

C. WHITE.
PISTON RING.
APPLICATION FILED FEB. 25, 1919.

1,369,592.

Patented Feb. 22, 1921.

Fig. 1.

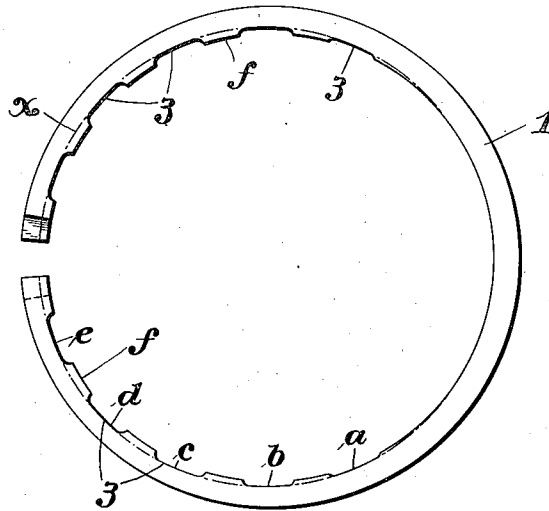
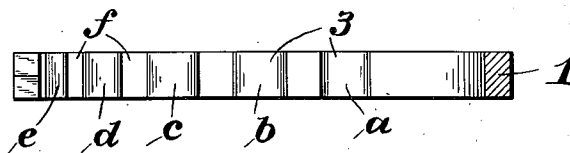


Fig. 2.



Inventor:

Charles White,

by Spear, Middleton, Dumas & Spear
Attys.

UNITED STATES PATENT OFFICE.

CHARLES WHITE, OF BALTIMORE, MARYLAND.

PISTON-RING.

1,369,592.

Specification of Letters Patent.

Patented Feb. 22, 1921.

Application filed February 25, 1919. Serial No. 279,037.

To all whom it may concern:

Be it known that I, CHARLES WHITE, a citizen of the United States, resident of Baltimore, Maryland, have invented certain new and useful Improvements in Piston-Rings, of which the following is a specification.

Among the objects of my invention is to provide a split piston ring having the desirable qualities of what is known as the eccentric ring, which is tapered toward its free ends, together with the desirable qualities of the concentric ring in which the thickness is uniform throughout and presents to the floors of the piston grooved side faces which are of uniform extent measured radially at all points along the ring.

Another object is to provide a ring, by casting, of such form that the desired degree of spring tension will exist where required about the ring, no hammering or distortion of the metal being resorted to for this purpose and no machining of the ring being necessary on the inside after it leaves the mold.

The improved ring is shown in the accompanying drawings in which Figure 1 is a side view of the ring, and

Fig. 2 is a view of the interior face of part of the ring.

In these drawings the ring 1 is of cast metal. The ring is cast rectangular in cross section with its side faces at right angles to its outer and inner faces and these side faces are of equal width, at the split portion to the width at intermediate points and to the width at the closed side of the ring or that portion opposite the split portion so that when the ring is in the groove of the piston it will fill the same at the split portion and at the intermediate points mentioned the same as at the closed side of the ring, and the same width of lateral bearing face will be available to bear against the floors of the grooves *i. e.* the lateral wall, as will be present at the closed part of the ring. At intervals, however, the ring is cast on its inner face with corrugations 3 extending across the said face from side to side. These corrugations may be differently disposed but in the particular construction shown they are successively of different depths, the one at *b* being slightly deeper than the one at *a*, *c* being deeper than *b* and so on around the ring to *e* which is the deepest and is nearest the split portion of the

ring. Corrugations in like order and depth are formed in the other free end portion of the ring.

A line drawn along the bottoms of these corrugations as indicated by the dotted line *x* would represent the taper of the free arm of the ring like that in a ring of eccentric form, except that the tapered inner face would have the ridges *f* at intervals. At these ridges as well as at the extreme ends of the split portion, the thickness of the ring is uniform with that of the uncorrugated portion so that lateral faces of the full width from inner to outer face will be provided to bear on the lateral wall of the groove thus providing a ring having wearing qualities and capacity to prevent undue tipping or twisting of the ring in its groove equal to that of a concentric ring which is of the full thickness throughout and presents a lateral face of the full width at the split portion and at points intermediate the same and the closed side.

A ring of eccentric form or in other words, with its ends tapered will wear on the corner edges and the thinner portions and thus not fit the cylinder in such manner as to effectually prevent the passage of oil or gas. This is avoided with my construction and at the same time the desired resilience of the eccentric ring is afforded.

As stated above the ring is cast with the corrugations and intermediate ridges extending entirely across the inner face of the ring.

I can so dispose the corrugations and so arrange the order of the varying depths as to give the ring its spring quality at the points desired so that the ring will bear throughout with a uniform pressure upon the cylinder wall and thus no crevices will be left for the passage of oil or gas.

I cast this ring in a die or mold preferably of metal and by this means I can produce a chilled ring requiring no finishing on the inside or face toward the piston.

The features relating to the die casting will be disclosed in another application, but it may be mentioned here that I cast the ring in molds with the split or separation between the ends, requiring no cutting after casting, at this point. The composition of the ring is harder than that used in a ring which has to be cut.

For casting the ring with the ends separated the mold cavity is provided with

blocks or pieces extending across the same so as to form the ends shouldered to overlap or inclined to overlap. In either case the cast ring is of such form that when closed
5 it will be adapted to bear on the cylinder throughout with substantially equal pressure.

I claim as my invention:

10 An annular piston ring having on its inner face recesses extending entirely across

the same from side face to side face, said recesses being of increasing depth from the closed side of the ring to the slit portion, and each recess being of uniform configuration from side face to side face, those portions of the ring between adjacent recesses
15 maintaining the full thickness of the ring.

In testimony whereof, I affix my signature.

CHARLES WHITE.