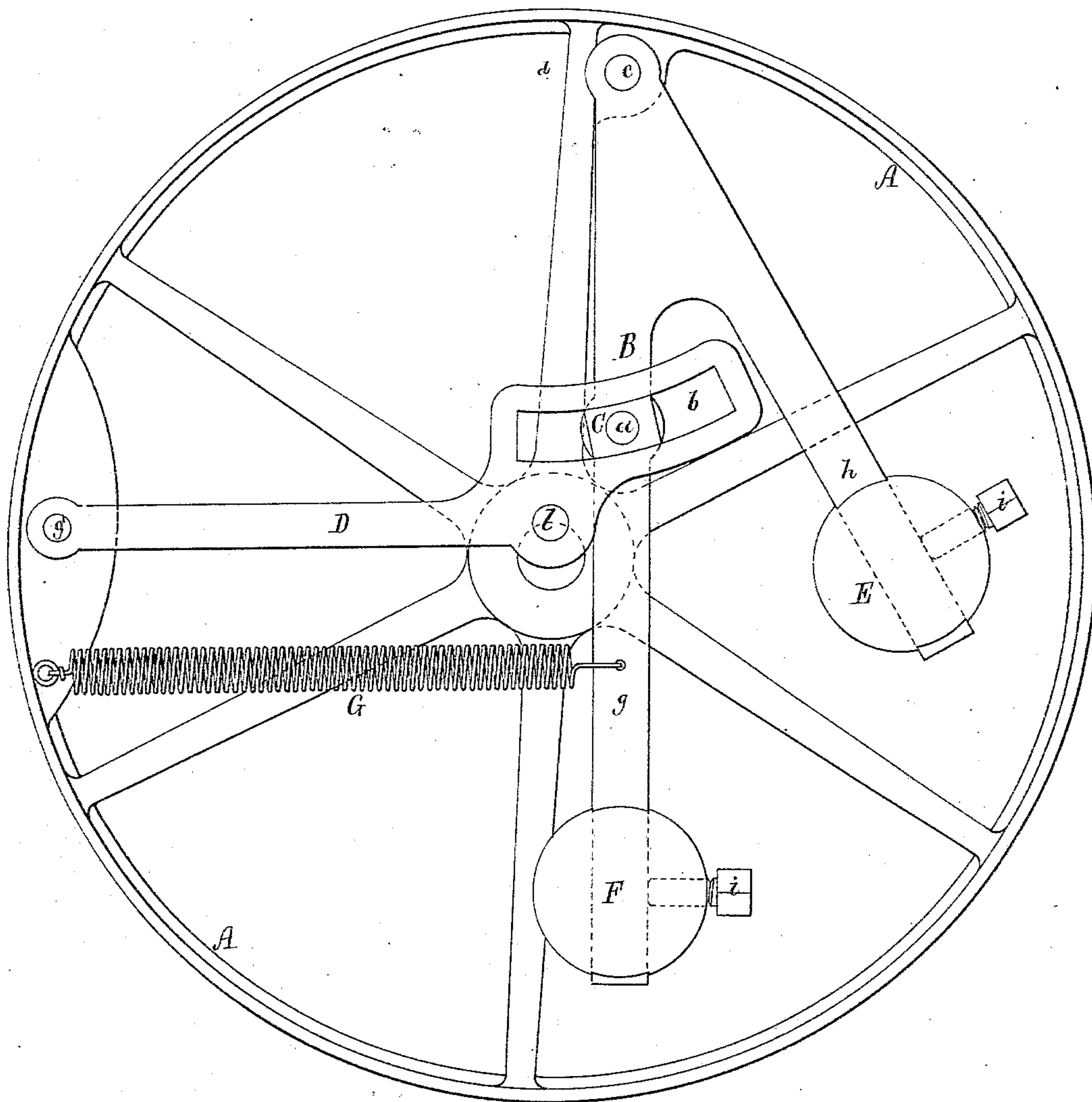


(No Model.)

G. W. BROWN.
STEAM ENGINE GOVERNOR.

No. 303.979.

Patented Aug. 26, 1884.



Witnesses.

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UNITED STATES PATENT OFFICE.

GILMAN WELD BROWN, OF WEST NEWBURY, MASSACHUSETTS.

STEAM-ENGINE GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 303,979, dated August 26, 1884.

Application filed February 18, 1884. (No model.)

To all whom it may concern:

Be it known that I, GILMAN WELD BROWN, of West Newbury, in the county of Essex, of the Commonwealth of Massachusetts, have invented a new and useful Improvement in Steam-Engine Governors; and I do hereby declare the same to be described in the following specification and represented in the accompanying drawing, which is a front view of a governor embodying my invention, whose nature is defined in the claims hereinafter presented.

My invention relates to that class of governors of which a disk or wheel or the fly-wheel of the engine constitutes a part or has applied to revolve with and be revolved by it other parts of the governor.

In the drawing, A denotes the wheel, having pivoted to it a vibratory lever, B, from which a pin, *a*, projects into a slide, C, arranged in the areal slot *b* of an arm, D, such arm being pivoted near its outer end to the wheel and arranged with the lever B in manner as represented. The areal slot *b* of the arm D is not concentric with the pivot *c* of the lever B, but has its radial center *d* at a distance laterally from the said pivot, in order that when the lever B may swing away from the axis of the wheel as the speed of the wheel may be increased the arm D shall be moved inwardly laterally on its pivot *g'*, and in the opposite direction when the lever B is moved toward the axis of the wheel. In practice the arm D is to be suitably connected with the slide-valve of the valve-chest of a steam-engine cylinder for the throw or movements of the valve to be effected by the motions imparted to the arm D by the weighted vibratory lever.

In the drawing the pin for connecting the valve-rod to the arm D is shown at *l*.

The vibratory lever B is shown of angular form in the drawing—that is, as having two arms, *g* and *h*, disposed at an acute angle to each other, each arm being provided with a weight, one of such weights being marked E and the other F, and the latter on the longer arm. Each weight may be adapted to be adjustable on the arm—that is, to slide lengthwise thereon—such weight being provided with a set-screw, *i*, to clamp it to the arm.

In some cases the arm *g* may be without its weight F and may extend down little, if any, beyond the arm D; but it is better to have the two arms and their two weights to the lever arranged with reference to the wheel and the slotted arm, in manner substantially as represented, in which case the path of centrifugal movement of the weight E, while the wheel may be in revolution, will be approximately radial to the wheel.

A spiral spring, G, attached at one end to the arm *g* extends therefrom to the wheel A, as shown, such spring at its outer end being fixed to the wheel. This spring is to move the vibratory lever centripetally relatively to the wheel or contrary direction in which such lever may be moved by its weight E.

The power of the governor to move or throw the slide-valve, when necessary, when such governor has the two weighted arms arranged with and adapted to the wheel, as represented, is due to a combination of two forces acting together. The weight E, which, for the sake of illustration, may be termed the “centrifugal weight,” is so arranged that its path of movement is approximately radial to the wheel, such allowing the said weight to move under the influence of centrifugal force while the wheel may be in revolution. The weight F, however, which, for the sake of illustration, may be termed the “inertia weight,” is so arranged that its path of motion is approximately parallel to the circumference of the wheel, whereby, when such wheel is in revolution, the weight will be greatly influenced in its movement by the inertia of such weight, and little by centrifugal force in comparison to what is the case with the weight E.

The action of the two weights in governing the speed of the engine may be thus described. As the speed of the wheel A may increase, the centrifugal force of the weight E is balanced, as nearly as may be desired, by the contractile power of the spring. There being in the weight F, while the wheel may be revolving, a due amount of inertia, this weight, owing thereto, will have a tendency to keep rotating at the velocity given it by the wheel, and since such weight is free to move in the path of its revolution it will yield to the force of its inertia and change its position relatively to the

wheel, but the weight E will be little affected by changes of inertia under the influence of changes of centrifugal force. Now, should the speed of the engine or wheel slacken, the inertia of the weight F will cause such weight to advance from its former position, thereby causing the arm D to move to increase the throw of the valve so as to increase the steam to the engine-cylinder. This action will be assisted by the diminution of the centrifugal force of the weight E, such weight being pulled inwardly by the spring; but should the speed of the engine or the wheel increase counter effects would occur.

15 I claim—

1. The steam-engine governor, substantially as described, consisting of the wheel, spring, slotted arm, and a vibratory weighted lever, adapted and arranged essentially and to operate as set forth.

2. The combination of the spring and the vibratory lever, having the two arms and their weights and pivoted to the wheel, with such wheel and the slotted arms or mechanism for varying the throw of the valve of a steam-engine, all being essentially as set forth.

GILMAN WELD BROWN.

Witnesses:

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