METHOD OF MAKING PISTON-RINGS.

UNITED STATES PATENT OFFICE.

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To all whom it may concern:

Be it known that I, HENRY STOFFERS, a citizen of the United States, and resident of Newark, in the county of Essex and State of New Jersey, have invented a new and Improved Method of Making Piston-Rings, of which the following is a full, clear, and exact description.

This invention relates to piston rings and refers particularly to hammered piston rings.

In hammering piston rings to give the necessary resiliency thereto, the density of the grain of metal is increased by the impact of the blows and it has been found that slightly raised and hardened spots are formed on the outer peripheral bearing face of the ring. These hardened spots or portions necessarily injure the walls of the cylinder and tend to scratch or groove the same thereby destroying and impairing the compression of an engine.

The invention therefore contemplates both a method of obviating this objection and the provision of a ring which is so constructed as to prevent the same.

A further object of the invention is to provide a ring of the character described and a method for constructing the same which does not materially increase the expense or time necessarily required in its production.

With the above recited and other objects in view some of which will appear as the nature, purpose and use is more clearly defined, reference is made to the following description, claims and accompanying drawings in which—

Figure 1 is a sectional view through a piston ring constructed in accordance with the invention.

Figs. 2, 3 and 4 are diagrammatic illustrations of the same of the various ways in which the ring may be made.

Fig. 5 is a diagrammatic view of the old and known construction and the method now employed.

Referring to Fig. 5 of the drawings, the ring 10 of the ordinary well known type is of rectangular formation in cross section. In hammering a ring of this type for the purpose of increasing its resiliency, the blow is recorded at the points 11 resulting in the compression of the grain of the metal to a greater density than the remainder as illustrated by the shaded portion 12. As the rings are necessarily of thin material this increase in the density caused by the impact of the blows extends through the ring to its outer peripheral bearing surface 13 resulting in the hardened and slightly raised spots or portions 14. When the ring is applied to a piston and arranged in a cylinder it is obvious that the spots or portions 14 will tend to scratch and create grooves in the cylinder resulting in loss of compression and other objectionable disruptions in the cylinder walls.

In the formation of the ring illustrated in Figs. 1 and 2, the inner periphery of the ring is provided with an annular groove 15 having angularly disposed walls 16 against which the force of the hammer blows are received. By this arrangement the density of the grain formed by the compression of the blow is forced to take an angular course of travel as illustrated by the shading 17. The density of the grain necessarily decreases toward the outer face but should the blow be sufficient to force the compression through the metal, the angular disposition of the faces will compel the hardened spots or surfaces to appear on the upper or lower edges 18 of the ring.

In Figs. 3 and 4 slightly modified forms of grooves are illustrated which are provided with angular faces to perform the same function as that disclosed in Figs. 1 and 2, the shading therein illustrating the compressed or intensified density resulting from the hammer blow.

While there has been shown and described several formations of grooves which may be formed in the ring to obtain the desired result, no limitation is necessarily made thereto as the same are merely illustrative of several of the ways in which the invention may be reduced to practice.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The herein described method of making a piston ring consisting in providing an annular interior groove in the ring having angularly disposed sides, hammering the faces of said groove at an angle to a radial plane of the ring to cause the increase in the density of the metal resulting from the hammering operation to be transmitted at an angle.

HENRY STOFFERS.