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J. H. LEWIS & L. G. KUNZER.

METALLIC PACKING AND PACKING CASE FOR PISTON RODS.

APPLICATION FILED NOV. 10, 1902.

NO MODEL.

Fig. 1

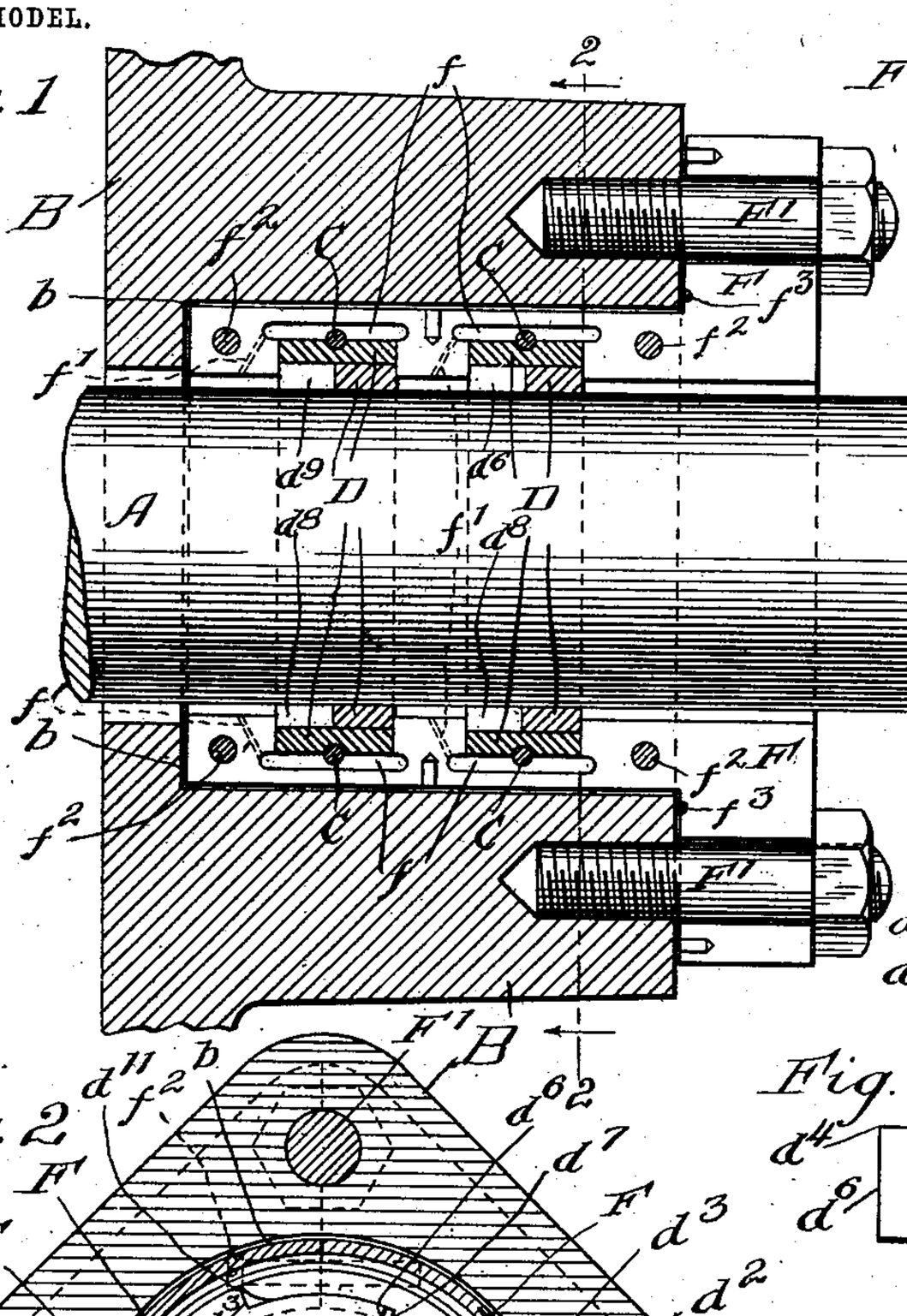


Fig. 6

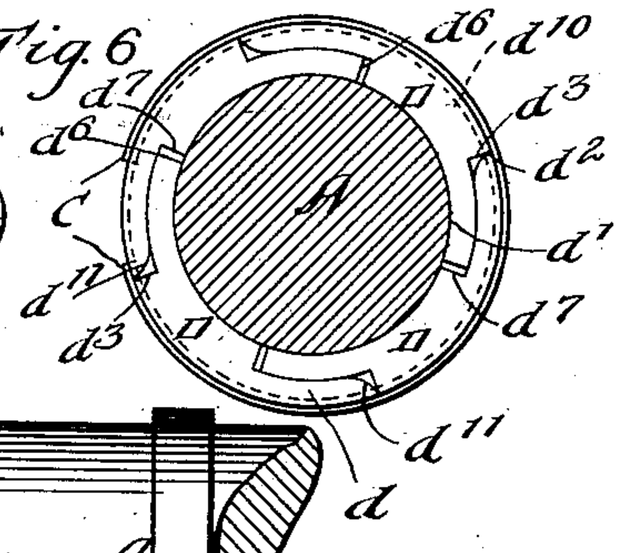


Fig. 7

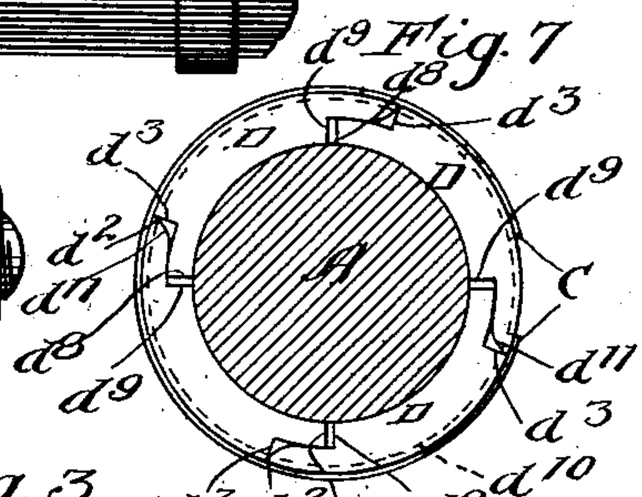


Fig. 3

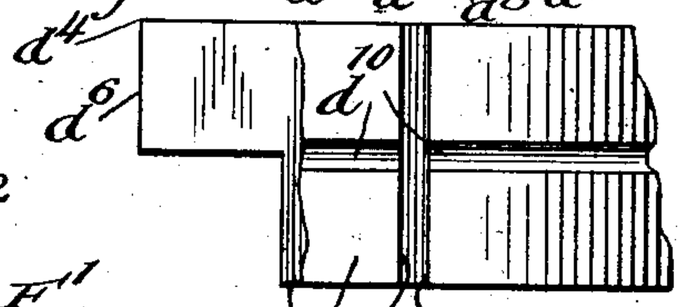


Fig. 4

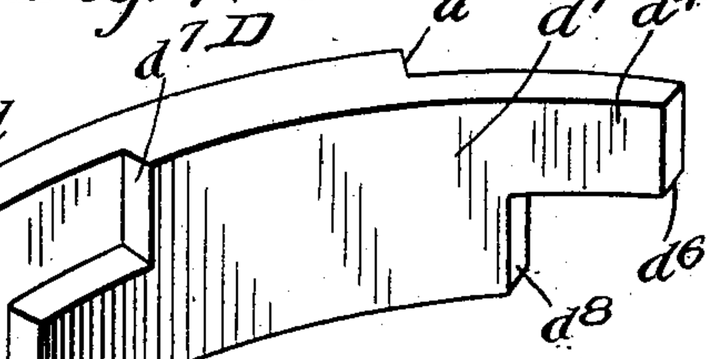
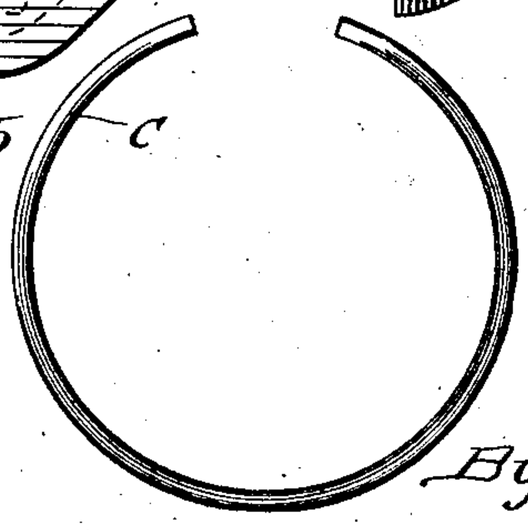


Fig. 2

Fig. 5



Witnesses:

Wm. Geiger

H. M. Munday,

Inventors:

John H. Lewis

Louis G. Kunzer

By Munday, Evarts & Adcock

Attorneys

UNITED STATES PATENT OFFICE.

JOHN H. LEWIS AND LOUIS G. KUNZER, OF CHICAGO, ILLINOIS.

METALLIC PACKING AND PACKING-CASE FOR PISTON-RODS.

SPECIFICATION forming part of Letters Patent No. 721,710, dated March 3, 1903.

Application filed November 10, 1902. Serial No. 130,635. (No model.)

To all whom it may concern:

Be it known that we, JOHN H. LEWIS and LOUIS G. KUNZER, citizens of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Metallic Packing and Packing-Cases for Piston-Rods, of which the following is a specification.

Our invention relates to improvements in metal packing and packing-glands for piston-rods, the same being specially designed for use upon locomotives, although applicable to other purposes.

The object of our invention is to provide a piston-rod packing and packing-case of a simple, efficient, durable, and economical construction which may be quickly and conveniently applied and which will automatically provide for wear and compression and prevent the escape of steam.

Our invention consists in the means we employ to practically accomplish this object or result—that is to say, it consists, essentially, in connection with the piston-rod and cylinder-head, of a divided or two-part packing-gland secured to the cylinder-head and provided with one or more annular grooves or chambers to receive the packing and a metallic packing comprising a plurality of segments, the meeting ends of which are halved, offset, or notched in two planes transverse to each other, forming overlapping leaves and forming three transverse joints at the meeting ends of the segments, each extending only part way through the packing and coming at different points of the circumference from and breaking joint with the others. One joint extends through the outer half or portion of the packing-ring, and the other two extend each only part way through the inner half or portion of the packing-ring.

Our invention also consists in the novel construction of parts and devices and in the novel combinations of parts and devices herein shown and described.

In the accompanying drawings, forming a part of this specification, Figure 1 is a longitudinal vertical section of a device embodying our invention. Fig. 2 is a cross-section on line 2 2 of Fig. 1, showing also in dotted lines the packing-gland. Fig. 3 is a detail elevation of the packing. Fig. 4 is a detail perspective view of one of the segments, showing the double notches or notches in two planes transverse to each other at the meeting ends thereof. Fig. 5 is a detail view of the clamp-ring, and Figs. 6 and 7 are opposite end views of the packing.

In said drawings, A represents a piston-rod, and B a portion of the cylinder-head through which the piston-rod reciprocates. The cylinder-head B is furnished with an opening or chamber *b* to receive the packing-gland and packing.

D is the metallic packing, the same comprising a plurality of segments, the segments being preferably four in number. Each of the segments D of the packing is halved, notched, or offset in two planes transverse to each other, the halving, notching, or offseting in one plane or parallel to the circumference of the packing forming outer and inner overlapping leaves d d', the end d^2 of the outer leaf meeting the exterior shoulder d^3 at the end of the inner leaf d' and producing a transverse joint extending across the whole width of the packing at the outer half or portion of its thickness. The inner leaf d' is itself halved, notched, or offset transversely to the surface of the packing-ring, thus forming the interfitting tongues d^4 d^5, the joints at the meeting ends and shoulders d^6 d^7 and d^8 d^9 of which extend each only half-way across the packing and only half-way through its thickness and coming at different points from each other and also at different points from the transverse joint d^2 d^3, which extends through the outer half or portion of the packing, so that all the transverse joints d^6 d^7, d^8 d^9, and d^2 d^3 break joints with each other. The packing is also provided with an exterior circumferential groove d^{10} to receive the clamping spring or ring C, which serves to hold the parts of the packing assembled or together.

F is the packing gland or collar, which is secured to the cylinder-head B by bolts F'. This packing gland or collar is preferably divided or made in two parts for convenience of application around the piston-rod, especially in cases where the piston-rod is formed with an enlargement *a*. The packing gland or collar F is furnished with one or more interior annular grooves or recesses *f* to receive

the packing or packings D, the same being preferably provided with two of these annular grooves or recesses *f*, so that two packing-rings D may be employed. The packing-gland F is provided with one or more, preferably four, small openings *f'* for admitting steam into the annular grooves *f*, so that the steam-pressure will firmly compress the segments of the packing-ring around the piston and form a tight joint. In cases where the packing-gland is provided with two or more recesses *f* and two or more packing-rings D each succeeding packing-ring groove *f* is provided with steam-inlet openings *f'*, so that the steam escaping through the preceding packing may enter and compress the succeeding packing, greater or less pressure being exerted upon the succeeding packing, according as more or less steam escapes through the preceding one. The segments or parts of the packing-gland F are secured together by bolts f^2. A packing f^3 of wire or other suitable material is interposed between the packing gland or collar F and the cylinder-head B. Space is left between the meeting end faces of the leaves *d* and shoulders d^3 and tongues d^4 and shoulders d^7 and shoulders d^8 and d^9 to allow for wear and compression of the packing. The end d^2 of the outer leaf *d* is provided with a tapering face d^{11}, so that while leaving space for compression of the ring as a whole a tight joint may be formed between said end d^2 and the shoulder d^3.

We claim—

1. The combination with a piston-rod and cylinder-head of a divided or two-part packing gland or collar secured to the cylinder-head and provided with a plurality of annular grooves or recesses having steam-inlets thereto, of a plurality of metallic packing-rings each comprising a plurality of segments, the meeting ends of which are halved, offset or notched in two planes transverse to each other forming inner and outer overlapping leaves, the inner circumferential leaves being themselves halved, offset or notched forming at each meeting end of the segments three transverse joints at different points of the circumference, one of which extends through only the outer half or portion of the packing-ring and the other two of which extend only part way through the inner half or portion of the packing-ring, and a clamp-ring embracing the segmental packing-ring, substantially as specified.

2. The metallic packing for piston-rods comprising a plurality of segments offset, halved or notched together at their meeting ends in two different planes or directions and forming three joints at different points of the circumference, one extending through the outer portion of the ring and the other two extending each only part way through the inner portion of the ring, substantially as specified.

3. A metallic piston-rod packing comprising a plurality of segments having each at their meeting ends double notches or offsets forming overlapping leaves and three joints at different points of the circumference, one of which extends only through the outer portion of the packing-ring and the other two of which extend each only part way through the inner portion of the packing-ring, substantially as specified.

4. A metallic packing comprising a plurality of segments having at their meeting ends double notches or offsets forming overlapping leaves and three joints at different points of the circumference, one of which extends only through one portion of the thickness of the packing-ring and the other two of the joints extend each only part way through the other portion of the thickness of the packing-ring, substantially as specified.

5. A metallic packing comprising a plurality of segments having at their meeting ends double notches or offsets forming overlapping leaves and three joints at different points of the circumference, one of which extends only through one portion of the thickness of the packing-ring and the other two of the joints extend each only part way through the other portion of the thickness of the packing-ring, one of said overlapping leaves on each segment having a tapering or curved face, substantially as specified.

6. The combination with a piston-rod and cylinder-head of a gland secured to the cylinder-head and provided with an annular groove or recess, of a metallic packing-ring comprising a plurality of segments having each at their meeting ends double notches or offsets forming overlapping leaves and three joints at different points of the circumference, one of which extends only through the outer portion of the packing-ring and the other two of which extend only part way through the inner portion of the packing-ring, substantially as specified.

JOHN H. LEWIS.
LOUIS G. KUNZER.

Witnesses:
H. M. MUNDAY,
EDMUND ADCOCK.