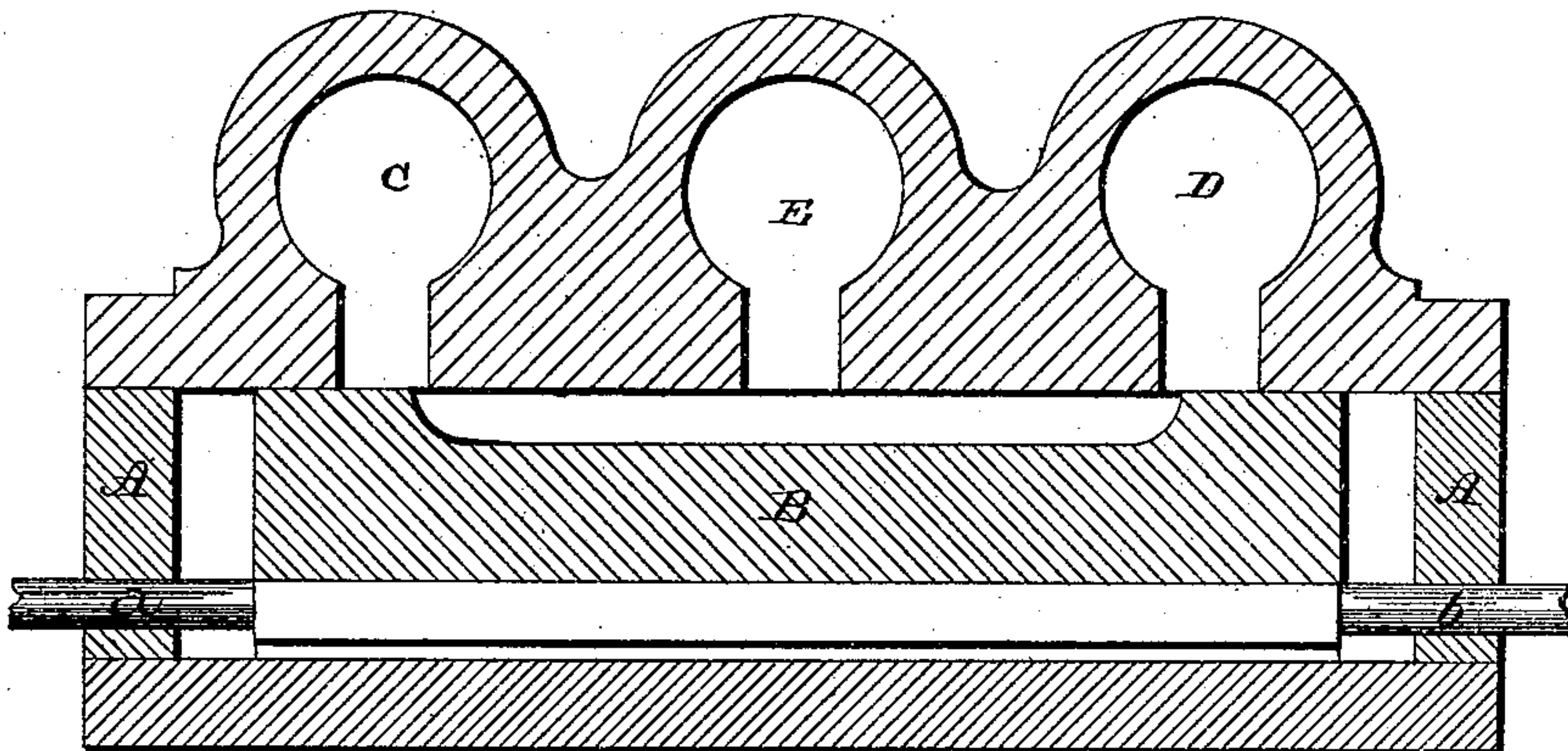


R. H. CARTER.
Slide-Valve for Steam-Engines.

No. 226,715.

Patented April 20, 1880.



Witnesses=

W. W. Mortimer

Chas. H. Scham

Inventor=

Robt. H. Carter

per

F. A. Lehmann,

Atty

UNITED STATES PATENT OFFICE.

ROBERT H. CARTER, OF PITTSBURG, PENNSYLVANIA.

SLIDE-VALVE FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 226,715, dated April 20, 1880.

Application filed February 13, 1880.

To all whom it may concern:

Be it known that I, ROBERT H. CARTER, of
Pittsburg, in the county of Allegheny and State
of Pennsylvania, have invented certain new
and useful Improvements in Slide-Valves for
Steam-Engines; and I do hereby declare the
following to be a full, clear, and exact descrip-
tion of the invention, such as will enable others
skilled in the art to which it pertains to make
and use it, reference being had to the accom-
panying drawing, which form part of this
specification.

My invention relates to an improvement in
steam-engines; and it consists in the applica-
tion of a slide-valve to the exhaust of the cyl-
inder, which valve is operated by the engine.
The said valve opens and shuts alternately the
escape-pipe and a pipe leading to a vacuum-
chamber, in which the steam remaining in the
cylinder is condensed, as will be fully described
hereinafter.

The accompanying drawing represents my
invention.

A represents a box containing a slide-valve,
B, that may be of any suitable form or con-
struction. The valve is held in its position
and connected with the motive power by rods
a b, that are guided in holes at the ends of the
box, allowing the valve to move from side to
side, so as to alternately close and open the
lower ends of two pipes, C and D.

The valve B is acted upon by the engine,
and allows the steam to escape to the atmos-
phere through the pipe C, while the pipe D,
leading to the vacuum chamber or condenser,
is closed.

The connection between the cylinder of the
engine and the box A is made by means of a
pipe, E, for the passage of the exhaust-steam
from the cylinder. By the returned action of
the engine the valve closes the escape-pipe C
and opens the pipe D, communicating with
the vacuum chamber or condenser.

Acted upon by the vacuum, the steam re-
maining in the cylinder behind the piston
rushes suddenly up into the condenser and is
condensed, whereby the resistance to the re-
turning piston is removed.

The advantage gained by my invention is
that all the remaining steam in the cylinder,
after the greater mass has been allowed to es-
cape, is condensed, and instead of resisting the
returning motion of the piston, rather assists
it by the vacuum created.

A steam-engine, be it of high or low press-
ure, can thus be worked to its full capacity,
and if in a low-pressure or condensing engine
the surplus steam be allowed to escape and
only the steam remaining in the cylinder be
condensed, the size of the vacuum-chamber
and air-pumps and the quantity of water re-
quired to produce a vacuum may be greatly
reduced.

I am aware that a slide-valve having a num-
ber of openings through it, and which open-
ings are made to register with others in the
frame, is not new, and this I disclaim.

I am also aware that a vertically-moving
valve placed at the junction of two pipes is
not new, and this I also disclaim.

Having thus described my invention, I
claim—

In a steam-engine, the combination of an in-
closing-case, A, provided with a cover, in which
the three pipes C D E are formed in a single
piece, with the slide-valve B, having a recess
in its top sufficiently long to be always in com-
munication with the central pipe, E, and the
one C or D, substantially as shown.

In testimony that I claim the foregoing I
have hereunto set my hand this 7th day of
February, 1880.

ROBT. H. CARTER.

Witnesses:

T. F. LEHMANN,
CHAS. H. ISHAM.