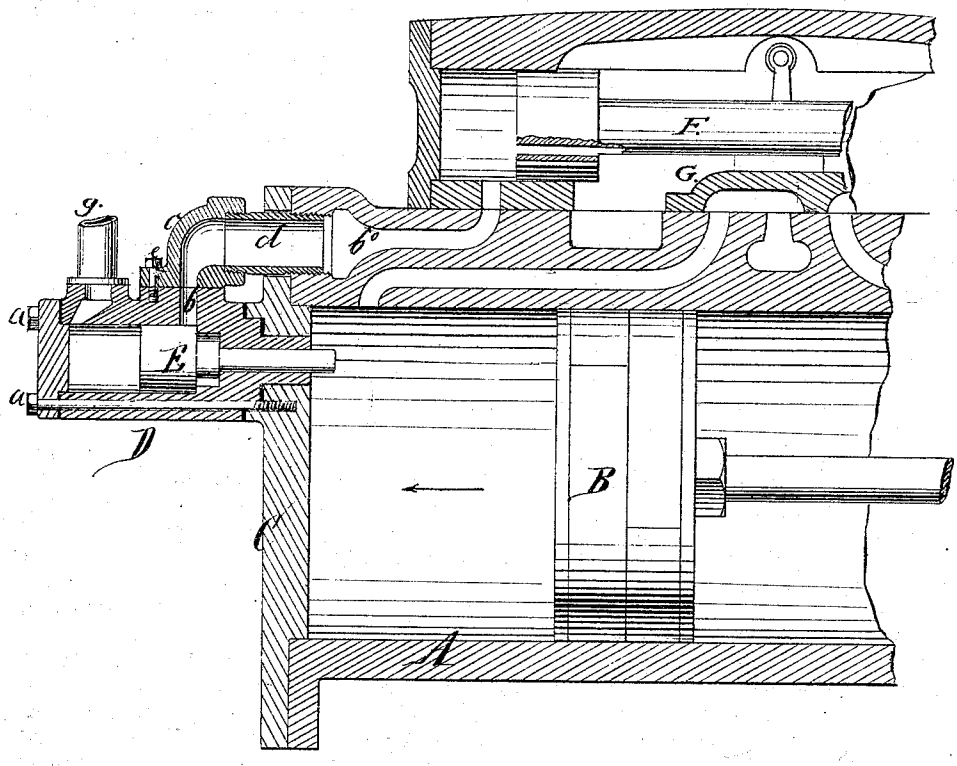
A. S. CAMERON.

Valve-Gears for Steam-Engines.

No. 147,478. Patented Feb. 17, 1874.



Witnesses:
Ernst Bilhuber.
Henry Gennert.

Inventor:
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UNITED STATES PATENT OFFICE.

ADAM S. CAMERON, OF NEW YORK, N. Y.

IMPROVEMENT IN VALVE-GEARS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **147,478**, dated February 17, 1874; application filed December 3, 1873.

To all whom it may concern:

Be it known that I, ADAM S. CAMERON, of the city, county, and State of New York, have invented a new and useful Improvement in Valve-Gear for Steam-Engines; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, which drawing represents a longitudinal section of my improvement.

This invention relates to an improvement on a valve-gear for steam-engines for which Letters Patent were granted to me October 3, 1865, No. 50,218, and which consisted, principally, in the arrangement of valves in valve-chambers attached to the cylinder-heads, said valve-chambers being made to connect with supplementary cylinders in the steam-chest, while the stems of the valves project into the main cylinder, in such a manner that whenever the main piston approaches the end of its stroke one of the valves is moved, and thereby the supplementary pistons in the steam-chest are caused to change their position, and the slide-valve is made to change the steam from one side of the main piston to the other.

My present improvement consists in the arrangement of valve-chambers in castings separate from the cylinder-heads, said castings being fastened to the cylinder-heads by screws or other suitable means, in such a manner that the construction of the mechanism is materially simplified, and that the valve-chambers can be taken off, repaired, and replaced without disturbing the cylinder-heads.

In the drawing, the letter A designates a steam-cylinder, in which is fitted the main piston B. On each of the heads C of this steam-cylinder is secured a valve-chamber, D, which contains a valve, E, the stem of which projects through the cylinder-head, so that whenever the main piston strikes one of said stems the equilibrium of the auxiliary piston F of the steam-chest is disturbed, and the steam is changed, as I have fully explained in my Patent No. 50,218, above mentioned. The valve-chambers D are formed in separate castings, which are fastened to the cylinder-heads C by means of bolts *a*, and said valve-chambers communicate with the steam-chest by means of channels *b*, which connect with chambers b^o in the side wall of the main cylinder by means of elbow-joints *c* and pipes *d*, said elbow-joints being secured to the valve-chambers D by screws *e*, so that by removing these screws, and taking out the bolts *a*, each of the valve-chambers D can be readily removed without disturbing the cylinder-head.

The great advantage arising from this construction will be apparent to practical machinists. If either of the valve-chambers wears out, or if one of the valves requires to be refitted, this operation can be easily performed simply by removing the valve-chamber, and I am enabled to substitute a new valve-chamber for an old one with little trouble or expense, since all the other parts and connections can remain undisturbed.

If the piston B moves in the direction of the arrow marked near it, when it strikes the stem of the reversing-valve E, the space on the left-hand end of the plunger F is exhausted by the passage b^o *d b*, which at that instant is brought to communicate with exhaust-port in the piston F. The greater pressure inside of the steam-chest changes the position of the piston F and slide-valve G, and the motion of the piston B is reversed. The same operation repeated at each stroke makes the motion continuous. The reversing-valves E are closed by a pressure of steam on their outer ends, conveyed through the pipes *g*, which communicate with the steam-space of the valve-chest or of the boiler.

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

The arrangement of valve-chambers D, containing tappet-valves E, said valve-chambers being formed in castings separate from the cylinder-heads, substantially in the manner herein shown and described.

ADAM S. CAMERON.

Witnesses:
W. HAUFF,
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