

Methods of Expanding Steam-Cylinder Packing-Rings.

Patented May 19, 1874.

g.1

g. 5



A circular diagram showing a mechanical component. It features a central hub with a spiral pattern, surrounded by a ring with six spokes. The spokes are labeled with letters: 'f' at the top, 'k' at the top-right, 'z' at the right, 'k' at the bottom-right, 'k' at the bottom, and 'z' at the bottom-left. The central hub has a spiral pattern. The entire component is enclosed within a dashed circle.

INVENTOR:

James Joshua Roberts

for E. Laass, Attorney

adley
James H. McDeville,
Attorney in fact.

UNITED STATES PATENT OFFICE.

JAMES J. ROBERTS, OF GEDDES, NEW YORK, ASSIGNOR OF ONE-HALF HIS
RIGHT TO CHARLES S. PHARIS, OF SAME PLACE.

IMPROVEMENT IN THE METHODS OF EXPANDING STEAM-CYLINDER PACKING-RINGS.

Specification forming part of Letters Patent No. **151,057**, dated May 19, 1874; application filed
March 7, 1874.

To all whom it may concern:

Be it known that I, JAMES J. ROBERTS, of Geddes, in the county of Onondaga, in the State of New York, have invented a new and useful Improvement for expanding the Packing-Rings of a Cylinder, and for centering the piston within the cylinder, of which the following description, taken in connection with the accompanying drawings, is a statement sufficient to enable any one skilled in the art to make and use my invention.

The object of this invention is to expand the packing-rings in a cylinder, and at the same time to adjust the piston in the center of the cylinder, without necessitating a removal either of cylinder-head or follower, thereby saving a large amount of time and labor, which is very essential on railroad-locomotives, and avoiding also the danger of breaking the follower-bolts, which are generally difficult to remove and to renew. This invention consists, first, in attaching a small plate upon the hub of the piston, on the outside of the follower, so as to contain and hold in place the set-screws, which are a part of and which operate the ordinary wedges used for the purpose of centering a piston in a cylinder, and also for expanding its packing-rings, and by a removal of which plate all of the wedges are also removed with it, one of the objects of the plate being to accomplish a quick removal of the wedges; second, arranging the wedges within the hub near the center of the piston, so that they may be accessible for adjustment or removal without first taking off the cylinder-head or the follower of the piston.

In the drawing, Figure I is an end view of a piston containing my invention. Fig. II is a longitudinal section of a cylinder, showing my improvement. Fig. III is an end view of a piston with the follower removed, so as to show the slots for the wedges and their connection with the set-springs. Fig. IV is an isometric view of one of the wedges and a screw for setting it; and Fig. V is a view of the wedges, and of the plate for holding them, detached from their proper place.

A represents the follower of a piston, and B a cap or cover, which may be fastened to

the cylinder-head *h* in any desirable manner. In the rear end, and near the center of the piston *g*, are slots or channels *i i*, parallel with the piston, and of sufficient size to receive the wedges *e e*, the taper ends of which lie inwardly. Bearing upon the surface of each one of the wedges are spurs *l*, that are joined to set-springs *k k*, which bear upon a large portion of the inner surface of the packing-rings *f f* of the piston. The wedges are operated by set-screws *c c*, extending through a wedge-plate, *b*, that is fastened by a single nut, *d*, to the hub of the piston, but outside of the follower, and entirely independent of it. To overcome the necessity of removing the follower and cylinder-head, so as to adjust the piston, or expand the packing-rings, a hole is made in the center of the cylinder-head large enough to admit the small wedge-plate to which all the wedges are secured. The greatest wear of the piston is on the bottom of the cylinder; therefore three or more wedges are employed, so that the piston may first be raised, and then centered in the cylinder by using the hole in the cylinder-head as a guide without first having to establish a circular line around its center. Wedges applied at a distance from the piston-hub do not accomplish the object here sought, because they are placed too far from the center of the piston to make them accessible, without first a removal of the whole cylinder-head. In this invention the wedges are placed within the hub, thus bringing them all within a small compass; and they are all arranged upon a small plate, so that to operate the wedges, it is only necessary to have a small aperture in the cylinder-head, which may be covered by a little screw-cap. Then, too, the attachment of the wedge-plate to the piston-hub is by a single nut, which admits of a ready detachment of the plate, whereby all the wedges may be withdrawn at once.

It is evident that this invention may be applied to the smallest cylinder. The invention also admits the use of more than one follower-bolt, thus insuring a greater security of parts, and a more certain movement of the piston upon a true line within the cylinder, over the use of a single follower-bolt.

I claim—

1. The combination, with a piston-head, of a wedge-plate, which is attached to the piston-hub independently of the follower, so that all of the wedges may readily be removed with the wedge-plate without a removal of the follower or cylinder-head, substantially as described.

2. The arrangement of the wedge-plate attached to the piston-hub, independently of the follower, with the cylinder-head provided with a cylinder-cap, so that the said wedge-plate

can be removed without taking off the whole cylinder-head.

In testimony whereof I have signed my name and affixed my seal, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga and State of New York, this 13th day of February, 1874.

JAMES JOSHUA ROBERTS. [L. S.]

Witnesses:

CHRISTIAN HOLMSTRUP,
WM. BRADLEY.