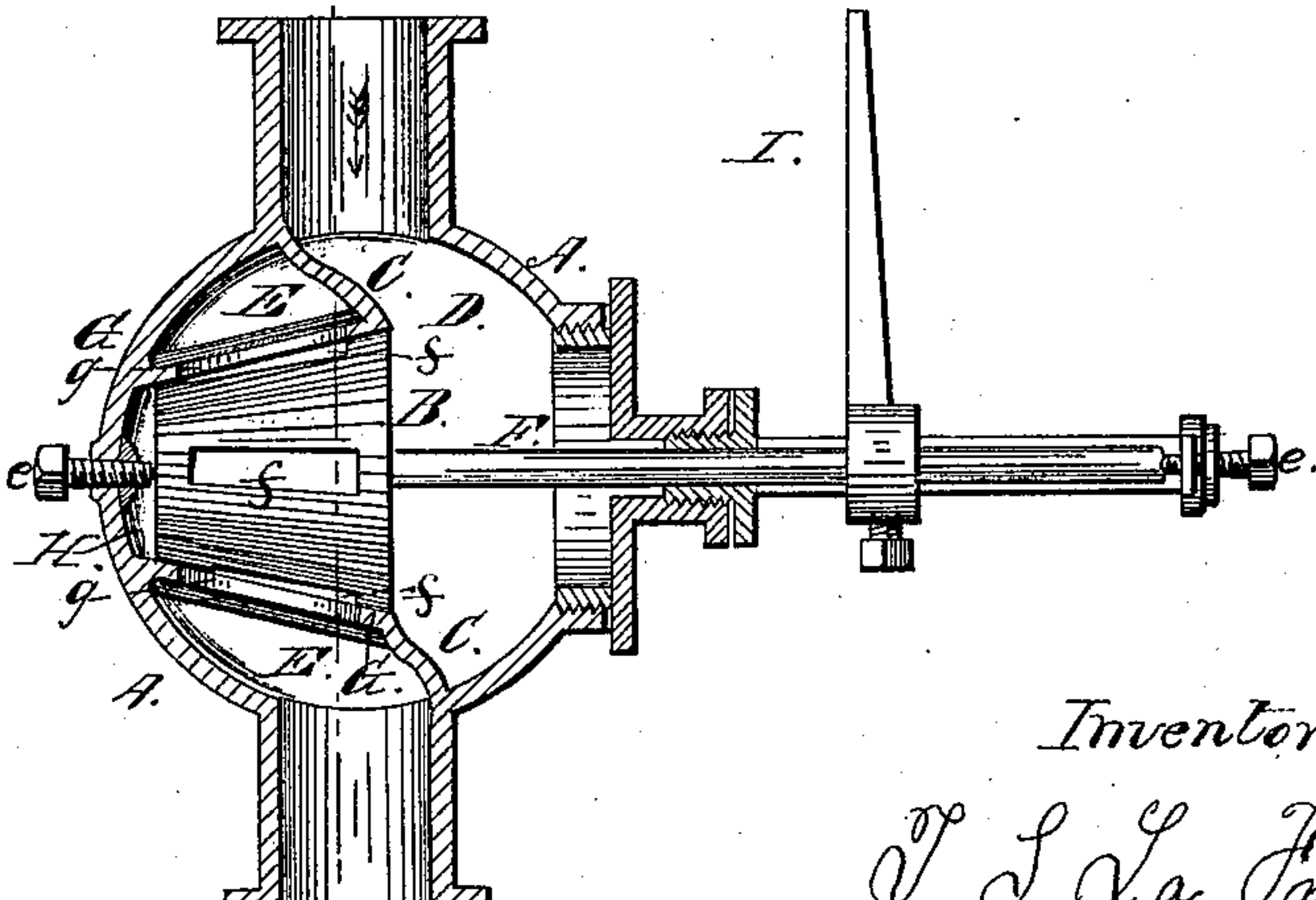


№ 19,933.

Patented Apr. 13, 1858.



Inventor.
J L La France

UNITED STATES PATENT OFFICE.

T. S. LA FRANCE, OF ELMIRA, NEW YORK.

THROTTLE-VALVE.

Specification of Letters Patent No. 19,933, dated April 13, 1858.

To all whom it may concern:

Be it known that I, TRUCKSON S. LA FRANCE, of Elmira, in the county of Chemung and State of New York, have invented a new and Improved Throttle or Governor Valve for Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon.

Figure 1 is a vertical section parallel with the axis. Fig. 2 is a vertical section on the line *a a* of Fig. 1. Fig. 3 is a view of the valve detached.

A is a spherical chamber, containing the valve, B. It is divided by the partition, C C, into two compartments, D, and E; one for the admission of steam to the valve, and the other for the passage of the steam from the valve ports to the steam chest. The latter is annular and surrounds the valve seat, as seen at E, E, Fig. 2.

The valve is in the form of a hollow frustum, being supported on its axis F, by four arms or partitions, *b*, which serve to strengthen it against any unequal pressure that it may receive.

The valve-seat, G, consists of a shell surrounding the valve, and fitted closely to it. It is joined to the partition C, at one extremity, and to the wall or case A, at the other. In it are four recesses or passages *d d* extending from the chamber D, and uniting in a single chamber H, at the end of the valve. The valve stem or spindle is packed and supported in the usual manner having an adjusting screw at each end, *e e*, to regulate its pressure on the seat. I is the lever for connecting it with the governor.

The valve has four oblong ports or openings at opposite sides, *f f*. Corresponding openings, *g g*, are provided in the seat at intermediate distances between the recesses *d*. The steam enters from the boiler into the chamber D, filling the interior of the valve, and also the passages *d*, and chamber H. As the ports are opened it passes into the annular passage E, surrounding the valve seat, and thence to the steam chest. The course of the steam, both in its passage through the valve and through the sur-

rounding chamber, is indicated by the arrows.

The adjoining surfaces of the valve and seat are ground so as to constitute a steam-tight joint, and the adjustment of steam, in and upon the valve, is such as to reduce friction to a minimum rate, and thus produce what may be justly termed a balanced valve. The pressure of the steam on a considerable portion of the exterior surface of the valve by means of the passages and chamber, *d* and H, tends to overcome friction, and make it sensitive in a high degree, while the interior arrangement is such that the force of the steam in escaping by one port is counter-balanced by the same force in the opposite positions of the four different ports. The supporting partitions, *b*, receive the back pressure of the steam, and throw it upon the center, and form in fact four equal and distinct passages for the steam to the ports. The openings, *f*, in the valve are made slightly oblique to those of the seat, in order to open gradually for the passage of steam, and the considerable area of the four ports, and their united action, produces an extreme degree of sensibility, and a very slight turn of the valve varies the opening greatly. So rapid and perfect is its operation that it is difficult to detect a difference in the revolutions when suddenly changing from light to heavy labor of the engine, and vice versa.

I am aware that hollow conical valves have before been used and such alone I do not claim, nor do I claim the employment of recesses formed in the periphery for the admission of steam for the purpose of balancing the valve when at rest, as such arrangement does not produce the effect claimed for my invention, but—

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

The series of chambers *d d*, in the valve seat, in combination with corresponding chambers or passages in the valve-shell B, and the bracing and binding partitions, *b b*; the whole arranged and operating substantially as herein set forth.

TRUCKSON S. LA FRANCE.

Witnesses:

JOHN COLMAN,
J. FRASER.