March 19, 1929. H. WEBER 1,705,653

ROTARY COMPRESSOR

Filed Feb. 7, 1927

Fig. 1.

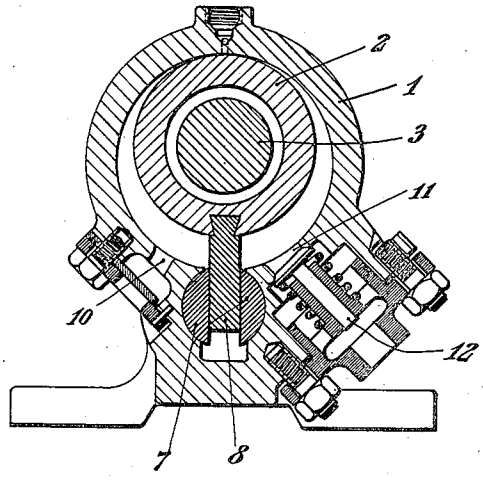
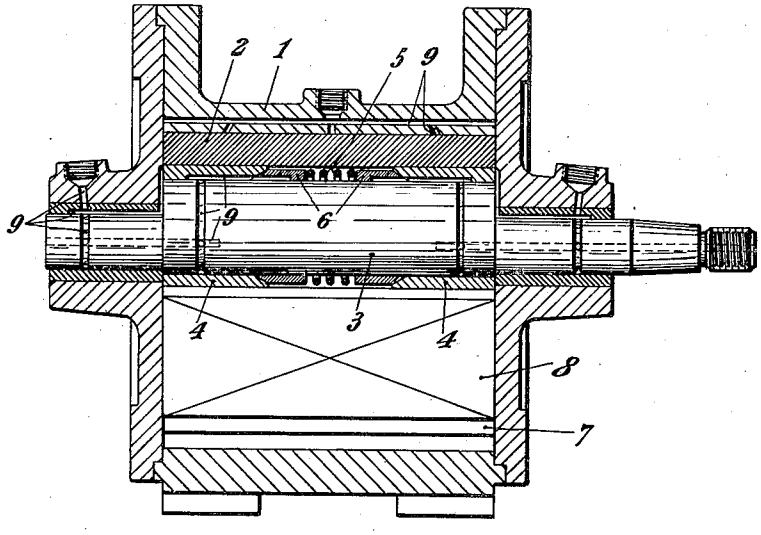



Fig. 2.

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# UNITED STATES PATENT OFFICE.

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## ROTARY COMPRESSOR.

Application filed February 7, 1927, Serial No. 166,332, and in Switzerland November 15, 1926.

This invention relates to high-pressure rotary compressors of the kind wherein a casing contains an eccentric rotor connected with a radial slide that is mounted to swing in the casing, and divides the working chamber into a suction space and compression space, and has to withstand the working pressures.

One drawback met with in all compressors of this kind and not yet obviated by any constructional modifications proposed heretofore was the defective joint between the rotor or slide and the casing. One cause of this defective joint is due to the fact that for pivotally mounting the slide in the casing there was employed a one-piece boss or hub having a longitudinal groove entered by the slide. It has been found that when the slide was journaled in this manner there were always losses of highly compressed gas through the groove as it is not possible in practise to make the groove so that the slide enters it without play so as to form a fluid-tight joint. Another cause of leakage was that owing to the high pressures the rotor-shaft journaled at both ends in the casing became worn rapidly in its bearings and was consequently subject to play which made a tight joint between the rotor and inside face of the casing impossible.

This invention has for its main object to obviate these defects and to provide an improved construction of compressor of the kind described.

According to the invention the boss or hub previously made in one piece comprises two segmental packing pieces rotatable in the casing, between which packing pieces the slide extends. For driving the rotor there serves an eccentric that is journaled in the rotor and has pivots situated coaxially in relation to the casing; bushings that are not rotatable in relation to the rotor are arranged between the latter and the eccentric; also spring-pressed wedge-shaped pressure rings of very hard material are arranged between the bushings and the eccentric, which pressure rings prevent play between the eccentric and bushings even if any wear is caused by friction.

One embodiment of the invention is illustrated diagrammatically and by way of example in the accompanying drawing, wherein:—

Figure 1 is a cross-section through one form of compressor according to the invention, and

Figure 2 is a vertical longitudinal section thereof.

Like reference numerals designate like parts in both views.

Referring to the drawing, a casing 1 has a rotor 2 arranged eccentrically in it. An eccentric 3 journaled centrically in the end walls of the casing 1 is rotatable in the rotor 2. At each end of the rotor 2 there is arranged between it and the eccentric 3 a bushing 4, for example of bronze, fixed against rotation in relation to the rotor, the inner ends of which bushings are conically undercut. The middle of the eccentric is surrounded by a coil spring 5 which presses two wedge-shaped pressure rings 6 of hardened steel into the conical ends of the two bushings 4 and thereby prevents play between the bushings and the eccentric in the event of the bushes becoming worn.

In the lower part of the casing 1 two segmental packing pieces 7 are journaled, between which extends fluid-tight a slide 8 mounted radially on the rotor. This slide is ground exactly in the packing pieces. Owing to the slide being pivotally mounted in this manner in the casing, if the slide and packing pieces are carefully lubricated play between these members can be prevented and leakage at this place can be avoided.

Ducts or grooves 9 serve for lubricating all the rubbing parts of the compressor. The inlet port 10 for fresh gas and the outlet port 11 for the compressed gas are controlled each by a valve 12, whereof only one is illustrated.

It has been found that with the described compressor pressures up to 10 atmospheres can be obtained when working with a single stage.

I claim:—

1. A high-pressure rotary compressor of the kind described, comprising in combination a cylindrical casing containing a working chamber, an eccentric in the latter with pivots journaled centrically in the end walls of the casing, a rotor rotatably carried by said eccentric and making fluid-tight contact with the wall of said working chamber, a slide fixed at one end radially on said rotor and extending into a cylindrical cavity in said casing, packing means for the slide, journaled in said cavity, and packing means

axially adjustable on said eccentric and between the same and the rotor for preventing play between the same when wear of one of these parts occurs.

2. A high-pressure rotary compressor according to claim 1, wherein said axially adjustable means comprise two bushings surrounding the eccentric and fixed against rotation in relation to the rotor, and two spring-pressed pressure rings of very hard material surrounding said eccentric and extending each between the adjacent end of a said bushing and the eccentric.

3. A high-pressure rotary compressor as set forth in claim 1, wherein said means comprise two bushings surrounding the eccentric and fixed against rotation in relation to the rotor and spaced apart in the direction of length of the eccentric, the inner ends of which bushings are conically undercut, two pressure rings of very hard material spaced apart and surrounding said eccentric between the bushings and having each a wedge-shaped end extending between one of the conical ends of the bushings and the eccentric, and a spring between said pressure rings pressing the latter each into its associated bushing.

Signed at Berne, this 18th day of January 1927.

HERMANN WEBER.