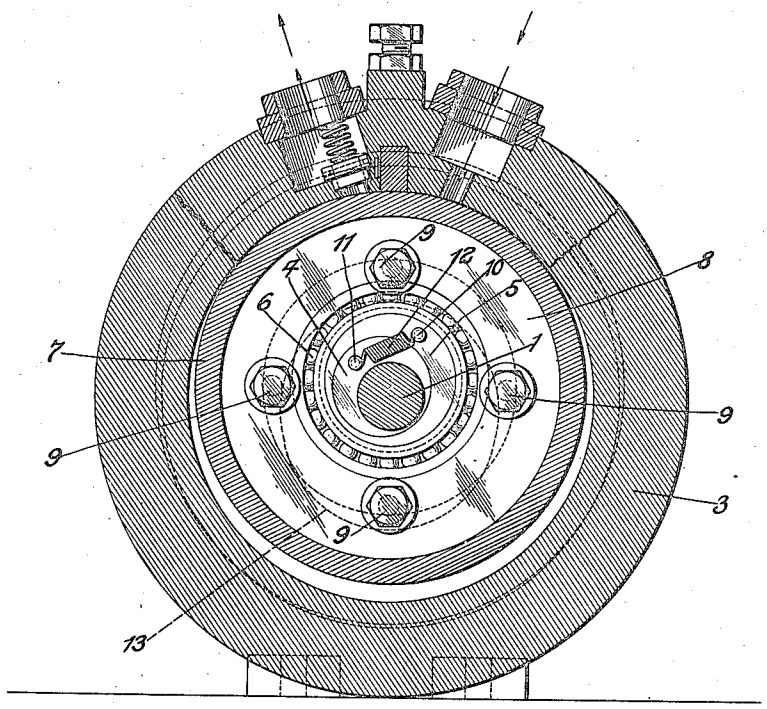
APPLICATION FILED MAY 13, 1920.

1,419,915.

Patented June 20, 1922.

2 SHEETS—SHEET 2.

Fig. 3.



Attest.

Charles A. Becker.

Inventor.

Percy L. Bowser,

by Ripley & Kingsland,

His Attorneys.

UNITED STATES PATENT OFFICE.

PERCY L. BOWSER, OF ST. LOUIS, MISSOURI.

ROTARY COMPRESSOR OR ROTARY ENGINE.

1,419,915. Specification of Letters Patent. Patented June 20, 1922.

Application filed May 13, 1920. Serial No. 381,199.

To all whom it may concern:

Be it known that I, PERCY L. BOWSER, a citizen of the United States, residing at the city of St. Louis and State of Missouri, have invented a new and useful Rotary Compressor or Rotary Engine, of which the following is a specification.

This invention relates to improvements in rotary compressors or rotary engines, and more particularly to means whereby the rotor of the compressor is mounted for imparting thereto an eccentric throw in respect of the stator.

In a co-pending application, Serial No. 358,188, of which I am joint applicant, there is disclosed a construction in which the present invention is an improvement insofar as the mounting of the rotor is concerned.

An object of the present invention is to provide novel means for mounting the rotor in an apparatus of the class disclosed in said co-pending application, the advantages and features of this improvement being fully disclosed hereinafter, reference being made to the accompanying drawing, in which

Fig. 1 is a vertical section through a sufficient portion of the apparatus to fully illustrate the novel mounting for the rotor.

Fig. 2 is a diagrammatic view illustrating the arrangement of the parts.

Fig. 3 is a sectional view on the line 2—2 of Fig. 1 looking in the direction indicated by the arrows.

The main shaft 1 of the apparatus is mounted in ball bearings 2 supported in end plates 3 of the stator case. The main axis of the shaft 1 is concentric with the stator case of the apparatus as indicated in the diagrammatic illustration in Fig. 2. The shaft 1 has an enlarged portion 4 which is eccentric with respect to the main axis of the shaft 1. A sleeve 5 is fitted over the enlarged portion 4 of the shaft 1, the walls of the sleeve being formed so that the external surface of the sleeve is eccentric both with respect to the main axis of the shaft 1 and the axis of the portion 4 of that shaft. The sleeve 5 supports a pair of ball bearings 6, the axis of rotation of which is concentric with the axis of the sleeve 5.

The rotor 7 is in the form of a cylindrical sleeve having internal flanges 8 into which the ball bearings 6 are fitted, the rotor being held in association with its bearings by bolts 9. The result to be obtained by the mounting for the rotor is to provide an adjustable eccentric throw of the rotor so that a constant close contact will be maintained along a contact line between the rotor and the stator. On account of the expansion and contraction of the parts and of the incidental wear this adjustment in order to be effective must necessarily be automatic. Since the enlarged portion 4 and the sleeve 5 are relatively movable and are on different centers there is a tendency, when the shaft 1 is revolved by the double cam action resulting from the eccentric formation of the portion 4 and the sleeve 5, to force the rotor outwardly against the stator case on one side of the axis of the shaft 1. That is to say, the centrifugal force, due to the rotation of the shaft 1 upon which is supported the parts having eccentric axes, has a tendency to bring the higher faces of the portion 4 and the sleeve 5 into coincidence.

When the apparatus is in operation, that is when a sufficient speed of rotation has been imparted to the shaft 1, the centrifugal action will accomplish this result alone. However, in initial operation and before the apparatus is under speed, the centrifugal force imperfectly accomplishes this result. Therefore, in the apparatus, I have provided mechanical means for adjusting the sleeve 5 and the portion 4, the means consisting of the provision of pins 10 extending from the ends of the sleeve 5 and the pins 11 extending from the end of the portion 4 of the shaft 1. Strong retractile springs 12 are mounted on each of said pairs of pins, the tendency of the springs being to draw the higher faces of the portion 4 and of the sleeve 5 toward coincidence.

In order to balance the parts an adjustable balance weight 13 is fitted over the sleeve 5, said weight being supported so that it may be adjusted with respect to the circumference of the sleeve, and set by a set screw 14.

What I claim and desire to secure by Letters Patent, is:—

1. In an apparatus of the class described, a rotor shaft, a cylindrical enlargement on said shaft having its axis eccentric with respect to the axis of the shaft, a sleeve on said enlargement having its axis eccentric with respect to said shaft and said enlargement, a spring connecting said sleeve with another one of said parts and tending to move said sleeve relative to the shaft, revoluble

bearings supported by said sleeve, and a rotor element supported by said bearings.

2. In an apparatus of the class described, a rotor shaft having bearings concentric with the stator case, an enlargement on said shaft having an axis eccentric with respect thereto, a sleeve loosely supported by said enlargement and having an external circumference eccentric with respect to said enlargement and also with respect to said shaft, a spring connecting said sleeve with another one of said parts and tending to turn said sleeve relative to said shaft, revoluble bearings supported by said sleeve, and a rotor supported by said bearings.

3. In an apparatus of the class described, a rotor shaft, a rotor, and connections between said rotor shaft and said rotor adjustable by the centrifugal action of the apparatus to vary the eccentric throw of the rotor in respect of the axis of the rotor shaft.

4. In an apparatus of the class described, a rotor shaft, a rotor, a double cam construction for supporting the rotor on the shaft, and springs tending to adjust said cams toward maximum eccentric throw.

5. In an apparatus of the class described, a rotor shaft, a rotor, a double cam construction for supporting the rotor on the shaft, springs tending to adjust said cams for maximum eccentric throw, and a balance weight for balancing said rotor.

6. In an apparatus of the class described, a rotor shaft, a sleeve supported by the shaft eccentrically with respect to the axis thereof, springs tending to adjust said sleeve to the maximum degree of eccentric throw, and a rotor revolubly supported with respect to said sleeve.

7. In an apparatus of the class described, a rotor shaft, a cylindrical enlargement on said shaft having its axis eccentric with respect to the axis of the shaft, a sleeve on said enlargement having its axis eccentric with respect to the axis of said shaft and also with respect to the axis of said enlargement and having its high point out of coincidence with the high point of said enlargement, springs tending to draw said sleeve to place the high point thereof in coincidence with the high point of said enlargement, bearings supported by said sleeve, and a rotor supported by said bearings.

8. In an apparatus of the class described, a rotor shaft, an enlargement on said shaft having its axis eccentric with respect to the axis of the shaft, a sleeve encircling said enlargement and having the axis of its circumference eccentric with respect to the axis of said enlargement, devices acting to draw said sleeve to position in which the high point thereof is in coincidence with the high point of said enlargement, and a rotor supported by said sleeve.

9. In an apparatus of the class described, a rotor shaft, a cylindrical enlargement on said shaft having its axis eccentric with respect to the axis of the shaft, a sleeve on said enlargement having its axis eccentric with respect to the axis of said shaft and also with respect to the axis of said enlargement, springs tending to draw said sleeve to place the high point thereof in coincidence with the high point of said enlargement, a balance weight supported by said sleeve, and a rotor supported by said sleeve.

10. In an apparatus of the class described, a rotor shaft, an enlargement on said shaft having its axis eccentric with respect to the axis of the shaft, a sleeve encircling said enlargement and having the axis of its circumference eccentric with respect to the axis of said enlargement, devices in connection with said sleeve acting to draw said sleeve to position in which the high point thereof is in coincidence with the high point of said enlargement, a balance weight adjustably supported on said sleeve, means for holding said balance weight in any adjusted position on said sleeve, and a rotor supported on said sleeve.

PERCY L. BOWSER.