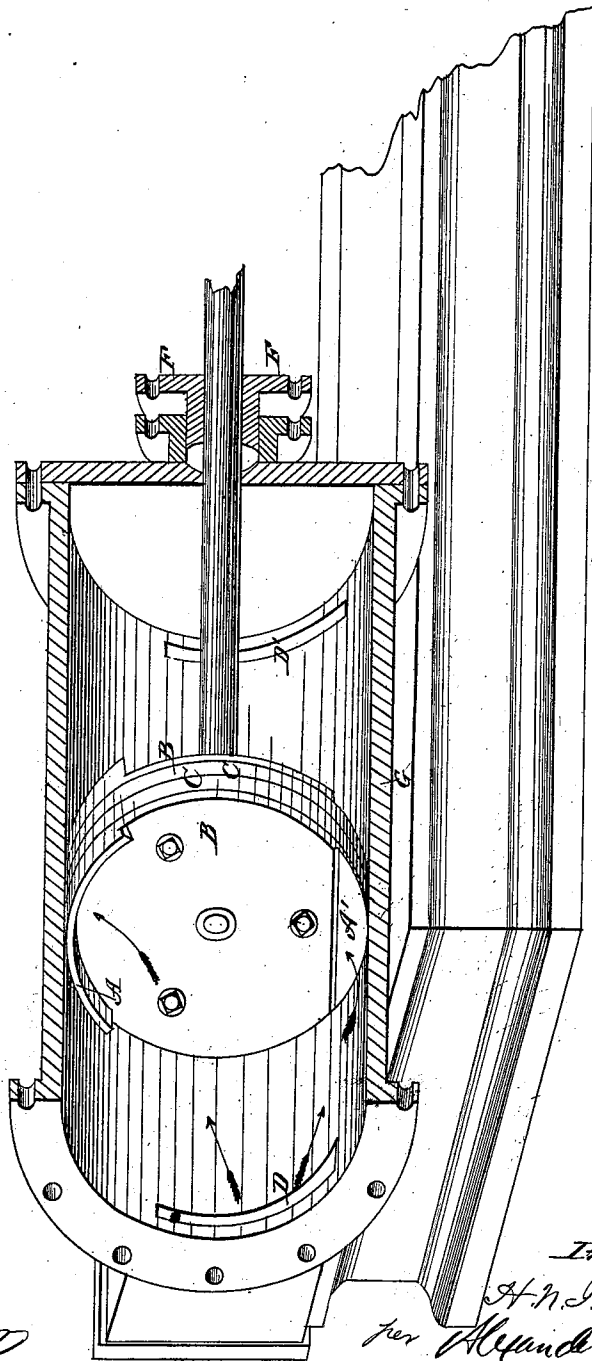


*H. N. J. Mansfield,  
Steam-Engine Piston.*

*No 83,188.*

*Patented Oct. 20, 1868*



*Witnesses:  
Leopold Buch  
C. H. Mann*

*Inventor:  
H. N. J. Mansfield  
per Alexander Wilson  
Atty.*

# United States Patent Office.

H. N. J. MANSFIELD, OF MALONE, NEW YORK.

Letters Patent No. 83,188, dated October 20, 1868.

## IMPROVEMENT IN PISTONS FOR STEAM-ENGINES.

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

### To all whom it may concern:

Be it known that I, H. N. J. MANSFIELD, of Malone, in the county of Franklin, and in the State of New York, have invented certain new and useful Improvements in Pistons for Steam-Engines; 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.

In the present ordinary style of cylinder, horizontal, the whole weight of the piston-head and rod is continually borne by the lower inside of the cylinder, and by the stuffing-box, causing a rapid wear of the lower cylinder, on its bottom and sides, also a wear of the stuffing-box, as well as of the packing-rings and followers of the piston-head. From this it results that the best piston-head soon becomes leaky, and the stuffing-box and cylinder are cut downwards.

The design of my invention is to prevent this wear by constructing the piston-head in the manner hereinafter described, so that there shall be an upward pressure of the steam exactly sufficient to counterbalance the weight of the piston-head and rod.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation, referring to the annexed drawings, which form a part of this specification, and which represent a vertical section of a steam-cylinder, showing my counter-balance on steam-piston.

G is the lower inside of cylinder, on which the piston-head rests and moves, and on which comes the wear of the piston, and which it is the purpose of my improvement to prevent;

B B are the followers of the piston-head;

C C packing-rings of the piston-head;

F, stuffing-box;

D D', steam-ports; and

A A', respectively the upper and lower lips of the follower, which constitute my improvement.

In the drawings, the arrows show the way in which the steam is brought to bear upon the piston.

The steam entering through the steam-port D passes to A, which is a lip or projecting flange from the follower. This lip should have a surface sufficiently large for the upper pressure of the steam to counterbalance the weight of piston-head and rod.

For example, if the piston-head and rod weigh two hundred pounds, and the engine is run with steam having a pressure of fifty pounds to the square inch, then it is found that a lip having a surface of four inches, will allow an upward pressure of two hundred pounds, just sufficient to balance the gravity of the piston, and permitting it to move backwards and forwards comparatively free from friction, and without wearing the cylinder or box.

In new-made cylinders, the lip A is sufficient to accomplish the purpose.

In old cylinders, which have been worn down, and where steam might easily pass above the lip A, the purpose is accomplished by making a lip, A', at the bottom of the follower, by taking out or sinking a segment of its surface, as shown in the drawing, or both lips may be used on the follower at the same time, and the upward pressure divided between the two lips.

This improvement is applicable for all horizontal cylinders, for air, steam, or water.

Having thus fully described my invention,

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

The construction of the piston-head for horizontal cylinders, with the projecting lip A and indentation A', near its periphery, whereby to obtain upward pressure of steam, all substantially as herein set forth.

In testimony that I claim the foregoing, I have hereunto set my hand, this 25th day of August, 1868.

Witnesses:

H. N. J. MANSFIELD.

ROYAL CORBIN,  
J. H. MOORE.