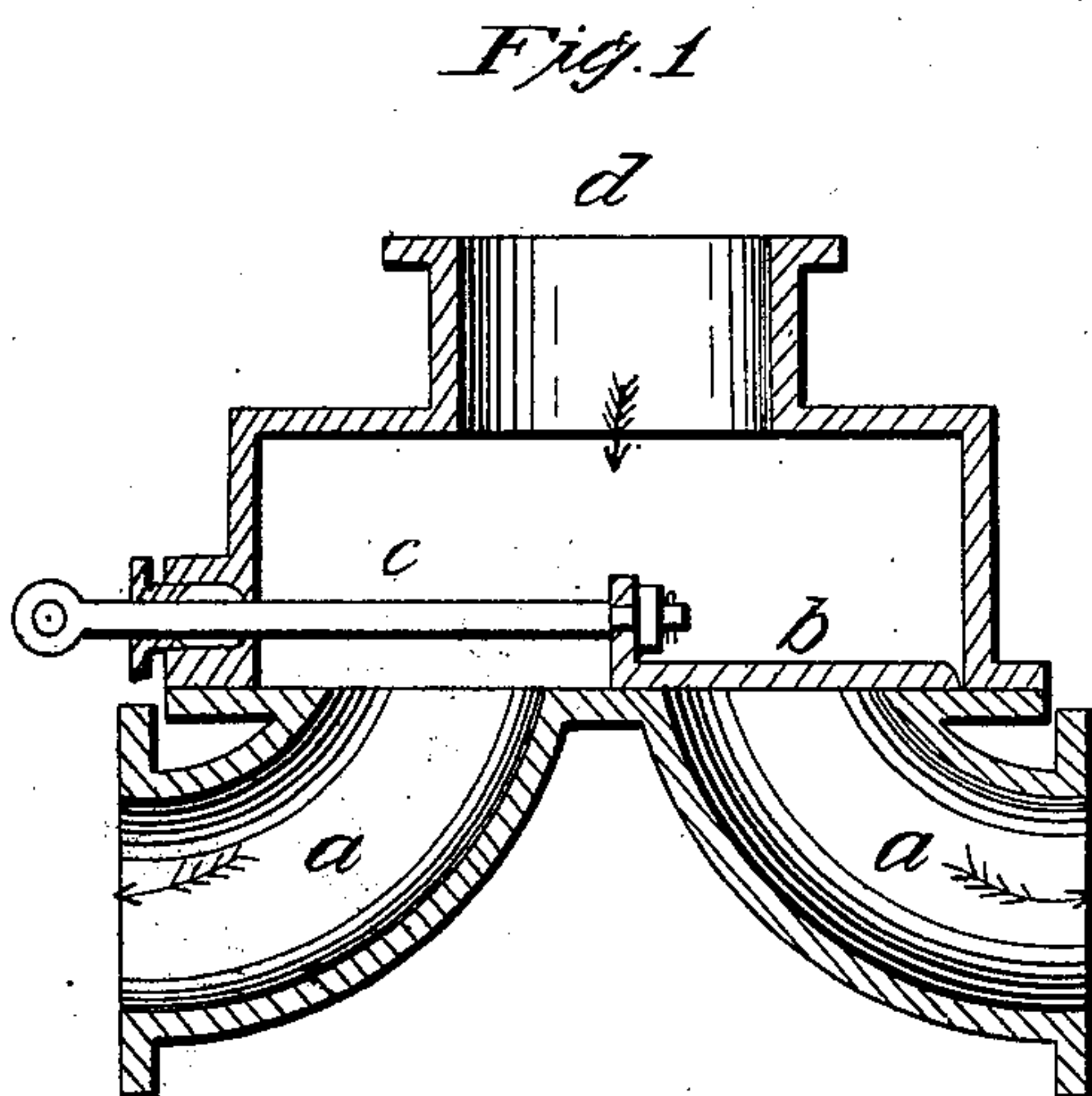


E. Garfield,
Exhaust Mechanism for Locomotives.
N^o 71,159. Patented Nov. 19, 1867.



Witnesses:

A. C. Wilder.

Jermy W. Bay's

Inventor:

Edwin Garfield

United States Patent Office.

EDWIN GARFIELD, OF HARTFORD, CONNECTICUT.

Letters Patent No. 71,159, dated November 19, 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, EDWIN GARFIELD, of the city and county of Hartford, and State of Connecticut, have invented certain new and useful Improvements in the Mode of Exhausting Steam from Steam Engines; and to enable others skilled in the art to make and use it, I will proceed to describe, by referring to the drawings, in which the same letters indicate like parts in each of the figures.

The nature of this invention will be understood from the following:

It consists of a device, by the use of which, in connection with the exhaust-passage of a steam-cylinder, the exhaust steam can be discharged through two distinct passages or pipes into the open air, the smoke-stack, into the water-tank, or condenser.

The object desired to be attained thereby is to place the exhaust-passage of a steam-cylinder in connection with a device whereby said passage is rendered changeable from one direction to the other, and perfectly under the control of the engineer, so that if he be running his engine through a portion of a city whose laws prohibit him from exhausting steam into the smoke-stack or open air, the engineer, on reaching the confines of the city, can instantly change the valve from one port to the other, and thereby change the exhaust steam, which has been passing into the smoke-stack or into the open air, through one passage, so that it will pass through the other passage into a condenser or water-tank without stopping the engine. In the accompanying drawings—

Figure 1 is a section view of a valve, which has a double-exhaust passage, *a a'*, from the main exhaust *d* from the steam-cylinder, one branch of which conducts the steam into the smoke-stack in the common way, and the other conducts it into a condenser or water-tank. One of these passages can always be kept closed by the valve *b*, which is or may be operated by a lever acting upon the valve-rod *c*. This valve-chamber may be made either round or square. Thus, a non-condensing engine can be changed into a condensing engine, or a condensing engine into a non-condensing engine.

The principle as applied to locomotive engines is equally applicable to a stationary engine; and it is particularly valuable in such cases as where it is desirable to use the exhaust steam for steaming or heating purposes.

I believe I have thus shown the nature, construction, and advantage of this improvement so as to enable others skilled in the art to make and use the same therefrom.

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

The valve *b*, in combination with the double exhaust-passage *a a'* and the steam-exhaust port *d*, substantially as and for the purpose described.

EDWIN GARFIELD. [L. S.]

Witnesses:

N. C. WILDER,
JEREMY W. BLISS.