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DEVICE FOR REDUCING PISTON SLAP IN INTERNAL COMBUSTION ENGINES

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Fig. 1.

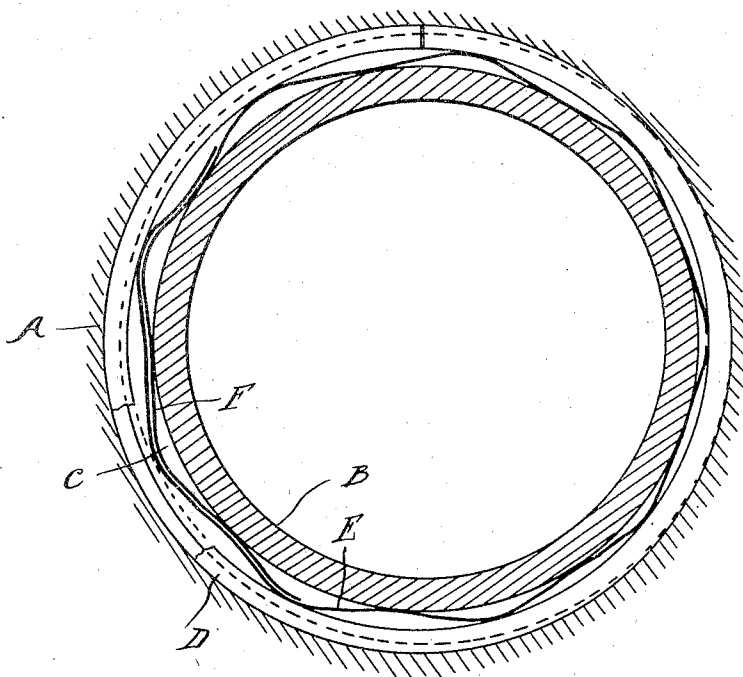


Fig. 2.

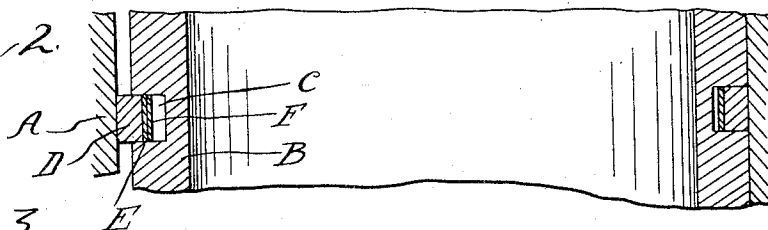
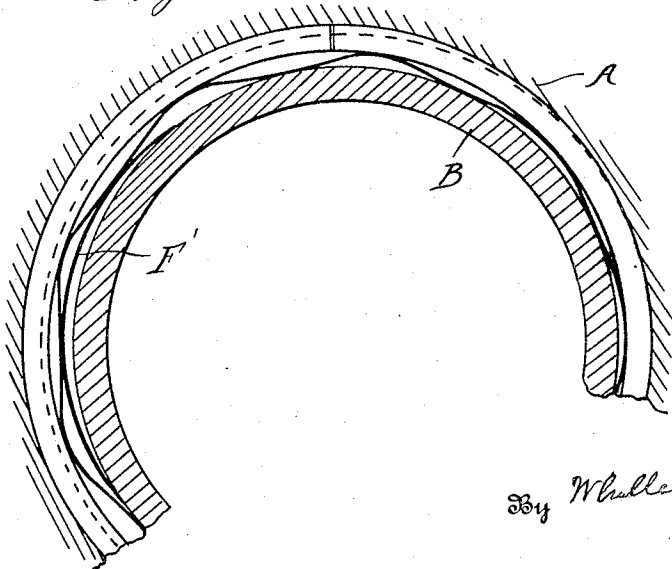


Fig. 3.



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UNITED STATES PATENT OFFICE.

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DEVICE FOR REDUCING PISTON SLAP IN INTERNAL-COMBUSTION ENGINES.

Application filed September 26, 1927. Serial No. 222,096.

The invention relates to devices for preventing piston slap in internal combustion engines of the type forming the subject matter of my former application Ser. No. 91,601 filed March 1, 1926. In this earlier application a number of different specific constructions were shown all including a radially expandible piston ring in a groove in the piston together with means for exerting a preponderance of radial pressure between the ring and one side of the piston whereby said piston is held in closer contact with the opposite side of the cylinder.

The present invention consists in the construction of this general character employing a trans-split ring of uniform radial thickness located in a ring groove of uniform radial depth and reinforced by a uniformly corrugated ribbon expander together with an auxiliary expander for causing the preponderance of pressure as hereinafter set forth.

In the drawings;

Figure 1 is a horizontal section through an engine cylinder and piston.

Figure 2 is a vertical section therethrough.

Figure 3 is a view similar to Figure 1 showing modification.

A is the cylinder, B the piston having the ring groove C therein and D is a trans-split ring of uniform thickness in said groove. E is a uniformly corrugated ribbon expander located in the ring groove so as to reinforce the radial pressure of the ring uniformly in all directions.

To produce the preponderance of pressure on one side of the piston I employ an auxiliary expander. This may either be an extension of the main expander forming an overlapping portion as shown at F Figure 1 or it may be formed of a separate member as indicated at F', Figure 3. With either construction as well as with the various other modifications the combined radial tension of the expander and its reinforcement is exerted in one direction and only the tension of the single expander in the opposite direc-

tion. Consequently there is the desired preponderance of pressure for holding the piston to one side of the cylinder wall which lessens piston slap.

What I claim as my invention is:

1. The combination with a cylinder, of a piston loosely fitting the same and provided with a ring groove, a trans-split ring in said groove and a ribbon expander between said ring and the bottom of the groove corrugated to produce radial resiliency and having two plies on one side of the piston for exerting a preponderance of pressure against said side of the piston.

2. The combination with a cylinder, of a piston loosely fitting the same and provided with a ring groove, a trans-split ring in said groove, a corrugated ribbon expander between the ring and the bottom of the groove and a reinforcing expander located on one side of the ring for exerting a preponderance of radial pressure against one side of the piston.

3. The combination with a cylinder, of a piston loosely fitting the same provided with a ring groove of uniform radial depth, a trans-split ring of uniform radial thickness in said groove, a ribbon expander between said ring and the bottom of the groove for exerting a radial outward pressure on said ring in all directions and a reinforcing expander located on one side of the ring for exerting a preponderance of radial pressure against said side.

4. The combination with a cylinder, of a piston loosely fitting the same provided with a ring groove of uniform radial depth, a trans-split ring of uniform radial thickness in said groove, a uniformly corrugated ribbon expander located between said ring and the bottom of the ring groove and a reinforcing expander located on one side of the groove for exerting a preponderance of radial pressure on said side.

In testimony whereof I affix my signature.

DEAN M. SOLENBERGER.