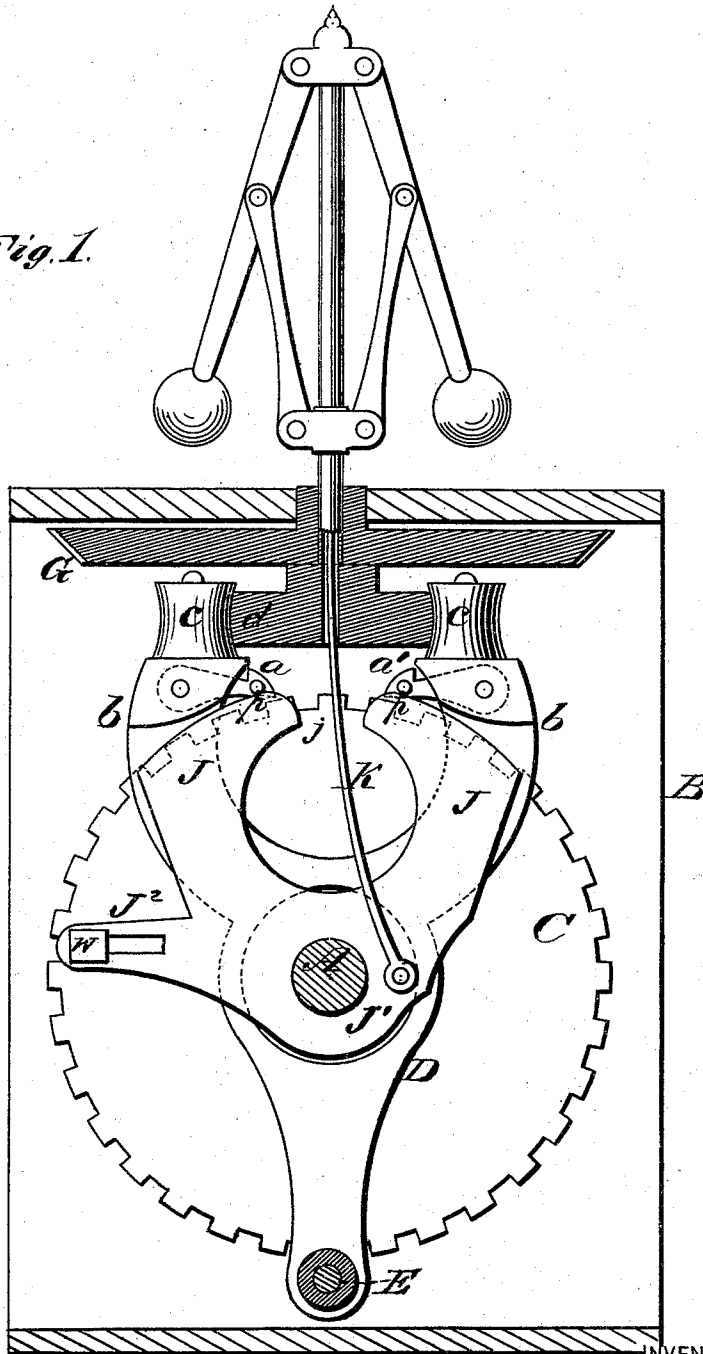


A. WOODWORTH.
Water-Wheel Governors.

No. 156,720.

Patented Nov. 10, 1874.

Fig. 1.



WITNESSES
E. H. Bates
Robert Everett

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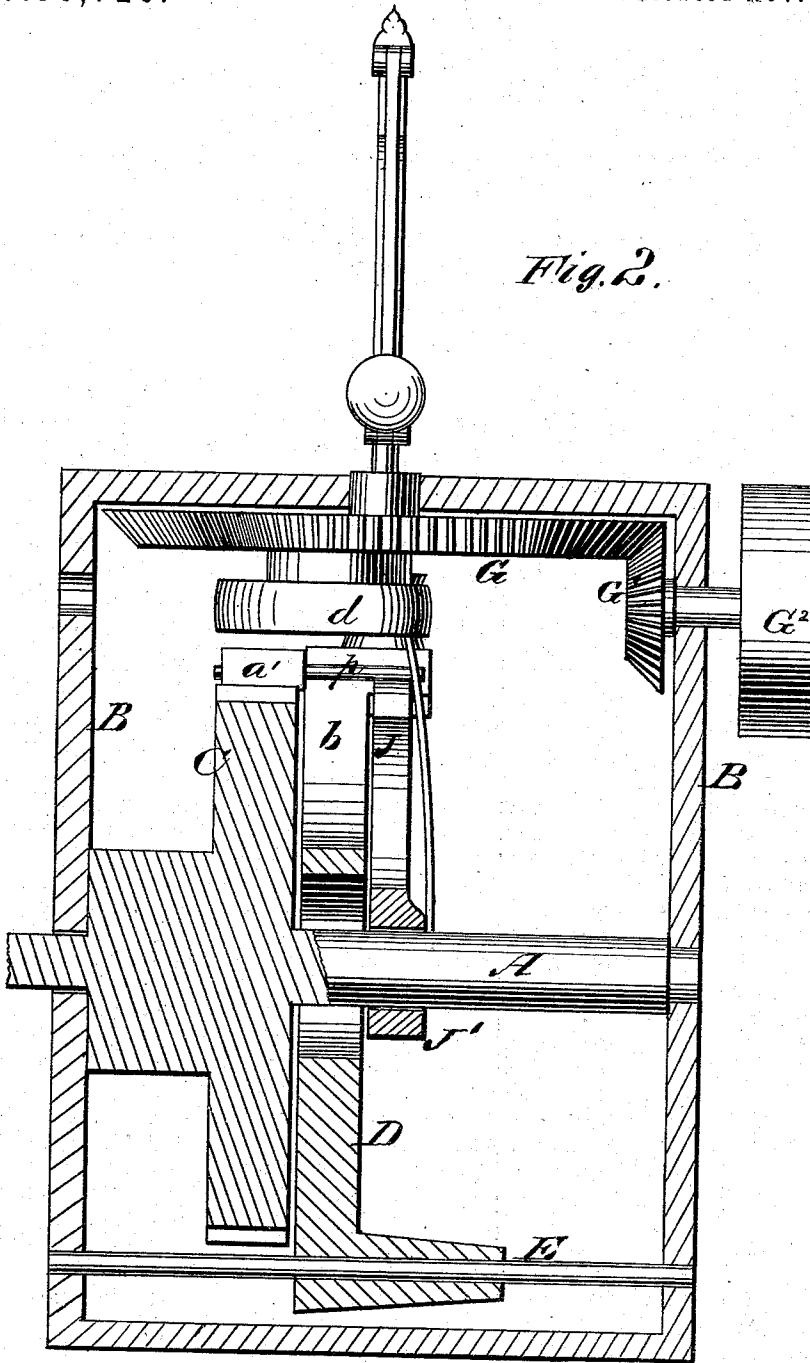
ATTORNEYS

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Fig. 2.



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ATTORNEYS

UNITED STATES PATENT OFFICE.

ALFRED WOODWORTH, OF CAMBRIDGE, NEW YORK.

IMPROVEMENT IN WATER-WHEEL GOVERNORS.

Specification forming part of Letters Patent No. **156,720**, dated November 10, 1874; application filed September 12, 1874.

CASE B.

To all whom it may concern:

Be it known that I, ALFRED WOODWORTH, of Cambridge, in the county of Washington and State of New York, have invented a new and valuable Improvement in Water-Wheel Governors; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figures 1 of the drawings are representations of vertical sectional views of my water-wheel governor. Fig. 2 is a transverse vertical sectional view of the same.

This invention relates to certain novel improvements on the water-wheel governor marked "Case A," and bearing even date with the filing of this.

The improvements consist mainly in a vibrating pawl-carrier having upon its upper end anti-friction wheels, in combination with actuating mechanism, as will be hereinafter more fully described and claimed.

In the annexed drawings I have omitted to show the connection of the shaft A with the gate-stem, as this may be done by means of bevel-wheels, or by any other suitable means. I have also omitted to show the stop-motion and the friction-clamp described and illustrated in my application for Letters Patent marked "Case A," and above referred to.

The shaft A has its end bearings in a suitable frame, B, and on this shaft is keyed a ratchet-wheel, C, the teeth of which are so shaped as will allow pawls *a a'* to turn it either toward the right or left. The pawls *a a'* are loaded, so that they will be held down to their work by their own gravity, and these pawls are pivoted to two arms, *b b*, of a bifurcated pawl-carrier, D, which is pivoted to a rod, E, beneath the shaft A, and constructed with a large opening through it, which will allow it to vibrate freely, and also allow shaft A to pass through it. The upper ends of the arms *b b* of pawl-carrier D bear anti-friction rollers *c c*, having concave peripheries, be-

tween which rollers is an eccentric, *d*, which is fixed on the lower end of a short shaft, on which a bevel-wheel, G, is keyed. This wheel engages with a bevel-pinion, G¹, on the shaft of a belt-wheel, G², which receives motion from the mechanism driven by the water-wheel. J J designate two guards, which are separated from each other by a short space, *j*, and which are formed on a hub, J¹, that is free to vibrate on the shaft A. The hub and its guards are vibrated by the rise and descent of the governor-balls, to which they are connected by means of a rod, K, passing up through the shaft of wheel G. On the opposite side of shaft A to the point where rod K is attached to the hub J¹, an arm, J², is formed on this hub, and to this arm a weight, *w*, is adjustably applied for balancing the balls of the centrifugal governor.

When the guards J J are in the position shown in Fig. 1, pins *p p* on pawls *a a'* will lie upon these guards, and the pawls will be held free from the ratchet-wheel. When the governor-balls rise one of the guards J will be moved from beneath the pin *p* of pawl *a*, and allow this pawl to engage with the ratchet-wheel C and turn this wheel so as to diminish the flow of water to the water-wheel.

If the governor-balls descend below a given point, the pawl *a'* will be caused to engage with the wheel C and turn this wheel so as to open the gate and allow an increase of the flow of water to the water-wheel.

What I claim as new, and desire to secure by Letters Patent, is—

The combination, with the bifurcated vibrating pawl-carrier D, having anti-friction pulley-wheels *c c* upon its upper extremities, of the eccentric *d*, bevel-wheel G, actuating-wheel G², and rod E, as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

ALFRED WOODWORTH.

Witnesses:

GIDEON B. BROWNELL,
L. C. BROWNELL.