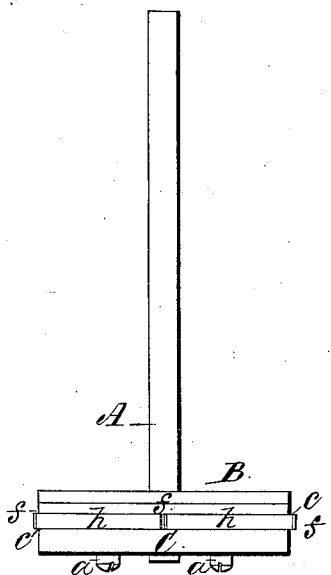
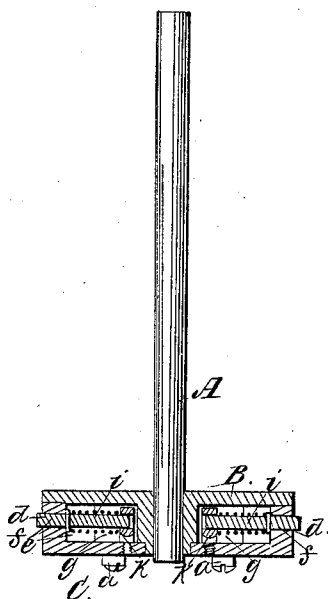


*W. D. Whitmore,*  
*Steam-Engine Piston,*  
*N<sup>o</sup> 61,373.      Patented Jan. 22, 1867.*

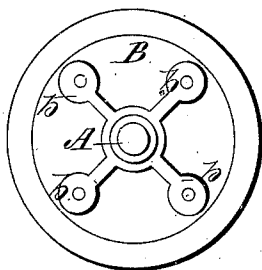
*Fig. 1.*



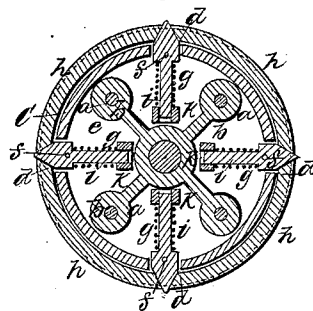
*Fig. 2.*



*Fig. 4.*



*Fig. 3.*



*Witnesses:*  
*Geo. H. Andrews*  
*Samuel C. Caper*

*Inventor:*  
*W. D. Whitmore*  
*by his attorney.*  
*R. W. Eddy*

# United States Patent Office.

WILLIAM D. WHITMORE, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 61,373, dated January 22, 1867.

## IMPROVEMENT IN PISTONS FOR STEAM ENGINES.

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

### TO ALL PERSONS TO WHOM THESE PRESENTS SHALL COME:

Be it known that I, WILLIAM D. WHITMORE, of Boston, in the county of Suffolk, and State of Massachusetts, have made a new and useful invention having reference to metallic packed Piston for Steam or other Engines; and I do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a side elevation; and

Figure 2, a longitudinal section of one of my improved pistons.

Figure 3 is a section of its head, taken in a plane at right angles with the axis of its rod, and through the ring-sections, wedges, and springs, to be hereinafter explained.

The piston on which my invention is based is the well-known "Barton piston," which has a series of ring-sections or annular arcs arranged in the circumference of the piston-head, and with their ends against wedges, forced outward or in radial directions by one or more springs. In constructing such a piston it has been customary to arrange its ring-sections and their wedges between and against two circular plates, one fastened to the piston-rod, and the other movable thereon, the whole being so as to render it necessary to remove the whole of the piston from the engine cylinder in order to remove any or all of the ring-sections and wedges from the piston-head, or to apply any or all of them thereto, as circumstances may require. This removal of the piston from the cylinder necessitates the disconnection of the piston from the cross-head, or mechanical device to be moved by it. This oftentimes is a very inconvenient as well as a laborious operation, which it is the object of my invention to avoid, as with my improvement in the construction of the piston, the rod with its cap-plate may be left within the cylinder, without disconnection from the cross-head, whenever it may be necessary to remove the packing and its wedges and springs, they being taken in a connected state from the piston.

In the drawings, A denotes the piston-rod, provided with a circular cap-plate, B. Against this cap-plate is placed a cylindrical box or case, C, closed at its front and open at the end next the cap-plate. This box is connected with the cap-plate by screws, *a a a*, which go through the head of the box and screw into projections, *b b b*, from the cap-plate. An inner end view of the cap-plate, with such projections, is shown in Figure 4. An annular groove, *c*, is made in the circumference of the box or case C, and between its two extremities. Four, or any other suitable number of openings, *d*, lead from the groove radially into the interior space or chamber *e* of the case, each of such openings being for the reception and support of one of a series of sliding wedges, *ffff*, arranged as represented. There is a spring, *g*, to press each wedge outwardly and against the contiguous ends of two ring-sections, *h h*. The groove *c* is filled with these ring-sections, and the wedges arranged together and formed as shown in fig. 3. A shank, *i*, extends from each of the wedges through its spring, and a projection, *k*, extending from the case, such projection serving as a guide to the shank, and to aid in keeping the wedge and its spring in place. By detaching the case C from the plate B, the former, with the packing-ring sections, their operative wedges and springs, can easily be removed from the cylinder, and leave the head B and piston-rod A therein and connected with the cross-head. My invention is calculated for use in locomotive and stationary engines, whose cylinders are so situated or connected with machinery as to require, for removal of their piston, the detachment of that head through which the piston-rod does not travel.

I make no claim to a piston made with ring-sections, and wedges arranged between such sections, and provided with one or more springs for forcing the wedges forward, so as to press the ring-sections against the bore of the cylinder, such being the construction of the well-known "Barton piston." Nor do I claim arranging a metallic packing-ring in a groove made in and about a piston-head, so that the ring may be supported on each of its flat sides by the sides of the groove rather than against the cap-plate of the piston.

I claim my improved ring-section and wedge-piston as made, not only with its ring-sections and their wedges wholly within and supported by a case, C, separate from and to be attached to the cap B by screws, but as having the cap B applied to the piston-rod A, the whole being substantially as and for the purpose hereinbefore set forth.

WM. D. WHITMORE.

Witnesses:

R. H. EDDY,

F. P. HALE, Jr.