(No Model.)

# W. M. BARR.

## PISTON.

No. 372,058. Patented Oct. 25, 1887.

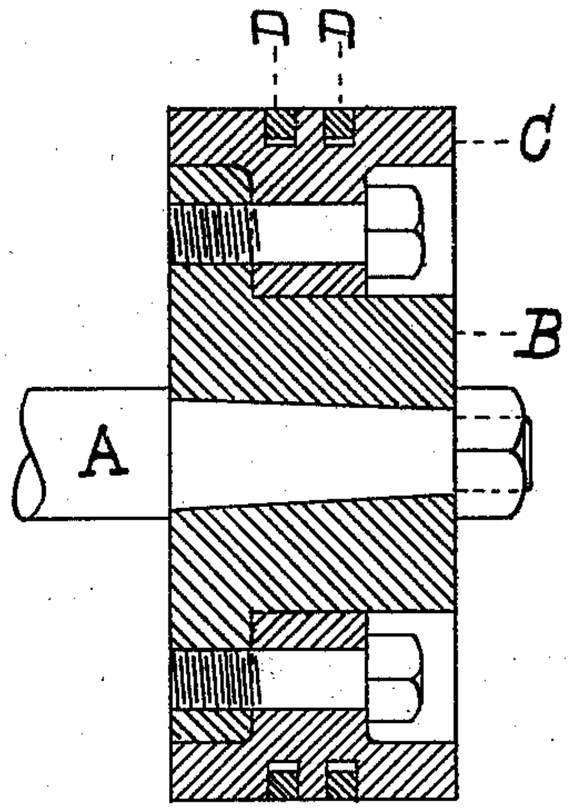


Fig. 1

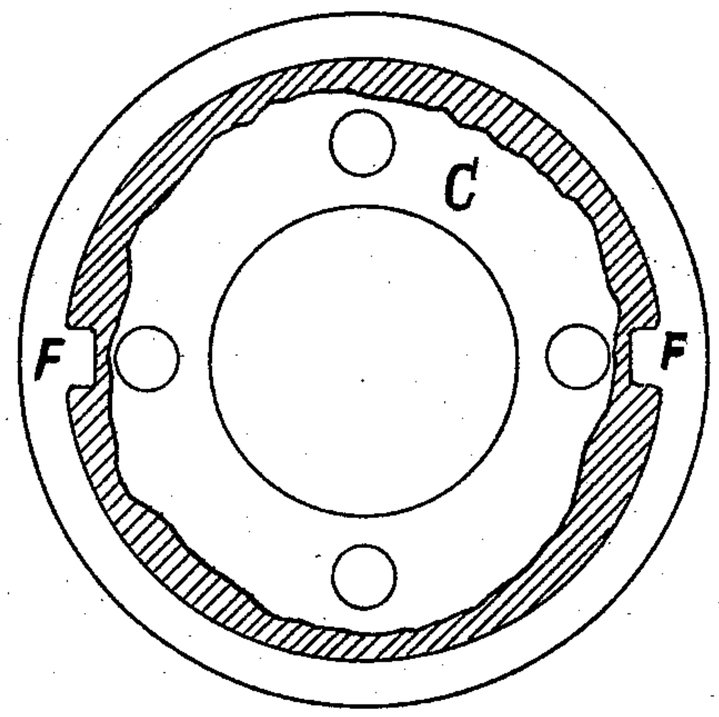


Fig. 2

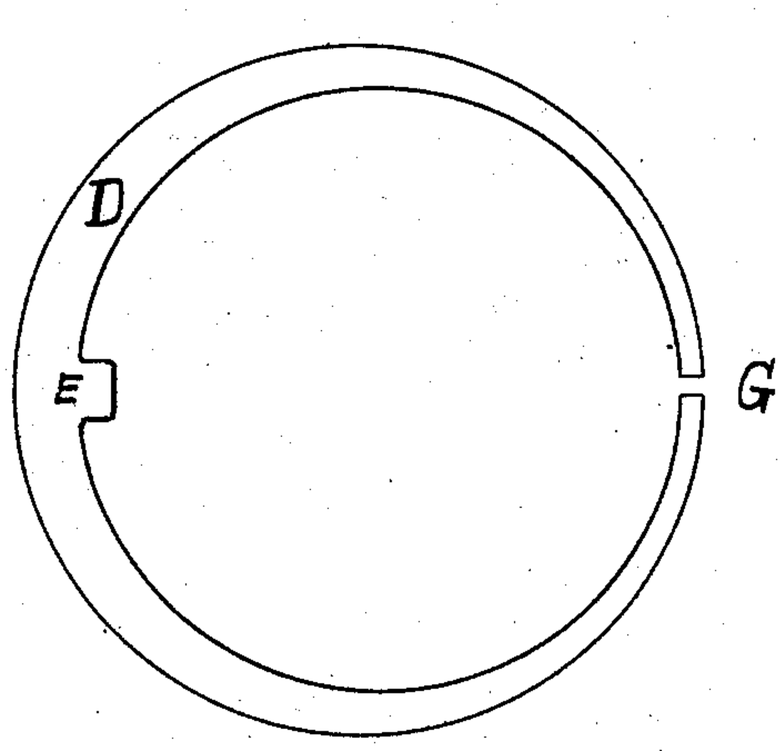


Fig. 3

WITNESSES:

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# UNITED STATES PATENT OFFICE.

WILLIAM M. BARR, OF BROOKLYN, NEW YORK.

## PISTON.

SPECIFICATION forming part of Letters Patent No. 372,058, dated October 25, 1887.

Application filed February 26, 1887. Serial No. 229,041. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM M. BARR, a citizen of the United States, residing at Brooklyn, county of Kings, State of New York, have invented new and useful Improvements in Pistons, of which the following is a specification.

This invention relates to improvements in pistons for steam engines, also applicable for other purposes, the object being to produce a piston which shall fit the cylinder and be practically the same as a solid piston or plug, and at the same time be able to renew the circumference at any time that it should become worn below its original size without the necessity of supplying a new piston entire.

This invention also consists in making the removable ring or casing of the same diameter as the bore of the cylinder not only, but it may extend in width to the outside of the piston-head and that of the follower, if one be used, thereby permitting the wearing-surface of the removable ring or casing to be fixed in any quantity from a narrow ring to that of the length of the piston, or beyond it, if desired. This removable ring or casing, when attached to the piston-head, makes the equivalent of a solid piston. The use of a follower may be dispensed with in constructing a piston according to this specification, and its use is not recommended.

This invention also consists in providing the removable ring or casing with one or more narrow rings, which, by their own elasticity, press outward against the sides of the cylinder and prevent the flow of steam past the piston when the removable ring or casing becomes worn, all of which will be more fully described hereinafter, reference being had to the accompanying drawings, and the letters of reference marked thereon, in which—

Figure 1 is a sectional elevation showing the piston-rod A, the piston-head B, the removable ring or casing C, and the packing-rings D D. Fig. 2 is a partial section of the removable ring or casing C, which is shown at right angles to the section in Fig. 1. This section is intended to represent the shape of the grooves, in which are fitted the rings D D and the recesses F F. Fig. 3 represents one of the rings D, showing also the internal projection E and the slot G.

Referring to Fig. 1, the piston-head B may be of any desired size or shape to suit the cylinder in which it is to be used, and should be enough smaller in diameter as will allow the edge or flange of the removable ring or casing C to project over the joint between it and the piston-head B until the inner face of the piston-head B is reached, or pass beyond it, if so desired. The opposite edge or flange of the removable ring or casing C may be brought out in like manner to any desired distance with reference to the piston head B. The removable ring or casing C should be turned to fit the bore of the cylinder, and secured to the piston-head B by bolts, as shown in Fig. 1, or in any other manner that may be preferred. This enables the withdrawal of the removable ring or casing C at any time without disturbing the relations of the piston-head B and the rod A.

The removable ring or casing C is shown in Fig. 2, partly in elevation and partly in section. The grooves for the rings D D are simply turned recesses, in the bottoms of which are other recesses, F F, which are intended to receive a corresponding projection on the inner side of each ring D D, the object of which is to prevent either of the rings from turning in the groove.

Fig. 3 shows one of the rings D in elevation. This ring is shown with a projection, E, on the inside. This projection is intended to fit loosely in the recess F. (Shown in Fig. 2.) The ring D is shown in the drawings with the outer and inner circumferences eccentric to each other. This is done to impart a greater elasticity or spring to the ring. A method of fitting this ring D is to make it slightly larger than the bore of the cylinder and cut the slot shown at G. This slot may be of any width corresponding to the amount of spring required in the ring. It is then compressed until the edges touch each other, and is then held under compression between two flanges and turned to fit the bore of the cylinder for which it is intended. No space or break occurs in its circumference, excepting only a fine line at the juncture of the two edges. The ring D can then be sprung over the re-

movable ring or casing C into the groove fitted for its reception. There need be no other provision made for keeping the ring D in contact with the cylinder than that due to its own extension after compression, thereby dispensing with springs, screws, wedges, or other complications.

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

A piston consisting of a piston-head, B, a removable ring or casing, C, with one or more grooves having recesses F, in combination with one or more rings D, having an internal projection, E, substantially as described, and for the purpose set forth.

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Witnesses:
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