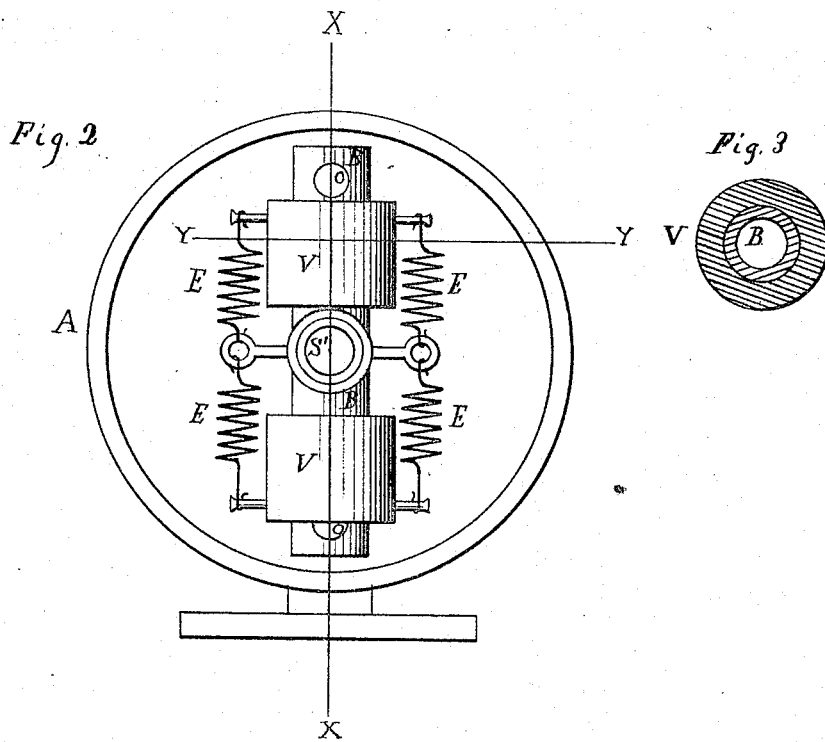
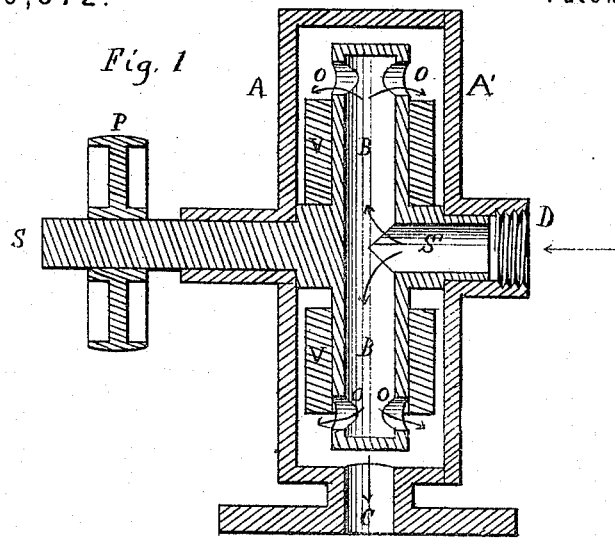


D. L. F. CHASE.  
 Steam-Governor

No. 160,572.

Patented March 9, 1875.



Witnesses.

*Daniel L. Chase*  
*Reich D. Chase*

Inventor.

*Daniel L. F. Chase*

# UNITED STATES PATENT OFFICE.

DANIEL L. F. CHASE, OF SOMERVILLE, MASSACHUSETTS.

## IMPROVEMENT IN STEAM-GOVERNORS.

Specification forming part of Letters Patent No. 160,572, dated March 9, 1875; application filed December 1, 1874.

*To all whom it may concern :*

Be it known that I, DANIEL L. F. CHASE, of Somerville, in the county of Middlesex and State of Massachusetts, have invented a new and valuable Improvement in Steam-Governors; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object of my invention is to increase the sensitiveness of the centrifugal governor by dispensing with steam-packed valve-stems, jointed arms, &c., and thus avoiding the friction consequent on the use thereof; and my invention consists in constructing a steam-governor with a steam-chamber, provided with induction and eduction ports, and locating in such chamber a rotary steam-conductor or conductors, provided with valve-ports, and having valves which shall close such ports by the direct action of their centrifugal force.

Referring to the drawings, Figure 1 is a vertical longitudinal section through the shaft of the machine, made on the line *xx* of Fig. 2. Fig. 2 is an end view of the interior working parts. Fig. 3 will be explained hereafter.

The essential parts of the governor consist of the hollow steam-chamber A, with its removable cover A', and the inclosed centrifugal mechanism hereinafter next explained, the arrangement of the centrifugal mechanism within the said steam-chamber constituting the main feature of the machine, and making it possible to dispense with packed valve-stems.

The revolving parts are the shaft S S', with the attached hollow or conductor's arms B B, and the sleeves or valves V V sliding on the arms B B, the whole being driven by the pulley P in the usual manner. The part S' of the shaft is hollow, and of sufficient size for the required steam-passage, and communicates with the hollow arms B B. The hollow arms B B are closed at their outer ends, but have holes O O O O through them, communicating with the interior of the chamber A, these holes being the valve-ports of the governor.

The steam, then, as shown by the arrows, enters the hollow shaft S' through a steam-pipe, supposed to be screwed into the hub D of the cover A', thence into the hollow arms

B B, and through the ports O O O O into the interior of the chamber A, from whence it escapes through the exit-passage C in the base-flange of the machine.

Fig. 2, as before stated, is a view of the interior parts, the cover A', Fig. 1, being removed in order to show the same. The valves V V are furnished with springs E E E E, attached to themselves and to the shaft S' in such a manner that the valves are drawn inward by the springs toward the shaft. The valves V V are of suitable length, so that when drawn back to the shaft the ports O of the arms B B are left entirely open; but when the machine is running the centrifugal force causes the valves to slide outward on the arms and close the ports, either partially or entirely, according to the varying speed.

In the drawings the upper pair of ports are shown as entirely open, while the lower pair appear as partially closed by the valve moving outward.

Fig. 3 is a section on the line Y Y, to show the cylindrical form of the valve and arm, such form, however, being merely preferable, but not essential.

It will be evident that any convenient number of hollow arms B might be used instead of the pair described, and also that the particular course of the steam indicated is not essential, as the same might with equal facility be made to enter at C and pass out at D.

It will also be evident that the particular forms of valves and springs described are not essential, as the various other balanced valves in common use might be employed with like results.

I wish especially to disclaim all novelty in the form of valves and valve-ports, supposing the same to be detached from other parts of the machine.

From the above it will be seen that by the arrangement of the valves within the steam-chamber of the governor such valves are caused to close their ports by the direct action of the centrifugal force generated by the rotation of the driving-shaft, without the employment of either balls, weights, or jointed arms.

I claim as my invention—

1. The combination, in a steam-governor,

of a stationary steam-chamber, having induction and eduction ports, with a rotary steam conductor or conductors, disposed within said chamber, and provided with steam ports and valves, arranged to close such ports by direct centrifugal action, substantially as set forth.

2. In a governor for steam-engines, &c., the combination of the case A A', provided with induction and eduction ports D C, the driving-shaft S S', provided with hollow arms B B, having ports O O, the centrifugal valves V

V, and springs E E, substantially as shown and described.

3. The combination of the centrifugal valves V V, with the hollow arms or conductors B B, provided with steam-ports O O, and the casing A A', substantially as shown and described.

DANIEL L. F. CHASE.

Witnesses:

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