

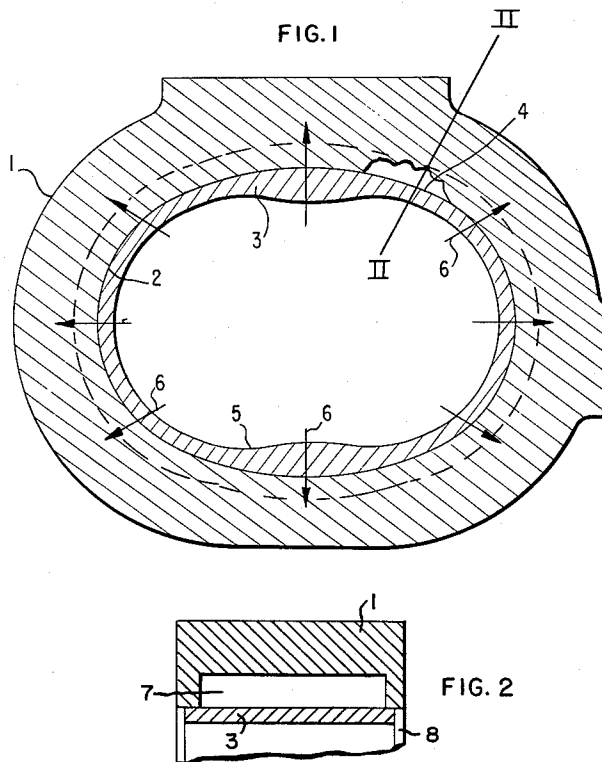
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HOUSING FOR ROTARY-PISTON INTERNAL COMBUSTION ENGINE

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1

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HOUSING FOR ROTARY-PISTON INTERNAL COMBUSTION ENGINE

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3 Claims. (Cl. 230—145)

The present invention relates to a housing of a rotary-piston internal combustion engine of trochoidal construction which comprises an enclosure body provided with a two-arched internal surface as cam track surface for the piston.

In order to improve the quality of the internal surfaces which are subjected to relatively high wear, within housings of rotary-piston internal-combustion engines, it has already been attempted to spray out the internal contour of the enclosure body with a suitable metal so that the internal surface is formed by this metal. Apart from the fact that special installations are necessary for carrying out the spraying operation of the enclosure body and that the spraying operation involves a process relatively little suited for series production, it has been found that the union or connection between the enclosure body and the sprayed or cast-on material is not satisfactory, that the structure and texture of the sprayed material does not correspond to the requirements, and that finally the machining thereof offers difficulties.

For purposes of eliminating these disadvantages, the present invention proposes to arrange the internal surface within a bushing having an elliptical outer contour which is pressed into the enclosure body having a correspondingly elliptical inner contour. The pressed-in bushing may advantageously consist thereby of annealed or hardened steel and the enclosure body of aluminum or of an aluminum alloy.

It has been made possible by the present invention to anchor the bushing with absolute safety within the enclosure body since the abutment or supporting surfaces of the bushing pressed into the heated enclosure body with an appropriate overlap all act in the outward direction, even in those areas in which the internal surface protrudes toward the center of the housing. The fabrication of the bushing and the pressing operation of the bushing into the enclosure body makes no large demands from a manufacturing point of view. The bushing may be made of any suitable material. Insofar as necessary, the bushing may also be pressed out of the enclosure body and may be replaced by another bushing. This is particularly advantageous for testing operations when the basic concern is to determine the length of life of different materials and to match the same to the material utilized for the sealing ledge members at the piston. Additionally, it is of advantage that the pressed-in bushing may be utilized as wet bushing, that is, the cooling medium can be conducted directly up to the outer surface of the relatively thin-walled bushing.

Accordingly, it is an object of the present invention to provide a rotary-piston housing in which the wear qualities of the internal surfaces are greatly enhanced without involving difficult manufacturing or assembly techniques.

It is another object of the present invention to provide a housing for a rotary-piston internal-combustion engine of trochoidal construction which, by simple means, assures an internal cam track surface for the piston and more particularly for the piston seals providing adequate wear qualities in actual operation.

2

A further object of the present invention resides in the provision of a housing for a rotary-piston internal-combustion engine of trochoidal construction which not only may be made and assembled in a very simple and relatively inexpensive manner but which also permits of matching by simple means the characteristics and wear qualities of the internal surface of the housing to those of the piston seals.

Still another object of the present invention resides in the provision of a housing for a rotary-piston internal-combustion engine which is suitable for mass production techniques, permits an absolutely safe securing of the bushing forming the internal surface within the housing enclosure body, allows of improved cooling of the exposed internal surfaces, and also enables a safe absorption of all forces which by reason of the particular arrangement all act in the outward direction.

A further object of the present invention resides in the provision of a housing for a rotary-piston internal-combustion engine of trochoidal construction in which the internal surface may be readily exchanged thereby greatly facilitating test operations, and which additionally entails certain advantages as regards cooling and heat transfer thereof.

These and other objects, features and advantages of the present invention will become more obvious from the following description when taken in connection with the accompanying drawings which show, for purposes of illustration only, one embodiment in accordance with the present invention wherein:

FIGURE 1 shows a cross sectional view through a housing for a rotary-piston internal-combustion engine of trochoidal construction in accordance with the present invention.

FIGURE 2 is a sectional view of FIGURE 1 taken along line II—II of FIGURE 1.

Referring now to FIGURE 1, reference numeral 1 designates therein the enclosure body of the housing of the rotary-piston internal-combustion engine which consists preferably of aluminum by reason of the better heat conductivity properties. The enclosure body 1 is provided with an elliptical inner contour 2. The bushings 3 consisting, for example, of tempered steel, is pressed into the elliptical inner contour 2. This bushing 3 is provided, corresponding to the elliptical inner contour 2 of the enclosure body 1, with an elliptical outer contour 4. The internal surface 5 provided within the bushing 3 as cam surface for the piston (not shown) of the internal-combustion engine has the form of a two-arched epitrochoid. The supporting forces 6 of the bushing all act in the outward direction so that a stable anchoring within the enclosure body 1 is imparted to the bushing 3.

FIGURE 2 shows a cooling fluid chamber 7 provided within the enclosure body 1 and extending the length of the elliptical inner contour 2. The outer surface of the elliptical outer contour 4 of the bushing 3 is therefor in direct contact with the cooling fluid. The means by which the cooling fluid is conducted through the chamber 7 forms no part of the present invention, accordingly, any conventional cooling fluid conducting means may be used. Reference numeral 8 shows a degree of overlap of the inner contour surface of the enclosure body over the outer contour surface of the bushing which may be used consistent with the present invention.

While I have shown and described one embodiment in accordance with the present invention, it is understood that the same is not limited thereto but is susceptible of numerous changes and modifications within the spirit and scope thereof and I therefore do not wish to be limited to the details shown and described herein but intend to

3

cover all such changes and modifications as are encompassed by the scope of the appended claims.

I claim:

1. A housing for a rotary-piston internal-combustion engine of trochoidal construction, comprising:
 - enclosure body means provided with a substantially elliptical inner contour,
 - and bushing means provided with a substantially elliptical outer contour and pressed into the substantially elliptical inner contour of said enclosure body means so as to provide a forceful contact between said bushing means and said enclosure body means sufficient to prevent relative movement therebetween under all conditions of operation, said bushing means being provided with a two-arched internal surface constituting the cam track for the piston,
 - and said contours being such that the support forces of said bushing means all act outwardly.
2. A housing as defined in claim 1, wherein said bushing means consists of hardened steel and said enclosure body means of light-weight metal selected from the group consisting of aluminum and an aluminum alloy.
3. A housing as defined in claim 2, which includes means in said enclosure body means for conducting the

4

cooling fluid to contact directly the surfaces of the external contour of said bushing means.

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