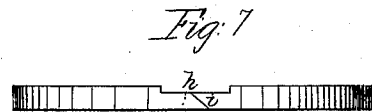
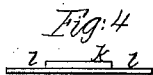
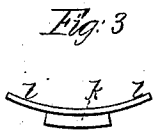
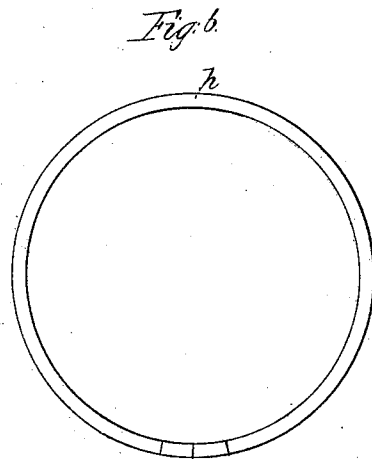
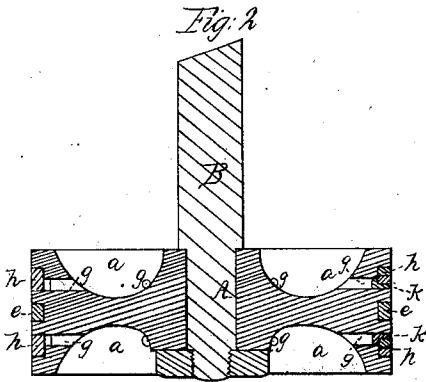
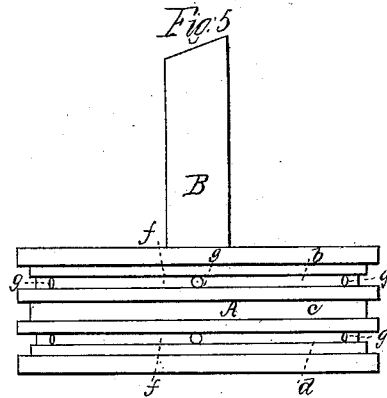
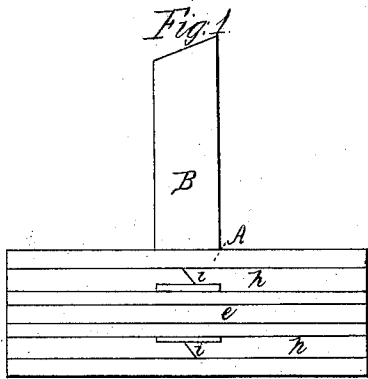


T. S. Drelley,
Steam-Engine Piston.

N^o 38,474.

Patented May 12, 1863.



Witnesses
R. H. Ledy
W. P. Hale Jr.

Inventor
Thos. S. Drelley

UNITED STATES PATENT OFFICE.

THOMAS S. DWELLEY, OF CHARLESTOWN, MASSACHUSETTS.

IMPROVED ENGINE-PISTON.

Specification forming part of Letters Patent No. 38,474, dated May 12, 1863.

To all whom it may concern:

Be it known that I, THOMAS S. DWELLEY, a citizen of the United States, and a resident of Charlestown, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Pistons for Engine-Cylinders; 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 denotes a side view, and Fig. 2 a vertical section, of a piston provided with my invention, or, in other words, such figures represent an improved piston, as made, not only with an annular space or groove encompassing and being within the periphery of the piston-head, but as having a fusible-metal or other proper filling or annulus inserted or cast within such groove, the purpose of the groove and its filling being not only to provide a means of centralizing the piston-head and its packing within the cylinder or barrel in which they are to run or work, but to furnish such a centralizer as may be removed from the piston-head and replaced in position without any disturbance of the packing, which is hereinafter described, as composed mainly of metallic rings to be expanded by the pressure of the steam or other medium used within the cylinder and against the piston. Fig. 3 is a top view, and Fig. 4 a front elevation, of a joint-lap for each of the metallic packing-rings, to be hereinafter described. Fig. 5 is a side view of the piston-head as it appears without the fusible-metal centralizing ring and the packing-rings. Fig. 6 is a top view, and Fig. 7 a side view, of one of the said packing-rings.

In the said drawings, A denotes a piston head or body, of which B is the stem or rod. Each end of the piston is made with an annular chamber or concavity, *a*. The cylindrical surface or periphery of the said head is provided with three annular grooves, *b c d*, extended around it and arranged with respect to one another as shown in the drawings, Fig. 5. The middle one of the grooves—viz., that marked *c*—is to be filled with an annulus, *e*, which may be of metal more readily fusible than that of which the body or head A of the piston is made—that is to say, if the said head A be of either cast or wrought iron, the ring or centralizer may be of what is termed “babbitt metal” or any other anti-friction

composition or metal generally employed for the bearings of the journals of shafts, the object being to have the centralizer *e* composed of a metal which may be easily fused without injury to the head A or the detriment or disturbance of either of the packing-rings placed in the grooves *b d*. Each of the said grooves *b d* is constructed with an auxiliary groove or channel, *f*, which is of about one-half the width of such groove *b* or *d*, and extends below and leads from the bottom of it, in manner as shown in the drawings. This auxiliary groove *f* freely communicates with the next adjacent chamber or concavity *a* by one or more holes or passages, *g*, made in the head A. Furthermore, there is an expansive steel or metallic ring-packing, *h*, placed within each groove *b d*, and so as to fill or nearly fill and fit it and correspond in size to it. This packing is cut open slantwise, as shown at *i*, and it is also formed so as to overlap a short arc or joint lap or breaker, *k*, which breaks the joint *i* and is placed both within the groove *b* or *d*, extends into the auxiliary groove *f*, and is furnished with arms or projections *l l*, to extend underneath the ends of the packing-ring and along within the auxiliary groove. These projections *l l* serve to keep the joint-breaker *k* in place, the auxiliary groove being not only a receiver of these projections, but a conductor of the steam to the internal surface of the expansive packing-ring. In consequence of the joint-breaker so made and applied, I am enabled to use for a packing an entire annulus with but one separation, and to fix it in its groove by springing it apart and into such groove.

With a piston constructed as above described, the steam, air, or fluid, as the case may be, against which it may be acting when within a cylinder, will be caused to expand the packing, and thereby operate to produce a tight fit of the piston to the cylinder. Furthermore, the centralizing-ring operates to centralize the piston-head and its packing with reference to the cylinder and piston-rod, whatever may be the wear on the packing. Whenever the centralizing-ring may have become worn, so as not to properly perform its functions, it may be easily removed from or melted out of its groove and another be substituted for it and be turned down into concentricity with the piston-rod.

I lay no claim to the invention which constitutes the subject of the United States Patent No. 29,576, and dated August 14, 1860.

I claim as my invention—

1. The improved piston, made not only with an annular space or groove encompassing and being within the periphery of the piston-head, but having an annulus or centralizer (cast or placed within such groove) and a packing, arranged substantially in manner and for the purpose as described.

2. The combination of the auxiliary groove *f* and the retaining projections or arms *l l* with the packing-ring groove and with the joint lap or breaker of the packing-ring, the whole being arranged and so as to operate together as specified.

THOS. S. DWELLEY.

Witnesses:

R. H. EDDY,

F. P. HALE, Jr.