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No. 801,959. PATENTED OCT. 17. 1905.

J. BADEKER.

METALLIC PACKING.

APPLICATION FILED JULY 30, 1903. RENEWED MAR. 20, 1905.

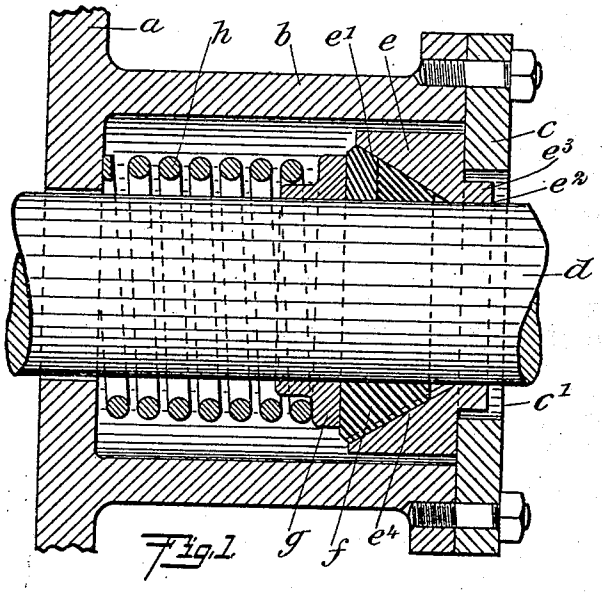


Fig. 1

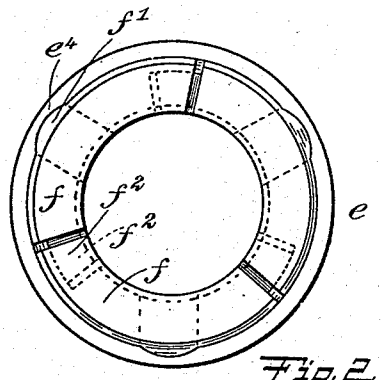


Fig. 2

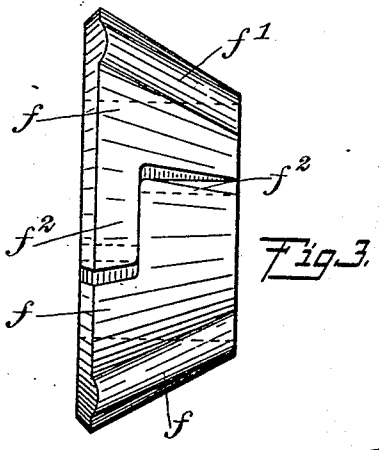


Fig. 3.

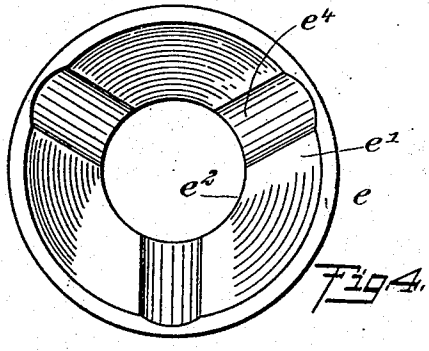


Fig. 4.

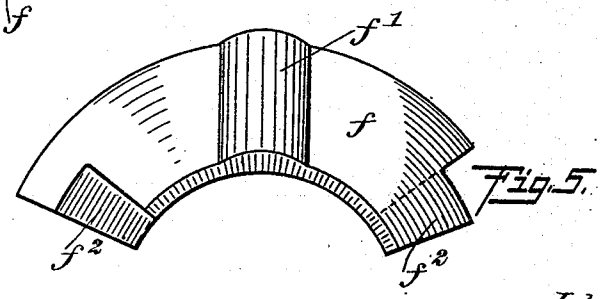


Fig. 5.

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UNITED STATES PATENT OFFICE.

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METALLIC PACKING.

No. 801,959 Specification of Letters Patent. Patented Oct. 17, 1905.

Application filed July 30, 1903. Renewed March 20, 1905. Serial No. 251,006.

To all whom it may concern:

Be it known that I, JOHN BADEKER, a citizen of the United States, and a resident of Omaha, in the county of Douglas and State of Nebraska, have invented a new and Improved Metallic Packing, of which the following is a full, clear, and exact description.

This invention relates particularly to a packing for the piston-rod of locomotives, although it may be used upon other rods, as will be apparent.

The principal object of the invention is to provide a packing in which the strength of the packing-segments will be brought as high as possible and in which should any of the segments break the segments will nevertheless be held in their proper position with respect to the rod, so that the breaking of the segments will not result in the absolute destruction of the packing.

To this end the invention consists in certain pecial features of construction, as will fully be described hereinafter, and pointed out in the claims.

This specification is a specific description of one example of my invention, while the claims are definitions of the exact scope of the invention.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal section of the stuffing-box and rod, showing my invention applied thereto. Fig. 2 is an inner end elevation of the segments and cup. Fig. 3 is a side elevation of the sections. Fig. 4 is an inner view of the cup with the segments removed, and Fig. 5 is an outer end view of one of the segments.

a indicates the cylinder-head, *b* the stuffing-box, *c* the cap or gland, and *d* the piston-rod, all of which may be of the usual or any desired construction. Located in the outer end of the box *b* is a cup *e*, which has a cylindrical outer side and a tapering or conical interior the small diameter of which runs into a cylindrical interior portion e^2, fitting snugly to the rod *d*. From the outer side of the cup *e* a flange or collar e^3 projects, this collar lying in the opening *c'* of the cap or gland *c*. The tapering or conical interior *e'* of the cup flares from the rod *d* inward toward the cylinder-head and is formed with a number (preferably three) of radially-disposed depressions or grooves e^4, the purpose of which will fully appear hereinafter. The cup *e* is formed, preferably, of brass.

The packing-cone is made up of preferably three segments *f*, of Babbitt or similar metal, these sections or segments of the cone being arranged jointly to encircle the rod *d*, as shown in Fig. 1, and the cone has a cylindrical interior fitting snugly to the rod *d* to form a steam-tight connection, while the outer surfaces of the segments are tapered or conical to match the tapered interior *e'* of the cup *e*. Each segment *f* is formed at its middle with a radial protuberance *f'* on its outer side, these protuberances *f'* fitting snugly within the respective depressions e^4 in the cup *e*. Said protuberances *f'* serve the double purpose of strengthening the sections *f* and of matching with the cavities e^4 to prevent the segments in the cone from turning within the cup. In metallic packings the chief danger lies in the cracking or breaking of the segments of the packing metal, and the greatest strain on these segments obviously is necessarily at the middle portions thereof. The protuberances *f'* therefore provide an extra mass of metal at the point of the segments where the greatest strain is endured. It is also essential to the efficiency and durability of the packing that the segments be kept from turning within the cup, and this is attained by the inner engagement between the protuberances *f'* and the walls of the cavities e^4. The ends of the segments *f* are formed with matching reduced portions f^2, which overlap, as shown best in Fig. 3. This construction enables the segments to contract around the rod as they wear down through the use of the packing, but prevents the leakage of steam past the segments, since it will be observed that said reduced portions f^2 lie closely against each other on their transverse faces, and thus effect a steam-tight connection. When the packing is first applied, a certain clearance is left between the ends of the segments, as shown in Figs. 2 and 3, these clearances permitting the packing-cone to close or contract around the rod as the metal wears away. In connection with this feature of the invention it will be observed that the cavities e^4 of the cup *e* are placed equidistant in the cup, and

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being engaged by the protuberances f' of the segments f keep the segments always in the same relative position on the rod and prevent two segments from being forced up tightly against the middle segments, so as to close the clearance-spaces between the segments at two points and to leave an abnormal clearance-space at the third juncture between the segments, through which abnormal clearance-steam would be liable to leak. This relative dislocation of the packing-segments is a common fault with metallic packings heretofore devised, and by means of the improved construction which I have provided the sections maintain at all times their proper relative position—that is to say, there is an equal degree of clearance between each section—and the life of the packing is kept unimpaired until it has been worn sufficiently to take up the entire clearance between the segments—that is to say, until the end of the segments are bound firmly together.

g indicates a collar which encircles the rod d and bears against the inner or larger end of the packing-cone, and h indicates an expansive spring acting between the cylinder-head a and the collar g and serving to hold all of the parts of the packing tight yet yieldingly engaged. As fast as the packing-segments wear away they are forced by the spring h into the cup e. The tapering walls of the cup cause the segments to be contracted around the rod and hold them firmly thereon. This packing provides an absolutely steam-tight connection, and for the reasons hereinbefore explained its structure is such as reduces the liability of fracture on any of its parts to a minimum, and even should the fracture occur the parts will be held nevertheless in their proper positions and will perform their intended functions almost as effectively as when the packing is in its normal position.

Various changes in the form, proportions, and details of the invention may be resorted to at will without departing from the spirit and scope of my invention as defined in the claims.

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

1. A metallic rod-packing, comprising a cup adapted to encircle the rod having a tapering interior, a sectional cone correspondingly tapered and fitted within the cup, the cone encircling the rod for the purpose specified, and means for yieldingly holding the cone in place, the sections of the cone and the cup having interengaged surfaces to prevent the movement of the cone-sections within the cup and the cone-sections having overlapped ends with clearance-spaces between them to permit the contraction of the cone around the rod.

2. A metallic rod-packing segment, having a cylindrical inner surface adapted to engage the rod, and a uniformly-tapered curved outer surface concentric to the inner surface, said segment having at a point intermediate its ends an outwardly-projecting protuberance extending longitudinally of the rod, for the double purpose specified.

3. A metallic rod-packing, comprising a cup with a tapered interior surface and also having longitudinally-extending grooves in its inner surface, and a sectional cone fitting in the cup and encircling the rod, the segments of said cone having curved, tapered outer surfaces concentric to the rod and fitting snugly against the interior surfaces of the cup, said segments also having on their outer surface intermediate their ends, longitudinally-extending protuberances fitting in the respective depressions in the cup, for the double purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN BADEKER.

Witnesses:
HOWARD J. COWGILL,
D. O. BARNELL.