April 22, 1941. J. R. SUMMERS 2,239,257

PISTON STABILIZER

Filed Feb. 28, 1938

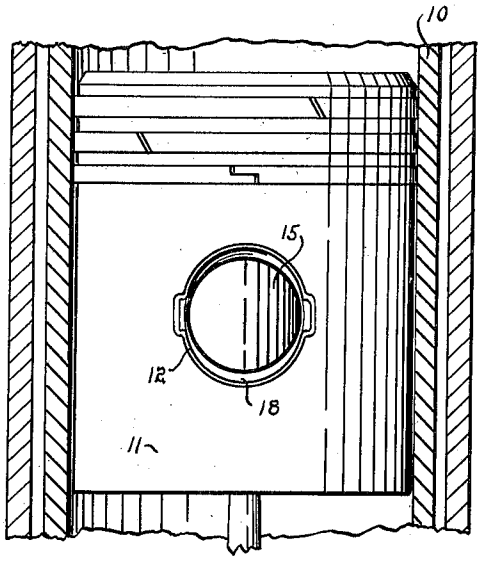


Fig. 1.

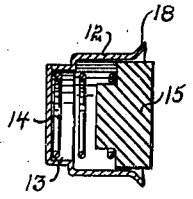


Fig. 2.

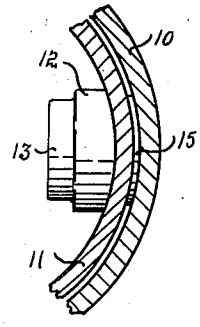


Fig. 4.

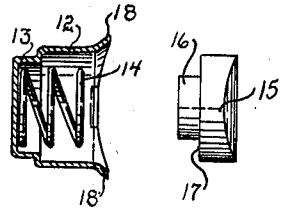


Fig. 3.

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PISTON STABILIZER

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Application February 28, 1938, Serial No. 193,097

1 Claim. (Cl. 309—5)

The principal object of my invention is to provide a stabilizing device for the pistons of internal combustion engines and like, that will yieldingly control the lateral or slap movement of the pistons when the pistons are reciprocated in their cylinders.

A further object of this invention is to provide a piston stabilizer that will compensate for wear, expansion, and contraction of the piston and its cylinder wall, thereby making for a more efficient engine as well as a more quiet running engine.

A still further object of my invention is to provide a piston stabilizer that will properly align the piston inside of the cylinder wall and hold the piston in such proper position regardless of the taper of the cylinder.

A still further object of my invention is to provide a piston stabilizer that aids in reducing the wear and tear on pistons, piston rings and cylinders.

These and other objects will be apparent to those skilled in the art.

My invention consists in the construction, arrangement, and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, pointed out in my claim, and illustrated in the accompanying drawing, in which:

Fig. 1 is a front view of my device installed on an ordinary engine piston.

Fig. 2 is a side sectional view of my device detached from a piston.

Fig. 3 is a side view of various parts of my device with the cup portion in section.

Fig. 4 is a top plan view of my device installed and in use.

It is well known that reciprocating pistons in cylinders have undesirable lateral movement, thereby impairing the efficiency of the piston, damaging the piston rings and the cylinder wall. Various devices have been placed on the market to reduce or control this lateral movement of reciprocating pistons, but many of these devices are quite complicated, are hard to install and do not successfully function over a long period of time. I have overcome such objections by providing a piston stabilizer wherein the spring of the same and plunger are properly and successfully centered within their holding cup.

Referring to the drawing, I have used the numeral 10 to designate an ordinary cylinder having a piston 11. It is to such a piston that I install my device and which I will now describe. The numeral 12 designates the cup portion of my device having a well portion 13 of reduced diameter in its bottom, as shown in Fig. 2. This well portion 13 provides a cylindrical depression for receiving, holding and supporting the rear end portion of the coil spring 14 of my device, as shown in Fig. 3. By this construction, the coil spring 14 is properly centered within the cup 12 and the spring, when actuated, will not engage the inner side wall of the major portion of the cup 12. Such a construction prevents the full freedom of action of the coil spring and the same is not hampered in its function by frictionally engaging the inner wall of the cup proper. The numeral 15 designates the plunger portion of the device, having a cylindrical lug portion 16 on its rear center. The head or forward portion of the member 15 is curved to conform to the inside curvature of the cylinder. As the portion 16 has a diameter less than the diameter of the portion 15, a shoulder 17 is provided. The diameter of the portion 16 is such that it slips easily within the forward portion of the spring 14. By this arrangement of parts, the plunger will be properly centered within the cup 12 and also the forward end portion which surrounds the portion 16 and engages the shoulder 17 of the plunger, will be properly centered within the cup 12. With the spring exerting a forward pressure of the plunger 15, the device, when installed, will yieldingly force the plunger 15 into sliding contact with the inside wall of the cylinder 12, thereby yieldingly holding the piston against undesirable lateral movement within the cylinder.

To install my device, it is merely necessary to bore a suitable hole within the skirt of the piston 11 and insert the cup 12 into such opening. The cup 12 is limited, however, in passing completely through the skirt of the piston 11, by a flange 18. The hole formed in the piston 11 may be reamed or otherwise beveled to conform with this flange 18, but in all events, the forward edge of the cup 12 cannot protrude beyond the outer plane of the skirt of the piston. With my device so installed, the spring 14 will yieldingly force the plunger 15 forwardly and outwardly and beyond the plane of the skirt of the piston and into engagement with the inside of the cylinder as shown in Fig. 4.

Some changes may be made in the construction and arrangement of my improved piston stabilizer without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claim any modified forms of structure or use of mechanical equivalents

which may be reasonably included within their scope.

I claim:

An auto cylinder and piston mounted therein having in combination, a side opening in said piston provided with lateral notches in its periphery, a cup having side lugs bearing on said notches and characterized by having a bottom provided with an outward concentric depression forming a recess inside, a coil spring having one end bearing in said recess, and a plug slidably fitting in said cup and engaged by the other end of said spring to force the plug to bear on the inner face of said cylinder and avoid side slap of the piston therein, substantially as described.

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