

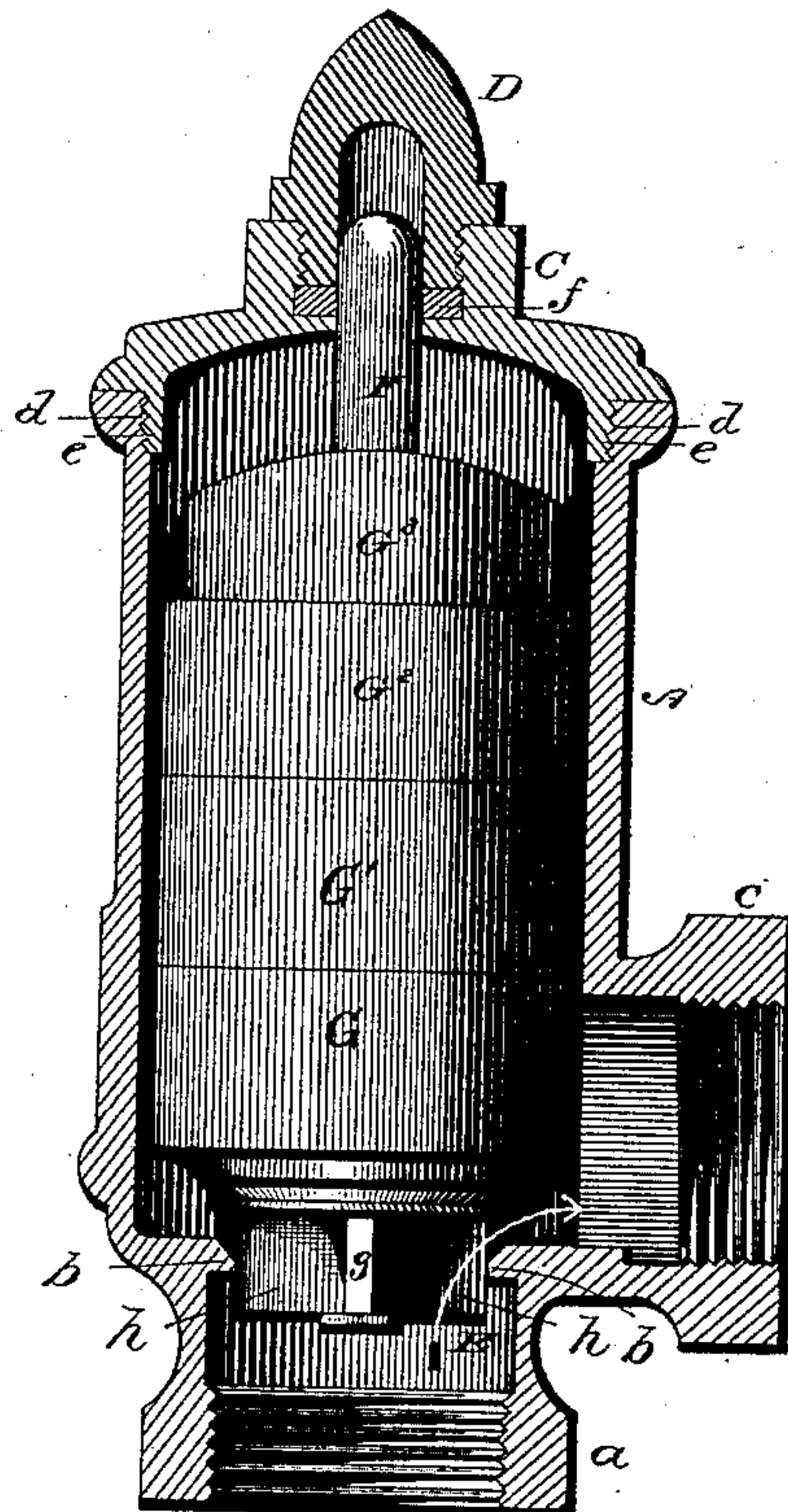
(No Model.)

W. S. PAYNE.

SAFETY VALVE.

No. 338,436.

Patented Mar. 23, 1886.



WITNESSES

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UNITED STATES PATENT OFFICE.

WALTER S. PAYNE, OF FOSTORIA, OHIO, ASSIGNOR TO WALTER S. PAYNE
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SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 338,436, dated March 23, 1886.

Application filed October 28, 1885. Serial No. 181,180. (No model.)

To all whom it may concern:

Be it known that I, WALTER S. PAYNE, a citizen of the United States, residing at Fostoria, in the county of Seneca and State of Ohio, have invented a new and useful Improvement in Safety-Valves, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to low-pressure safety-valves for steam-heating boilers; and it has for its object to improve the construction of the same, whereby the valve will be caused to seat itself square, and steam will be prevented from escaping, except when the pressure within the boiler overcomes the weight of the valve.

With this end in view the said invention consists in certain details of construction and combination of parts, as will be hereinafter set forth, and particularly pointed out in the claims.

In the accompanying drawing the single figure represents a vertical longitudinal section of the safety-valve.

Referring to the drawing, A designates the valve-casing, provided at its lower end with an interiorly-threaded extension, *a*, to connect with the boiler, and a valve-seat, *b*, at the top of the extension. On one side of the casing above the valve-seat is provided an interiorly-threaded extension, *c*, to connect with the exhaust-pipe. The top of the casing is interiorly threaded at *d*, to receive an exteriorly-threaded flange, *e*, provided around the lower edge of the cover B. Projecting upward from the cover is an integral collar, C, which has a brass ring or washer, *f*, seated at its lower portion, and is interiorly threaded above the washer to receive the threaded lower end of the cap D. It will be seen that this cap screws partly within the collar C and works against the washer *f*, the latter serving to make the joint steam-tight, and also guiding the valve-stem, as will be hereinafter explained.

E designates the valve, circular in form, with its under side beveled to fit the seat *b*, and provided with depending guide-flanges *g*, the spaces *h* between which allow for the passage of steam from the boiler to the exhaust-pipe, as indicated by the arrow. The stem F of the valve is cylindrical in form, and is provided with four weights, *G G' G² G³*, each having a central opening to allow the passage of the

stem, all the weights except the top one being of the same diameter, said top weight, *G³*, being smaller, so as to allow its reception within the cover B when the valve rises from its seat. The several weights have a graduated standard of heaviness, so that the pressure of the steam necessary to overcome the valve will be known.

An opening is formed in the cover B, washer *f*, and cap D, providing a passage, *i*, in which works the upper end of the valve-stem, whereby the valve will be caused to seat itself square on the seat *b* when it drops down.

The operation of my invention is as follows: When in its normal position, the valve rests on its seat, with the lower weight, *G*, resting on the valve and holding it shut. Should the pressure of the steam within the boiler become greater than the combined weights, the valve will be forced upward from its seat until the steam is allowed to escape into the exhaust-pipe through the spaces *h* between the guide-flanges *g*. As the valve rises the stem works at its upper end in the passage *i*, so that the moment the pressure of the steam decreases the valve will drop down, the extended upper end of the stem holding the valve in a true vertical position and causing it to be received on its seat. The flanges *g* also guide the valve and prevent it from working laterally or being displaced.

It will be understood that the weights are all concealed in the valve-case, and thus children or mischievous persons cannot alter the weight of the valve. There will be no escape of steam into the cellar, such as is often the case with the present safety-valves on steam-heating boilers.

The construction of the valve is simple and inexpensive, and by the arrangement and combination of parts shown there is very little possibility of its working out of order.

Having described my invention, I claim—

1. The combination of a case, A, a removable cover, B, having an upward hollow extension, C, a hollow cap, D, secured to and within the hollow extension, and a vertically-movable valve-stem arranged within the case and passing through openings in the cover and extension C, and projected into the hollow cap, to be guided therein in its movements, substantially as described.

2. The valve-case A, a detachable perforated cover, B, provided with an integral hollow flange, C, a washer, *f*, seated in the flange, and a hollow cap, D, removably secured in the flange, in combination with a vertically-movable valve-stem arranged within the case, and working through the openings of the cover and washer and projected into the cap, substantially as described.

10 3. In a safety-valve, a case, A, having the threaded extensions *a c*, forming the inlet and outlet ports thereto, and a valve-seat, *b*, intermediate of the ports, a vertically-movable valve-stem having the valve and the depend-

ing guide-flanges *g*, the weights placed vertically on and carried by the valve-stem, a removable cover, B, having a threaded collar, C, and a hollow removable cap, D, screwed into the collar, the upper end of the valve-stem passing through the cover into the cap and guided therein, substantially as described. 15 20

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WALTER S. PAYNE.

Witnesses:

WM. JAEGER,

FLEMING W. MUSSETTER.