

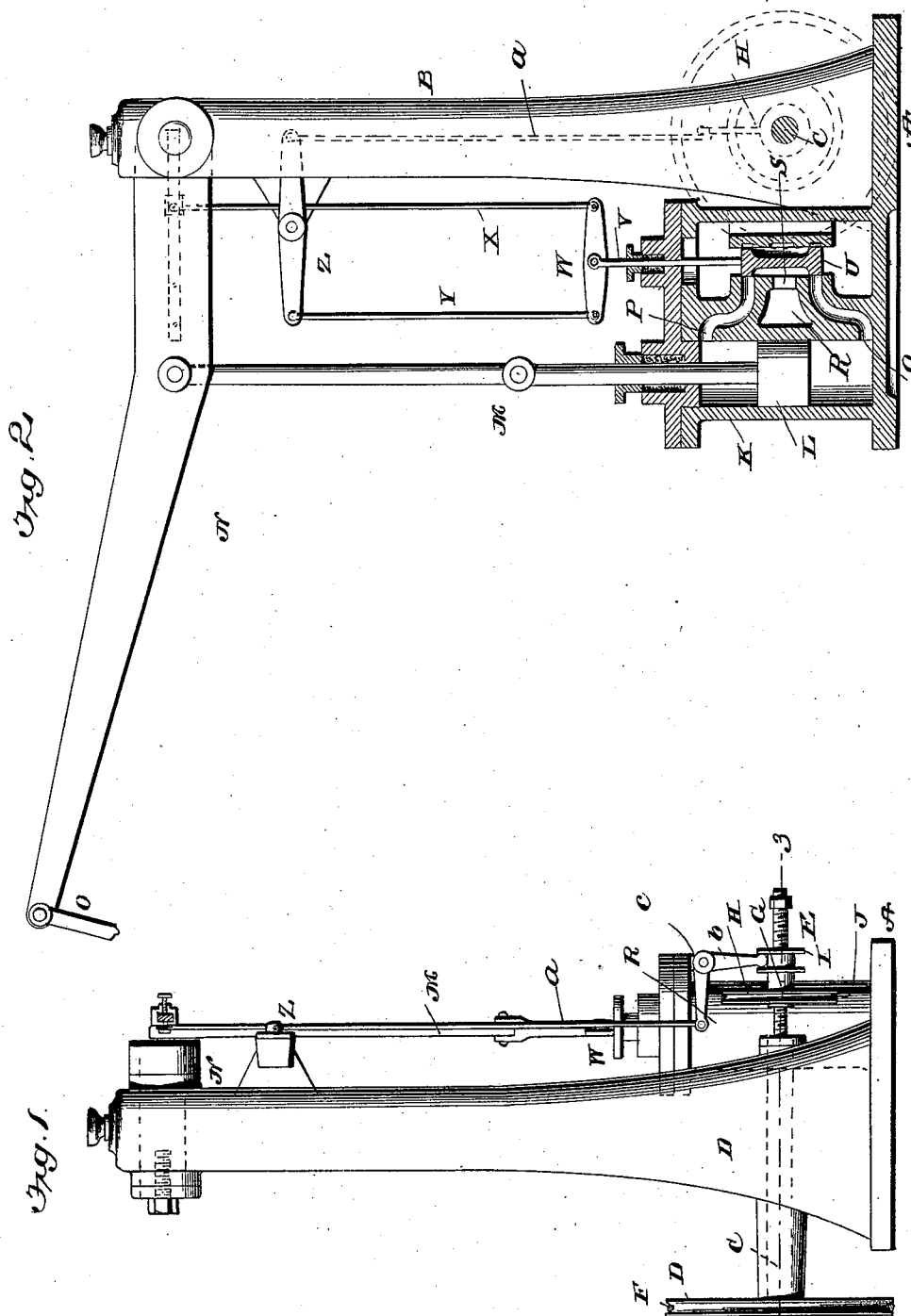
(No Model.)

2 Sheets—Sheet 1.

C. E. R. MARTIN.  
ENGINE GOVERNOR.

No. 528,276.

Patented Oct. 30, 1894.



Witnesses  
*John Danne*  
*R. B. Bishop*

Inventor  
*Carl E. R. Martin*  
By *W. W. Calmore*  
Attorney

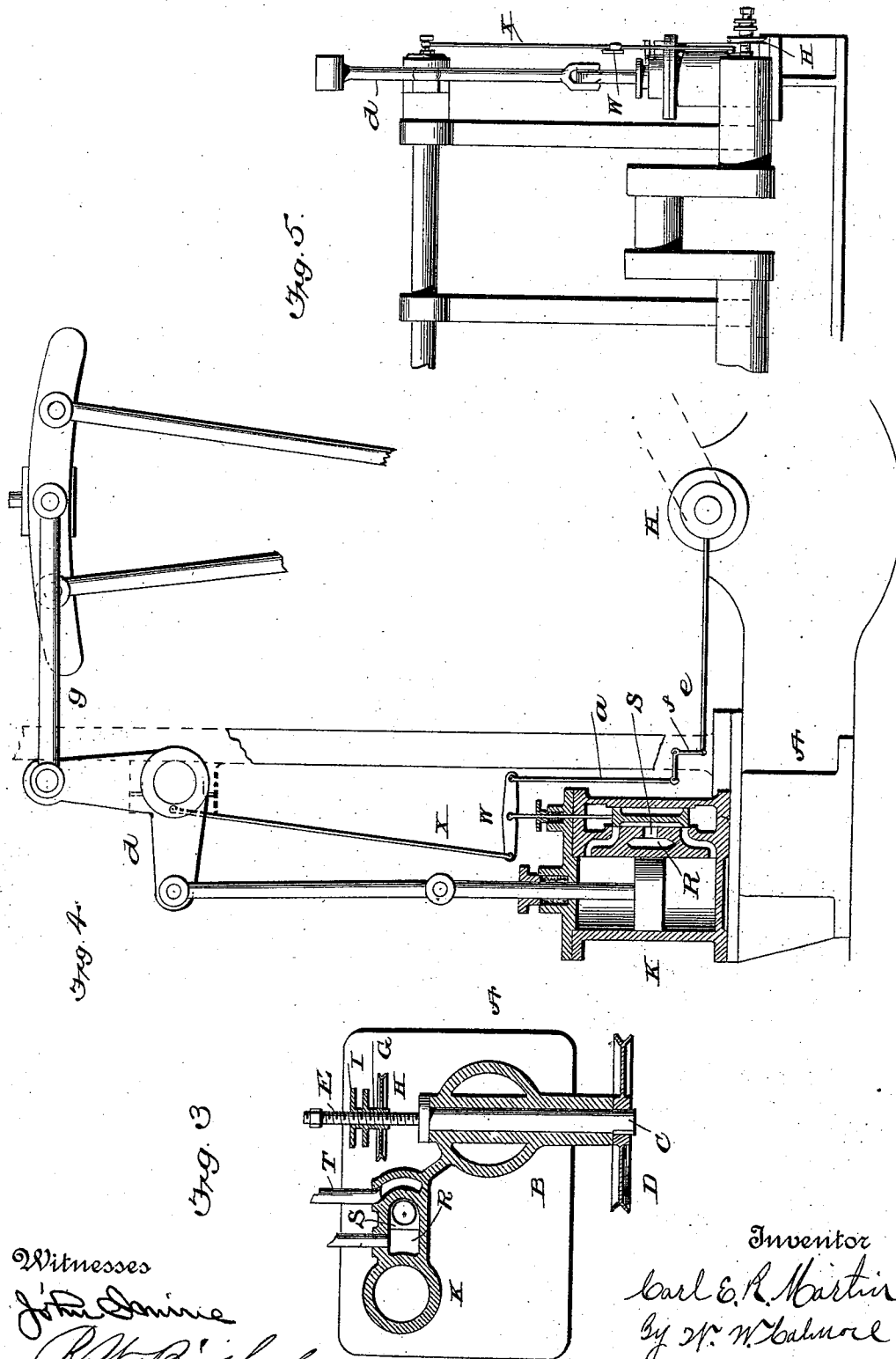
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*John Quinn*  
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Inventor  
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# UNITED STATES PATENT OFFICE.

CARL E. R. MARTIN, OF PHILADELPHIA, PENNSYLVANIA.

## ENGINE-GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 528,276, dated October 30, 1894.

Application filed February 1, 1893. Renewed September 24, 1894. Serial No. 523,988. (No model.)

*To all whom it may concern:*

Be it known that I, CARL E. R. MARTIN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Engine-Governors, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The object of my invention is to provide an automatic governor for steam engines by means of which the engine will be caused to run uniformly at the desired rate of speed and loss of steam due to sudden increases in  
15 the speed of the engine will be obviated.

The invention consists in certain novel features which will be hereinafter described and claimed.

20 In the annexed drawings, which fully illustrate my invention, Figure 1 is a front elevation of my governor. Fig. 2 is a side elevation of the same with the governor cylinder in section. Fig. 3 is a horizontal section on the line 3—3 of Fig. 1. Figs. 4 and 5 are  
25 elevations showing the governor adapted to a marine engine.

Referring to the drawings more particularly by letter, A designates a bed plate from which rises a standard or column B, as shown.  
30 In the lower portion of this standard or column I journal a shaft C having a pulley D at one end and provided with a threaded spindle E at its opposite end. The pulley D is connected with the driving shaft of the engine by the belt F and the shaft C is thereby  
35 driven at the same speed as the engine. Upon the spindle E I mount a sleeve G which has a pulley H at its inner end and is provided with the annular flanges I at its outer  
40 end. This sleeve is internally threaded and the threads have the same pitch as the threads of the spindle. A belt J passes around the pulley H and imparts motion thereto from any suitable motor such as a clockwork which  
45 will operate evenly and regularly at the desired speed so that the said sleeve will rotate at the speed at which it is desired to drive the engine.

Upon the bed plate, at one side of the same,  
50 I erect a cylinder K in which a piston L reciprocates. The said piston L is connected by a link M with a lever N fulcrumed on the

upper end of the standard D and having its outer end connected with the reversing gear of the engine by a suitable link O, as will be readily understood. The cylinder K is provided with the ports P, Q, at its ends to permit the passage to the piston and escape therefrom of water in the operation of the device. The water enters the cylinder through  
55 a chest R and escapes through a passage S in the said chest to one or the other of the ports P, Q, as will be readily understood on reference to Fig. 2. The discharge takes place from the chest through an escape pipe  
60 T. The inlet pipe may run from the boiler below the water line to the chest R and the discharge pipe may lead the exhaust back to the boiler or into an intermediate reservoir.

A slide valve U is adapted to control the  
70 passage of the water through the ports P, Q. A stem V rises from the said valve and has its upper end pivoted centrally to a vibratory cross-head W, as shown, one end of said cross-head being connected by a link X with the  
75 lever N near the fulcrum of said lever and the opposite end of said cross-head being connected by a link Y with an oscillating arm Z which is pivoted on the standard B. A connecting rod a connects the front end of the  
80 arm Z with an angle lever b which is mounted on an arm c projecting from the standard and has its lower end engaging between the annular flanges I on the sleeve G.

The construction and arrangement of the  
85 several parts of my device being thus made known, the operation of the same will, it is thought, be readily understood.

Ordinarily the spindle E and the sleeve G will rotate at the same rate of speed and the  
90 sleeve cannot increase or diminish its speed as it is driven by a regular motor, such as a clock-work mechanism. Should the speed of the engine, however, increase, the speed of rotation of the spindle E will be correspondingly increased and the sleeve will consequently be caused to move toward the outer  
95 end of the said spindle. This outward movement of the sleeve G will cause the angle lever b to vibrate, and thereby exert a downward  
100 pull on the connecting rod a. The arm Z will thus be vibrated and will act through the link Y and the cross-head W to slightly lift the valve stem V and the valve U carried thereby.

The ports P Q will thus be opened and the water will pass through the same so as to act on the piston L and thereby force the same downward. The downward motion of the said piston will be transmitted through the link M to the lever N and the said lever consequently vibrated so as to actuate the reversing gear of the engine and decrease the speed of the same. The downward movement of the lever N will also act through the link X on the cross-head W so as to force the same downward and thereby close the ports P Q thus preventing the entire stoppage or reversal of the engine and causing the same to run at the desired uniform speed. It will be readily understood, of course, that if the speed of the engine should fall below the desired speed, the several parts will move in directions the reverse of those just described so that the speed of the engine will be brought up to the normal rate.

It is obvious that my governor is entirely automatic in its action and will act instantly on the slightest variation of the speed so that the work performed by the engine will be constant. The governor can be kept up to the required degree of sensitiveness by shifting the position of the pivots or fulcrums of the several levers, as will be readily understood.

In Figs. 4 and 5 I have shown a slight modification in the arrangement of the governor whereby it is adapted to a marine engine. In this form of the device an angle lever *d* which is secured to the reversing shaft is substituted for the lever N and the link Y and arm Z are dispensed with, the link X extending from the cross-head W to the lever *d* and the link *a* passing downward from the said cross-head. The threaded spindle is formed on the end of the driving shaft and a link *e*

and an angle lever *f* connect the sleeve with the links *a*. A connecting rod *g* extends between the angle lever *d* and the link mechanism of the engine, as shown. The operation of this form of the device is the same as that shown in the other figures and previously described.

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

1. In a steam engine governor, the combination of a threaded spindle driven by the engine, a sleeve loosely mounted on the said spindle and driven by an independent motor, a piston connected with the reversing gear of the engine, a valve controlling said piston, connections between said valve and the loose sleeve, and connections between said valve and the reversing gear of the engine.

2. The combination of a piston connected with the reversing lever of the engine, a valve controlling said piston, a vibratory crosshead pivoted to the upper end of the stem of said valve, a link connecting one end of the crosshead with the engine reversing lever, and mechanism connected with the opposite end of said crosshead to actuate the same upon a variance in the speed of the engine.

3. The combination of the threaded spindle driven by the engine, the sleeve mounted thereon and driven by an independent motor, the levers N and *b*, the links X Y and M, connecting rod *a*, arm Z, cross-head W, valve U and piston L, all arranged and operating substantially as specified.

In testimony whereof I affix my signature in the presence of two witnesses.

CARL E. R. MARTIN.

Witnesses:

B. G. BROMLEY,  
C. A. TOPPING.