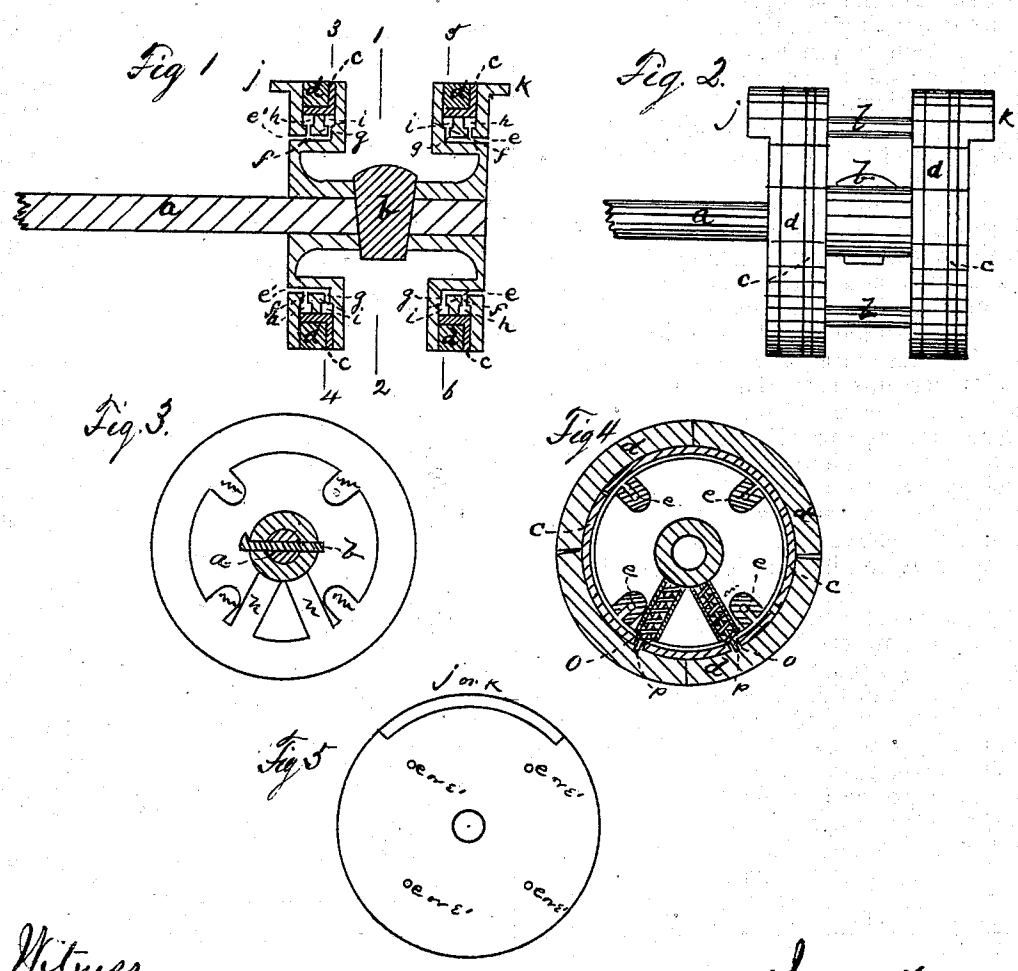


OSCAR S. HOWARD.

Improvement in Piston Heads for Steam Engines.

No. 120,586.

Patented Nov. 7, 1871.



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UNITED STATES PATENT OFFICE.

OSCAR S. HOWARD, OF BANGOR, MAINE.

IMPROVEMENT IN PISTON-HEADS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. 120,586, dated November 7, 1871.

To all whom it may concern:

Be it known that I, OSCAR S. HOWARD, of Bangor, in the county of Penobscot and State of Maine, have invented a new and useful Improved Piston-Head; and I hereby declare the following to be a full, clear, and exact description of my invention, which will enable others to make and use the same, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 shows a section of my invention; Fig. 2, a side view of same; Fig. 3, a section through the line 1 2; Fig. 4, a section through the line 3 4 or 5 6; Fig. 5, the top or bottom of the piston-head.

Same letters show like parts.

The object of my invention is to obtain a simple and effective steam-packing piston-head. I use in my piston-head the common expansible steam-packing rings, but introduce the steam between the rings and the head in such a manner that it forces out equally every part of said rings. I place lips near the circumference of the head, at that part which is to be uppermost. The steam entering the cylinder strikes this projection or lip from the under side and serves to raise the piston. To assist this in heavy heads springs may be inserted so as to bear outwardly upon the lower packing-rings, and thus steady pins so fixed as to serve as dowels for the said rings.

Referring to the drawing, Figure 1 shows a section of my improved piston; *a*, the piston-rod; *b*, the key; *c* the inner, and *d* the outer expansible rings; *e e'*, the steam-ports. It will be seen that the steam is admitted directly behind the rings through the two passages *f* and *g* of the port. These passages each communicate with a groove running entirely around the piston-head behind the ring, each passage *f g* having its own groove *h* and *i*. These grooves allow the steam entering by the port to circulate and pass around the back of the rings, bearing equally upon them and forcing them directly out. The piston-head

is cored out, as shown in the section, to diminish its weight. The steam-ports *e* admit the steam when the piston is pushed forward, and *e'* when it takes the back stroke. At *j k*, Fig. 2, are shown the lips or projections upon the top, at the front and rear of the piston, which are acted upon by the steam so as to assist in raising the head and diminishing the friction in horizontal engines. At *l* are standards or braces between the parts supporting the rings. Fig. 3 shows the projections left upon the inside of the head, when the same is cored out, through which the steam-ports pass, said projections being lettered *m*. It also shows the projections *n*, which are bored for the reception of the springs *o*, Fig. 4, which assist in forcing out the bottom rings of the piston-head. Fig. 4 shows the same in section, with the springs *o* and their steady-pins *p*, which serve as dowels for the rings *c d*. Fig. 5 shows a top or bottom view of the piston-head, said views being identical with each other.

The peculiarities of my piston-head consist in the cored piston-head, rendering it very light; in having no follower; the manner in which the steam is admitted, so as to act equally in forcing out every part of the expansible rings; the springs which assist in sustaining the weight of the head; and the projections or lips which diminish the friction. By my method of admitting the steam to expand the rings I attain also the important result of avoiding all slat of said rings, the pressure upon them being directly from behind, as stated.

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

The arrangement, in a piston-head without a follower, of expansible rings *c d*, steam-ports *e e'*, each having double passages *f g* at right angles thereto, connecting with annular grooves *h i*, substantially as set forth and described.

O. S. HOWARD.

Witnesses:

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