Jan. 8, 1924. 1,480,185

M. B. SETTER

SELF ADJUSTING BEARING

Filed Dec. 16, 1921

Fig. 1

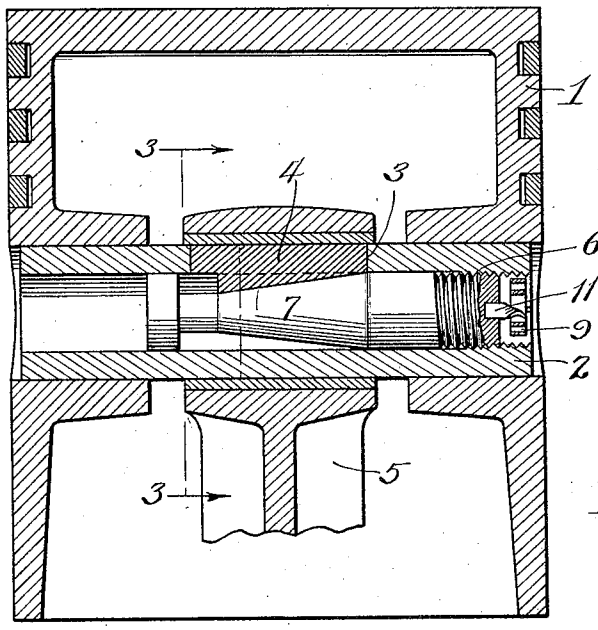


Fig. 2

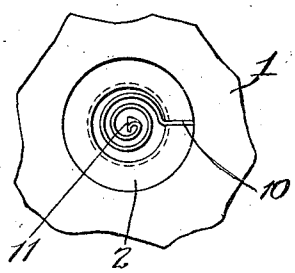


Fig. 3

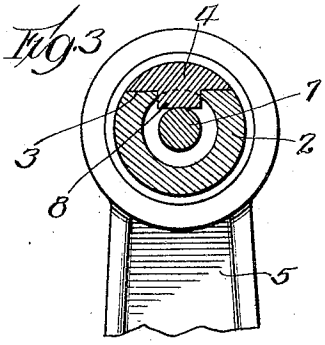


Fig. 4

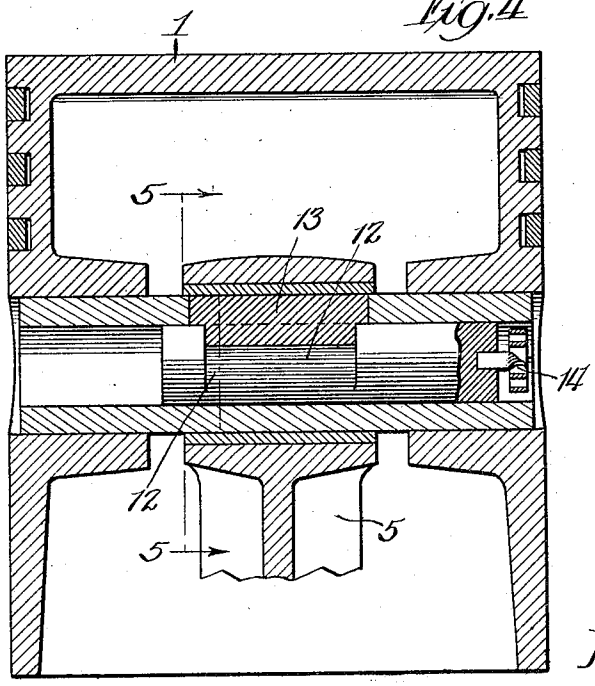
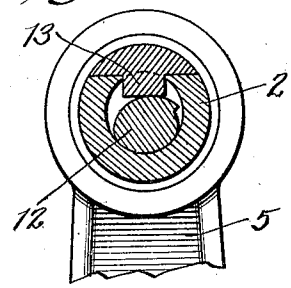


Fig. 5



Inventor
Michael B. Setter
by Arthur H. Durand Atty.

Patented Jan. 8, 1924. 1,480,185

UNITED STATES PATENT OFFICE.

MICHAEL B. SETTER, OF CHICAGO, ILLINOIS.

SELF-ADJUSTING BEARING.

Application filed December 16, 1921. Serial No. 522,728.

To all whom it may concern:

Be it known that I, MICHAEL B. SETTER, a citizen of the United States, and a resident of Chicago, Cook County, State of Illinois, have invented a certain new and useful Improvement in Self-Adjusting Bearings, of which the following is a specification.

This invention relates to bearings for automatically taking up wear in the connections between the piston and the crank shaft of an internal combustion engine.

Generally stated, the object of the invention is to provide a novel and improved form of means, preferably of a rotary character, to automatically take up wear and thereby prevent lost motion in the connection between the piston and the upper end of the pitman or connecting rod of the engine, or in one of the other bearings, so that any wear or lost motion which may develop will be automatically taken up while the engine is in motion.

It is also an object to provide certain details and features of construction tending to increase the general efficiency and the desirability of a device for automatically taking up wear in an internal combustion engine, while the engine is in operation, of this particular character.

To these and other useful ends the invention consists in matters hereinafter set forth and claimed and shown in the accompanying drawings in which—

Figure 1 is a vertical section of an engine piston of the type in which the transverse connecting member, sometimes, called a wrist-pin, is rigid with the piston so that the upper end of the pitman or connecting rod turns or oscillates on the middle portion of said pin.

Figure 2 is an end view of said pin, showing the adjacent portions of the piston in fragmentary form.

Figure 3 is a vertical section on line 3—3 in Figure 1.

Figure 4 is a view similar to Figure 1, showing another form of the invention.

Figure 5 is a vertical section on line 5—5 in Figure 4.

As thus illustrated, referring to Figures 1 to 3 inclusive, the invention comprises a piston 1 of any suitable or desired form, having a transverse cylindric member or wrist-pin 2 secured therein. Said pin is hollow and tubular in form and is formed with a slot 3 at its upper side for the adjustable wearing block 4 which, as will be readily apparent, forms a movable section of said pin. The upper end of the pitman 5 turns on the pin 2, and the thrust of the piston is on the lower side of said pin, against the pitman, so that wear is advantageously and desirably taken up at the top of the bearing thus formed between the pitman and the pin. One end portion of the pin is threaded internally at 6 to receive the tapered screw plug 7, the tapered portion of which engages the inclined lower portion 8 of the wearing block 4 previously mentioned. Obviously, therefore, rotation of the plug 7 in one direction will cause it to move endwise, by reason of the screw thread formation, and this will crowd the block 4 upward against the top portion of the pitman. In order that this may be done automatically, while the engine is in motion, a spiral spring 9 has one end anchored at 10 in the end of the pin 2 and has its other end anchored at 11 in the end of the plug 7, said spring being wound up like a clock spring to gradually rotate the plug 7 and thus take up wear between the block 4 and the top of the pitman supported thereon.

In Figures 4 and 5 the construction is similar to that previously described, but in this case a rotary cam 12 engages the underside of the wearing block 13, and the gradual rotation of this cam 12 serves to crowd the block 13 upward against the top portion of pitman. For this purpose a spiral spring 14, similar to the one previously described, is applied to the outer end of the cam 12, so that the latter is gradually rotated by the tension of this spring to automatically take up wear and lost motion between the wrist-pin and the pitman. It will be understood that these springs can be tensioned in any suitable or desired manner for this purpose.

Thus, in either form of the invention, there is a rotary element in the hollow transverse member in the piston, in combination with means for automatically rotating this element, very gradually, of course, to automatically take up wear and lost motion between the piston and the upper end of the pitman or connecting rod. In each case the rotary means (7 or 12) have wedging engagement with the wearing block (4 or 13) of the automatic wear take-up means. Of course, as will be readily ap-

parent, the rotary means thus provided to automatically take up wear can be applied to a bearing of any suitable character, and is not necessarily limited to the particular construction shown and described.

What I claim as my invention is:—

1. In means for automatically taking up wear in a bearing, a movable wearing member forming a part of the bearing, a pitman engaging said member, and a rotary element engaging said member and formed to gradually force said member outward against the pitman and thereby take up wear and prevent lost motion in the bearing.

2. A structure as specified in claim 1, said bearing being disposed between the pitman and the piston of an internal combustion engine, and said rotary element being rotatable about an axis extending transversely about the piston, and having a spring to automatically produce said rotary motion, thereby to take up wear in said bearing while the engine is in motion.

3. A structure as specified in claim 1, said bearing being formed in part by a hollow and transverse tubular member forming the wrist-pin for the piston of an internal combustion engine, and said rotary element being inclosed in said tubular member.

4. In an internal combustion engine, the combination of a piston, a transverse tubular member in said piston, forming a wristpin therefor, a rotary member in said tubular member, a wearing block engaging said rotary member, and a spring to gradually rotate said rotary member, thereby to take up wear and prevent lost motion.

5. The improved means for automatically taking up wear and preventing lost motion in a bearing forming a part of the connection between the piston and crank shaft of an internal combustion engine, comprising a wearing block, and rotary means having wedging engagement with said block, substantially as shown and described.

MICHAEL B. SETTER