J. BYERS.

PACKING FOR PISTON-RODS.

No. 193,318. Patented July 24, 1877.

Fig. 1.

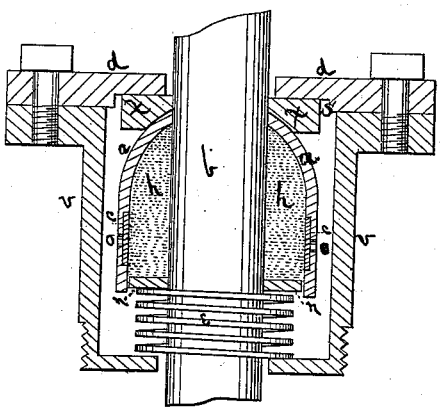


Fig. 2.

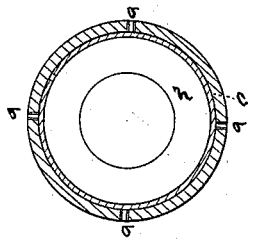
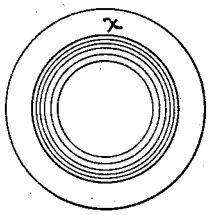


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN BYERS, OF RAVENNA, OHIO, ASSIGNOR OF ONE-HALF HIS RIGHT TO IRA CULVER, OF SAME PLACE.

IMPROVEMENT IN PACKING FOR PISTON-RODS.

Specification forming part of Letters Patent No. **193,318**, dated July 24, 1877; application filed April 7, 1877.

To all whom it may concern:

Be it known that I, JOHN BYERS, of Ravenna, Portage county, Ohio, have invented a new and useful Improvement in Packing for Piston-Rods, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

The object of my invention is to hold the fibrous packing in contact with the piston-rod in a case, the exterior and interior of one end of which is hemispherical, and perforated for the rod to pass through it; and also, by means of a socket-plate fitted to the piston-rod and the convex end of the packing-case, and having a less diameter than the interior of the stuffing-box, to allow a slight lateral play to the piston-rod.

Figure 1 is a sectional representation. Fig. 2 is a cross-section of the case *a* through the spring *c*. Fig. 3 represents the socket-plate *x*.

The stuffing-box *v* is threaded, at one end, to be screwed into the cylinder-head of a steam-engine. It is covered by the cap *d*, which is bolted to the stuffing-box. The holes through the stuffing-box and the cap *d* are of greater diameter than the piston-rod, which passes through them, so as to allow lateral motion to the piston-rod. The socket-plate *x* surrounds, and is fitted to, the piston-rod *b*. Its upper side is a plain surface, and is in contact with the bottom of the cap *d* in the recess *s*, which is of a greater diameter than the socket-plate *x*, so as to allow the plate to have lateral play with the piston-rod.

The hemispherical end of the packing-case *a* is accurately fitted into a corresponding concave depression in the lower side of the socket-plate *x*, forming a ball-and-socket joint to permit a slight oscillating motion to the piston-rod. Both the interior and exterior of the end of the packing-case *a* are hemispherical, and the other part of the case is cylindrical. The convex end is perforated to fit around the piston-rod. The case *a* contains fibrous packing *h*, surrounding the piston-rod, which is constantly pressed in contact with it by the force of the spiral spring *e* around the piston-rod, between the lower end of the stuffing-box *v* and the plate *n*, and also by the force of the steam passing through the perforations *o o o o* in the sides of the case *a* against the spring *c*. The plate *n* surrounds the piston-rod in the open end of the case *a*, and covers the packing *h*.

The force of the spiral spring *e*, and the pressure of the steam against the plate *n*, presses the packing *h* at the concave end of the case *a* against the piston-rod, while the packing in the cylindrical part of the case is kept in contact with the piston-rod by the pressure of the steam through the perforations *o o o o* in the case *a* against the spring *c*, which nearly surrounds the packing *h* at the cylindrical part of the case *a*, leaving a small space between the ends of the spring *c* to permit it to be pressed against the packing by the steam. The spring *c* rests in an annular recess in the case *a*, and thereby is retained in its position.

I claim as my invention—

The socket-plate *x*, having lateral movement with the piston-rod *b* in the stuffing-box *v*, in combination with the case *a*, having the orifices *o o o o*, the interior and exterior of one end of which being hemisperical, and the rest of the case cylindrical, the fibrous packing *h*, the circular spring *c*, the plate *n*, and spring *e*, substantially as herein set forth.

Witnesses: JOHN BYERS.

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GEORGE F. ROBINSON.