N. E. NASH.

Governor for Steam Engines.

No. 168,914. Patented Oct. 19, 1875.

FIG. I.

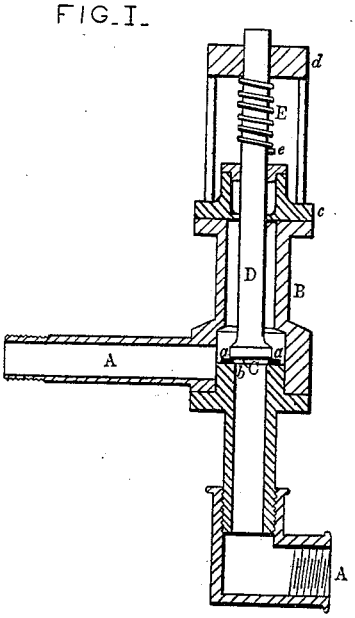
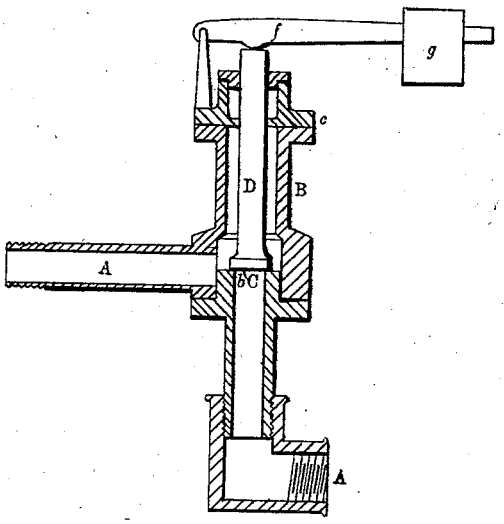


FIG. II.



WITNESSES

Cornelius Cox

W. W. Wharton

INVENTOR

Nathan E. Nash,

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UNITED STATES PATENT OFFICE.

NATHAN E. NASH, OF WESTERLY, RHODE ISLAND.

IMPROVEMENT IN GOVERNORS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **168,914**, dated October 19, 1875; application filed March 26, 1875.

To all whom it may concern:

Be it known that I, NATHAN E. NASH, of Westerly, in the State of Rhode Island, have invented certain new and useful Improvements in Steam-Engine Governors and maximum pressure-valves combined, of which the following is a specification; and I do hereby declare that in the same is contained a full, clear, and exact description of my said invention, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

My invention relates to a valve placed in a chamber formed in a steam-pipe, and located between the engine and boiler, adapted to partially close the steam-passage in the said chamber, and which valve, being held to its partially closed position by the resiliency of a spring, or by means of a weighted lever resting upon an extension of the said valve, can be regulated to allow of its elevation or depression and the increasing or diminishing the area of steam-opening, as the pressure in the steam-cylinder is increased or diminished by the alteration of the load or strain upon the moving parts of the engine.

Figure 1 is a sectional view of my invention. Fig. 2 is a sectional view of an ordinary form of valve to which my invention can be readily changed, as hereinafter described.

Similar letters of reference indicate similar parts in both figures.

A is a steam-pipe, and B the valve-chamber. C is the valve, which in Fig. 1 rests, when in its lowest position, upon a projection, *a*, on the seat *b*, and in Fig. 2 upon the face of the seat, forming a close joint. The object of the projections *a* on the seat *b* is to prevent at any time while the device is used as a governor, a complete closing of the steam-passage in the chamber. D is a valve-stem extending from the valve C through a suitable packing-box in the cover *c* to the guide *d*, through which it slides in its vertical movement. E is a spiral spring, occupying a position upon that portion of the stem between the lower side of the guide and the pin or stop *e*. In Fig. 2 the spiral spring is dispensed with and the valve held to seat *b* by means of the lever *f* and weight *g*.

When the invention is to be used as a governor, one end of the steam-pipe is connected to the engine and the other end to the boiler, and the tension of the spiral or the position of the weight on the lever regulated to give such opening to the valve as will cause the rotatory parts of the engine to make the desired number of revolutions.

Supposing the opening of the valve to be regulated as described, and the engine adapted thereby to make a certain number of revolutions, a reduction in the load upon the engine causes an increased velocity of piston and an accelerated movement of the current of steam in the steam-pipe and valve-chamber.

As the velocity of the steam-current is increased the pressure in the chamber is diminished, and consequently the sustaining power of the steam acting upon the valve in opposition to the tension of the spiral spring is reduced and the valve depressed. The supply of steam to the engine is thus decreased, and the original velocity of rotatory parts of the engine re-established.

In case of an addition to the load upon the engine the above operation is reversed, the valve being opened as the pressure is increased by the stoppage or partial stoppage of the engine-piston.

When it is desired to change the invention to a maximum pressure-valve, the projections *a* are removed to allow of a close joint being formed between the valve and seat *b*, and the end of the pipe A below the valve C attached to the receptacle in which it is proposed to prevent the existence of pressure above a certain tension. The spiral spring is then compressed by means of any of the well-known mechanical devices fitted for the purpose; or if, instead of the spiral spring, the weighted lever shown in Fig. 2 is used, the weight is placed at such distance from the fulcrum as will give to the valve a weight per square inch equal to the pressure at which the receptacle is to be relieved.

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent of the United States, is—

The combination of the steam-pipe A, valve-chamber B, having a seat, *b*, provided with the projections *a*, weighted or spring-valve C and stem D, all constructed and arranged substantially as herein specified.

In testimony whereof I have hereunto subscribed my name this 5th day of March in the year of our Lord 1875.

N. E. NASH.

Witnesses:

E. H. HOWARD,

THOS. MURDOCH.