

C. M. FARRAR.  
Rotary Balanced Valve.

No. 166,758.

Patented Aug. 17, 1875.

FIG. 1

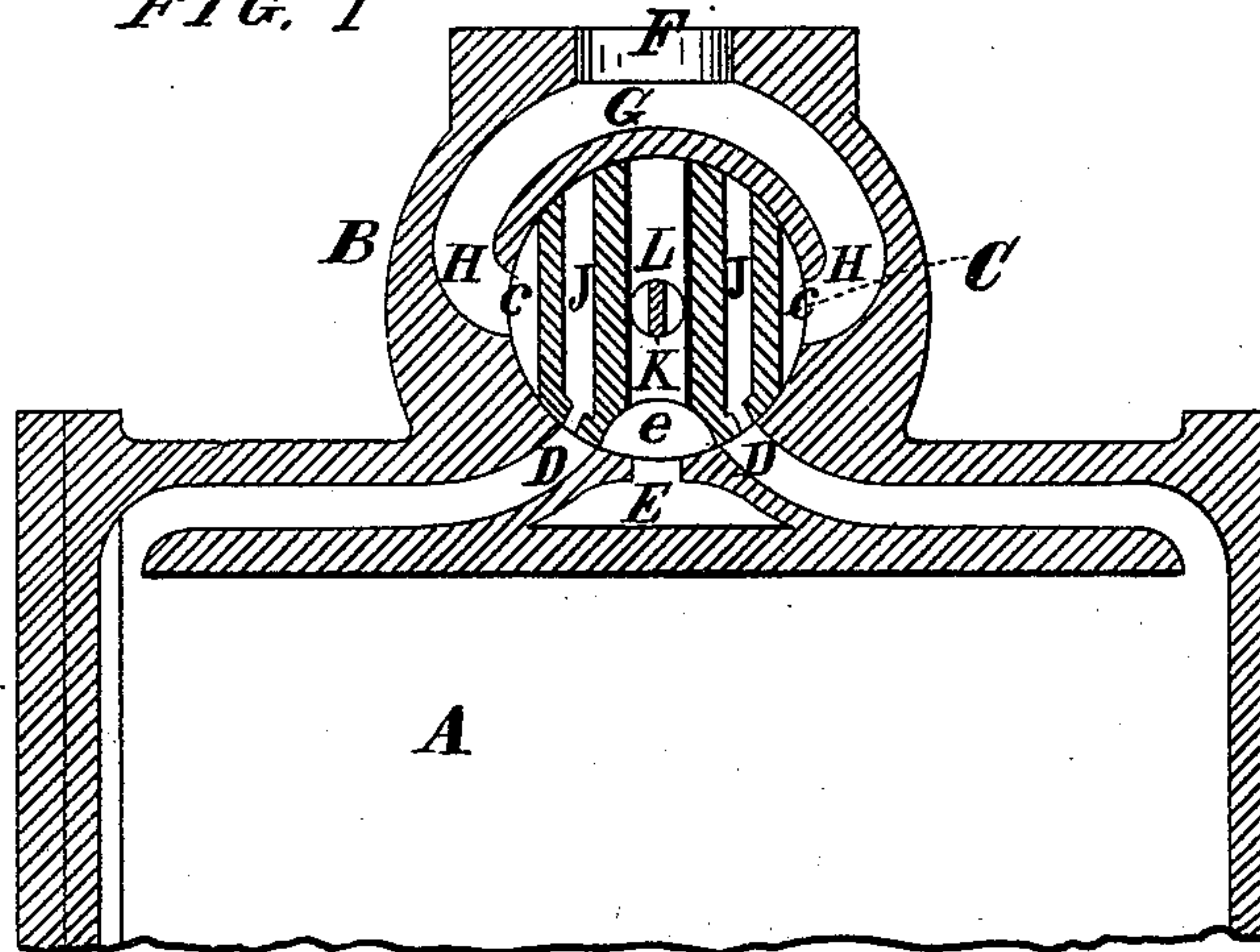


FIG. 2

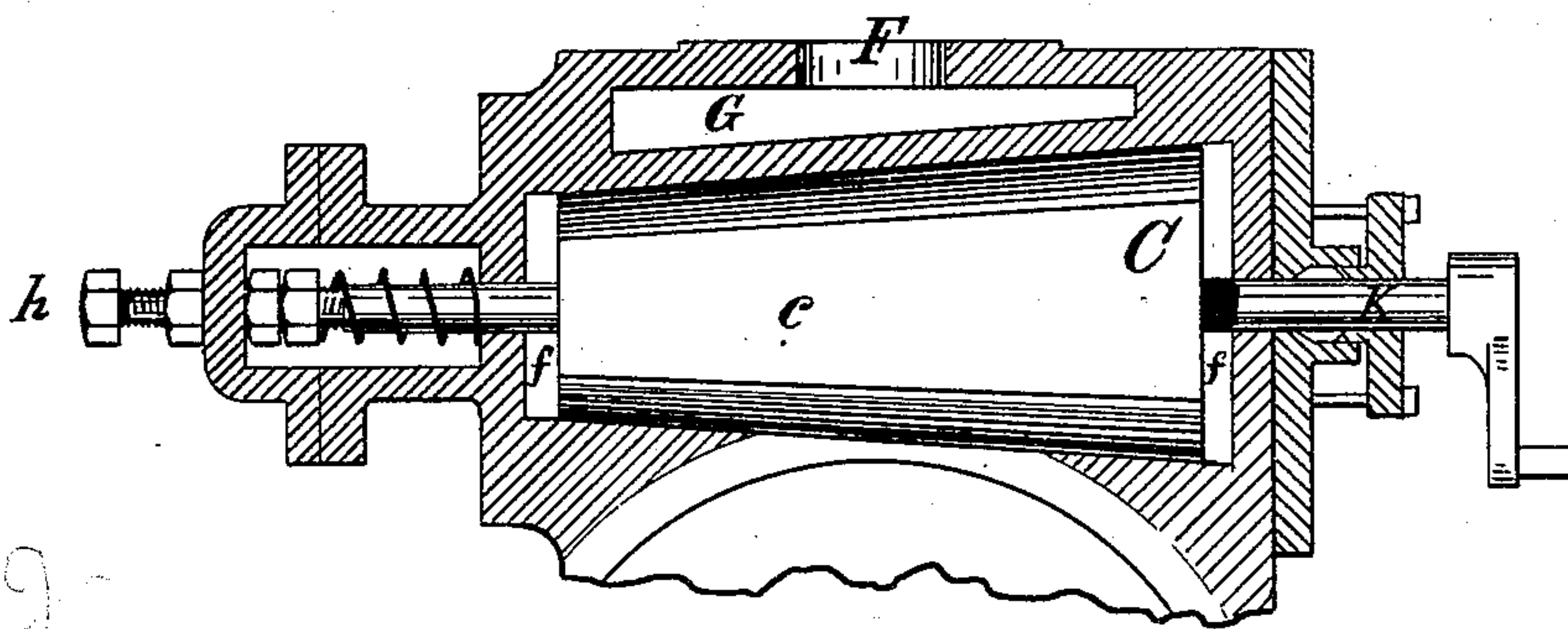


FIG. 3

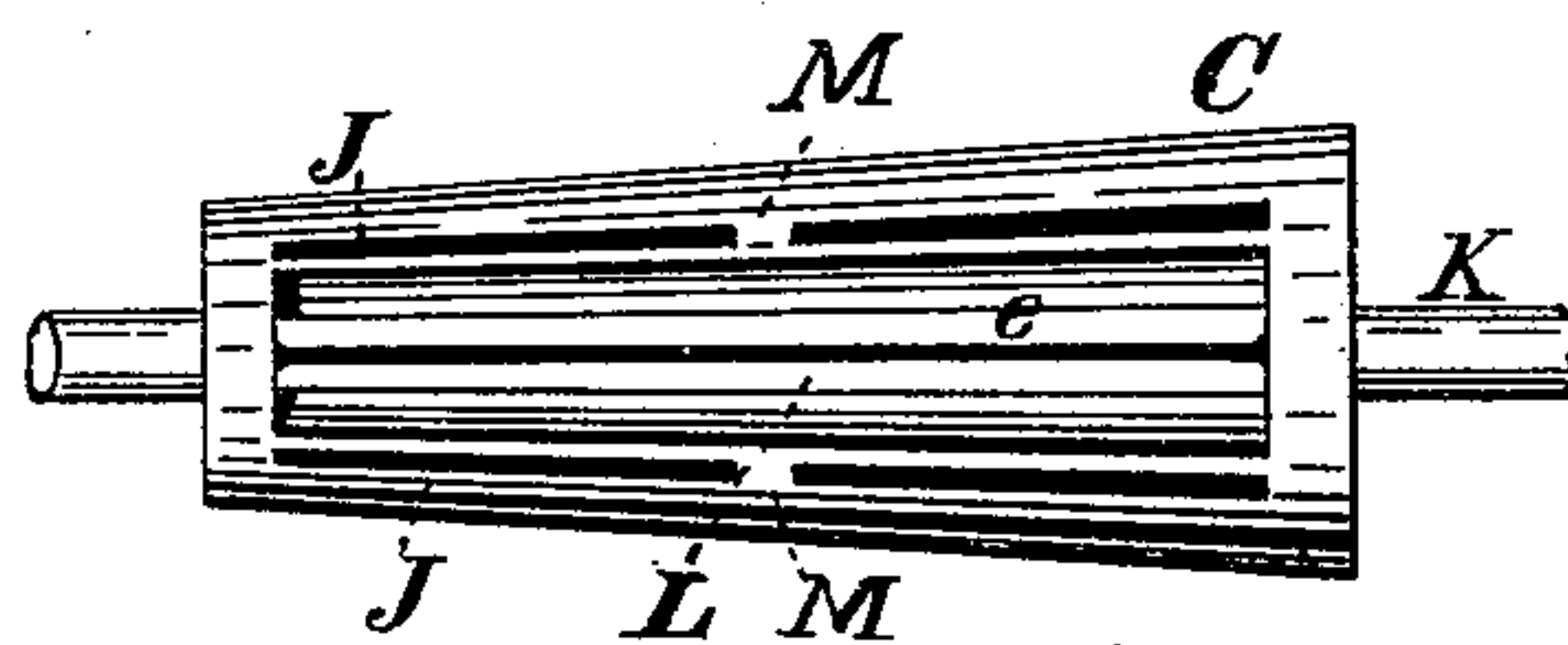
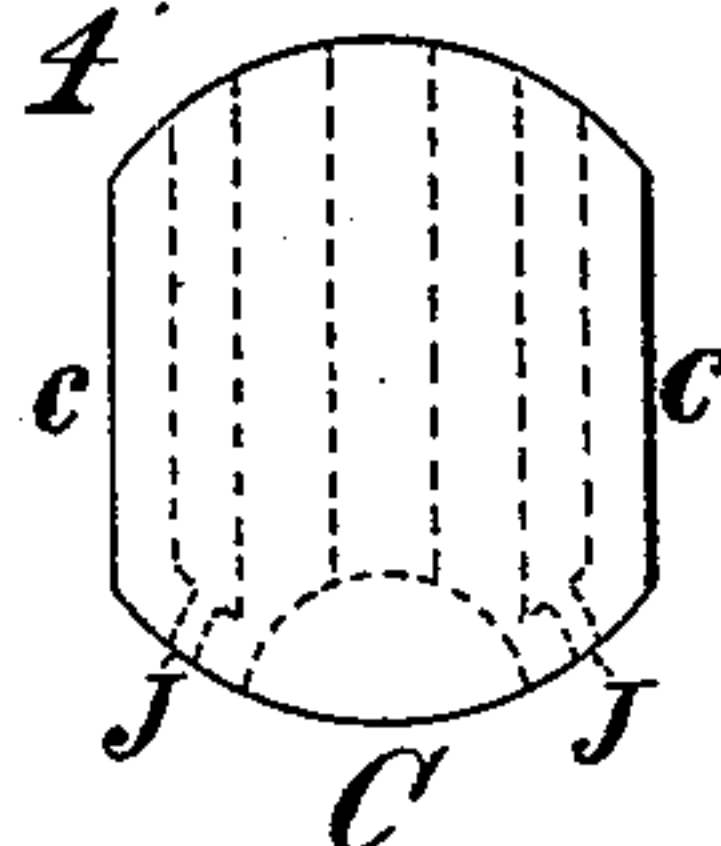


FIG. 4



Witnesses.  
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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN ROTARY BALANCED VALVES.

Specification forming part of Letters Patent No. **166,758**, dated August 17, 1875; application filed June 21, 1875.

*To all whom it may concern:*

Be it known that I, CHILION M. FARRAR, of the city of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Balanced Valves for Steam-Engines, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

This invention consists of a cone-shaped valve having flattened sides, arranged opposite each other, or nearly so, and openings or passages through the same, the whole being combined and arranged for the purpose of admitting the steam in such a manner as to produce, very nearly, an equilibrium, leaving only sufficient pressure to hold the valve to its seat, as will be more clearly shown by reference to the drawings, in which—

Figure 1 is a vertical longitudinal section through a portion of a steam-cylinder, and a cross-section through the valve. Fig. 2 represents a longitudinal section through the steam-chest and a side elevation of the valve, showing one of the flattened sides H. Fig. 3 is a bottom view of the valve; and Fig. 4, an end view of the same, showing by dotted lines the form and arrangement of the openings or passages through it.

In said drawings, A represents the cylinder; B, the steam-chest; C, the valve, which is cone-shaped, as shown, and made to operate as a rolling valve, just sufficient taper being given to it to prevent sticking. D D are the inlet-ports; E, the exhaust-port in the cylinder, and e the exhaust-chamber in the valve. F represents the inlet to the steam-chest, and from thence to the valve through the cham-

ber G. K is the valve-rod; it is flattened where it passes through the passage L, as shown in Figs. 1 and 3, so as to leave room on each side for the passage of steam. J L J are the passages or openings through the valve, and c c the flattened sides of the same. M M are two braces, arranged within the passages J J, for the purpose of strengthening the valve, so that it will not spring or collapse under pressure. g is a spring for drawing it to its seat, and h a set-screw for adjusting it. If desired, this spring may be dispensed with, as, when the steam is let on, the pressure on the additional area of the large end of the valve is sufficient to hold it closely to its seat.

In operating my invention, steam is admitted at F, and, passing through the chamber G, reaches the flattened sides c c through the ports H H, and both ends of the valve through the spaces f f, (shown in Fig. 2,) after which it operates similarly to an ordinary rolling valve, in admitting alternately and exhausting the steam. The pressure on the sides c c being the same, the valve is perfectly balanced, and, being made tapering, the seat wears close and keeps tight. The passage L relieves the upward pressure of the exhaust, and the openings J J relieve it from the upward pressure of steam from the cylinder-ports.

I claim as my invention—

The cone-shaped valve C, provided with the passages J L J and the flattened sides c c, as and for the purposes specified.

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Witnesses:

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