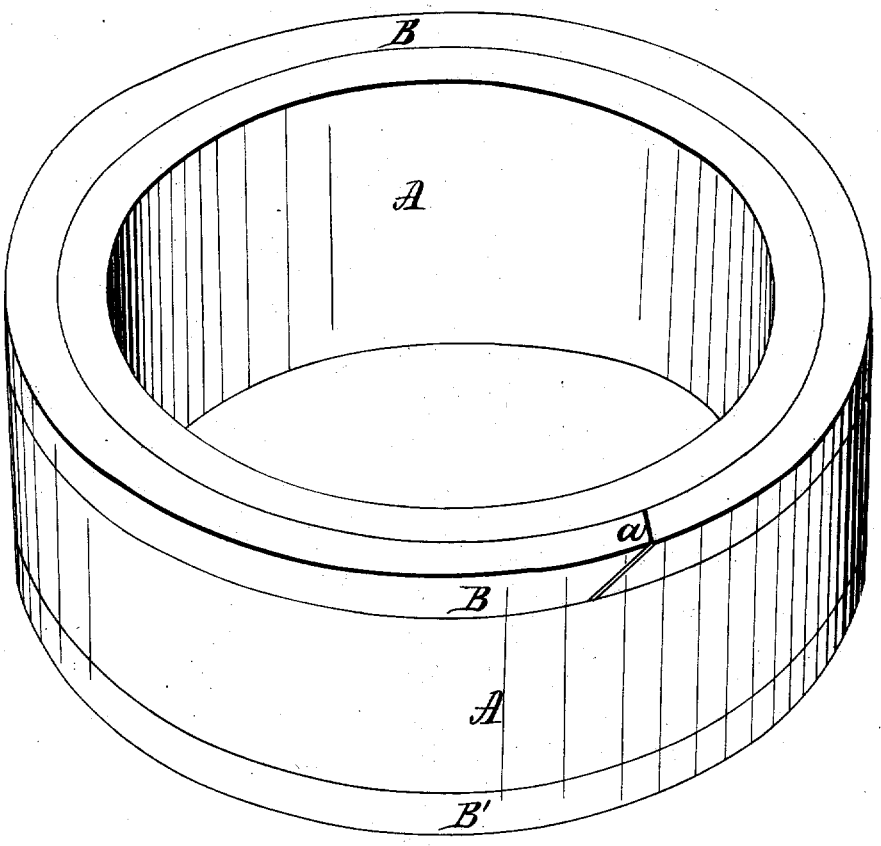
A. Fulton,

Piston Packing.

No. 7,214. Patented Mar. 26, 1850.



UNITED STATES PATENT OFFICE.

ANDREW FULTON, OF PITTSBURGH, PENNSYLVANIA.

COMPOUND HARD AND SOFT METAL PACKING.

Specification of Letters Patent No. 7,214, dated March 26, 1850.

To all whom it may concern:

Be it known that I, ANDREW FULTON, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Metallic Packing for the Pistons of Steam-Engines and for other Purposes; and I do hereby declare that the following is a full, clear, and exact description of my invention, reference being had to the accompanying drawing, which forms part of this specification, and which represents a view in perspective of my compound metallic packing ring.

My metallic piston-packing consists of a ring of soft metal embraced between two rings of a harder metal which expand with the soft metal as the latter is forced outward by the tightening of the piston-follower.

In the drawing, A, is the ring of soft metal of the full width of the space between the flange at the end of the piston and the follower, and fitted to the interior of the cylinder, it is formed in this instance of an alloy of lead tin and zinc (say lead 12 parts tin 4, zinc 2), but a softer or harder alloy may be used as circumstances render expedient. Two narrow rings of copper B, B′, are let into corresponding grooves formed in the outer angles of the soft ring these rings are each cut (as at *a*) to admit of their expansion as their exterior wears away. The compound ring thus constructed is placed around the body of the piston and fills up all the space between it and the inner face of the cylinder. The follower is then applied in the usual manner, as the latter is screwed up toward the flange, the soft metal between them yielding to the pressure is forced outward against the inner face of the cylinder and carries with it the copper rings which embracing it between them protect its angles and by covering the openings left between the inner face of the cylinder and the peripheries of the follower and flange on the opposite end of the piston prevent the soft metal from squeezing out under the pressure, while at the same time the copper-rings are neither hard enough nor pressed with sufficient force against the piston to cut it. It will be perceived that this packing possesses the great merit of simplicity and does away with all the inconveniences resulting from the use of springs and wedges which form an important feature in the ordinary kinds of metallic packing; it is also much cheaper in its construction than spring packing and is applicable to all descriptions of cylinders whether for steam or other purposes. In practice it has proved itself far superior to metallic packings constructed of a hard metal alone, as it does not cut even when sand is accidentally present in the steam cylinder, an accident which is of frequent occurrence when muddy water is used in the boilers; it is also superior to the ordinary kinds of soft metallic packing the material of which gradually escapes through the spaces left between the inner face of the cylinder and the peripheries of the flange at the end of the piston and the follower, thus quickly becoming loose and allowing the escape of steam around the piston; whereas in my packing the rings of the hard metal are forced out with the soft ring and being thus always in contact with the cylinder confine the soft metal and prevents its destruction by any other means than the ordinary wear of the piston.

Packing upon this principle may be made of any convenient or suitable number of rings of different metals and the several hard rings being divided into segments. It may also be constructed of alternate diaphragms or disks of different metals.

What I claim as my invention and desire to secure by Letters Patent is—

The compound metallic packing ring constructed of hard and soft metals substantially as herein set forth; the hard rings being for the purpose of preventing the substance of the softer from squeezing out around the follower and flange of the piston.

In testimony whereof I have hereunto subscribed my name.

A. FULTON.

Witnesses:
E. T. RENWICK,
P. H. WATSON.

Disclaimer.

To the Commissioner of Patents.

The petition of ANDREW FULTON, of the city of Pittsburgh, in the State of Pennsylvania, respectfully represents that he is the inventor of a Compound Hard and Soft Metal Packing for Steam-Engines, for which Letters Patent of the United States were granted to him on the 26th day of March, 1850; that by the representation of