N. FOUST

Piston for Steam Engines.

No. 201,661. **Patented March 26, 1878.**

Fig. 1.

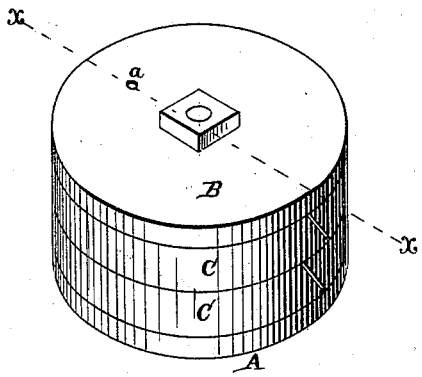


Fig. 2.

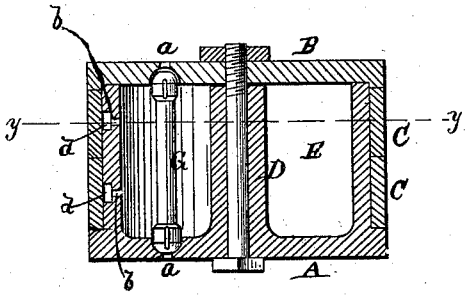
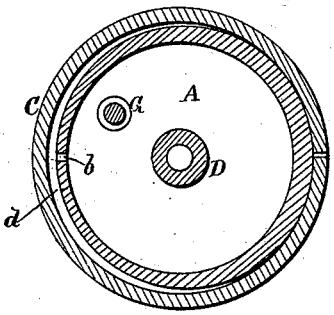


Fig. 3.



WITNESSES

Henry N. Miller

Frank Gall

INVENTOR

Nathaniel Foust,

Alexander Mason

ATTORNEYS

UNITED STATES PATENT OFFICE.

NATHANIEL FOUST, OF EDENBURG, PENNSYLVANIA.

IMPROVEMENT IN PISTONS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **201,661**, dated March 26, 1878; application filed July 19, 1877.

To all whom it may concern:

Be it known that I, NATHANIEL FOUST, of Edenburg, in the county of Clarion and State of Pennsylvania, have invented certain new and useful Improvements in Piston-Heads; and 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, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a piston for steam-engines, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a perspective view of my improved piston; Fig. 2, a section of the same through the line *x x*, Fig. 1; and Fig. 3, a section through the line *y y*, Fig. 2.

My piston is composed of a cup, A, with head or cover B and split or open rings C C, surrounding the body of the cup or piston.

In the center of the cup A is formed a hollow post, D, through which the piston-rod is passed, and fastened by a nut on the end, whereby the head B is also secured in place. An annular chamber, E, is thus formed inside of the piston.

In the heads of the piston are made valve-openings *a a*, directly opposite each other, said valve-openings being countersunk on the inside, as shown in Fig. 2.

G is a double valve, placed in these countersinks and guided by them, to admit steam into the chamber E from either end, according to which side the steam is acting on, and, of course, close the other opening.

In the under side of the piston A are made ports *b b*, which open into eccentric grooves *d d* made in the exterior surface of the piston. These grooves are the deepest on the under side of the piston, where the ports *b* enter, and extend up a suitable distance on either side, gradually diminishing or decreasing in depth.

The eccentric grooves *d d* may equally as well be made in the inner surfaces of the rings C C.

The steam enters the chamber E at each stroke or dead-center of the engine, and thence passes into the eccentric grooves *d*, forcing the rings outward and packing the piston.

It will be understood that the piston-head is at all times full of steam, which, of course, exerts an equal pressure in all directions; hence the piston rests on the bottom of the cylinder simply with the force of its own weight. The steam escaping through the bottom of the piston into the eccentric grooves naturally draws the packing-rings downward, making a tight joint at the top between said rings and the piston, so that the steam cannot pass entirely around the piston.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination of the hollow piston A B, provided on its under side with ports *b*, and in its exterior with grooves *d*, tapering from the bottom toward both sides and extending only partially around the piston, the packing-rings C, and interior valve G, all constructed substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 29th day of June, 1877.

NATHANIEL FOUST.

Witnesses:

FRANK GALT,

J. H. WASSON.