

N. D. HAMEL.
 PISTON PACKING RING.
 APPLICATION FILED DEC. 27, 1912.

1,062,095.

Patented May 20, 1913.

Fig. 1

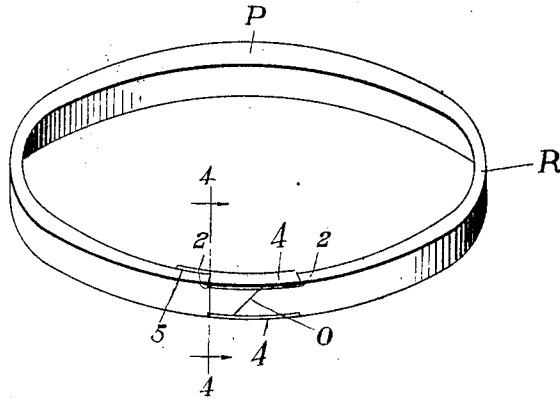


Fig. 2

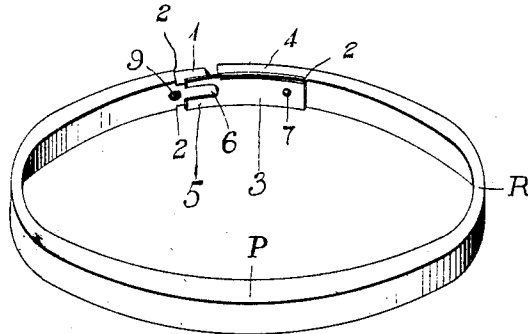


Fig. 3

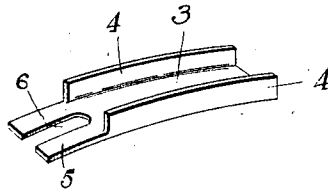
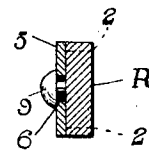


Fig. 4



Inventor

Norbert D. Hamel

Witnesses

E. D. Haines.

N. D. Hamel.

By *H. B. Wilson* *Geo*
 Attorney

UNITED STATES PATENT OFFICE.

NORBERT DANES HAMEL, OF GARDNER, MASSACHUSETTS.

PISTON PACKING-RING.

1,062,095.

Specification of Letters Patent.

Patented May 20, 1913.

Application filed December 27, 1912. Serial No. 738,948.

To all whom it may concern:

Be it known that I, NORBERT DANES HAMEL, a citizen of the United States, residing at Gardner, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Piston Packing-Rings; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to packing rings, and more especially to those intended to be used around pistons such as are employed within the cylinders of gasoline engines; and its object is to prolong the life of such a piston ring by reducing the leakage past it where it is split and therefore enabling it to be used longer before it must necessarily be replaced by a new one.

I have observed that when a split piston ring is removed after having been used for some time in a gasoline engine, especially a ring of crescent shape which is thinnest near its ends and thickest at a point diametrically opposite, the outer face of the ring is worn smooth nearly all the way around, but the ends appear to be bent inward a trifle and are black on their outer sides. From this I gather that the normal and constant expansion of the ring throws its outer face into contact with the inner face of the cylinder throughout most of its length, but where the material of the ring is thin this radial tendency is exerted with less force—whether due to the thinness of the metal, the heat, the friction, or other causes, I am uncertain. The fact remains, however, that in time the ends of a split piston ring become deflected slightly inward so that the leakage is past their outer faces, as proven by the fact that the latter are not worn bright but are rather sooty. But whether the ends of the piston ring do or do not become deflected inward, when they are cut off oblique or on broken lines they interengage while the ring is new and they draw apart slightly when the ring becomes worn, and the result is that a tortuous passage is produced through which the steam or compression may escape. If it can not pass along this passage directly, the fluid may pass radially inward at one edge of the piston ring, across within the piston groove behind said ring, and radially outward through the passage at the

other edge of the ring; and this course it could follow easily if the ends are cut off on a broken line, especially when said ends have become worn by long use.

The purpose of the present invention is, then, to reduce the possibility that the ends of a split piston ring may become deflected inward, and incidentally to avoid the formation of such a passage across either the outer face of the ring where it is split or around behind it. This object is carried out in the manner hereinafter more fully described and claimed, and as shown in the drawings wherein—

Figure 1 is a perspective view of a split piston ring embodying my improvements, looking at the outside thereof with the split ends closed together; and Fig. 2 is a similar view looking at the inside of the split ends which latter are in this instance slightly separated. Fig. 3 is an enlarged perspective detail of the device itself detached from the ring; and Fig. 4 is an enlarged cross section on the line 4—4 of Fig. 1.

In the drawings the letter R designates a piston ring which is made slightly crescent shaped in the present instance, being thicker at the point P and split directly opposite thereto. The manner of splitting the ring is not essential to the present invention but I have illustrated each end as cut off oblique on the line O and as reduced in width at its edges slightly as at 1 so as to form oppositely disposed shoulders 2, 2 on both ends of the ring. The present invention consists in the provision of a channeled member whose base 3 underlies one end of the ring and whose side flanges 4 pass radially outward alongside the reduced portion of the ring-ends so as to fill out the width thereof as shown in the drawings, the flanges extending for about half or two-thirds the length of this member so as to leave a projecting flat tongue 5 at its outer end, and this tongue is deeply notched as at 6.

The numeral 7 designates a fastening means (solder or rivet, preferably the latter), by use of which the channeled end of this plate is firmly secured to one end of the ring; and the numeral 9 designates a headed rivet seated in the other end of the ring from the inside and adapted to be engaged by said deep notch.

With the parts thus constructed, when the ring is first inserted it is compressed so that its ends are brought toward each other

and the flanges on the channeled plate pass into the recesses on the opposite ends of the ring, while the tongue of the plate passes under the free end and the deep notch in said tongue passes over the rivet and under its head. This is a condition the parts of the device will assume while the ring is new, after it has been put onto the piston and the latter inserted in the cylinder. When the parts wear under long use, the wear is on the outer face of the ring, but my device has a tendency to prevent the free ends of the ring from becoming deflected inward as above described, because the plate underlying its ends and held in place by the rivets braces such ends from deflection inward. Moreover, the side flanges prevent the formation of a tortuous passage across the split between the ends of this ring, and retard the leakage past the piston ring in that direction. In time the parts will become so much worn that, as the ring expands, the notch will draw off of the headed rivet, but the tongue will yet sustain that end of the ring beneath or behind which it is disposed. After a sufficient length of time the flanges will draw off this end of the ring completely, but the device then needs to be replaced by a new one because by that time it will have been worn extremely thin.

I do not wish to be limited to the material of parts, nor to the details of the ring itself other than as they co-act with this improvement.

What is claimed as new is:

1. The combination with a split piston

ring whose ends are recessed in both edges; of a reinforcing member channeled at one end with the base of the channel fitting inside one ring-end and the flanges thereof fitting in its recesses and adapted to slide into the recesses of the other ring-end, the base of said channel being longitudinally slotted, and a screw inside the other ring-end engaging said slot.

2. The combination with a split piston ring whose ends are cut off oblique; of a channeled member secured inside one end of the ring and projecting beyond the extremity thereof, the base of this member being continued beyond its sides in a tongue having a deep notch in its extremity, and a device inside the other end of the ring with which said notch engages.

3. The combination with a split piston ring whose ends are cut off on an irregular line and each of which is recessed in both edges; of a re-inforcing member channeled at one end with the base of the channel fitting inside one ring-end and the flanges thereof fitting in its recesses and adapted to slide into the recesses of the other ring-end, the base of said channel being continued beyond its flanges and longitudinally slotted, and a stud inside the other ring-end engaging said slot.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

NORBERT DANES HAMEL.

Witnesses:

JOSEPH P. CARNEY,
PATRICK KENNEDY.