N. M. DIBBLE.

Water-Wheel Governor.

No. 219,923. Patented Sept. 23, 1879.

Fig. 1

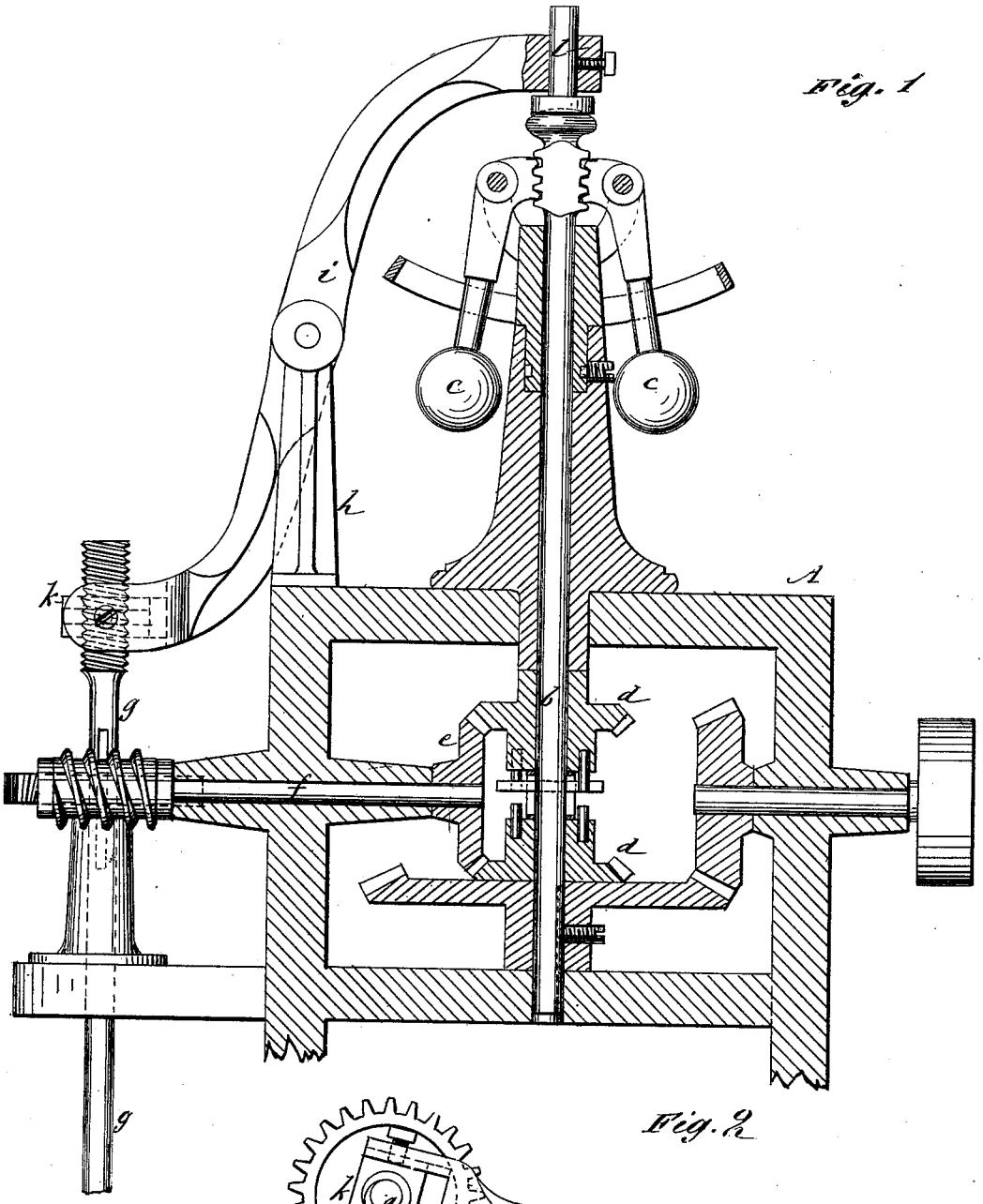
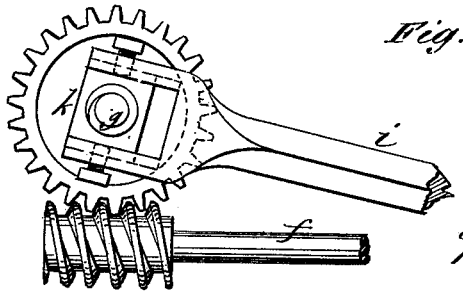


Fig. 2



WITNESSES:

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UNITED STATES PATENT OFFICE

NATHAN M. DIBBLE, OF BIRMINGHAM, CONNECTICUT, ASSIGNOR TO HIMSELF AND LUCAS A. DOLPH, OF SAME PLACE.

IMPROVEMENT IN WATER-WHEEL GOVERNORS.

Specification forming part of Letters Patent No. **219,923**, dated September 23, 1879; application filed June 24, 1879.

To all whom it may concern:

Be it known that I, NATHAN M. DIBBLE, of Birmingham, in the county of New Haven and State of Connecticut, have invented a new and Improved Water-Wheel Governor, of which the following is a specification.

The invention consists in combining with a speed-governor for water-wheels a pivoted arm connected with the gate-stem and fitted to act upon the sliding shaft of governor; also in combining, with wheel-stem, shaft, and balls, a lever, nut, and bearing-block, as hereinafter described.

In the accompanying drawings, Figure 1 is a sectional elevation of a water-wheel governor fitted with my improved safety device. Fig. 2 is a top view of the gate-stem and connections thereto.

Similar letters of reference indicate corresponding parts.

The governor shown is a well-known form of the centrifugal type. A is the case containing the gearing. *b* is a vertical shaft revolved continuously by connections with the power, and fitted for endwise movement by the governor-balls C. *d d* are bevel-gears loose upon shaft *b* and meshing with a gear, *e*, that is keyed on the horizontal shaft *f*. *g* is the gate-stem, operated by worm-gearing from shaft *f*.

Projecting from the shaft *b* between the bevel-gears *d* are pins or lugs, which cause the movement of one or the other of gears *d* by contact with pins or lugs on the gears, according as the shaft *b* is raised or lowered by the balls *c*, and thereby open or close the gate. In an intermediate position the pins escape contact with either gear, and the gate remains stationary.

Upon a standard, *h*, is hung an arm or lever, *i*, one end of which is fitted with a pivoted nut, *k*, that is upon a threaded extension of the gate-stem *g*, and the other end extends over the upper end of the governor-shaft *b*. In this end is fitted an adjustable bearing-block, *l*, that is formed as a step so as to bear on the end of shaft *b*, while the latter is revolving, without unnecessary friction.

The operation is as follows. When the wheel runs below its working speed the balls cause the vertical shaft to rise, and the gate is opened by the mechanism of the governor as described, until, by increased speed, the balls move out and the shaft *b* is moved to the intermediate position, or by an increase of speed above the normal point the gate is closed by reverse action. The arm *i* is to be adjusted by moving the nut *k* on the stem *g* or the block *l* in the arm, so that when the gate is open to the greatest extent desired, which point may be more or less short of full-gate, the end of arm *i* above shaft *b* will have moved downward far enough to cause the disengagement of shaft *b* from the upper gear, *b*. By these means, if the speed of the wheel be checked when the gate is fully open the shaft *i* cannot rise to cause farther opening of the gate, or if while the gate is being opened by the governor the speed is not increased the block *l* will bear on shaft *b*, and by forcing the same downward stop the opening of the gate at the proper point.

I do not limit myself to the construction exactly as described and shown, as the safety device may be applied to other forms of governors and to gates that open by a revolving or a sliding movement.

It will be understood that the safety device does not interfere with the ordinary action of the governor, and is only operative under the exceptional circumstances named to prevent injury and maintain the proper relative position of the gate and sliding shaft *b*.

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

1. In combination with a speed-governor for water-wheels, the pivoted arm or lever *i*, connected with the gate-stem and fitted for operating upon the sliding shaft *b* of the governor, substantially as and for the purposes specified.

2. In a water-wheel governor, the combination, with the wheel-stem *g*, shaft *b*, and balls *c*, of the lever *i*, nut *k*, and bearing-block *l*, substantially as described and shown, and for the purposes set forth.

NATHAN MINOR DIBBLE.

Witnesses:
THOS. S. BIRDSEYE,
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