

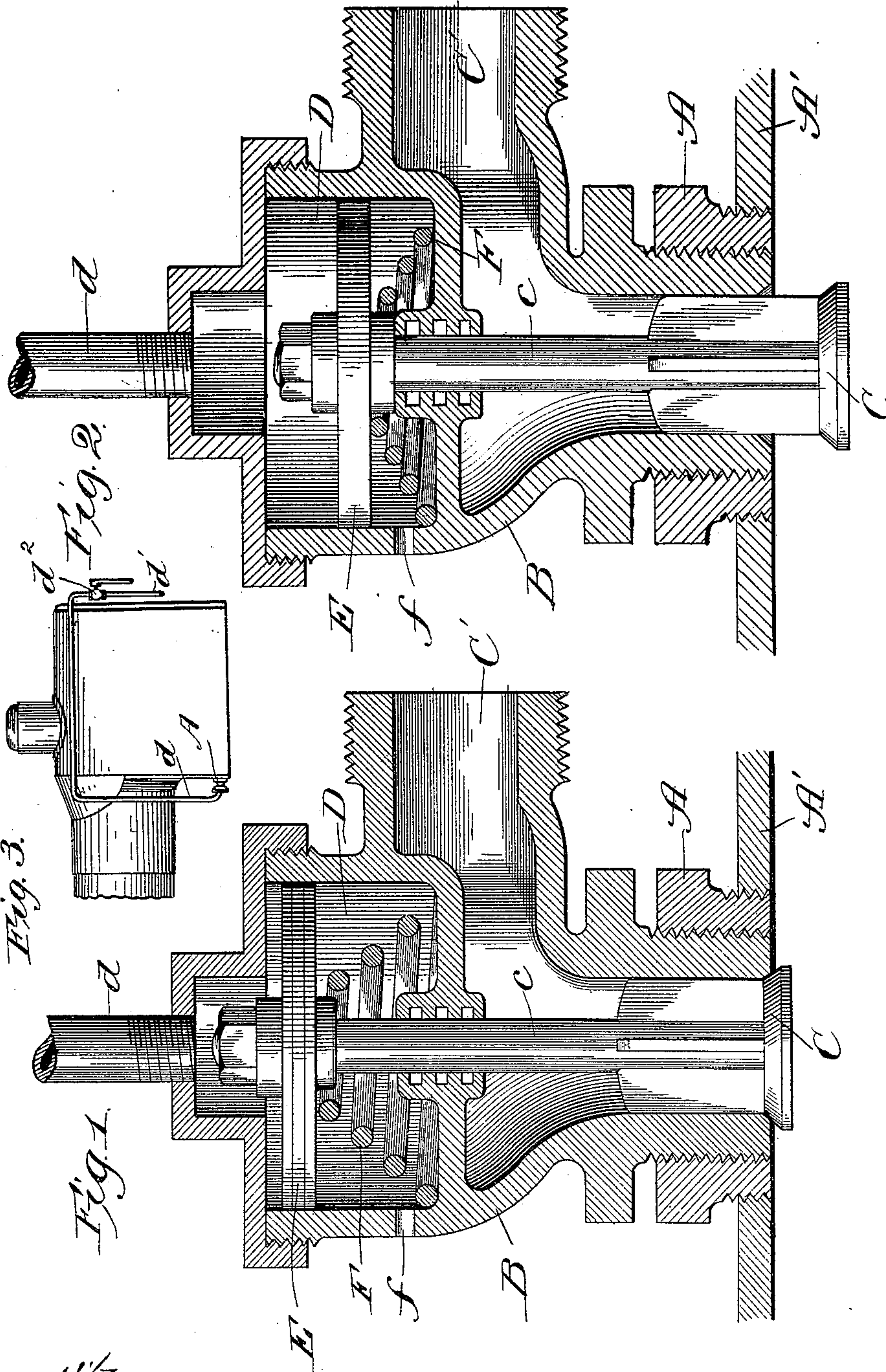
No. 641,790.

Patented Jan. 23, 1900.

W. MCINTOSH.  
BLOW-OFF COCK.

(Application filed Aug. 12, 1895.)

(No Model.)



Witnesses:  
Chas. E. Gaylord  
Lute. J. Patten

Inventor:  
William McIntosh  
By Samuel E. Gibbon Atty



# UNITED STATES PATENT OFFICE.

WILLIAM MCINTOSH, OF WINONA, MINNESOTA.

## BLOW-OFF COCK.

SPECIFICATION forming part of Letters Patent No. 641,790, dated January 23, 1900.

Application filed August 12, 1895. Serial No. 558,951. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM MCINTOSH, residing at Winona, in the county of Winona and State of Minnesota, have invented a new and useful Improvement in Blow-Off Cocks, of which the following is a specification.

The object of my invention is to provide a simple and efficient blow-off device for use in connection with boilers of all kinds and which shall be capable of operation by fluid-pressure mechanism.

In the accompanying drawings, Figure 1 is a central sectional view of my device, showing the blow-off port or discharge-opening closed by the valve. Fig. 2 is a similar view showing the position of parts when the port is open; and Fig. 3, a view of a portion of a locomotive-boiler, showing the arrangement diagrammatically of the fluid-pressure-supply pipe and the engineer's valve.

In the proper discharge-opening or blow-off port in the sheet A' of the boiler I prefer to secure a portion A, which I term a "foundation-plug." A valve-casing B is adapted to screw into this plug and is provided with an inlet-passage communicating with the interior of the boiler and governed by a valve C and with an outlet-passage or exhaust C'. This valve is provided with a stem c, which extends into a fluid-pressure chamber or cylinder D, where the end of the stem is provided with a piston-head E, traveling in such cylinder. The top of the cylinder communicates, by means of the inlet pipe or passage d, with any suitable source of fluid-pressure for the proper operation of the piston-head and valve. The device may therefore be termed a "counter-pressure" blow-off cock. The blow-off cock may obviously be placed in any suitable position on the boiler, and in Fig. 3 I have, for the purpose of illustration, shown it as communicating with the front water-leg. The supply-pipe d communicates with a pipe d', which supplies fluid-pressure, air, or steam, and such communication is under the control of a suitable valve d<sup>2</sup>, operated by the engineer. Fig. 3 shows in diagram these pipes and valve. In the cylinder and below this piston-head I arrange a suitable spring F, whose tension serves to keep the valve and other parts in their normal position, as illustrated in Fig. 1 of the drawings. A suitable bleed or exhaust

opening f is provided in the side of the cylinder to allow the air below the piston-head to escape.

The device, being constructed as above set forth, operates as follows: From his position in the cab or elsewhere, by operating valve d<sup>2</sup>, fluid-pressure is admitted by the engineer or operator through pipe d to the head of the piston, which is caused to travel in the cylinder, and thereby force the valve C from its seat against the boiler-pressure and the tension of the spring F. The parts when in this position of blowing off are clearly illustrated in Fig. 2, wherein it is seen that a direct passage is provided for the steam, water, and impurities to escape from the boiler past the valve and out through the outlet or exhaust passage C'. When the pressure above the piston-head is released, the valve C will be seated both by the boiler-pressure and the spring F.

This invention is particularly applicable to locomotives by reason of the ready and abundant supply of fluid-pressure, and the drawings show the construction of such a device as used for that particular purpose, although I do not intend to restrict myself thereto, as I contemplate using my invention wherever applicable.

My device may be operated by air-pressure from the usual air-drum or by steam-pressure which is independent of that pressure adjacent to the blow-off port of the boiler. In both cases therefore the pressure which operates the fluid-pressure mechanism is derived from an independent source, and I employ the word "independent" in the claims with this meaning.

Although I have described more or less exact forms and details of construction, I do not wish to be understood as limiting myself thereto, except as may be particularly pointed out in some of the claims, as I contemplate changes in form, proportion of parts, and substitution of equivalents as circumstances may suggest or render expedient and without departing from the spirit of my invention.

I claim—

1. In combination with a boiler, a blow-off cock consisting of a valve-casing having a single blow-off port and having a discharge-passage to the atmosphere, a single valve normally closing such passage and alone govern-



ing the direct discharge from the boiler through said single port, a stem for the valve, a cylinder, a piston-head secured to this stem and operating in the cylinder, a source of  
5 fluid-pressure, and a connection between the cylinder and said source of fluid-pressure under control of the engineer or operator, such connection being independent of the valve or its stem.

10 2. In combination with a boiler, a blow-off cock consisting of a valve-casing having a discharge-passage leading from the boiler to the atmosphere and a cylinder, a single valve controlling the discharge-passage, a stem upon  
15 the valve extending into the cylinder, a piston-head secured upon the valve-stem and adapted to travel in the cylinder whereby the valve is directly responsive to the movements of the piston-head and a connection under  
20 the control of the engineer or operator with a source of fluid-pressure for actuating the piston-head, such connection being extraneous of the valve and its stem and independent thereof.

25 3. The combination with a boiler, of a valve-casing having a discharge-passage through the boiler-shell and leading from the boiler to the atmosphere, a single valve controlling the passage and located in the plane of said

shell and adapted to be forced into the boiler, 30 a stem for the valve, a cylinder, a piston-head secured directly upon the valve-stem and adapted to travel in the cylinder when fluid-pressure under control of the engineer is admitted thereto and a connection between the 35 cylinder and a source of fluid-pressure independent of that particular pressure against the valve.

4. The combination with a boiler, of a valve-casing having a single discharge passage and 40 port communicating with the boiler and atmosphere and also provided with an adjacent cylinder D, a stem *c* reciprocating in the discharge-passage and also in the cylinder, a single valve C mounted upon one end of the 45 stem and adapted alone to govern the discharge-passage, a piston-head E secured to the other end of the stem and traveling in the cylinder, a spring F to normally hold the piston-head to its outward limit of movement 50 and a connection *d* with a suitable source of fluid-pressure under the control of the engineer or operator and leading into the cylinder.

WILLIAM MCINTOSH.

Witnesses:

B. A. MAN,

ROBERT C. HILL.