G. C. SIMS.

Governor for Steam-Engines.

No. 164,942. Patented June 29, 1875.

Fig. 1.

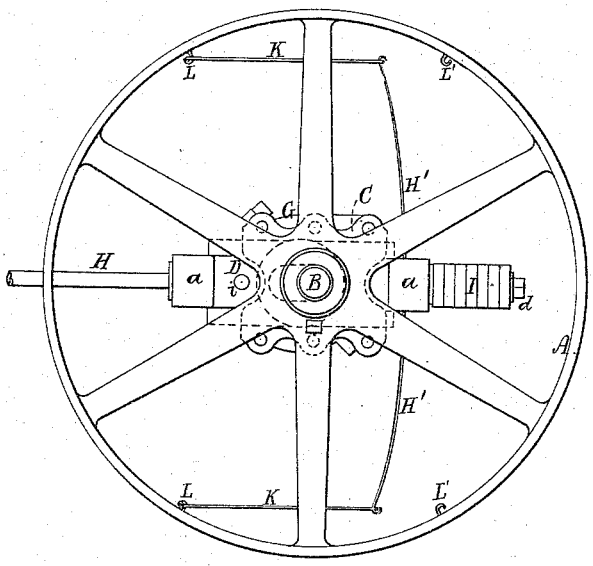


Fig. 3.

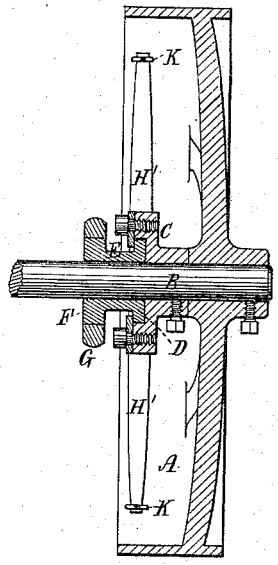
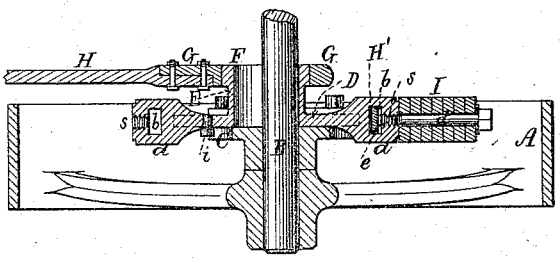


Fig. 2.



Witnesses
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Gardiner C. Sims
by his attorney,
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UNITED STATES PATENT OFFICE.

GARDINER C. SIMS, OF LAWRENCE, MASSACHUSETTS, ASSIGNOR TO THE J. C. HOADLEY COMPANY, OF SAME PLACE.

IMPROVEMENT IN GOVERNORS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **164,942**, dated June 29, 1875; application filed May 22, 1875.

To all whom it may concern:

Be it known that I, GARDINER C. SIMS, of Lawrence, of the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Governors for Steam-Engines; and do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a front elevation of a steam-engine band fly-wheel with my improved governor applied to it. Fig. 2 is a horizontal and transverse section; and Fig. 3 is a vertical and transverse section thereof, each section being in the plane of the axis of the shaft of the said band fly-wheel.

In the said drawings, A denotes the band fly-wheel, and B its shaft. There is fixed to the wheel, or to the shaft, a head, C, provided with a slide, D, to move in it rectilinearly and diametrically relatively to the wheel. From one side of the said slide there projects a short hollow shaft, E, provided with an eccentric, F, the bore of the shaft having a diameter larger than that of the shaft. The collar or yoke G of the eccentric is attached to a valve stem or rod, H. The slide D has heads *a a* at its opposite ends, each head having a slot or mortise, *b*, going through it laterally to receive, as occasion may require, a bow-spring, H′, which, arranged in the head in manner as shown, is clamped therein by a long screw, *d*, screwed into the head, and against a plate or block, *e*, placed between the spring and the end of the screw. On the shank of the screw there is disposed a weight or series, I, of weights. There is a hole, *s*, in each head of the slide, such hole leading into the mortise *b* thereof, and being provided with a female screw to receive the clamp-screw *d*. The ends of the spring are connected to the rim of the fly or band wheel by two rods, K K, arranged as shown, the said rim on its inner periphery being furnished with two sets of hooks, L L L′ L′, arranged as shown, for supporting the rods.

The object of providing the slide D with the slots or mortises at its opposite ends, and the fly-wheel with the two sets of hooks L L′, is to enable the spring to be changed from one end of the slide to the other, to reverse the action of the valve.

As the speed of the fly or band wheel may be increased, the centrifugal force generated in the slide and its weight or series of weights will, against the opposition of the spring, move the slide away from the axis of the wheel, the spring serving to effect a counter movement of the slide whenever the speed of the wheel may slacken. Such movements of the slide render the eccentric more or less eccentric to the axis of the shaft, and of course cause the eccentric to produce more or less movement of the valve-rod and its valve, either to cut off or increase or decrease the amount of steam to the engine, as circumstances may require.

In order that the axis of the eccentric may not be carried or moved one way beyond the axis of the shaft, by the centrifugal force generated in the slide and its weight or weights, there is projected from the slide a stud or stop, *i*, which, by bringing up against the head C, estops said slide from being moved too far. So, in order that the slide D may not be moved too far the other way by the spring, the mortised slide-head *a*, containing the latter, will estop the slide by bringing up against the next adjacent end of the head C.

The invention above described is in some respects analogous to that set forth and represented in the United States Patent No. 144,098, granted October 28, 1873.

Instead of two connected springs, two weighted slides, and two slotted arms and other mechanism applied to the fly-wheel, in order to operate the eccentric slide one way, and a spring to actuate or move it in the opposite direction, I simply make use of a single bow-spring, and a weight connected directly with the slide at either end thereof, and with the rim of the fly-wheel, all as described, whereby I make a cheaper and more sensitive governor, for, by reducing the operative parts, I reduce the friction, and thus gain an advantage.

I claim—

1. In combination with the eccentric F, its tubular shaft, and the carrier or slide D thereof, applied to the fly-wheel, and provided with

the weight, as described, the spring H′, fastened at its middle to the slide, and at its ends connected to the fly-wheel, all being substantially as shown and described.

2. In combination with the spring H′ and its connection-arms K K, the fly or band wheel, provided with the two sets of hooks L L L′ L′, and the slide D, provided with the mortises in its two heads for reception of the spring, as specified.

GARDINER C. SIMS.

Witnesses:
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