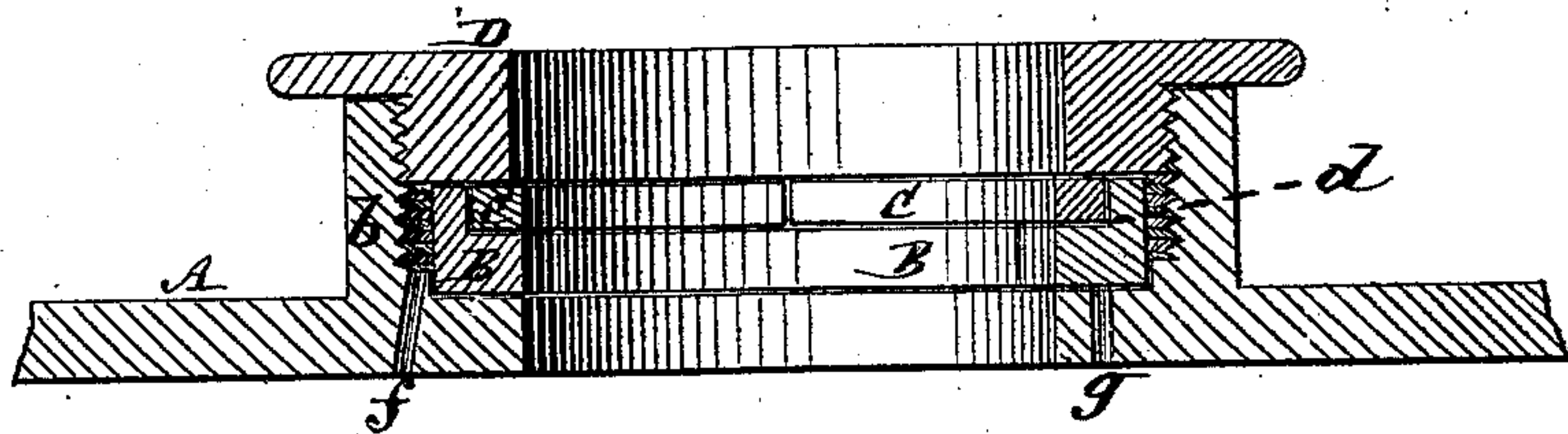


W. HARPER.  
METALLIC-PACKING.

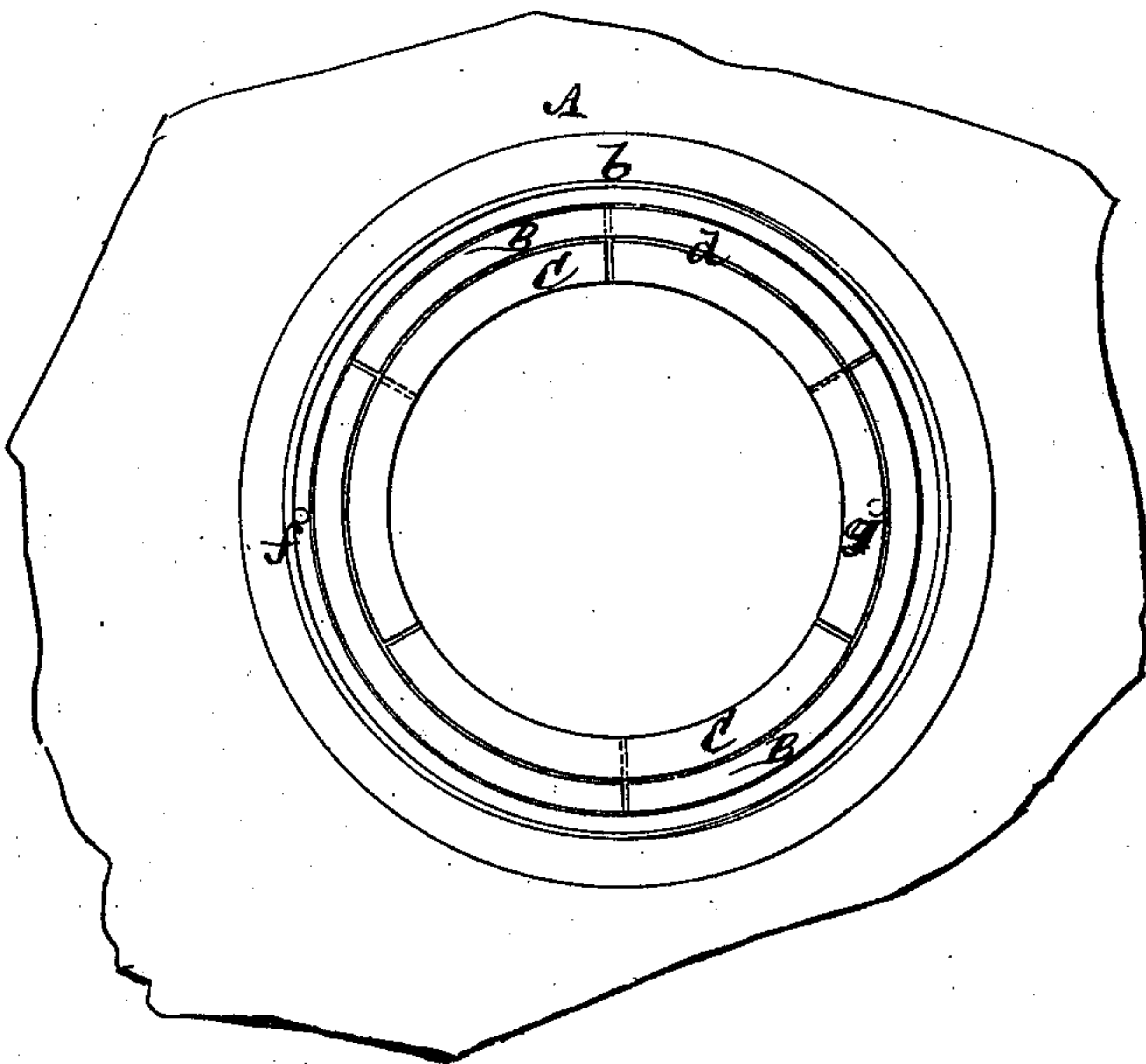
No. 176,627.

Patented April 25, 1876.

*Fig. 1.*



*Fig. 2.*



*Witnesses*

*John Becker*  
*Fred. Hays*

*William Harper*  
*by his Attorneys*  
*Brown & Allen*

# UNITED STATES PATENT OFFICE.

WILLIAM HARPER, OF NEW HAVEN, CONNECTICUT, ASSIGNOR OF ONE-HALF HIS RIGHT TO WILLIAM T. PORTER, OF SAME PLACE.

## IMPROVEMENT IN METALLIC PACKINGS.

Specification forming part of Letters Patent No. **176,627**, dated April 25, 1876; application filed February 3, 1876.

*To all whom it may concern:*

Be it known that I, WILLIAM HARPER, of the city and county of New Haven, in the State of Connecticut, have invented certain new and useful Improvements in Metallic Packings for the Piston-Rods of Steam-Engines, Pump-Rods, and other purposes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

Among the various purposes to which this invention is applicable may be mentioned packing the piston-rods of steam-engines and various kinds of steam, water, and air joints, including slip-joints of pipes, expansion-joints of sectional boilers, the packing of valve-stems, and steam and ordinary plunger pumps, but it will suffice here to describe the invention as applied to the cylinder-head of a steam-engine, for packing the piston-rod of the latter.

The improvement will be fully hereinafter described and specifically pointed out in the claim, a preliminary description being therefore deemed unnecessary.

Figure 1 is a transverse section of an engine-cylinder cover with my invention applied to the packing of the piston-rod of the engine. Fig. 2 is a plan of the same in part, with a cap or outer plate removed.

A represents the cylinder-cover of a steam-engine, constructed with a neck, *b*, whereby said cover is made to form the recessed or chambered base-piece, which receives the metallic packing within it. This packing is composed of an outer ring, B, and inner ring C, both built up of segments or sections, and arranged to break joint one with the other, and the inner ring C being seated within an inner rabbet, *d*, made in the outer ring, and of a depth

corresponding with the thickness of the inner ring. D is the cap or outer plate, against which the outer end of the compound ring-packing is or may be projected to make a close end joint in addition to the inner circumferential joint made by the interior of the packing-rings with the piston-rod, which works through the packing. The cap D is made to screw into the neck *b*, to adjust it to the endwise action of the packing, and to provide for the insertion and removal of the packing, said cap being ground or dressed on its inner surface to make a close joint with the packing.

The packing-rings are radially collapsed and forced out endwise in the following manner: The base-piece or cylinder-cover A has one or more outer passages or inlets, *f*, through it, arranged to conduct steam to the back of the outer ring B, to give a collapsing pressure or action to the rings B C, and has in addition one or more inner passages or inlets, *g*, to conduct steam to the back of the outer ring for the purpose of projecting the outer ends of the rings B C against the inner surface of the cap D, thus securing a close joint in every direction, besides securing an automatic adjustment of the packing and other advantages.

I claim—

The combination of the inner and outer inlets or passages *g f*, the chambered base A, the cap D, the inner rabbeted outer packing-ring B, and the packing-ring C, arranged within the rabbet of the outer ring, substantially as specified.

WILLIAM HARPER.

Witnesses:

C. T. DRISCOLL,  
ADOLPH ASHER.