M. D. MILLER.

GOVERNOR AND CUT-OFF FOR STEAM-ENGINES.

No. 169,719. Patented Nov. 9, 1875.

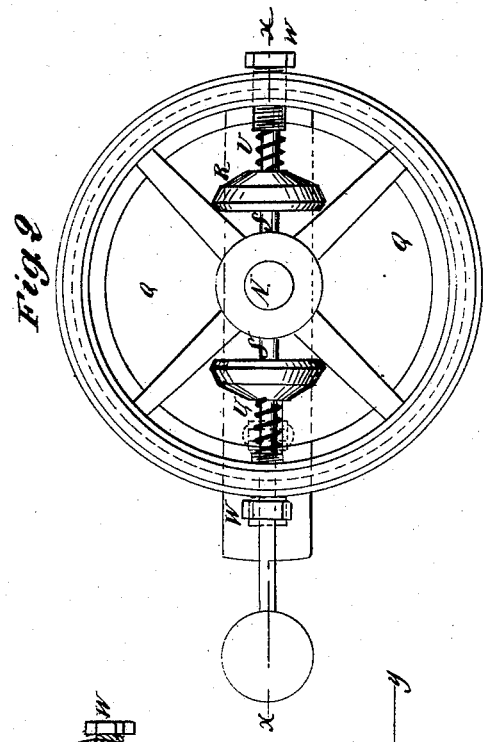

Fig. 2

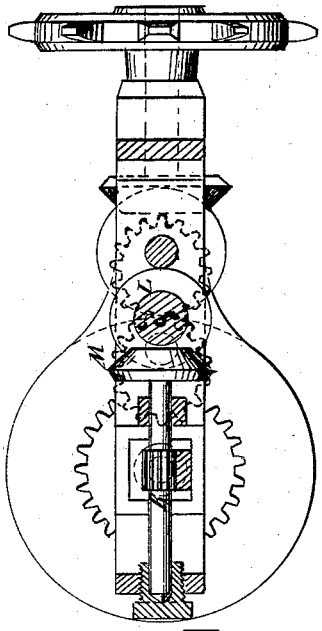

Fig. 3

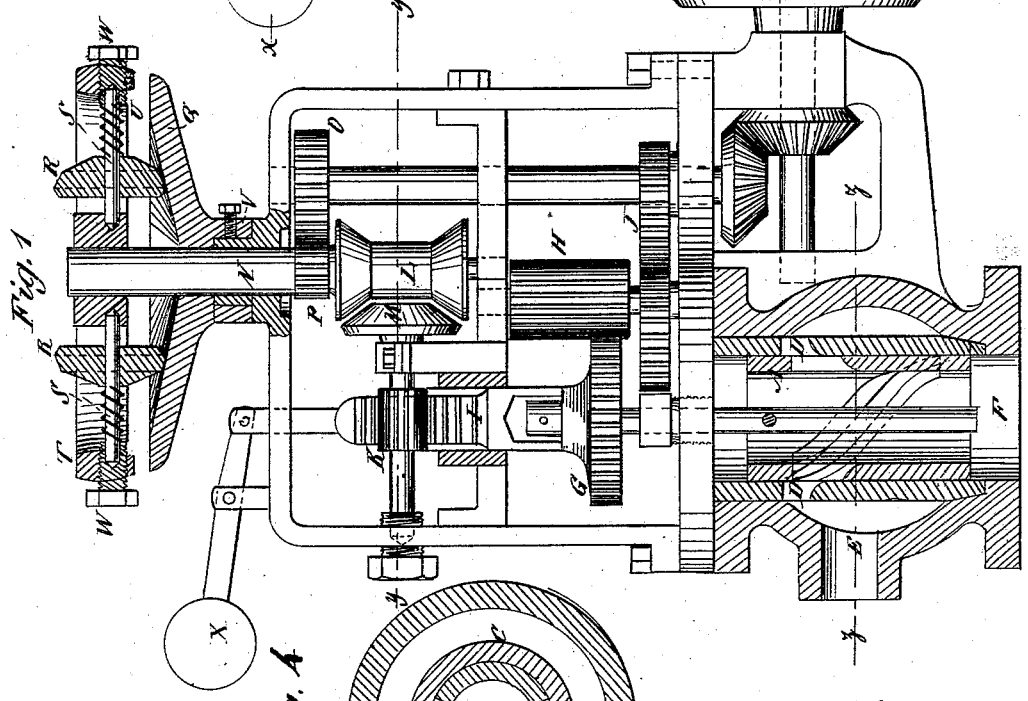

Fig. 1

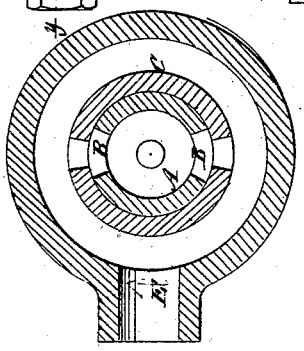

Fig. 4

WITNESSES:

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UNITED STATES PATENT OFFICE.

MARTIN D. MILLER, OF OSWEGO, KANSAS, ASSIGNOR TO HIMSELF AND JAMES T. PIERSON, OF SAME PLACE.

IMPROVEMENT IN GOVERNORS AND CUT-OFFS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **169,719**, dated November 9, 1875; application filed July 31, 1875.

To all whom it may concern:

Be it known that I, MARTIN D. MILLER, of Oswego, in the county of Labette and State of Kansas, have invented a new and Improved Governor and Cut-Off for Steam-Engines, of which the following is a specification:

The invention will first be described in connection with drawing, and then pointed out in the claims.

Figure 1 is a sectional elevation of my improved governor, taken on line *x x* of Fig. 2. Fig. 2 is a top view. Fig. 3 is a horizontal section on line *y y* of Fig. 1, and Fig. 4 is a section on line *z z*.

Similar letters of reference indicate corresponding parts.

A is the hollow revolving and reciprocating cylindrical valve, having spiral ports B, and arranged in the stationary case C, having spiral ports D, through which steam is admitted from pipe E, to pass down through F into the steam-chest containing the ordinary slide-valve. The stem of this valve is geared by wheel G with the long pinion H, and it is also swiveled to the toothed rack I, the former giving rotary and the latter reciprocating motion. The long pinion is geared by the eccentric wheels J to the driver, connected with the engine, and worked by a chain to give positive motion. The toothed rack gears with the pinion K, which is to be turned forward and backward, or allowed to rest, according to the speed by friction-wheel M and the double friction-wheel on the governor-spindle N. This spindle is geared to the driver by wheel O and pinion P.

The governor-spindle passes through a concave or dished plate, Q, which is secured to the frame-work of the governor by a screw, V. To the upper end of the governor-spindle is attached a horizontal frame or wheel, T, which carries spindles S, rollers R, springs U, and screws W.

The rollers R move upon the concave plate Q, and operate in such a manner that when the engine is running at regular speed the wheel L is held disengaged from the wheel M; but upon the least change of motion of the engine from load or steam pressure, the rollers R and governor-shaft will be raised or lowered, thus causing the wheel M to engage with the wheel L for raising or lowering the valve; by this means regulating the closing of said valve, according to the pressure required to again bring the engine to speed, when the wheel M again resumes its disengaged position. The springs U encircle the spindles S, and are adjusted to vary the force with which they act on the rollers by the adjusting-screws W.

The weight of the valve A and its adjuncts is counterbalanced by the weighted lever X, to enable the governor to have the same effect in both directions. The valve A is geared to be opened with the commencement of the stroke of the engine. The eccentric wheels, by their irregular motion, allow it to remain open three-quarters of the stroke, and insure the opening of it after the slide-valve has closed. The closing of valve A is regulated by the governor, and may be caused to close and cut off at one-eighth or three-quarters of the stroke. By giving it slow motion by the eccentric wheels while open, the slide-valve is permitted to close before valve A opens. Thus the opening of the ports of said valve never takes place until slide-valve has closed; but it closes at any point from one-eighth to three-quarters of the stroke of the engine.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The disengaging friction-wheel, in combination with valve and casing, the weight of valve and fittings being balanced by ball and lever, as set forth, to enable the governor to regulate the speed with accuracy.

2. The rotary hollow valve A, having spiral ports, in combination with a case having spiral ports, the said valve having its weight counterbalanced, and being geared with the governor-pinion K by a toothed rack, I, substantially as specified.

3. The combination, in a governor, of concave plate Q, rollers R, spindles S, springs U, and adjusting-screws W, substantially in the manner described.

MARTIN D. MILLER.

Witnesses:

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