(No Model.)

# E. WRIGHT.

## Governor.

No. 237,655. Patented Feb. 8, 1881.

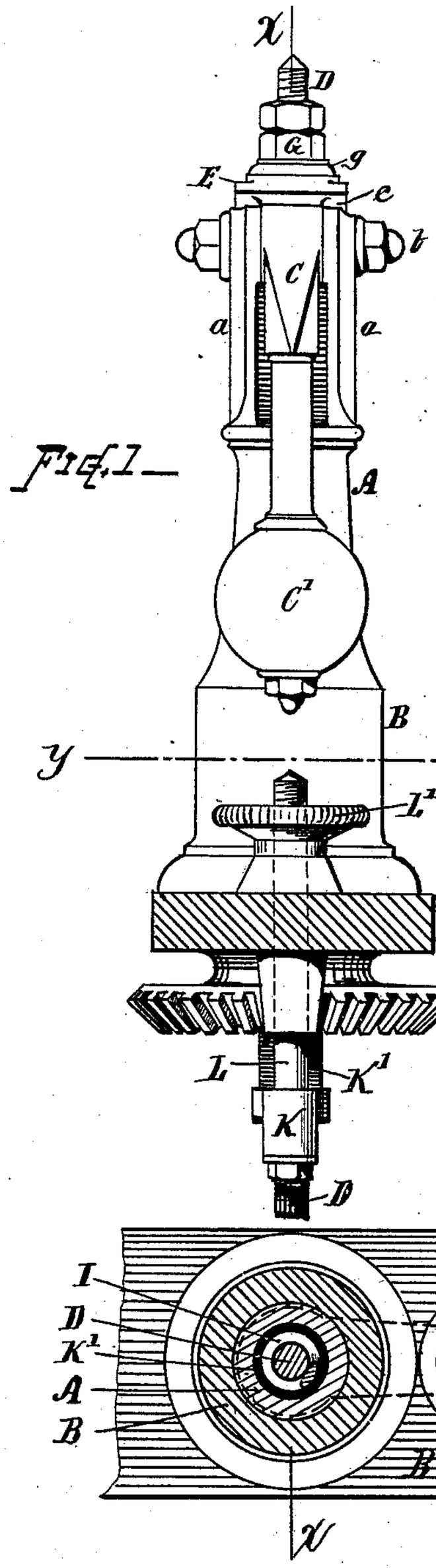


Fig. 1.

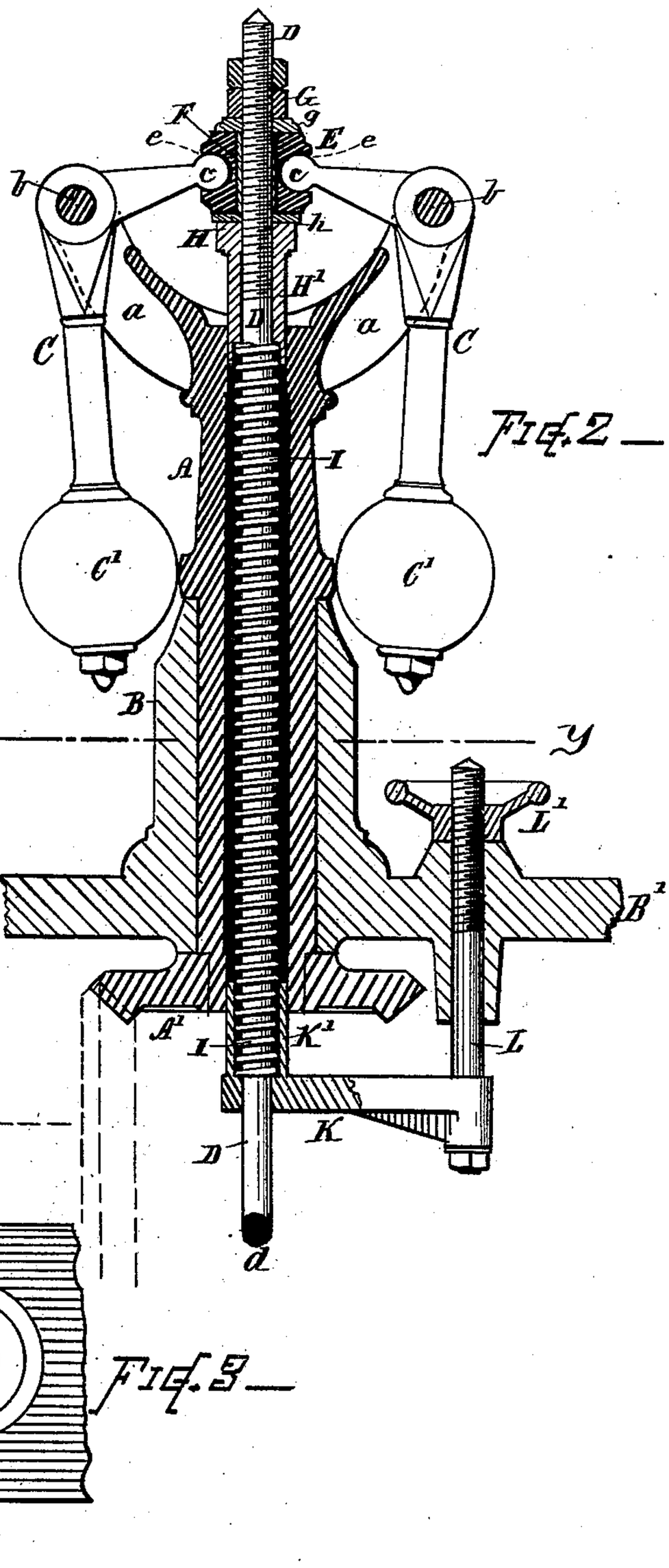


Fig. 2.

Fig. 3.

WITNESSES—

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# UNITED STATES PATENT OFFICE.

EDWARD WRIGHT, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO WRIGHT MACHINE COMPANY, OF SAME PLACE.

## GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 237,655, dated February 8, 1881.

Application filed October 13, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD WRIGHT, of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Governors; and I declare the following to be a description of my said invention sufficiently full, clear, and exact to enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to the peculiar construction and arrangement of the tension and adjusting devices in a governor mechanism, as described, with a view to rendering the governor more neat, simple, compact, and convenient, and to provide a mechanism adapted for light or heavy work on steam-engines or water-wheels, and adjustable to any required speed.

In the drawings, Figure 1 is a side view of such parts of a governor mechanism as are necessary to illustrate the nature of my invention. Fig. 2 is a vertical sectional view of the same at line *x x*, and Fig. 3 is a horizontal section at line *y y*.

The part indicated by letter A is the revolving standard, spindle, or shaft, formed hollow through its axis and supported to revolve in a bearing, B, on the frame B′, it being provided with a gear, A′, or other suitable means whereby it can receive the required motion from the driving mechanism in the ordinary manner.

At the upper part of the spindle A are formed ear-pieces or arms *a a*, to which are fulcrumed, at *b b*, the levers C C carrying the balls or weights C′, as shown.

D indicates the controlling-rod by which the steam-valve, cut-off devices, ratchet-guard, or other variable mechanism to be acted upon by the governor is connected, the connection being made to the lower end, *d*, of said rod, or in any suitable manner, according to the position or use of the mechanism. The controlling-rod D is arranged through the center of the spindle A, and its upper end is connected for operation with the ball-levers C by means of a revoluble head, E, having side grooves, *e*, to receive the broad bearing ends *c* of said levers, by which said head E, together with the rod D, is depressed or raised as the balls C′ move outward and inward. The head E revolves with the levers C and runs loose on the rod D, or on the hardened-steel sleeve F surrounding said rod, and is confined between the nuts G and H, which are screwed onto the rod D respectively above and below the sleeve F, suitable washers, *g* and *h*, being introduced, so that, the bearing or wearing surface being on the steel sleeve and washers *g h*, the parts can run freely under heavy strains. This is of importance on governors used for regulating heavy water-gates, &c. The nuts G H on the screw-threaded end of rod D permit of adjustment for varying the length of the connections when setting up or applying the governor to use.

I indicates the tension-spring for forcing inward the balls C′ against their centrifugal action. Said spring I is coiled around the controlling-rod D within the hollow of spindle A, (which is made ample size for its reception,) and is strained for exerting expansive force, its upper end pressing against the collar or extension H′, below the nut H, while its lower end rests within and is supported by a step or bearing tube, K′, upon an adjustable arm, K, arranged to move up and down independent of the rod D. The collar or extension-sleeve H′ and the step-tube K′ are turned off to fit into and form bearings or journals in the upper and lower ends of the spindle A, the latter being properly reamed out for their reception. These bearing parts H′ K′ keep the rod D in central position within the spindle A, while at the same time they completely inclose the spring I within the central chamber, and thus give the mechanism a clean exterior and neat appearance. The parts H′ and K′ slide in and out of the spindle—H′ as the rod D rises and falls, K′ as the spring support-bar K is adjusted, respectively. The adjusting-arm is provided with a support-rod, L, which extends up through the frame B′, and is furnished with a hand-nut, L′, by means of which the bar K can be raised or depressed for regulating the tension of the spring I and adapting the action of governor to greater or less speed.

By arranging the parts as herein described the governor is rendered compact and neat, a

single spring acts upon both of the balls uniformly, while adjustment is provided for the adaptation of the length of the controlling-rod, and an independent and ready adjustment of the tension devices for adaptation to the required speed. The governor is sensitive and quick in action, simple in construction, and easily cleaned and cared for.

If desired to entirely protect the spring I from contact with oil, the tubes or parts H′ K′ can be elongated or extended, so that the lower, K′, will telescope within the upper one, H′. This, however, is not essential to the proper operation of the devices.

I am aware that governors have heretofore been made with their controlling-rod arranged through a hollow standard or spindle, and I do not claim such feature as of my invention; neither do I claim, broadly, the use of springs for assisting the action of the weights or balls in governors.

What I claim as of my invention, and desire to secure by Letters Patent, is—

1. In a governor, the combination, with the ball-levers C and spindle A, of the spring I, inclosed within said spindle, the controlling-rod D, passing through the same, the adjusting-bar K, with screw-rod L and nut L′, and the bearing pieces or tubes H′ and K′, as and for the purposes shown and described.

2. In combination with the ball-levers C, having broad bearing ends *c*, and screw-threaded rods D, for connecting the controlled mechanism, the revoluble grooved head E, the steel sleeve F, and nuts G and H, for the purposes set forth.

Witness my hand this 21st day of September, A. D. 1880.

EDWARD WRIGHT.

Witnesses:
CHAS. H. BURLEIGH,
JACOB D. WRIGHT.