

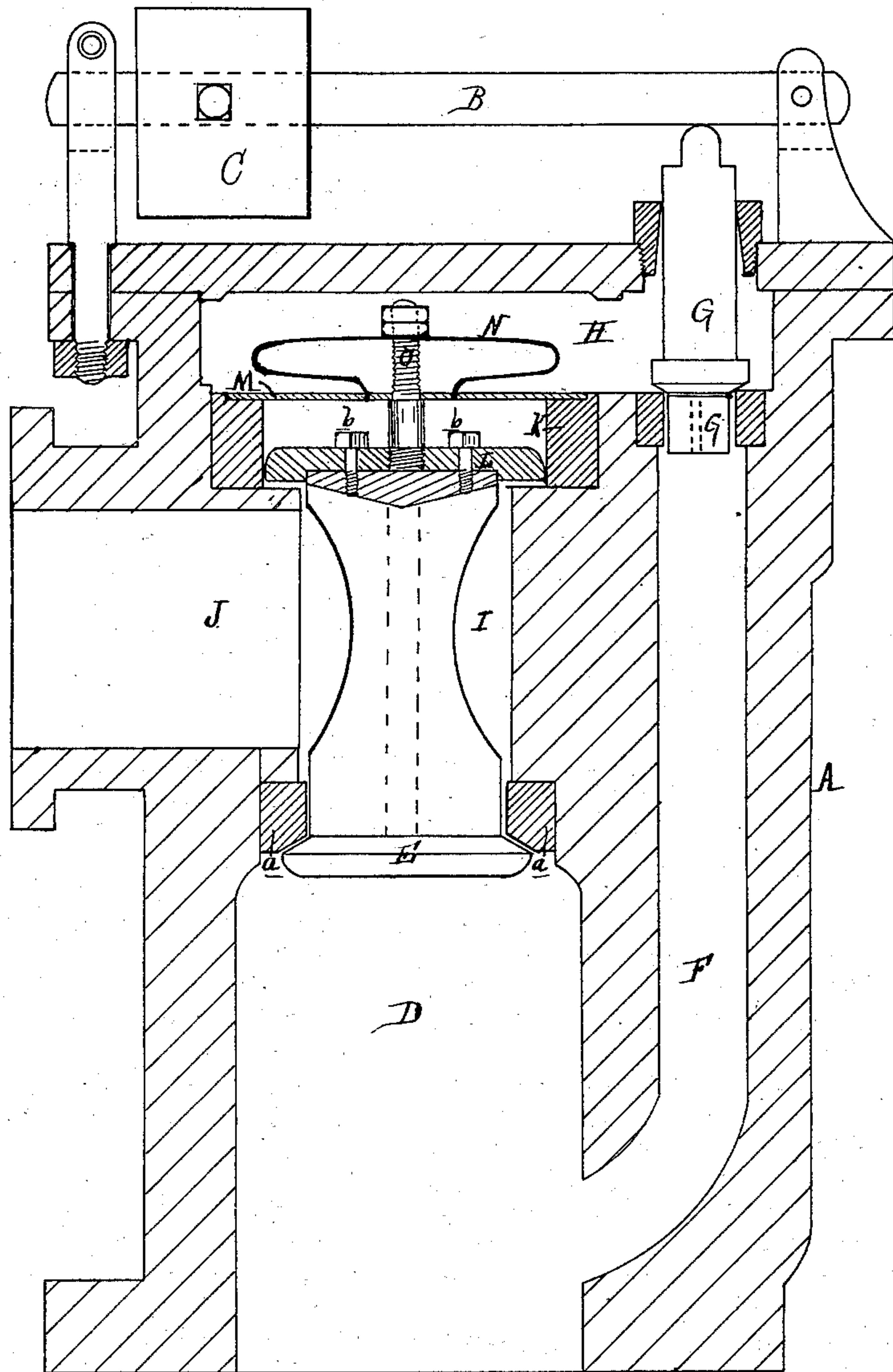
(No Model.)

G. E. COLLIER.

SAFETY VALVE.

No. 268,082.

Patented Nov. 28, 1882.



Attest:  
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# UNITED STATES PATENT OFFICE.

GEORGE E. COLLIER, OF BAY CITY, MICHIGAN.

## SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 268,082, dated November 28, 1882.

Application filed June 10, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE E. COLLIER, of Bay City, in the county of Bay and State of Michigan, have invented new and useful Improvements in Safety-Valves; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

The nature of this invention relates to certain new and useful improvements in the construction and operation of safety-valves for steam-generators; and the invention consists in the peculiar construction, combination, and operation of parts, as more fully hereinafter described.

In the accompanying drawings, which form part of this specification, my invention is shown in vertical central section, wherein A represents the shell or case of the device, upon top of which are secured, in the ordinary manner, the lever B and adjustable weight C. This case or shell A is attached to a steam-generator in any of the known ways, and at the point where it is usual to secure safety-valves. D is a steam-space, having communication with the steam-space in the boiler. The upper part of this steam-space is fitted with a ring-seat, *a*, against which the lower end of the wing-valve E is seated.

F is a steam-passage, in the top of which is seated the wing-valve G, by means of which the passage of steam to the chamber H is cut off when the valve is closed. It will be noticed that the area of the top of this valve G is greater than the area of its lower side, and the movement of the valve itself is controlled by the lever and weight.

I is a steam-passage between the chambers D and H, and communicates with the exhaust-passage J. At the top of this steam-passage I is secured the metallic ring K, which incloses a steam-space of larger area in cross-section than the steam-space I, and this ring acts as a guide to the valve L, which is secured by means of bolts *b* to the top of the wing-valve E, with the edges of the valve L arranged to seat themselves at the bottom of the steam-space surrounded by the ring K. It will be noticed that this valve L, which forms a part of the wing-valve E, and the top thereof, is of con-

siderably larger area than the bottom of said wing-valve. A bar, M, extends centrally across the steam-space surrounded by the ring K, and rests upon the top of said ring, which is rabbeted to receive it, as shown.

N is a spring secured to said bar M, and the upper portion of this spring is secured to the valve below by means of the bolt and nuts O.

In practice, the device being secured to the boiler, and the weight upon the lever being set to allow the boiler to blow off at eighty pounds pressure, when the pressure exceeds that amount this pressure upon the valve G will raise the same and allow the steam to pass into the space H, where, acting upon the greater area on top of the wing-valve E, and aided by the gravity thereof, it will force the upper valve, L, onto its seat, thereby opening the lower end of such valve and allowing the steam to escape through the ring-seat *a* and out at the exhaust-passage J. Whenever the pressure has been relieved below the blowing-off point the weight and lever will close the valve G, when the pressure on the steam-space D, aided by the spring N, will again seat the lower end of the wing-valve E in its seat *a*.

I am aware of Patent No. 96,999, of 1869, issued to Taylor and Coale, and the construction therein set forth is not sought to be covered in this application.

I am aware of the Patent No. 89,461, and I do not therefore claim the construction shown in said patent.

What I claim is—

1. The casing A, having steam-passage F, chambers D and H, and exhaust-passage J, in combination with the valve G, the valves E and L, the latter having the largest area, and the spring N, as and for the purposes specified.

2. The casing A, having steam-passage F, chambers D and H, and exhaust-passage J, combined with the valves G and L, of different area, the ring-seat *a*, the ring K, having cross-bar M, and the spring connected to the valves E L and pressing against the bar M, as specified.

GEORGE E. COLLIER.

Witnesses:

H. S. SPRAGUE,  
E. SCULLY.