J. HEWITT.

Piston-Rod Packing.

No. 216,038. Patented June 3, 1879.

Fig. 1.

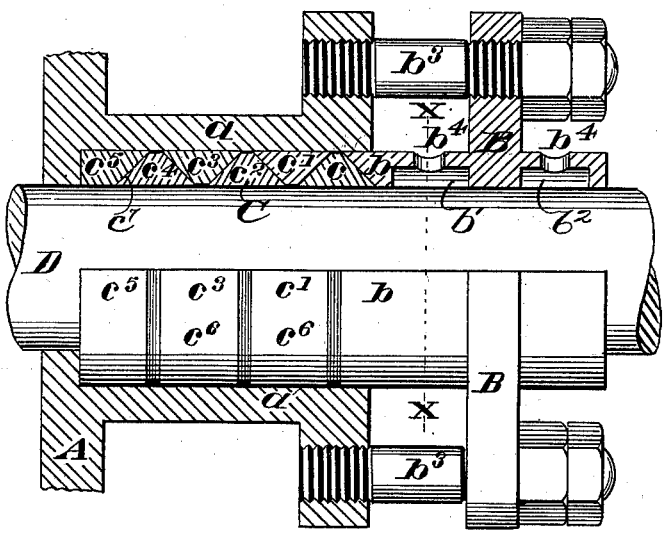



Fig. 2.

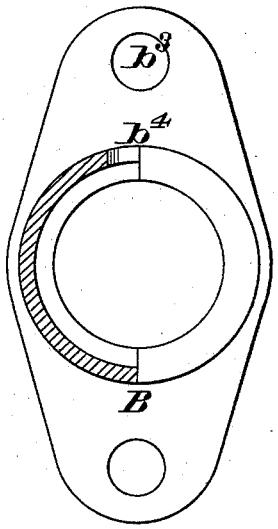



Fig. 3.

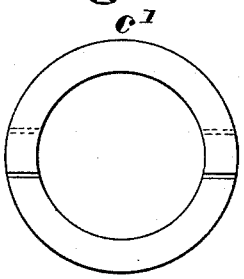



Fig. 4.

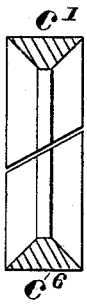



Fig. 5.

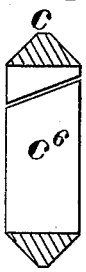
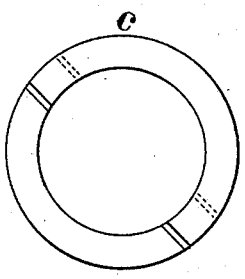



Fig. 6.

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN PISTON-ROD PACKINGS.

Specification forming part of Letters Patent No. **216,038**, dated June 3, 1879; application filed March 14, 1879.

*To all whom it may concern:*

Be it known that I, JOHN HEWITT, of the city of St. Louis, Missouri, have made a new and useful Improvement in Piston-Rod Packings, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a longitudinal section taken through a stuffing-box having the improvement, and showing the packing and gland partly in section and partly in elevation and the rod in elevation; Fig. 2, a section taken through the gland on the line $x\,x$, Fig. 1; Figs. 3 and 4, a side elevation and a cross-section, respectively, of one of the set of packing-rings that bear upon the stuffing-box; and Figs. 5 and 6, a cross-section and a side elevation, respectively, of one of the rings that bear upon the rod.

The same letters denote the same parts.

The present invention relates partly to the character of the material of which the packing is composed and partly to the shape in which the material is used. It also has reference to the means employed in lubricating the rod.

The invention, so far as the shape of the packing is concerned, is in its operation based upon the principle of the wedge. The gland at its inner end, or where it comes in contact with the packing, is beveled. That surface of the packing that is presented to the gland is also beveled. The effect of this is, that as the gland is forced into the stuffing-box the packing is wedged against the surfaces intended to be packed.

The packing should be of such material as will enable it to be moved as a mass by the gland, and at the same time it should be sufficiently malleable or moldable to enable it, under the pressure of the gland, to become accurately shaped to the surface that it is intended to pack, and so that each section or part of the packing shall become accurately fitted to the contiguous sections or parts.

The most effective and desirable substance I have found by trial to be lead or an alloy of lead and some metal that slightly hardens the lead; and the invention is most effectively carried out, as shown in the accompanying drawings, where—

A represents a stuffing-box of the usual form, and B the gland, which also is of the customary shape, saving that its inner edge, $b$, that comes against the packing, is beveled, and that the gland is provided with chambers $b^1\,b^2$, for the purpose hereinafter described.

C represents the packing. It is in the form of a series of rings, $c\,c^1\,c^2\,c^3\,c^4\,c^5$, which, in cross-section, are triangular, and which are arranged as shown—that is, the rings $c\,c^2\,c^4$ with the base $c^6$ toward the rod D, and the alternate ones, $c^1\,c^3\,c^5$, with the base toward the surface $a$ of the box. Thus arranged, the effect is that when the gland, by means of the bolts $b^3\,b^3$, is forced against the packing the rings $c\,c^2\,c^4$ are contracted upon the rod, and the rings $c^1\,c^3\,c^5$ are expanded against the surface $a$ of the stuffing-box, each one of the rings, under the action of the gland, serving as a wedge to force the adjacent rings against the rod and box. This causes the bases $c^6$ to be closed against the rod and box to any desired degree of tightness, and, owing to the nature of the material of which the rings are formed, the bases of the rings become perfectly fitted to the rod and the surface $a$, and those joints in consequence are perfectly packed. The various rings $c\,c^1\,c^2\,c^3\,c^4\,c^5$ also become so thoroughly compacted and fitted together as to prevent the passage of steam between them.

So far as packing the joint between the packing and the rod is concerned a single ring, $c$, in combination with the beveled gland, suffices; but to pack the joint between the packing and the surface $a$ of the stuffing-box at least two rings, $c\,c^1$, are needed. It is also better to employ a series, $c\,c^1\,c^2\,c^3\,c^4\,c^5$, as shown, as thereby it becomes practicable to extend the bearing-surface of the packing and to render it more reliable. The last ring, $c^5$, may be of a less compressible material than that of the other rings, or this part $c^5$ may be made in one piece with the box A, the object, so far as this part of the construction is concerned, being mainly to obtain a beveled surface, $c^7$, for the ring $c^4$ to come against.

In using metallic packing the piston-rod sometimes needs lubricating. Accordingly,

the gland is preferably provided with the chambers $b^1$ $b^2$, one or more, as desired, in which waste and oil can be held, and the rod thereby lubricated. The openings to these chambers are at $b^4$ $b^4$.

The improvement as described is as in connection with the piston-rod and stuffing-box of a steam-engine cylinder. It is equally adaptable, however, to the plunger of a pump or to the packing of a joint between two pipes.

I claim—

1. The box A, having the surface *a*, the gland B, having the beveled edge *b*, the rings *c* $c^1$ $c^5$, shaped as described, and formed of lead or other similarly malleable metal, and the rod D, combined and operating substantially as described, and for the purposes set forth.

2. The box A, having the surface *a*, the gland B, having the beveled edge *b*, the rings *c* $c^1$ $c^2$ $c^3$ $c^4$ $c^5$, shaped as described, and formed of lead or other similarly malleable metal, and the rod D, combined and operating substantially as described, and for the purposes set forth.

JOHN HEWITT.

Witnesses:
HERMAN GUELS,
CHAS. D. MOODY.