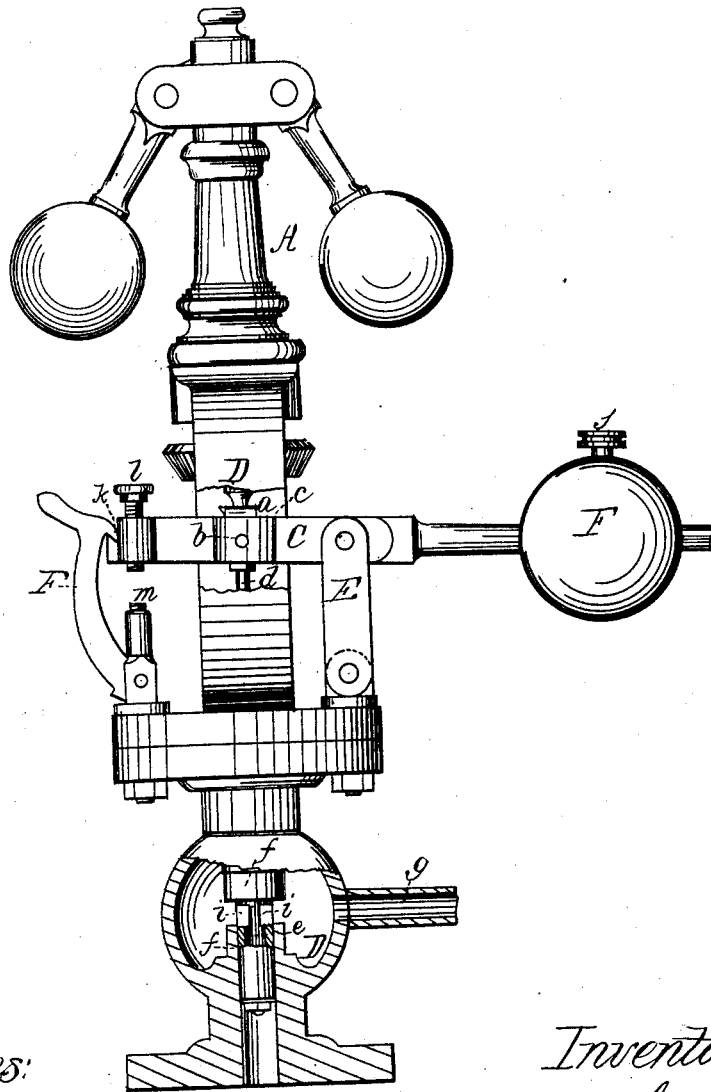


R. W. Gardner,

Governor.

No. 45,599.

Patented Dec. 27, 1864.



Witnesses:
Henry Morris
James P. Hall.

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UNITED STATES PATENT OFFICE.

ROBERT W. GARDNER, OF QUINCY, ILLINOIS.

IMPROVEMENT IN STEAM-ENGINE GOVERNORS.

Specification forming part of Letters Patent No. **45,599**, dated December 27, 1864.

To all whom it may concern:

Be it known that I, ROBERT W. GARDNER, of Quincy, in the county of Adams and State of Illinois, have invented a new and Improved Governor; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification.

The drawing represents a sectional side elevation of this invention.

This invention consists in combining with the governor and governor-valve a weighted lever, so that by said weighted lever the valve is closed when the motion of the governor stops; further, in the application of a self-releasing stop or catch in combination with the governor and governor or throttle valve in such a manner that by the action of said stop or catch the valve is held open and in position for starting the engine, and after the governor has reached or approached its proper speed the catch or stop is released automatically, and the operation of the governor proceeds as usual.

It consists, also, in the use of a set-screw and elastic seat for regulating the partial closing of the valve and adjusting the same for wear as may be requisite and desirable.

My present invention is intended particularly as an improvement on that class of governors on which Letters Patent have been granted to me August 14, 1860, and numbered 29,579. The spindle of the governor described in said Letters Patent is supported on the head of a valve-stem, but unconnected therewith, and applied in combination with an adjustable weighted lever tending to keep the several parts in close contact and partly balancing the moving parts of the governor. The object of this arrangement is to obviate the loss of motion consequent upon the great number of joints in governors of the ordinary construction, and to cause the governor to act quicker and more lively than it does if its action depends entirely upon the motion of the balls. This object is fully obtained by the arrangement described in my former patent; but I have found that it is susceptible to a material improvement, the object of which is to close the valve when the governor stops,

and also to counteract the weighted lever and hold the valve open when the engine is to be started, and to release said weighted lever automatically after the balls attain or approach the desired speed.

The governor A, which I have illustrated in the accompanying drawing, is of my ordinary construction, though it must be remarked that I do not wish to confine myself to any particular kind of governor, but I reserve the right to apply my improvement to governors of any suitable construction. The spindle B of this governor is stepped in a box, *a*, which oscillates on a pivot, *b*, in a suitable socket or mortise, *c*, in the lever C. The lower end of the box *a* is firmly connected to the upper end of the valve-rod *d*, and the valve consists of a tube, *e*, which works between two tubular seats, *f f'*, one above and the other below, in the interior of a suitable case or shell, D. Steam is admitted to the shell D through a pipe, *g*, and it passes through apertures *i* in the inner tube, *e*, down through said tube and out to the cylinder at the bottom of the shell.

If the valve tube *e* is raised or lowered to such a position that the apertures *i* are covered either by the seat *f* or by the seat *f'*, the communication between the steam supply pipe and the cylinder is closed. It is obvious that the construction of this valve can be altered in a great many different ways, and I do not wish to confine myself in the application of my governor to the precise construction of valve herein shown and described.

The lever C has its fulcrum on a hinged standard, E, rising from the bottom flange of the governor-frame, and one end of the same is loaded with a weight, F, which is adjustable by a set-screw, *j*, or in any other convenient manner. By the action of this weight the box *a*, together with the valve-rod, are carried up and the valve is closed. That end of the lever C opposite the weight is provided with a notch, *k*, and a hooked catch, F, which is hinged to ears or lugs projecting from the bottom flange of the governor-frame, can be brought in such a position that it catches into said notch and retains the lever C in a horizontal position, or nearly so. In that position the valve is wide open and the engine is ready to start. Without this catch, if the engineer wants to start, he has to hold down

the lever C with one hand, or to prop it up, while he operates the starting-bar; but by means of the hook he is enabled to retain said lever at once in the proper position to keep the valve open.

The catch F is so balanced that it turns back and clears the lever automatically as soon as the notched end of the same is depressed by the action of the balls sufficiently far to clear said catch, and the lever is free to follow the motions of the balls in either direction.

The closing or partial closing of the valve is regulated by a set-screw, *l*, in the notched end of the lever C, (governor-valves should never close perfectly tight,) and the point of this screw strikes an elastic seat, *m*, so that the downward motion of the valve is checked gradually, and the jumping of the engine and of the governor is prevented.

I claim as new and desire to secure by Letters Patent—

1. In combination with the valve *e i*, constructed substantially as described, and a governor adapted to close it by centrifugal action, the weighted lever C, employed to close the said valve when the governor stops.

2. The self-releasing hook, stop, or catch F, applied in combination with the governor A and valve *e*, substantially in the manner and for the purpose herein shown and described.

3. The adjusting-screw *l* and elastic seat *m*, in combination with the valve *e* and governor A, constructed and operating in the manner and for the purpose substantially as herein specified.

ROBT. W. GARDNER.

Witnesses:

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