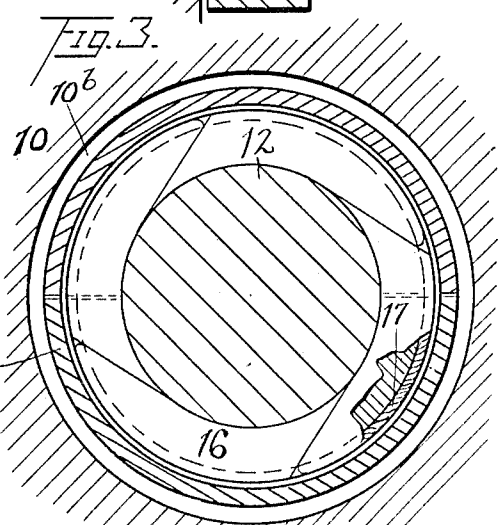
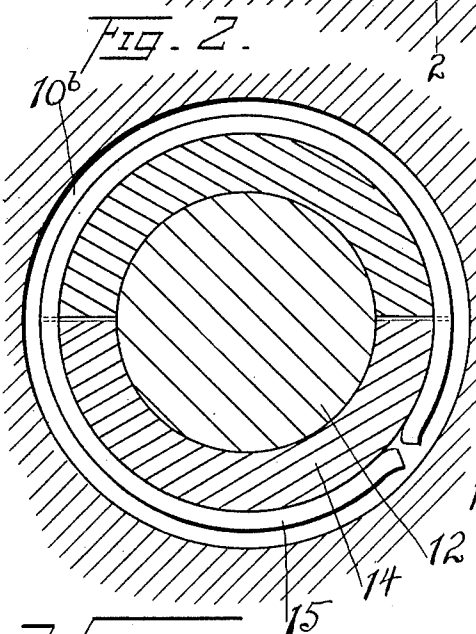
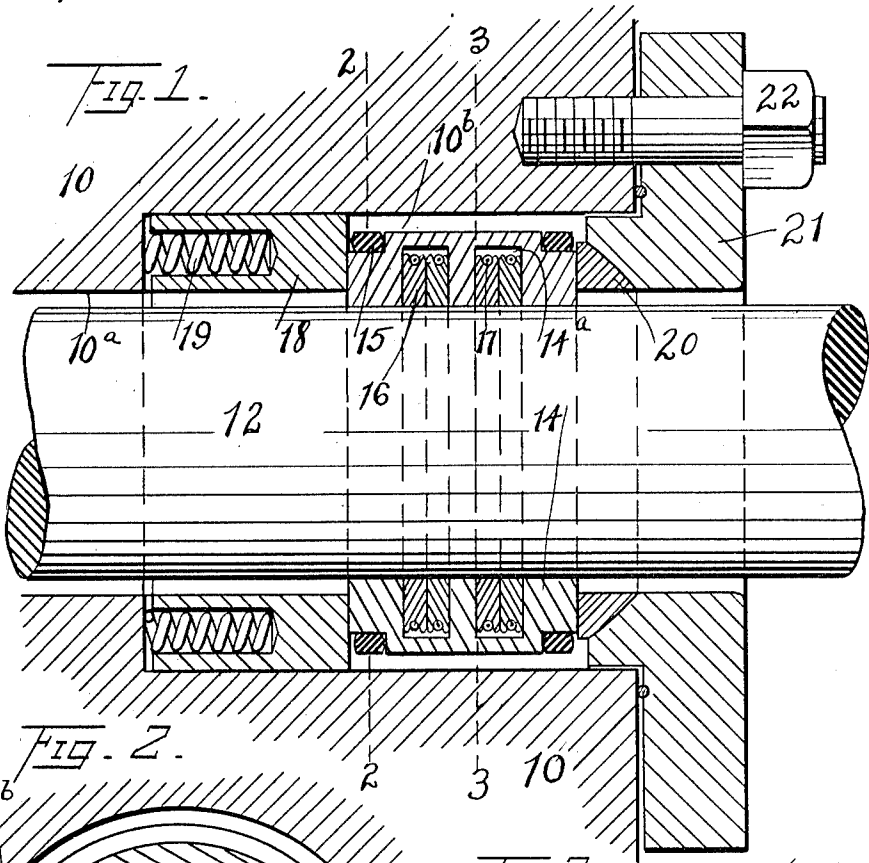


L. H. MARTELL.
STUFFING BOX.
APPLICATION FILED MAY 31, 1912.

1,072,016.

Patented Sept. 2, 1913.



Witnesses
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UNITED STATES PATENT OFFICE.

LOUIS H. MARTELL, OF ELYRIA, OHIO, ASSIGNOR TO THE METALLIC PACKING AND MANUFACTURING COMPANY, OF ELYRIA, OHIO, A CORPORATION OF OHIO.

STUFFING-BOX.

1,072,016.

Specification of Letters Patent.

Patented Sept. 2, 1913.

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To all whom it may concern:

Be it known that I, LOUIS H. MARTELL, a citizen of the United States, residing at Elyria, in the county of Lorain and State of Ohio, have invented a certain new and useful Improvement in Stuffing-Boxes, of which the following is a full, clear, and exact description.

The object of this invention is to provide a stuffing box especially, adapted for use around the piston rods of locomotive engines and other analogous structures whereof the piston rod has, in operation, a considerable lateral vibration,—which stuffing box shall not only be steam tight when first installed, but which will remain steam tight in use.

The invention has for its primary novel feature a case which fits around the piston rod and lies within a box formed in the cylinder head in which said case is laterally movable, said case having one or more internal annular grooves in which contractible metallic packing rings are fitted so as to have very little lateral movement and substantially no longitudinal movement relative to said case.

The invention also consists in the adjunctive features and specific characteristics of construction hereinafter described and shown in the drawing and definitely pointed out in the claims.

In the prior construction which most nearly resembles the present invention contractible metallic packing rings have been mounted in annular grooves in a case so as to be capable of a considerable lateral movement relative to said case, and the case itself has been held in a box in the cylinder head in such wise that it has no movement either laterally or longitudinally. There are numerous practical objections to this construction which are all overcome by the present invention, wherein, as stated, the packing rings have a minimum of movement in the case, while the case itself is free to move laterally with the piston rod in the cylinder head to whatever extent is necessary.

In the drawing, Figure 1 is a longitudinal sectional view showing the invention in position for use. Fig. 2 is a transverse section in the plane indicated by line 2—2 on Fig. 1; and Fig. 3 is a sectional view in the plane indicated by line 3—3 on Fig. 1.

In the drawing the cylinder head, indi-

cated by 10 is not completely shown; in fact, only so much of it as is adjacent to the piston rod is shown. The hole 10^a through this head is considerably larger in diameter than the diameter of the piston rod 12 which passes through it; and is enlarged at its outer end to form the annular box 10^b for the reception of the packing ring case 14. This packing ring case is made in two longitudinally separable halves which are held together around the piston rod by means of two spring clamping rings 15. When the case does so embrace the piston rod the hole through the case is only a trifle larger than the diameter of the piston rod. Within the case are one or two or more annular grooves 14^a, and these are to receive the contractible metallic packing rings 16, which rings, as shown, are themselves of familiar form, being made up each of a plurality of independent pieces arranged so that they may move relatively with respect to each other, as their inner faces may become worn, so as to always fit the cylindrical body about which they are placed. These metallic packing ring pieces are held around the piston rod and in engagement with it by the spring 17, or some equivalent means. The case 14 is considerably smaller in diameter than the box 10^b in the piston head, wherein it lies, but the packing rings are only a very little smaller in diameter than the grooves 14^a wherefore said rings can have very little longitudinal movement in said grooves. At the inner end of this box is a follower 18 which is pressed forward by springs 19 against the rear end of the case 14. The front end of said case bears against the rear face of a ring 20 whose convex face bears against the correspondingly shaped rear end of the cap plate 21 which is secured by bolts 22 or other suitable means to the front end of the cylinder head 10. When so secured the parts will be held in the relationship with one another in which they are shown, and the springs 19 will exert sufficient force to make a tight although not necessarily steam tight joint between the front end of the sleeve 18 and the rear end of the cage 14 and between the rear end of the ring 20 and the front end of said case. It will, however, cause the convex surfaces of the ring 20 and cap 21 to be held tightly in contact to make a steam tight joint. When, now, the described device is in use and the

piston rod vibrates, as it will, the entire case will move laterally in the box in the piston head, and between the sleeve 18 and the ring 20. The metallic packing rings 16 will, however, under all conditions, tightly embrace the piston rod and make a steam tight joint between it and themselves, but they will have very little, if any, movement within the recesses in the case wherein they lie. They will be subjected to little or any wear, except upon the surfaces where they engage the piston rod. They project very little inward beyond the inner periphery of the case, and therefore they are not likely to be displaced by any steam pressure against projecting parts thereof.

Having described my invention, I claim:

1. In stuffing box construction for locomotive engines and the like, the combination of a box, its end cap or gland, and the reciprocating piston rod which passes loosely through said cap and the rear end of the box, with a longitudinally divided tubular case whose external diameter is less than the internal diameter of the box and which surrounds the piston rod in said box and has an internal circumferential groove, means for holding the two parts of said case together, a contractible metallic packing ring fitted in said groove and having therein only slight lateral movement and substantially no longitudinal movement, a packing ring in the front end of the box having a conical front surface which engages with the cap and having a plain rear surface which engages the front end of the case, and a spring actuated tubular follower slidably fitted in the box around the piston rod and engaging at its front end with the rear end of the case.

2. In stuffing box construction for locomotive engines and the like, the combination of a box, its end cap or gland, and the reciprocating piston rod which passes loosely through said cap and the rear end of the box, with a longitudinally divided tubular case which surrounds the piston rod within

the box and whose external diameter is considerably less than the internal diameter of the box and whose internal diameter is very little greater than the diameter of the piston rod,—which case has an internal circumferential groove,—a contractible metallic packing ring which is fitted in said groove and has therein substantially no longitudinal movement and a very slight lateral movement, and which projects inward from said case a very slight distance beyond the inner surface thereof into engagement with the piston rod, means for holding the two parts of the case together, and a spring actuated tubular follower which surrounds the piston and is movable longitudinally only in the rear end of the box and engages with the rear end of the case and acts to force said case forward in the box against a surface supported by the end cap.

3. In stuffing box construction for locomotive engines and the like, the combination of a box, its end cap or gland, and the reciprocating piston rod which passes loosely through said cap and the rear end of the box, with a longitudinally divided tubular case which surrounds the piston rod within the box and has an internal circumferential groove, spring clamping rings holding the parts of said case together, a contractible metallic packing ring fitted in said circumferential groove in the case and having therein only slight lateral movement and substantially no longitudinal movement, and a spring actuated tubular follower which surrounds the piston and engages the rear end of the case and acts to force said case forward in the box against a surface supported by the end cap.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

LOUIS H. MARTELL.

Witnesses:

A. F. KWIS,
A. J. HUDSON.