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

PISTON ROD PACKING AND PACKING CASE.

APPLICATION FILED NOV. 10, 1902.

NO MODEL.

Fig. 1

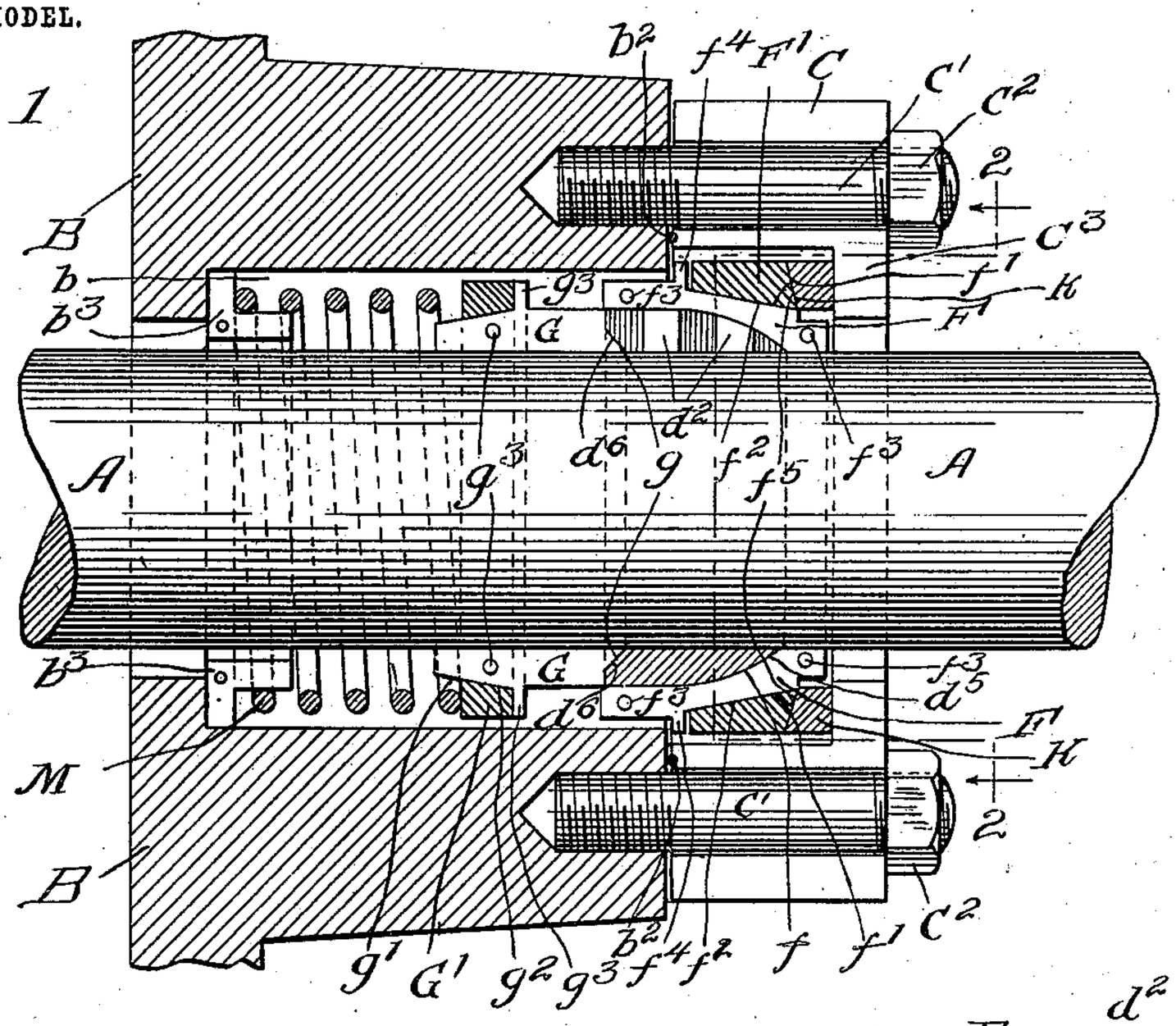


Fig. 2

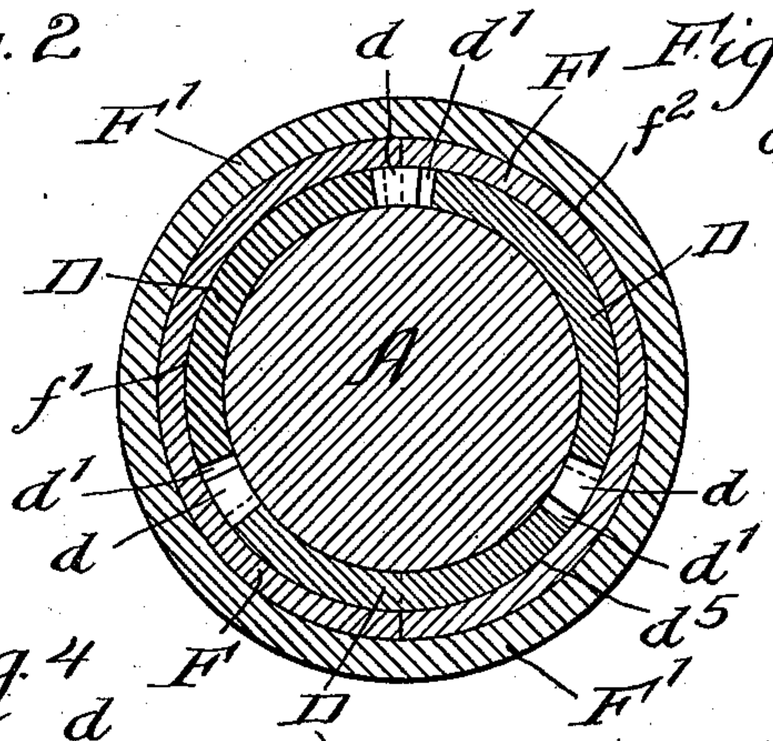


Fig. 3

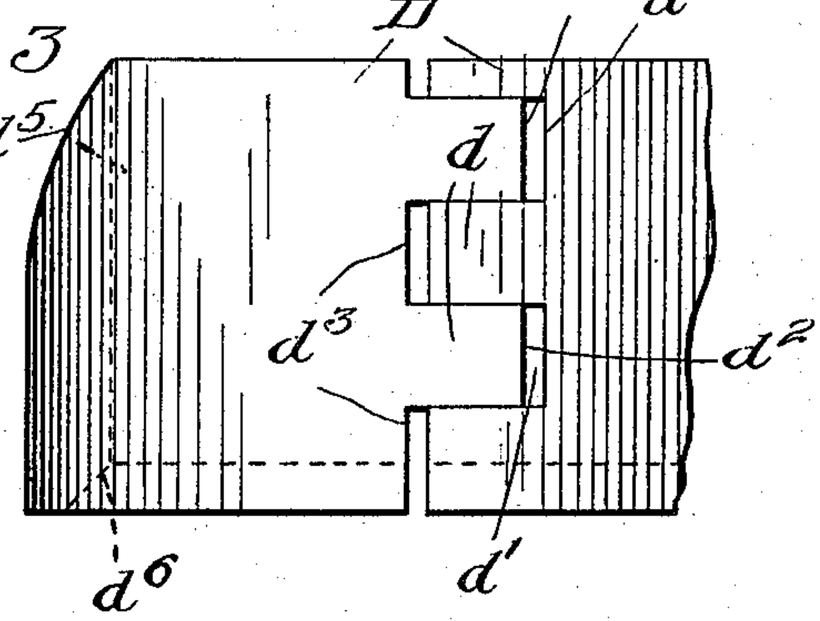


Fig. 4

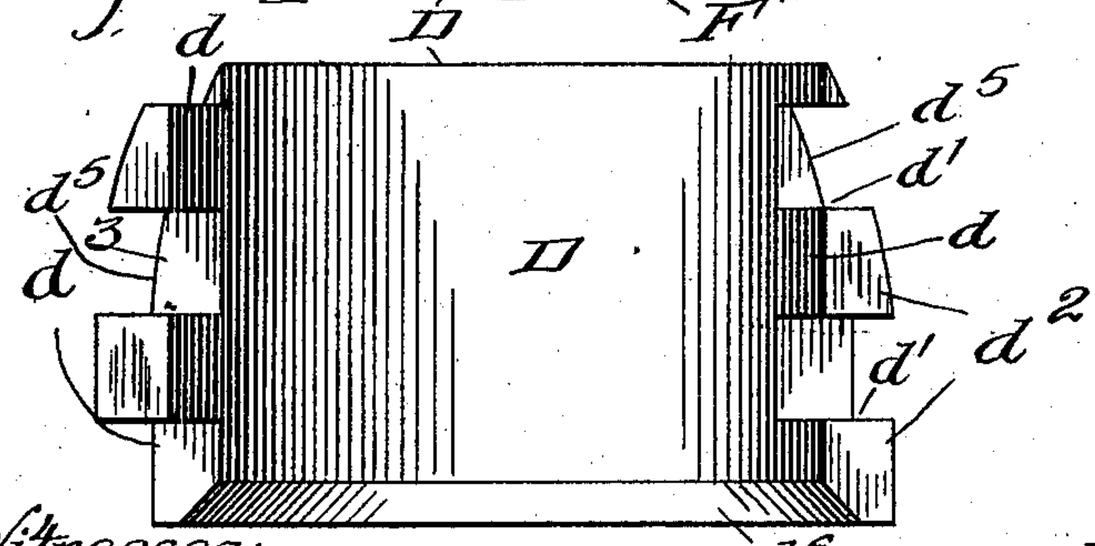
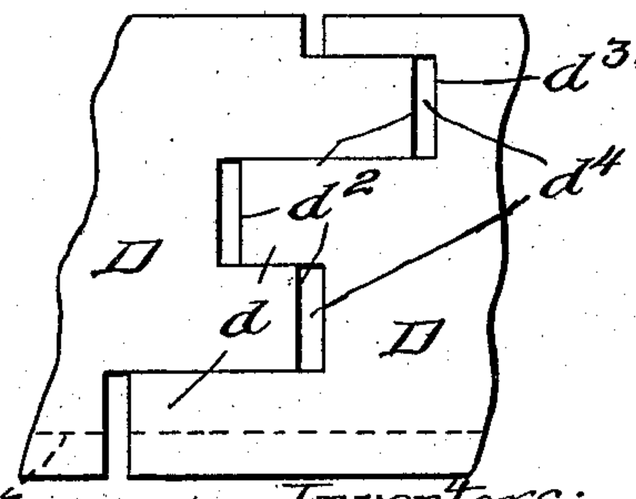


Fig. 5



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UNITED STATES PATENT OFFICE.

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

PISTON-ROD PACKING AND PACKING-CASE.

SPECIFICATION forming part of Letters Patent No. 724,022, dated March 31, 1903.

Application filed November 10, 1902. Serial No. 130,636. (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 Piston-Rod Packing and Packing-Cases, of which the following is a specification.

Our invention relates to metallic packing and packing-cases for piston-rods, and is specially designed for locomotive-pistons, which in practical use have more or less vibration, especially in rapid running of the locomotive over unsmooth tracks, though our invention is suitable for use upon other pistons.

The object of our invention is to provide a metallic packing and packing-case of a cheap, simple, and durable construction, which may be quickly and conveniently applied, either to straight pistons or those having enlarged cross-heads, and which will be steam-tight and efficient in operation and which will provide for the necessary vibration of the piston-rod when in use.

Our invention consists in the means we employ to practically accomplish this object or result—that is to say, it consists, in connection with the piston-rod and cylinder-head through which the piston reciprocates and a case and follower having tapering or wedging faces to bear against the interposed packing, of a segmental metallic packing of Babbitt or other metal provided with a series or plurality of interfitting tongues and grooves at the meeting ends of the segments, sufficient play being left between the ends of the tongues and the bottom or ends of the grooves to allow for the wear and compression of the packing. The segmental interfitting tongue-and-groove packing is preferably made in three segments, though the number of the segments may be varied.

Our invention also consists, in combination with the packing, of a divided or two-part follower and a divided or two-part case, each having wedging or tapering exterior faces in connection with solid clamping rings or collars having corresponding wedging or tapering interior faces which encircle and bear against the follower and case, thus enabling the packing, follower, and case to be very quickly and readily applied to piston-rods having enlargements, as well as to smooth pistons or pistons without such enlargements.

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

In the accompanying drawings, forming a part of this specification, Figure 1 is a vertical section of a piston-rod packing and gland embodying our invention. Fig. 2 is a cross-section on line 2 2 of Fig. 1. Fig. 3 is a detail elevation of the packing. Fig. 4 is a detail elevation of one of the segments of the packing, and Fig. 5 illustrates a modification in which the interfitting tongues and grooves are staggered or arranged zigzag across the packing.

In said drawings, A represents the piston-rod, and B a portion of the cylinder-head through which it reciprocates, and C is the packing gland or collar by which the packing as a whole is secured to and confined in the opening or chamber *b* in the cylinder-head, said gland or collar C being firmly secured to the cylinder-head by threaded bolts C′, having nuts C^2.

D is our improved segmental metallic packing, the same being preferably composed of three segments, each of which is provided with a series of interfitting tongues and grooves *d d′* at their meeting ends, so that the tongues *d*, fitting in the grooves *d′*, lap by each other, and thus form a continuous packing all around the piston-rod. The tongues *d* do not reach to the bottom or end of the groove *d′*, so as to allow for wear and compression of the packing. After the packing becomes so worn and compressed that the ends d^2 of the tongues abut against the shoulders or bottoms d^3 of the grooves the packing can be readily and cheaply repaired for further use by simply cutting or grinding off the ends of the tongues *d*, thus making the same shorter.

As illustrated in Fig. 5, the interfitting tongues and grooves *d d′* are staggered or arranged zigzag, so that the vacant spaces d^4 between the ends of the tongues and the bottoms of the grooves will not come in the same line transversely across the packing, which

in some respects is a preferable form, though not quite so convenient for repairing or shortening the tongues. The packing D has at its outer end a tapering, curved, or wedging face d^5 to bear against the corresponding tapering face f of the case F, and at its opposite end it has a tapering or wedging face d^6 to bear against the corresponding tapering or wedging face g of the follower G.

To enable the packing D, case F, and follower G to be readily and quickly applied, especially to piston-rods having enlargements a thereon, we employ a divided or two-part case F and a divided or two-part follower G. The divided or two-part case F has a tapering or wedging exterior face f' to receive the solid clamping ring or collar F', which has a corresponding tapering or wedging interior face f^2, and in like manner the divided or two-part follower G has a tapering or wedging exterior face g' to receive the solid clamping ring or collar G', which has a corresponding tapering or wedging interior face g^2. To cause the segments or parts of the case F to properly register with each other, the same are furnished with dowel-pins f^3 at their meeting ends, and the two parts or segments of the follower G are likewise furnished with dowel-pins g^3 to cause the same to register with each other. The case F has an exterior flange or shoulder f^4 to limit the inward movement of the clamping-ring F' thereon, and the follower G has an exterior flange or shoulder g^3 for the conical-faced clamping-ring G' to abut against. To provide for the slight rocking or vibratory movement of the piston-rod, due to the jolting of the locomotive, we provide the clamping-ring F' with a slightly-beveled outer face f^5, against which fits a ring K, having a correspondingly-beveled inner face k, and which ring K is interposed between the flange C^3 of the packing gland or collar C and said clamping-ring F'.

M is the spring, which acts against the follower G or its clamping-ring G' and serves to compress the packing and take up the wear. The inner end of this spring bears against a shoulder b' at the end of the chamber b in the cylinder-head B, a two-part bearing-ring b^3 being interposed.

The packing gland or collar C may preferably be divided or made in two parts, as this facilitates its application to the cylinder-head around the piston-rod. A packing-wire b^2 is interposed between the gland or collar C and the cylinder-head.

We claim—

1. The combination with a piston-rod and cylinder-head, of a divided or two-part case having a tapering or wedging inner face to bear against the packing, and a tapering or wedging exterior face, a clamping-ring embracing said case and having a tapering or wedging interior face, a divided or two-part follower having a tapering or wedging face to bear against the packing, and a tapering or wedging exterior face, a clamping-ring embracing said follower and having a tapering or wedging interior face, a spring interposed between said follower and the cylinder-head, a metallic segmental packing interposed between said case and follower and having interfitting tongues and grooves at the meeting ends of its segments, a two-part or divided and flanged packing gland or collar secured to the cylinder-head, and a ring interposed between the flange of said gland or collar and the clamping-ring surrounding the case, said interposed ring and clamping-ring having beveled meeting faces, substantially as specified.

2. A metallic piston-rod packing, comprising a plurality of segments, having a plurality of interfitting tongues and grooves at their meeting ends, said packing having tapering or wedging faces at the ends thereof, and a case and follower each having tapering or wedging bearing-faces engaging said tapering or wedging faces of the packing, substantially as specified.

3. The combination with a piston-rod and cylinder-head, of a segmental metallic packing having interfitting tongues at the meeting ends of its segments, and a divided or two-part case having an exterior tapering face and a clamp-ring F' having an interior tapering face, substantially as specified.

4. The combination with a piston-rod and cylinder-head, of a segmental metallic packing having interfitting tongues at the meeting ends of its segments, a divided or two-part case, and a divided or two-part follower, substantially as specified.

5. The combination with a piston-rod and cylinder-head, of a segmental metallic packing having interfitting tongues at the meeting ends of its segments, a divided or two-part case, and a clamping-ring embracing said case, substantially as specified.

6. The combination with a piston-rod and cylinder-head, of a segmental metallic packing having interfitting tongues at the meeting ends of its segments, a divided or two-part case, a clamping-ring embracing said case, a divided or two-part follower, and a clamping-ring embracing said follower, substantially as specified.

7. The combination with a piston-rod and cylinder-head, of a segmental metallic packing, a divided or two-part case having an exterior tapering face and a clamp-ring F' having an interior tapering face and a divided or two-part gland, substantially as specified.

8. The combination with a piston-rod and cylinder-head, of a packing-ring, a case, a flanged packing gland or collar, there being a bevel end bearing face or connection between the case and the packing gland or collar to provide for vibration of the piston-rod, substantially as specified.

9. The combination with a metallic packing, comprising a plurality of segments having interfitting tongues at their meeting ends, of a case and a follower, a gland and rings interposed between the case and gland hav-

ing beveled end bearing-faces to provide for vibration of the piston-rod, substantially as specified.

10. The combination with a metallic packing, comprising a plurality of segments having interfitting tongues at their meeting ends, of a case and follower, said case and follower being divided and having clamping-rings embracing the same and a gland, said clamping-ring embracing the case having a beveled end bearing-face to provide for vibration of the piston-rod, substantially as specified.

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