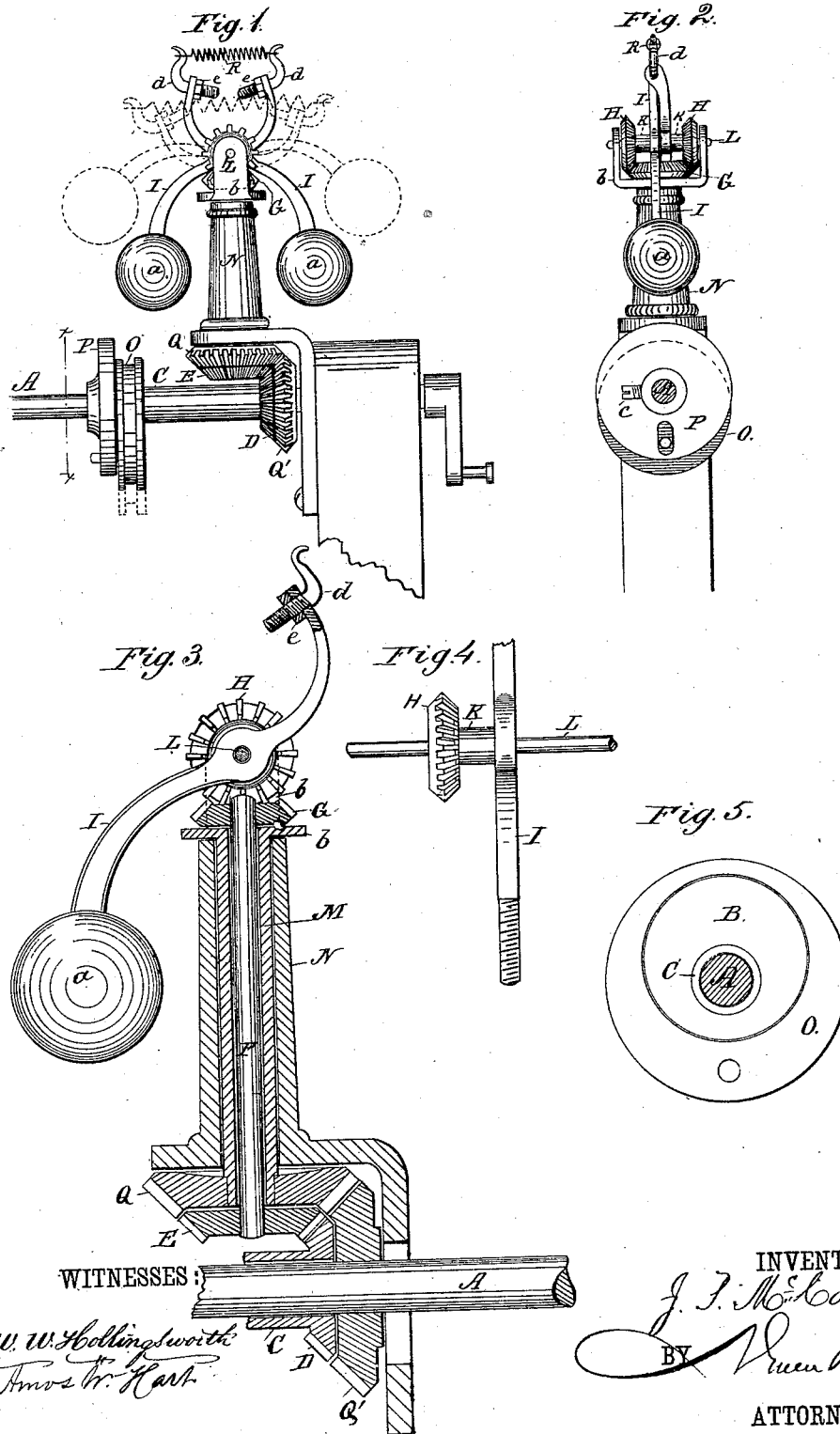


(No Model.)

J. P. McCOOK.
GOVERNOR FOR STEAM ENGINES.

No. 264,043.

Patented Sept. 5, 1882.



UNITED STATES PATENT OFFICE.

JOSHUA P. MCCOOK, OF RICHMOND, VIRGINIA, ASSIGNOR OF ONE-THIRD TO
JAMES H. BRUCE, OF SAME PLACE.

GOVERNOR FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 264,043, dated September 5, 1882.

Application filed July 22, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOSHUA PARKER MCCOOK, of Richmond, in the county of Henrico and State of Virginia, have invented a new and
5 Improved Governor for Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention is an improvement in the class of valve-gear governors having weighted arms
10 or levers that operate by centrifugal force to regulate the cut-off according to the speed of the engine, thus in turn increasing or diminishing the speed correspondingly. I employ a compound or variable eccentric in connection
15 with such weighted levers, and apply a spring to the latter, which supplements the effect of gravity in resisting centrifugal action, and thereby serves as a means for regulating the action of the governor upon the eccentric that
20 reciprocates the valve or cut-off. The construction, combination, and operation of these and other co-operating parts will be hereinafter described, reference being had to accompanying drawings, in which—

25 Figures 1 and 2 are side elevations of my improved governor. Fig. 3 is a vertical central enlarged section of the main portion of the governor. Fig. 4 is a detail view, showing one of the weighted levers and its sleeve and pinion detached. Fig. 5 is an enlarged section on
30 line *x x*, Fig. 1.

The letter A indicates the shaft of the engine, and B, Fig. 5, an eccentric disk fixed on a sleeve, C, through which the shaft passes.
35 Upon the other end of this sleeve is a bevel-pinion, D, that meshes with a similar pinion, E, fixed on the lower end of a vertical shaft, F, Fig. 3, that carries a bevel-pinion, G, on its upper end. Said pinion G meshes with pinions H H, each of which is mounted solid, along
40 with a weighted lever, I, on a sleeve, K, that is free to rotate on the horizontal shaft L—that is to say, each lever I carries a ball or weight, a, on its outer end, and is fixed with a pinion, H, on a sleeve, K, the two sleeves working in-
45 dependently on the same axis, L. The latter has its bearings in vertical arms, constituting an attachment of the head b of a hollow shaft, M, which rotates in the standard N. Upon the
50 aforesaid eccentric disk B is placed a shifting ring-like eccentric, O—that is to say, the latter

has a limited shifting circumferential movement on and around the disk B, the extremes thereof being determined by its connection with the collar or disk P, which is provided
55 with a clamp-screw, c, or other suitable device for holding it set in any desired position to which it may be moved around the engine-shaft A. The said connection between collar P and eccentric O is by means of a radial slot in the
60 former and a pin fixed in the latter, as shown in Fig. 2. The aforesaid shaft M, that revolves in the hollow standard N, has on its lower end an annular bevel-gear, Q, that meshes with a similar one, Q', fixed on the engine-shaft A, 65 contiguous to the pinion D on sleeve C.

So far as I have described the invention, the operation is as follows: The collar P is set as desired to regulate the position of the outer eccentric, O, on the inner one, B, which regulates
70 the throw of the valve, (not shown,) through the medium of the eccentric-rod, that is in practice attached to eccentric O in the usual way. Any variation from the speed so estab-
75 lished will lessen or increase centrifugal action, and thus cause the weighted levers I to vibrate on their fulcras, and thereby shift the eccentric disk B around the shaft A, which movement effects a change in the position of the ring-
80 eccentric O, causing it to become more nearly concentric with the shaft, or else more eccentric thereto, as the case may be, and consequently changing the throw of the valve and admitting less or more steam to the cylinder
85 correspondingly. In further explanation of the special operation of the parts connected with the weighted levers I, it may be stated that as the weighted ends of the latter rise the sleeves K and pinions H are rotated, and the
90 latter in turn rotate the vertical shaft F, which shifts the sleeve C and eccentric disk B, as will be readily understood. It will be observed that this action takes place without affecting the rotation of the levers I with the hollow
95 shaft M and around the shaft F.

I will now describe the spring-regulating attachment of the weighted levers. The latter are extended above their sleeve-fulcras K and have arms d attached, as shown. The said
100 arms are approximately right angular in shape and screwed into the ends of the levers, and provided with jam-nuts e, for securing them in

any desired adjustment. Their upper ends are hook-shaped or otherwise suitably constructed to adapt them for attachment of a gum or spiral spring, R. Thus the levers I are connected by a spring which supplements the gravity of the weights, tending to prevent the latter rising, and its tension may be changed by adjusting the arms toward or from each other for the purpose of regulating the action of the governor—that is to say, when the spring R is under slight tension the governor acts more quickly and cuts off at a lower speed than when the tension is greater.

What I claim is—

1. The combination, with the engine-shaft and a compound eccentric for operating the cut-off, of the sleeve K, having the pinion attached, the vertical shaft F, carrying pinions E,

the weighted levers I I, pinions H, sleeves K, hollow vertical shaft M, and a gear, Q, fixed on the engine-shaft, all as shown and described, to operate as specified.

2. The combination, with vibrating weighted levers connected with a variable eccentric, and having extensions, as specified, of a spring-regulating attachment, applied as shown and described.

3. The combination of the spring R and adjustable arms *d* with the weighted levers I I and means for connecting the latter with the variable eccentric for regulating the cut-off, as specified.

JOSHUA PARKER McCOOK.

Witnesses:

W. F. RICHARDSON,

T. E. PATTERSON.