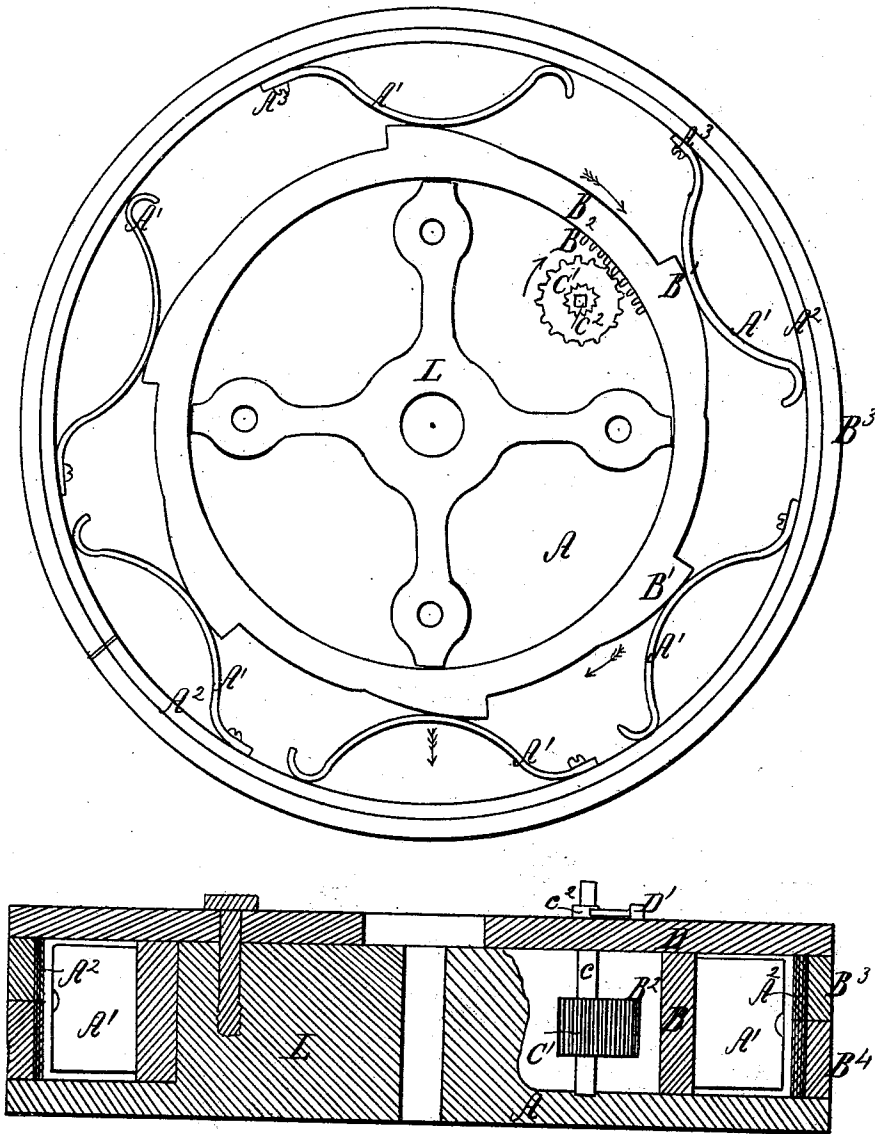


Patented Mar 16, 1869.

Fig. 1.



Witnesses;
Praval Bickett
John. P. Clark

Inventor,
Thos. R. Morgan

United States Patent Office.

THOMAS R. MORGAN, OF PITTSBURG, PENNSYLVANIA.

Letters Patent No. 87,789, dated March 16, 1869.

IMPROVEMENT IN STEAM-ENGINE PISTON-PACKING.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, THOMAS R. MORGAN, of Pittsburg, in the county of Allegheny, and State of Pennsylvania, have invented certain new and useful Improvements in Pistons for Steam-Engines, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to the construction and use of devices whereby ordinary steam-engine pistons' packing-rings can be expanded, and kept steam-tight, without taking off the follower or disturbing joints of the cylinder.

To enable others skilled in the art to make and use my device, I will describe its construction and operation.

In the accompanying drawings—

Figure 1 is a plan of my devices, as attached to an ordinary steam-engine piston.

Figure 2, a section of the same.

Like letters of reference, on the different figures, denote corresponding parts.

Resting on the base, and encircling the spider L of an ordinary piston, A, I place an annular ring, B, having six or more inclines, B¹, projecting from its periphery.

In and on the inner circumference are teeth B², projecting toward the centre of the piston A, the teeth B² being of an epicycloidal or other suitable form.

Six or more ordinary elliptic springs, A¹, bear against the inclines B¹.

The extremities of the springs A¹ bear against an ordinary packing-ring, A², to which one end, A³, of the springs A¹ is attached in any suitable manner, the other extremity being free to slide on the inner circumference of the ring A².

Ordinary packing-rings, B³ and B⁴, encircle the before-named ring A², resting, one above another, on the base of before-mentioned piston A.

In any suitable position, inside the annular ring B, is a vertical shaft, C, attached to which is a geared pinion, C¹, so arranged that its teeth will mesh in the teeth B² of the ring B.

The lower end of the shaft C is in and rotates in a suitable hole in the base of the piston A. Its upper extremity is square, below which is attached an ordinary ratchet-wheel, C², which rests upon the outside of the ordinary follower D, to which is attached, in a suitable manner, an ordinary pawl, D¹, so arranged that its point will meet the ratchet-wheel C². The follower D is attached to the piston A in the ordinary manner, the square end of the shaft C projecting therefrom.

The mode of operating with my devices is as follows, viz:

The pinion C¹, being rotated by means of a wrench,

or such like device, attached to the square end of the shaft C, rotates, by means of the teeth B², the annular ring B. The inclines B¹, meeting the springs A¹, by reason of their shape, force the same outwardly against the ring A², and also the packing-rings, B³ and B⁴, the pawl D¹ being so arranged that its point catches the ratchet-wheel C², and prevents the pinion C from being forced back, thus expanding the packing-rings, B³ and B⁴, from the centre of the piston A.

By making a suitable hole or slot in the cylinder-head of the steam-engine, so as to admit of the passage of an ordinary socket-wrench, the packing can be adjusted, without breaking the joint or removing the cylinder-head. A plug screwed into the hole, prevents the escape of steam when the engine is running.

As heretofore steam-engine piston-packing has been expanded and adjusted, the springs which bear against the packing-rings are set out from the hub of the piston by means of set-screws and nuts, and the follower has to be removed, so as to manipulate the screws and nuts, not only taking time, but also requiring considerable skilled labor to perform the same.

Piston-packing has been also heretofore expanded from the exterior of the piston; but the devices used are costly, complicated, and thereby liable to get out of order, and also cannot be attached to an ordinary existing steam-piston.

The advantages arising from the use of my devices are, that the piston-packing can be expanded and adjusted from the exterior, both of the piston and cylinder; and, as the devices used are simple, and not costly, skilled labor is not required to manipulate the same; and, as my devices can be readily attached to any ordinary existing piston, either steam or hydraulic, great change of parts not being required, much time, trouble, and unnecessary expense are saved thereby.

I am aware that piston-packing has been set out by a ring having inclined projections, which act upon rods pressing against the springs, and therefore do not broadly claim such device; neither do I claim the operation of the same by means of gearing; but having thus fully described my invention,

What I claim therein as new, and desire to secure by Letters Patent, is—

The annular ring B, surrounding an ordinary piston-head, or spider, outside the follower-bolts and their bearings, and provided with inclined projections B¹, acting directly upon the springs, which press out the packing, the whole constructed and arranged substantially as set forth.

In testimony that I claim the foregoing as my own, I affix my signature, in presence of two witnesses.

THOS. R. MORGAN.

Witnesses:

PERCEVAL BECKETT,
JOHN P. CLARK.