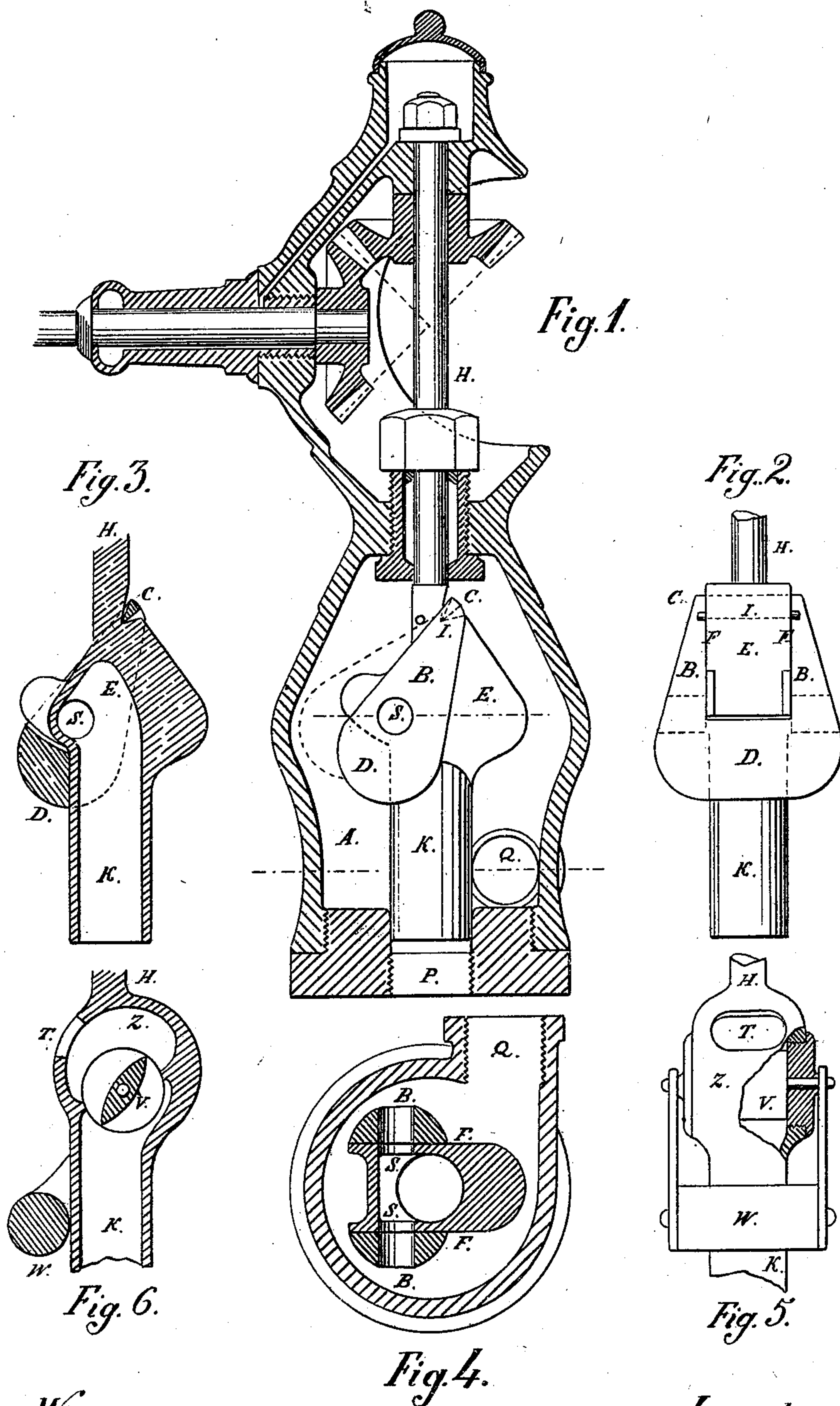


L. d'AURIA.
Steam Governor.

No. 230,519.

Patented July 27, 1880.



Witnesses;
A. D. Moore
Thos. Murray

Inventor;
Luigi d'Auria

UNITED STATES PATENT OFFICE.

LUIGI D'AURIA, OF PHILADELPHIA, PENNSYLVANIA.

STEAM-GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 230,519, dated July 27, 1880.

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To all whom it may concern:

Be it known that I, LUIGI D'AURIA, a subject of the King of Italy, and residing in Philadelphia, Pennsylvania, 3727 Locust street, have invented a new and useful Improvement in Steam-Governors, which improvement is fully set forth in the following specification and accompanying drawings.

The object of my invention is to furnish an isochronous centrifugal governor for steam-engines, in accomplishing which the governor-arm itself is used as the throttle-valve, the valve-chamber being attached to the spindle or axis of the governor and made to revolve in a steam-space formed in the supply or delivery pipe, which constitutes the steam-chamber of the governor.

Figure 1 is a vertical section through the governor, showing all its parts, the governor-arm or throttle-valve and the valve-chamber being in side view. Fig. 2 is a side view of those two parts taken at right angles to that shown in Fig. 1. Fig. 3 is a vertical section of the same parts through the axis of rotation. Fig. 4 represents a horizontal section through the governor-arm and valve-chamber, showing the ports of the latter, as also through the steam-chamber. Figs. 5 and 6 represent, respectively, a modification of what is represented in Figs. 2 and 3.

The same letters of reference refer to the same parts in all the views.

A is the steam-chamber, in which the governor-arm or throttle-valve revolves together with the valve-chamber.

B B is the governor-arm or throttle-valve, which consists of two equal pieces, B B, kept apart and parallel to each other internally by two bridge-bars, C D.

E is the valve-chamber, formed in the governor spindle or axis H, provided with two parallel flat sides, F F, in which are bored two ports, S S, of equal area, facing each other.

The spindle or axis H projects from the steam-chamber A through a stuffing-box, and to it is attached the gear by which the motion is imparted to the governor.

The interior part of the valve-chamber E is adjusted with the eduction-passage P of the steam-chamber, so as to form with it a practically tight

steam-joint. This can be accomplished in two ways—by lengthening the valve-chamber with a cylindrical tube, K, which is made to run in the eduction-passage P, as shown in the accompanying drawings, or by lengthening said passage P with a cylindrical stationary tube, which projects from the steam-chamber internally and fits the valve-chamber E.

The governor-valve B B is hung on the back of the valve-chamber E by a knife-edge suspension, I, the knife-edge being made by the bridge-bar C. (Any other kind of suspension may be used instead of it, as center-pins, chain-suspension, &c.) The lateral pieces B B of the governor-valve form a practically tight steam-joint with the parallel flat sides F F of the valve-chamber E, but without absolute contact against these sides, and as they swing in a vertical plane they are quite free of friction. Said pieces B B are provided with ports, which, when the governor is at rest or at its lower position, correspond exactly with the ports S S of the valve-chamber. The rising of the governor-valve B B is limited, so as to cover the ports S S when at its higher position without lost motion.

The center of gravity of the governor-valve B B is situated at one side and the suspension at the other of the geometrical axis of rotation, and it can be demonstrated by a mathematical argument discovered by myself that this disposition, when properly made, enables the closest approximation to isochronism.

The following is the action of the described governor: The steam from the boiler enters the steam-chamber A through the opening Q in a tangential direction, and nearly to the bottom of said chamber A, without striking against the revolving valve-chamber E and governor-arm B B. After flowing through the ports S S of the valve-chamber, (when opened,) it passes in the eduction-passage P, which communicates with the engine. The governor-valve B B being in equilibrium at only one speed of the engine when in motion, the smallest variation of velocity makes it oscillate on the ports S S of the valve-chamber E. Thus it will strictly govern the supply of steam to keep the engine with uniform velocity.

I have provided the lateral pieces B B of the

governor or throttle valve with ports to make it quite balanced under the flow of steam passing from the steam-chamber A into the valve-chamber E. Without such precaution the governor-arm will rise independently of its centrifugal force.

The governor-arm can be used as a throttle-valve, as shown in Figs. 5 and 6, which can be considered as substituting Figs. 2 and 3, respectively.

In Figs. 5 and 6 the valve V is suspended within the hollow spindle of the governor, and acts inside of the valve-chamber Z as an ordinary throttle-valve. The steam enters the valve-chamber Z through the port T. This valve-chamber Z is also attached to the governor spindle or axis H and adjusted with the steam-chamber A in the same manner as before described for Figs. 1, 2, and 3.

It can be easily understood without special illustration that the governor-arm could be used also to communicate motion to a throttle-valve, both being disposed within the steam-chamber. This arrangement has no advantage

over that described in the accompanying drawings, which is decidedly preferable for its simplicity.

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

1. A centrifugal governor in which the governor-arm or conical pendulum is used as the throttle-valve, the valve-chamber being formed in the spindle or axis of the governor itself, and being adjusted with a steam-chamber formed in the supply or delivery pipe, so that the steam from the boiler is delivered to the engine only through the port or ports of said valve-chamber, substantially as set forth.

2. The combination of the governor-arm, conical pendulum, or throttle-valve B B with the valve-chamber E, spindle or axis H, tube K, and steam-chamber A, substantially as shown and described.

LUIGI D'AURIA.

Witnesses:

B. F. MOORE,
THOS. J. MURRAY.