

S. W. Hudson,
Steam-Engine Attachment,
No 68,748, *Patented Sep. 10, 1867.*

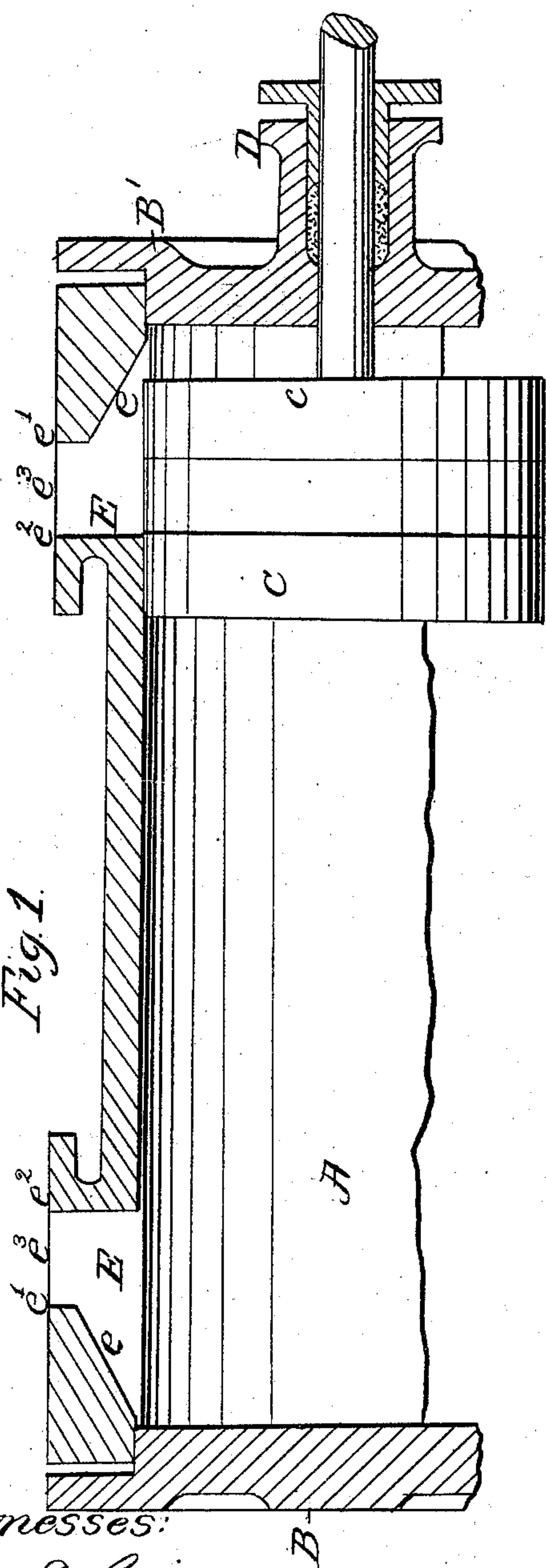


Fig. 1.

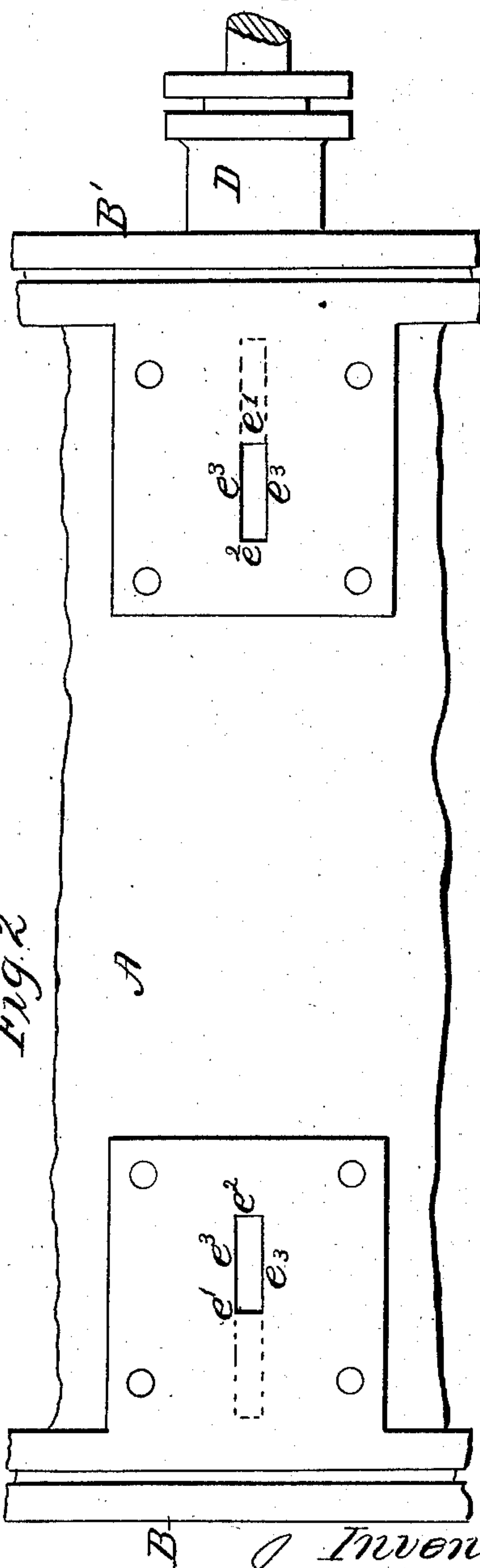


Fig. 2.

Witnesses:
Chas. D. Smith
J. W. Bowen

Inventor:
Samuel W. Hudson
By Kingsbury
Attorneys

United States Patent Office.

SAMUEL W. HUDSON, OF BEAVER MEADOW, PENNSYLVANIA.

Letters Patent No. 68,748, dated September 10, 1867.

IMPROVEMENT IN 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, SAMUEL W. HUDSON, of Beaver Meadow, in the county of Carbon, and State of Pennsylvania, have invented a new and useful Steam-Port; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which are made a part of this specification.

The subject of this invention is a steam-cylinder, the ports of which are constructed with vertically oblique passages and with sides parallel to the axis of the cylinder, the object being to introduce the steam and apply the pressure in a gradually-increasing ratio during the first part of the piston's movement, this provision being especially beneficial in cases where the piston acts directly without the intervention of a fly-wheel or other means for insuring a uniform motion, as in direct-acting steam-pumps, blowers, &c.

Figure 1 is a vertical longitudinal section of a steam-cylinder and side elevation of the piston.

Figure 2 is a plan of the cylinder.

Similar letters of reference indicate corresponding parts in the two figures.

In the drawings, A is the cylinder and B B' the cylinder-heads; C the piston, and D the customary stuffing-box through which the piston-rod works. E E are the ports or openings through which the steam is admitted to and discharged from the interior of the cylinder. That side or wall of each steam-port which is nearest to the adjacent end of the cylinder is oblique vertically from its lower terminus to a point in somewhat close proximity to the upper or outer edge of the port where the said oblique part *e* may join the vertical part *e'*, as seen in fig. 1. The part *e'* and the diametrically opposite wall *e''* form the ends of the steam-port, the sides *e'' e'''* being parallel with the axis of the cylinder. Let it be supposed that the piston C is moving toward the cylinder-head B, and that it has reached the position represented in fig. 1. By reason of the above-described construction it is apparent that under this position of the piston the port E will admit less steam to the cylinder than it would under the ordinary construction. During the first part of the piston's movement the oblique portion *e* of the side *e e'* effects a diminution in the quantity of steam admitted to the cylinder by as much as the difference between the distance from the top of face *e* and the nearest point on *e*, and between the face *e* and the lower extremity of *e*, the latter measurement denoting the capacity of a steam-passage having all its sides vertical, as in the ordinary construction. Hence, as the piston gradually uncovers the steam-port E, the steam, entering at first in a very limited quantity, is supplied in a constantly-increasing ratio until the face *e* of the piston reaches the vertical plane of *e'*, when the continued motion of the piston completely opens the port and permits the entrance of as much steam as the capacity of the port will admit of. By making the sides *e'' e'''* of the oblong steam-port E parallel with the axis of the cylinder I provide a further means of supplying the steam more gradually to the cylinder, as the port thus made will be opened to a smaller extent in a given time than a port having its long sides at right angles to the axis of the cylinder.

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

1. The narrow steam-openings E E, arranged lengthwise on the interior surface of the cylinder, so as to be gradually uncovered by the motion of the steam-piston, as herein described.
2. A vertically oblique wall or side *e* to the steam-port, to adapt the steam-passage to enlarge in an increasing ratio as said passage is opened by the piston for the admission of steam to the cylinder, substantially as described.

To the above specification of my invention I have signed my hand this 20th day of June, 1867.

SAMUEL W. HUDSON.

Witnesses:

OCTAVIUS KNIGHT,
JAMES L. EWIN.