

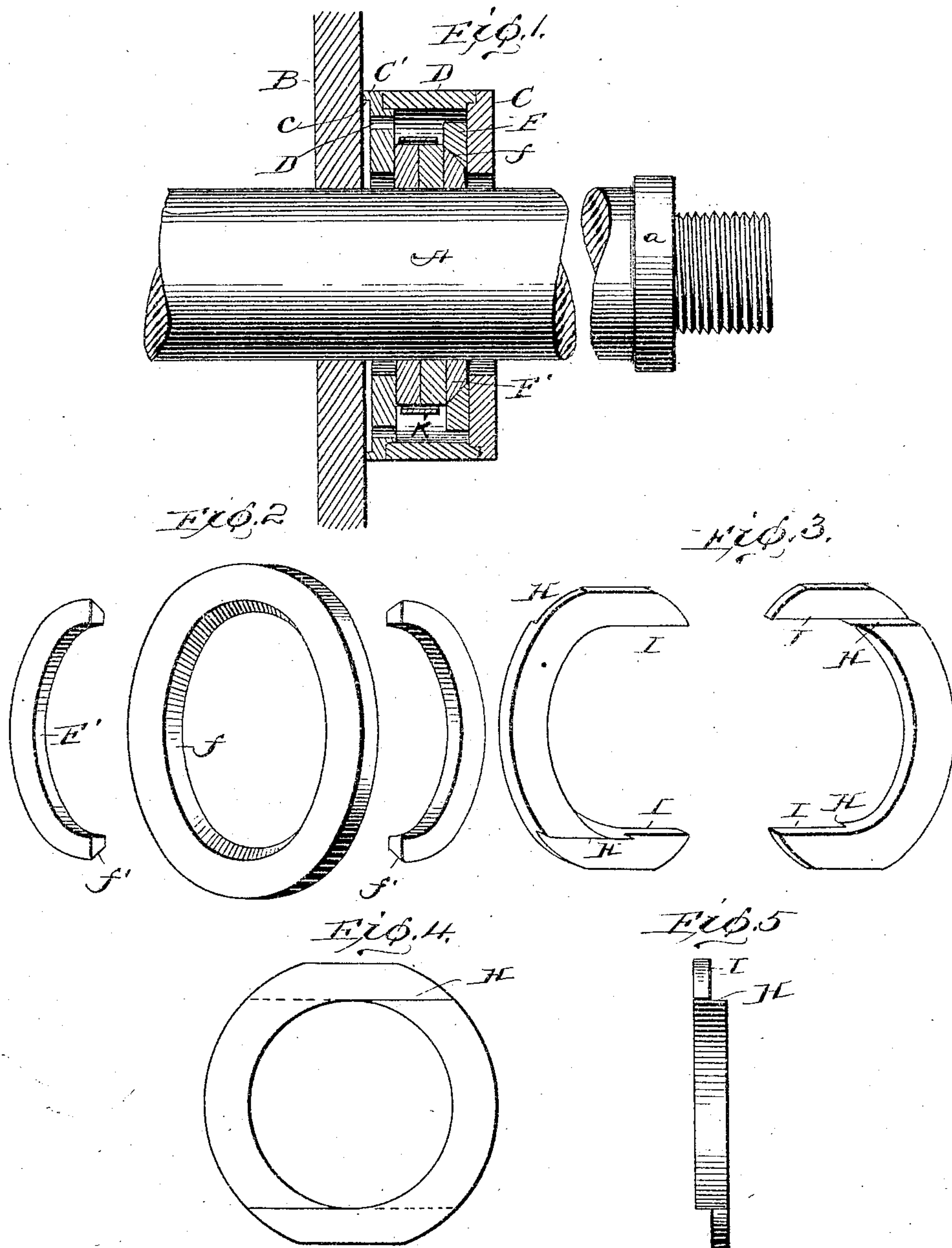
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H. THOMPSON.
METALLIC PACKING.

APPLICATION FILED JAN. 6, 1904.

NO MODEL.



Witnesses
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METALLIC PACKING.

SPECIFICATION forming part of Letters Patent No. 774,709, dated November 8, 1904.

Application filed January 6, 1904. Serial No. 187,969. (No model.)

To all whom it may concern:

Be it known that I, HARRY THOMPSON, of Cheyenne, in the county of Laramie, State of Wyoming, have invented certain new and useful Improvements in Metallic Packing; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates to improvements in metallic packings, and more particularly to packings adapted for application to piston-rods of steam-engines, the objects of the invention being to provide a structure which will form a steam-tight joint about the rod and at the same time permit of a limited lateral movement, such as is usually occasioned by unequal wear or transverse vibration of the rod, a further object being to provide a structure which may be readily applied to piston-rods having an enlarged cross-head fit.

The invention consists in an improved form of packing-ring and in certain novel details of construction and combinations and arrangements of parts, all as will be now described, and pointed out particularly in the appended claims.

Referring to the accompanying drawings, Figure 1 is a sectional view through a packing applied to a piston-rod and held within a chamber or stuffing-box mounted on one end of a steam-engine cylinder. Fig. 2 is a perspective view of the joint-ring with the several parts constituting the same separated from each other. Fig. 3 is a similar view of one of the packing-rings. Fig. 4 is a plan of one of the packing-rings with the segments assembled. Fig. 5 is an edge elevation of one of the segments.

Like letters of reference in the several figures indicate the same parts.

The letter A indicates the piston-rod, which is of usual construction and so shown is provided with an enlarged cross-head fit *a*.

B indicates the end of the cylinder, C C' the ends or heads of the packing box or chamber, and D the cylindrical wall of the latter. The heads or ends of the packing-box, and particularly the outer head C', are provided

with an aperture for the passage of the enlarged cross-head fit *a*, or in any event of sufficient size to permit of a limited transverse movement of the piston-rod therein without contacting with the wall of the opening. The inner head C' is provided with a bead *c'*, adapted to rest against the cylinder-head and form a steam-tight joint, while inside of said bead is a series of openings D' to admit steam around the packing-rings. The packing-rings confined within the chamber and held up by steam-pressure usually bear against the inner faces of the gland or chamber-covers C C', and where such packing-rings are of soft metal it frequently happens that not only is a steam-tight joint between said rings and inner face of the cover or gland impracticable, but owing to the wear and pressure within the chamber said rings are forced into the opening around the piston-rod, thereby greatly impairing their efficiency, if not resulting in their total destruction or a great wear and friction on the rod. In the present instance the packing-rings, to be presently described in detail, instead of bearing directly against the inner face of the gland or cover or against a simple follower, bear against a compound joint-ring, which is of such form that it may be readily placed on a rod having an enlarged cross-head fit and when in place will fit said rod quite accurately, thereby closing to a large extent the opening in the gland or cover C' and permitting of the formation of steam-tight joints which will not be injured by excessive wear or transverse vibration of the rod. This compound joint-ring consists, essentially, of an outer integral ring F, of iron, steel, or aluminium, having a conically-formed aperture therein or an aperture with inclined walls *f*, the angle of the inclination being immaterial, but the aperture being of sufficient diameter to permit of the ring being passed over the end of the connecting-rod. The ring is preferably of such diameter that while it will rest against the inner face of the gland or cover C' the packing-rings will not contact therewith. To reduce the size of the opening in the ring F, a segmental or sectional ring F' is introduced into the same, said ring F' having a peripheral conformation corre-

sponding to the conformation of the aperture in the ring F, or, in other words, having a conically-formed or tapering peripheral surface f' . The sections of this inner ring F' are preferably half-circles and formed to accurate dimensions, so that when the ring is in place the ends of the sections will abut and when the sections are forced into the outer rings F steam-tight joints will be formed between the several sections constituting the ring. The inner face of the sectional portion F' of the ring is preferably of such diameter as to receive the pressure of the packing-rings, the sections being thereby held firmly in place in the outer ring, and at the same time the whole joint-ring, together with the packing-rings, is free to partake of the transverse movements of the rod. The opposite faces of the joint-ring are flat and parallel. Thus the ring as a whole will rest flat against the gland and outer packing-ring, forming steam-tight joints at both of these points, the pressure on the rings serving to maintain the joints steam-tight at all times.

With a view to providing a packing-ring which is especially well adapted for maintaining its close contact with the rod and at the same time so formed as to present smooth flat surfaces to adjacent rings, as well as to the segmental portion of the joint-ring, I preferably form the packing-rings in duplicate segments, each constituting one-half of the complete ring. The ring itself is shown in detail in Figs. 3, 4, and 5, and from an inspection of these figures it will be seen that each end of each of the segments G is provided with a flat outwardly-facing bearing-surface H and a flat forwardly-facing bearing-surface I, the said surfaces at the same end of the segments being both extended in substantially the same plane, which plane (see Fig. 4) is tangential to the inner periphery of the ring. In width the said flat bearing-surfaces are approximately equal to one-half the thickness of the ring, and the outwardly-facing bearing-surface at one end of each segment and the inwardly-facing bearing-surface at the opposite end of the same segment are located on the same side of a central plane parallel with the faces of the ring—that is to say, they both extend inwardly at right angles to the same face of the ring, so that each segment is a duplicate of the other—and when the segments are assembled as shown in Fig. 4 each face of the ring will be flat and smooth; but the two segments are capable of movement toward and from each other. Each segment at its ends supports and protects the other segment in such manner that the segments will not open and permit of leakage through the joints between the segments.

Furthermore, by this construction it is found that the segments when assembled will maintain their assembled positions without the necessity of employing special retaining means, although, if so desired, a retainer, such as indicated at K, in the form of a ring may be employed to prevent the segments from rattling apart when the engine is being run without steam. The steam-pressure, however, keeps the rings set up whenever pressure is in the cylinder.

With a packing of the character described it is found that repairs may be easily and effectually made and packing may be readily applied to engines now in use without the necessity of disconnecting parts other than the rod from the cross-head. It forms a tight joint at all times, even when the packing-rings have been much worn, inasmuch as the space around the rod is so reduced that the packing-rings may be worn down very thin before there is sufficient looseness to permit of an appreciable escape of steam.

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

1. In metallic packing the combination of duplicate packing-ring segments, each end of each segment having flat inwardly and flat outwardly facing bearing-surfaces extending in substantially the same plane, and of a width corresponding to substantially one-half the thickness of the ring, the bearing-surfaces at opposite ends of the segment being parallel; substantially as described.

2. In metallic packing the combination of duplicate packing-ring segments, each end of each segment having flat inwardly and outwardly facing bearing-surfaces extending in substantially the same plane, and of a width corresponding to substantially one-half the thickness of the ring, the bearing-surfaces at opposite ends of the segment being parallel, the inwardly-facing bearing-surface at one end and the outwardly-facing bearing-surface at the opposite end being on the same side of a central plane parallel with the faces of the ring; substantially as described.

3. In metallic packing, a packing-ring formed of duplicate segments, each segment having at each end inwardly and outwardly facing flat bearing-surfaces of a width equal to approximately one-half the thickness of the ring and both extending in substantially the same plane tangentially of the inner periphery of the ring substantially as described.

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Witnesses:

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