(No Model.)

W. R. MICHENER.

STEAM ENGINE GOVERNOR.

No. 305,323. Patented Sept. 16, 1884.

Fig. 3.

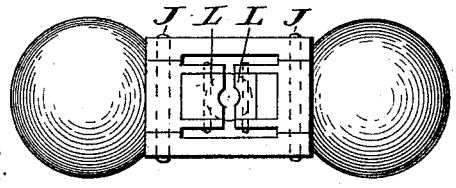


Fig. 4.

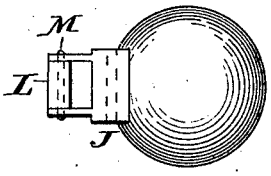


Fig. 6.

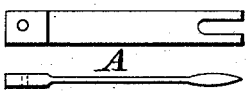


Fig. 1.

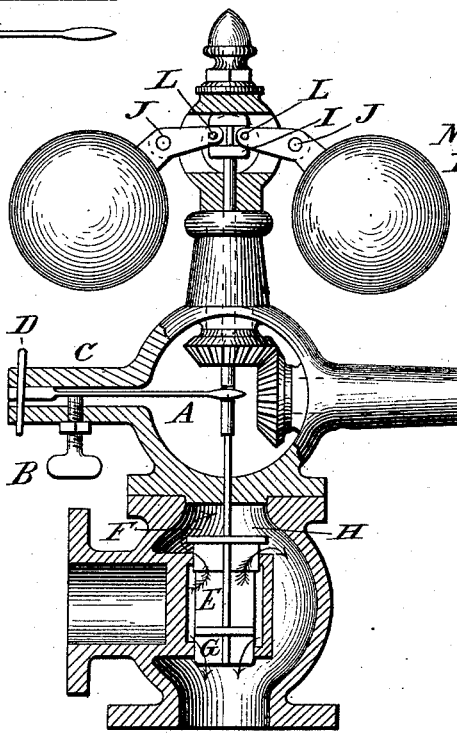


Fig. 5.

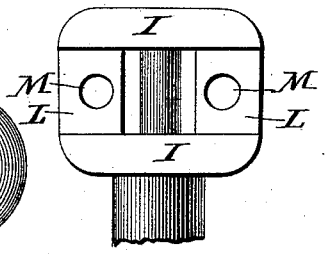


Fig. 7.

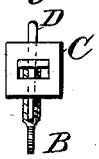
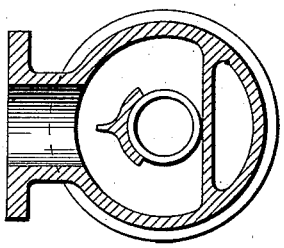


Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM R. MICHENER, OF BENICIA, CALIFORNIA.

STEAM-ENGINE GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 305,323, dated September 16, 1884.

Application filed October 18, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM RAKESTRAW MICHENER, a citizen of the United States, residing at Benicia, in the county of Solano and State of California, have invented new and useful Improvements in Steam-Engine Governors, of which this, with the accompanying drawings, is a specification.

My invention relates to improvements in the steam-engine governor to obviate the difficulties experienced by the manipulation of the speeding-spring; also, the difficulty of removing the valve when necessary, and also preventing the cutting or rough wearing in the grooved end of the valve-stem. I obtain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a vertical and part sectional elevation of a steam-engine governor. Fig. 2 is a cross-section of valve-chamber; Fig. 3 a top view of governor. Fig. 4 is a plan of one pendulum, showing swivel-block in short end. Fig. 5 is the top end of valve-stem, enlarged. Fig. 6 shows the speeding-spring, and Fig. 7 the end view of the speeding-spring box.

Similar letters refer to like parts throughout the several views.

The object of the feeding-spring A and the thumb-screw B is to put more or less lifting force upon the valve and depressing force upon the balls of the governor, and thereby causing the engine to run faster or slower, as desired; but one of the principal difficulties in connection with the spring wherever it has been in use is that persons not versed in this class of governor often put decidedly too much lifting force on the spring by screwing upon the thumb-screw B, and thereby producing, instead of a uniform, an unsteady motion to the engine. This I seek to avoid by placing the spring A within the spring-box C, and confining it therein, it being held in position by the pin D and controlled by the thumb-screw B. (Fig. 7 shows the end view of this box and spring.) Now, it is plainly seen that the spring A can be forced by the thumb-screw until it comes in contact with the upper side of the box, which prevents any more force being applied. Should the engine be required to run faster, a piece of pasteboard or any suitable material may be placed between the spring and box on the top side and at the end where the pin D passes, at the same time loosening the thumb-screw B, thereby giving sufficient range to regulate and not enough to derange the speed of the engine. The next great difficulty to overcome is the practice of all governor-makers to bore the top and bottom orifices or valve-seats, through which the valve E passes, the same size, thereby making it almost impossible to remove the valve when desired. This, perhaps, may seem paradoxical, but nevertheless in practice it is true. This difficulty I obviate by making the top end of the valve a trifle larger in diameter than the bottom, and to counterbalance the difference in pressure I allow a little more than one-half of the steam to pass through the upper orifice, and when at high speed the disk G closes its orifice a little before the disk H, thereby holding the pressure between the two disks about the same, or near enough for all practical purposes. The third and last difficulty we have to contend with is the cutting or rough wearing between the two collars I, at the upper end of the valve-stem, caused by the pin as generally used in the short end of the pendulum working always in the same place. This I seek to remedy by placing the center of motion, or fulcrum J, below the center of the swivel-blocks L. These swivel-blocks are perfectly free upon their pins M, and can be made of wood or any suitable material. It will be observed that as the balls rise the swivel-blocks seek to describe a circle having its center in J, and as the point L is above that of J the blocks must advance toward the center as they approach the same horizontal line, and as the balls are constantly vibrating the swivel-blocks travel back and forth, maintaining a smooth surface between the collars I and the swivel-blocks L.

Having thus illustrated and described my invention, what I deem new, and desire to secure by Letters Patent, is—

1. In a steam-engine governor, the spring-box C, spring A, and thumb-screw B, so arranged that the inner side of the spring-box limits the movement of the spring, substantially as and for the purpose set forth.

2. A steam-engine governor with a valve, E, larger at one end than at the other, and so arranged as to close one orifice in advance of the other, substantially as set forth.

Witnesses: W. R. MICHENER.

G. L. PIERCE,

CHR. E. GERLACH.