

(No Model.)

A. D. KILBORN & C. YOUNG.
METALLIC PACKING.

No. 466,170.

Patented Dec. 29, 1891.

Fig. 1.

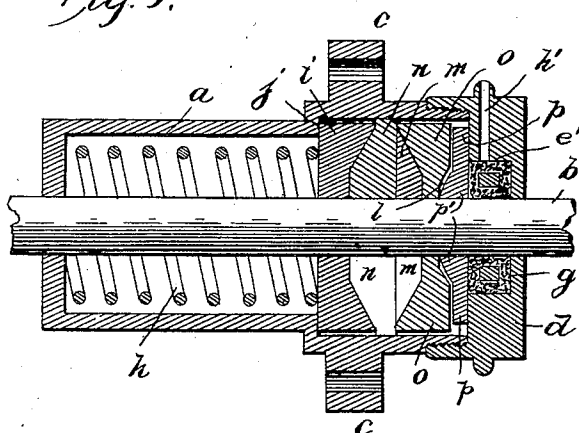
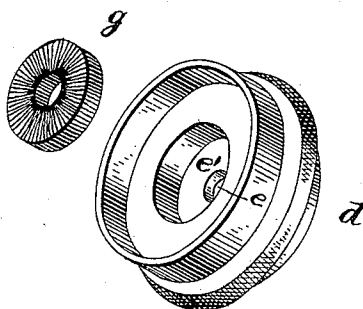


Fig. 2.



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METALLIC PACKING.

SPECIFICATION forming part of Letters Patent No. 466,170, dated December 29, 1891.

Application filed September 11, 1891. Serial No. 405,417. (No model.)

To all whom it may concern:

Be it known that we, ALDEN D. KILBORN, of Oakland, in the county of Alameda, and CHARLES YOUNG, of Sacramento, and State of California, have invented certain new and useful Improvements in Metallic Packing; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention relates to certain improvements in metallic packing for piston-rods or valve-stems.

The object of the invention is to provide improved metallic packing simple and inexpensive in construction and which will securely pack the piston-rod or valve-stem with a minimum amount of friction and which is so constructed that it will not wedge on the rod or stem, and will allow for lateral vibrations or play thereof.

A further object is to provide an improved metallic packing having an improved gland or box so constructed and provided with means that the metallic packing contained therein will be kept lubricated.

These objects are accomplished by and my invention consists in certain novel features of construction and in combinations of parts more fully described hereinafter, and particularly pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a longitudinal central section of the box and packing, showing the piston-rod extending therethrough. Fig. 2 is a detail view showing the cap of the box and the lubricating-collar which fits in a recess or pocket in said cap.

In the drawings, reference-letter *a* indicates the gland or box, preferably formed integral and cylindrical, as shown, and at its inner end having the aperture through which the piston-rod or valve-stem *b* passes. Near its outer end this box is provided with the exterior lugs or flanges *c*, preferably perforated so that the box can be rigidly secured in position to the cylinder-head.

The outer end of the box is preferably exteriorly threaded to receive the cap *d*, which also has a central perforation for the piston-rod. This cap, if desired, can be exteriorly milled or otherwise formed, so that it can be screwed up or unscrewed. The inner side of the cap around the opening *e*, through which the piston-rod passes, is annularly recessed to form a round chamber or space *e'* around the said rod, and in this space a lubricating-collar *g* is snugly fitted, snugly embracing the piston-rod. This collar preferably consists of a metal ring wound with cotton or other suitable absorbent material, which will retain a liquid lubricant and distribute the same upon the piston-rod, which it tightly embraces. The oil or lubricant duct *h'* extends upwardly from said pocket in which said ring is located to the exterior of the cap, so that oil can be fed through said duct *h'* and the lubricating-collar can be kept thoroughly saturated with the lubricating compound. The lubricating-ring is kept in position in its pocket by metallic packing and spring in the box.

A coiled expansive spring *h* is in the inner portion of the box, at one end bearing against the inner end of the box and at its opposite end bearing against flat inner face of the thick hard-metal washer *i*, loosely embracing the piston-rod end, preferably composed or brass or other suitable metal. An internal shoulder *j* limits the inner movement of this washer. The outer face of this washer is provided with the rearwardly-tapered or cone-shaped recess, shown concentric with the rod *b* and receiving the correspondingly-shaped cone end of the soft or anti-friction metal packing-ring *n*, split radially, so that it will be drawn together to tightly clasp the rod when the washer is forced up on the cone end. The opposite end of this packing-ring is formed flat, and the periphery of the ring is also flat and extends beyond or is flush with the peripheral surface of said washer *i*. The flat end of the cone-shaped radially-split small packing-ring *m* bears against the outer flat end of the large packing-ring and is located in a cone-shaped recess in the large hard-metal washer *o*, corresponding to the washer *i*. The thick packing-ring *n* separates the two hard-metal washers *i* and *o*, and when

this packing-ring is worn by continued use, so that the two hard-metal washers come together, the packing-ring is removed and replaced by a perfect ring. A ball or loose joint is formed between the outer end or cap of the box and the packing to permit lateral vibrations of the rod by means of the thin hard-metal washer *p*, having a flat outer side bearing against the cap and at its inner side, around and concentric with the piston-rod, having an annular raised convex boss *p'* fitting in a concaved annular recess or depression *l*, concentric with the piston-rod and in the outer face of the hard-metal washer *o*, as clearly shown. The washer *p* bears against the inner face of the cap or box and retains the lubricating-collar in its pocket. The two beveled packing-rings, having their flat ends bearing against flat surfaces and the washers having flat ends, prevent these rings and washers twisting transversely and wedging on the piston-rod and causing friction and wear. The packing-ring *n* is formed thick, as shown, to allow for the end wear thereon of the two hard-metal washers between which it is interposed. The small cone-shaped packing-ring is placed at the outer end or beyond the large packing-ring, so that there will be no chance for steam to escape through. The ball-joint allows lateral vibrations of the piston without causing excessive wear or wedging.

The lubricating device at one end of the box keeps the metallic packing thoroughly lubricated. The spring keeps the parts yieldingly together and in position and prevents rattling.

It is obvious that the pressure of the steam on the inner washer, together with the pressure of the spring and the relative shapes of the washers and packing-rings causes the packing-rings to tightly embrace the piston-rod or valve-stem, thereby forming a steam-tight joint, while the shoulder in the box on which the inner washer rests, together with the lubricating-ring embracing the piston-rod, prevents steam escaping around the peripheries of the metallic packing-rings and washers.

Having thus fully described our invention, what we claim is—

1. In combination, the box through which

the piston-rod passes, at its outer end having the pocket or annular recess around the piston-rod provided with an oil-duct to the exterior of the box, the lubricating-collar of absorbent material in said pocket surrounding the piston-rod, the piston-rod, and metallic packing in said box provided with a spring holding the packing, so as to retain said collar in said pocket, substantially as and for the purposes set forth.

2. The metallic packing comprising the box, a flat end washer centrally convexed or raised on its inner side, a hard-metal washer having a flat surface with a central depression receiving said convex portion and its opposite end provided with the conical concentric recess, the split beveled packing-ring in said recess, an additional packing-ring and washer, and a spring, arranged to operate substantially as described.

3. In a metallic packing, the two washers having the concentric conical recesses in their inner ends, the wide split packing-ring separating the two washers and having one end flat and the other end conical to enter a recess of one washer, and the conical split packing-ring, as described, fitted in the other washer and having the flat end bearing against the flat end of the large ring, as set forth and shown.

4. The combination of the box through which the rod passes, having a concentric pocket at one end, a lubricating-ring therein, a washer in the box bearing against said ring, a washer having a concentric conical recess in its inner end, said washers at their engaging faces having a raised boss and depression therefor to allow lateral play, another washer having a conical recess, the interposed conical split packing-rings between said two washers having the conical recesses, and the spring holding the parts together.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

ALDEN D. KILBORN.
CHARLES YOUNG.

Witnesses:

PATT. KELLY,
CHAR. G. CRAM.