M. SCHNEBLE.
Piston-Packing.

No. 204,766. Patented June 11, 1878.

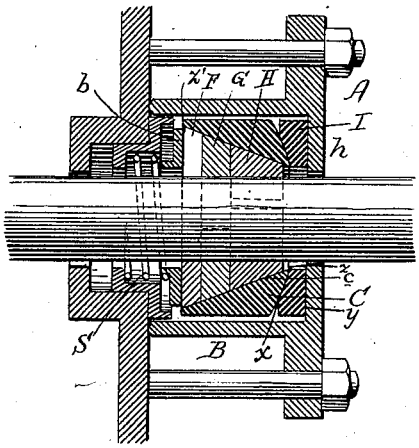


Fig. 1.

Fig. 2.

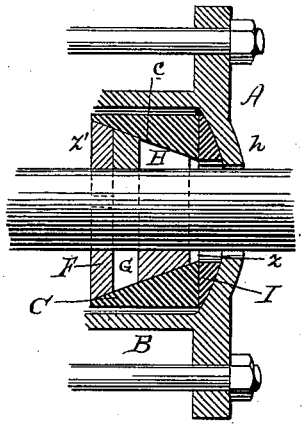
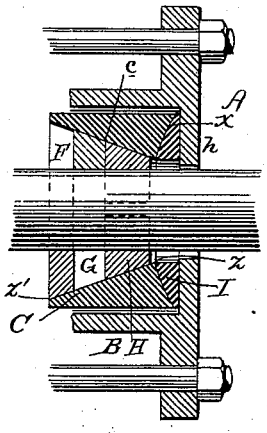


Fig. 3.



WITNESSES:
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UNITED STATES PATENT OFFICE.

MARTIN SCHNEBLE, OF DAYTON, OHIO, ASSIGNOR TO EDWIN P. MONROE, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN PISTON-PACKING.

Specification forming part of Letters Patent No. **204,766**, dated June 11, 1878; application filed November 23, 1877.

To all whom it may concern:

Be it known that I, MARTIN SCHNEBLE, of Dayton, in the county of Montgomery and State of Ohio, have invented a new and valuable Improvement in Piston-Packing; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon, in which—

Figure 1 is an axial section of a stuffing-box of a steam-engine with my improvements attached. Figs. 2 and 3 are sectional views, showing different forms of the socket-ring and vibrating cup.

My present invention relates to certain new and useful improvements in self-adjusting metallic packings for piston and other rods, and has for its main object the simplification and perfecting of an invention of the same nature made by myself and John T. Wright, of Dayton, Ohio, for which Letters Patent were granted December 8, 1874, and numbered 157,666, and a reissue thereof, No. 7,528, dated February 20, 1877.

My invention consists in the construction, adaptation, and novel arrangement of the parts or elements of the combination, hereinafter shown and described.

In the annexed drawings, A designates the stuffing-box of a steam-engine, to which, for convenience, my invention is represented as being applied; but it is obvious that in new engines this stuffing-box could be dispensed with, and my improvement attached directly to the cylinder-head by any of the well-known means.

B designates a case or cover, in combination with which my invention is shown. When adapted to old engines, this case is usually made of the same diameter of the flange of the well-known stuffing-box; but in new engines it would be made in proportion to the other parts, and of sufficient size for durability, strength, and convenience. In the edge of this case I insert a copper wire, to assist in forming a steam-tight joint between it and the flange or cylinder-head, when attached by bolts or otherwise. The head-plate *h* of this case is provided with a central aperture for the passage of the piston-rod, the opening being slightly greater than the diameter of the said piston-rod, for the purpose of allowing the rod a degree of lateral play.

C designates a rocking cup, the exterior of which is somewhat smaller in diameter than the interior of the case, for the purpose hereinafter set forth. The interior of this cup *c* has a conical cavity extending from the piston-rod opening *z* at one end to a wide mouth, *z'*, at the other end, the enlargement being gradual, so that the hollow is tapering and gradually increasing in a conical form toward the steam side, so that the steam which escapes from the cylinder into the stuffing-box will serve to press the packing-rings into the conical cavity and around the rod to pack the latter.

Within this chamber and around the piston-rod a number of packing-rings, F G H, are applied, the upper and lower or base surfaces of which are ground plane and true to fit accurately one upon the other, and the interior and exterior surfaces to conform precisely to the shape of the piston-rod and rocking cup. When the rings are placed together, their central openings will form a cylindrical passage for the rod, and their exterior surfaces will form a frustum, fitting closely within the conical cavity of the rocking cup. The layers of these packing-rings are respectively composed of segments, which, when applied around the piston-rod B, will have a slight space between the ends of the segments, so that as the interior faces are worn away by the action of the rod the segments will approach nearer to each other, penetrating farther into the conical chamber and taking up the waste, thereby maintaining a steam-tight joint.

The layers F G H are held in place by the follower-spring S, a follower-ring, *b*, being interposed to form an equitable bearing upon the segments, the opposite end of this spring being inserted into the stuffing-box, or having a bearing against the cylinder-head or other fixed bearing, readily adjusting itself to any slight movement of the parts.

While this spring is not of absolute neces-

sity when the engine is in operation, its function being in a measure served by steam escaping from the cylinder into the cavity of the case, it is indispensable when the engine is at rest, or the cylinder empty of steam, or when the cylinder is in an upright position, as in a walking-beam marine engine.

Between the end of the rocking cup C and the head-plate of the case B is inserted the socket-ring I, having plano-concave or plano-convex surfaces. The face of this ring in contact with the cup is made spherically concave or spherically convex, and the end of the cup accurately fitted thereto, and thus permitting them to have the universal motion of a ball-and-socket joint, as shown at *x*, Fig. 1. The face of this ring *y*, Fig. 1, in contact with the head-plate of the case B, is made plain and smooth, with ground surfaces, for the purpose of allowing a degree of play to the ring and rocking cup caused by any lateral deviation of the rod through wear in the cross-head, or lost motion in any part of the machinery connected therewith, which may cause them to take out of the true line.

Figs. 2 and 3 are modifications or different forms of the socket-ring, showing that the construction need not be confined to the form previously described, as it is evident that the ball-and-socket joint could as well be formed with the head-plate and ring, and the plane or sliding surface in contact with the rocking cup; or it could as well be made with the socket-joint reversed, and in other forms that would allow the compound motion described, for the purpose set forth.

What I do claim, and desire to secure by Letters Patent, is—

1. The rocking cup provided with segmental packing-rings, and having a central rod-opening, expanding in wedge form toward the steam side, substantially as and for the purpose specified.

2. The combination of a rocking cup provided with segmental packing-rings, and having a central rod-opening, with a socket-ring having plano-concave or plano-convex surfaces, substantially as specified.

3. The rocking cup provided with a concave or convex surface at one end, and a central rod-opening, expanding toward the steam side, in combination with a socket-ring having plano-concave or plano-convex surfaces, substantially as specified.

4. The combination, with a segmental packing ring or rings, of a rocking bearing at one end and an elastic and yielding bearing at the other end of the box or case in which the packing-rings are arranged to work, substantially as specified.

MARTIN SCHNEBLE.

Witnesses:
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