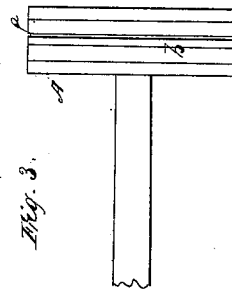
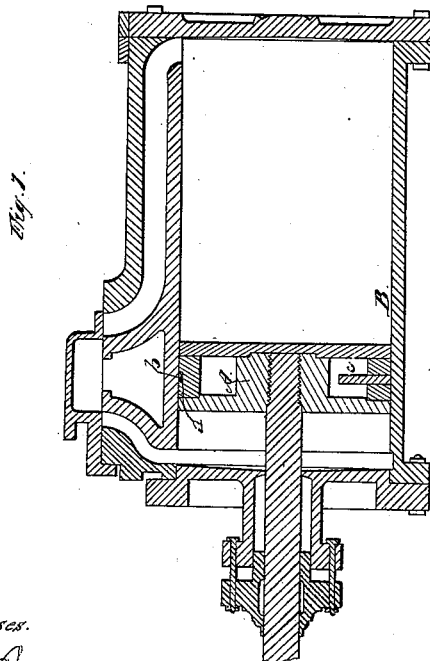
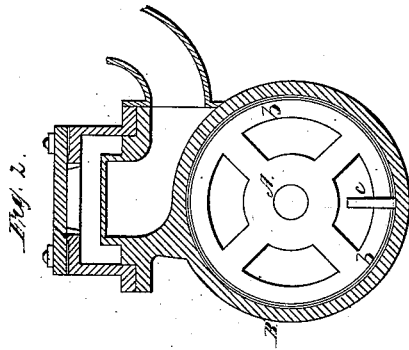


N. P. Sterens,
Steam-Engine Piston.

N^o 48,851.

Patented July 18, 1865.



Witnesses.

A. D. Gale of
W. E. Fisher

Inventor.

Nathan P. Sterens,
by his attorney,
R. W. Leland,

UNITED STATES PATENT OFFICE.

NATHAN P. STEVENS, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN PISTONS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. 48,851, dated July 18, 1865.

To all whom it may concern:

Be it known that I, NATHAN P. STEVENS, of Boston, in the county of Suffolk and State of Massachusetts, have made a new and useful invention having reference to engine-cylinders and expansion-pistons used therein; 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 longitudinal section, and Fig. 2 a transverse section, of an engine cylinder and piston provided with my invention. Fig. 3 is a side view of the piston. Fig. 4 is an edge view of the ring separate from the piston.

The expansive-piston to which my invention is applicable is represented at A and the engine-cylinder at B in the said figures; the head of the piston having a groove, *a*, in and around its circumference, such groove being for the reception of a split ring or annulus, *b*, which has a width a very little less than that of the groove, both ring and groove being rectangular in their transverse sections. In order to prevent the ring from turning around in the groove I employ a pin or projection, *c*, to extend from the piston-head into the ring or between its ends. Where the said pin or projection goes between the ends of the ring each of them may be hollowed out or made with a semicircular or other proper-shaped cavity to receive and fit to the pin.

The nature of my invention consists in the combination of the said pin or projection or its equivalent with the split expansion-ring and the piston, when the ring is arranged in a groove in the piston-head, as specified; also, in the arrangement of the joint of the expansion-ring on the bottom or lower surface of the bore of the engine-cylinder containing the piston, whether the axis of the cylinder be horizontal or inclined to the horizon, the same being so that the weight of the piston and the pressure of the steam tending to force the piston downward may co-operate with the lower surfaces of the piston and bore of the cylinder in breaking the joint or open spaces at the ends of the ring and keeping the steam from blowing through such joint or space.

In the drawings, the engine-piston is shown as having the joint of the expansive ring arranged at the bottom of the piston-head and on the bore of the cylinder. The ring is also exhibited as provided under such connection with the pin or projection *c*, extending from the piston-head and between the ends of the ring, in order to prevent the said ring from so turning around in the piston-head as to materially vary the positions of the ends of the ring with respect to the bottom of the piston-head and the bottom of the bore of the cylinder.

With an expansive ring so made and applied to a piston and its cylinder the steam, when pressing against either end of the piston-head in order to move the piston, will pass underneath the packing or expansion ring and expand it against the bore of the cylinder, so as to prevent the passage of steam by the said packing-ring. Were the joint of the ring at the top of the piston-head the steam would blow through the joint, for the reason that the diameter of the piston-head has to be somewhat less than that of the bore of the cylinder, and therefore there will be space between the upper part of the piston-head and the contiguous surface of the bore. As the piston-head at its bottom will be in contact with the bore, no such space will be formed immediately at the place of contact, and here it is that I arrange the opening of the ring, and thus by such arrangement of it I cause it to be so covered that no steam can pass through it.

What, therefore, I claim as my invention is—

Arranging the joint of the expansion-ring at the lower part of the piston-head and on the bottom of the bore of the cylinder, and providing such ring and piston with a means of preventing the ring from revolving in its groove, the whole being substantially as and for the purpose set forth.

N. P. STEVENS.

Witnesses:

R. H. EDDY,
F. P. HALE, Jr.