(No Model.) 2 Sheets—Sheet 1.

L. & A. Y. GRAY.

GOVERNOR.

No. 326,497. Patented Sept. 15, 1885.

Fig. 1.

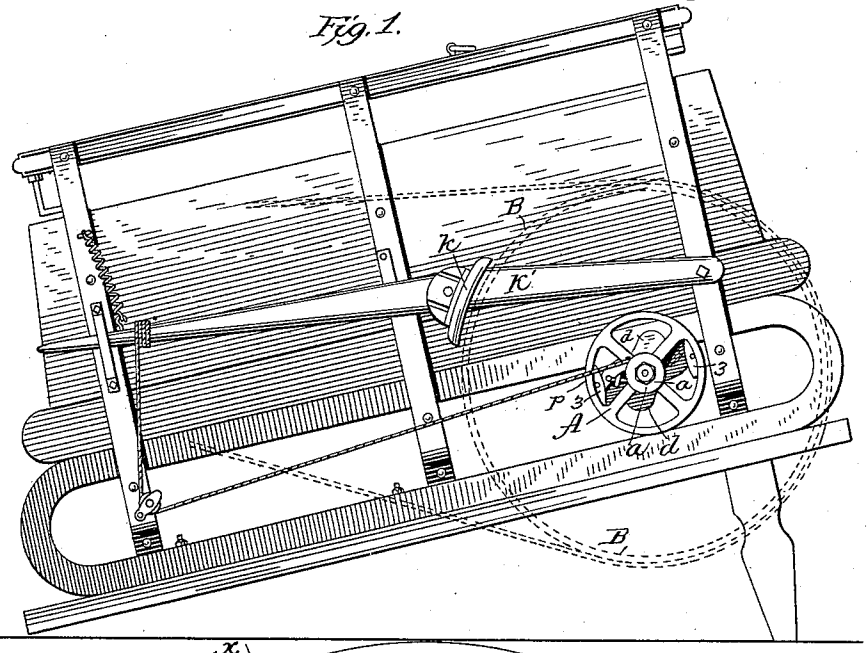
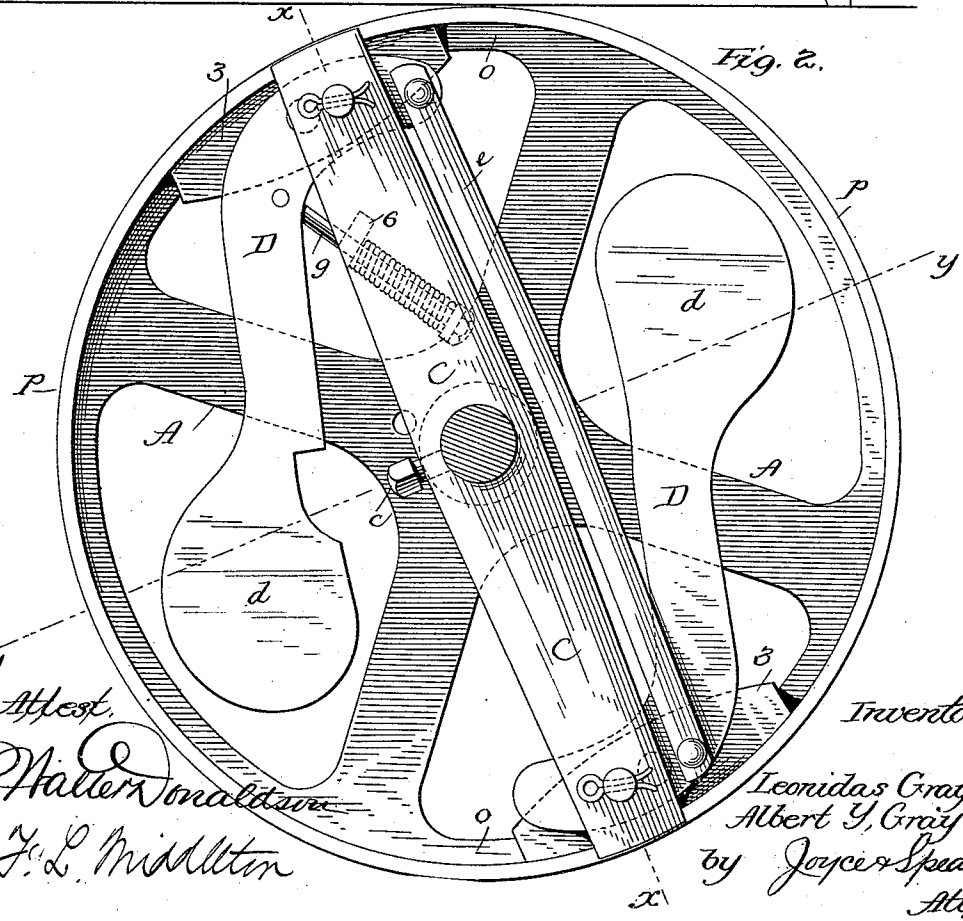


Fig. 2.



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N. PETERS. Photo-Lithographer. Washington. D. C.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

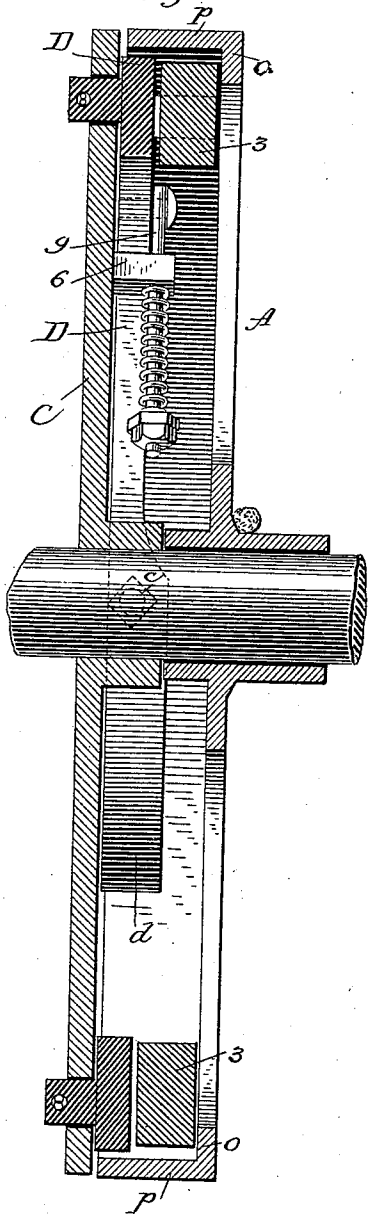
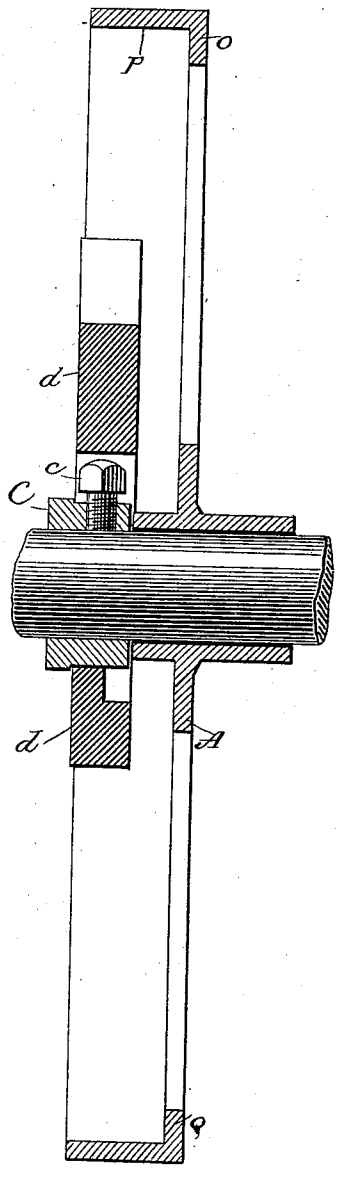


Fig. 4.



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UNITED STATES PATENT OFFICE.

LEONIDAS GRAY AND ALBERT Y. GRAY, OF MIDDLETOWN SPRINGS, VT.

GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 326,497, dated September 15, 1885.

Application filed June 29, 1885. (No model.)

To all whom it may concern:

Be it known that we, LEONIDAS GRAY and ALBERT Y. GRAY, of Middletown Springs, in the county of Rutland and State of Vermont, have invented a new and useful Improvement in Governors; and we do hereby declare that the following is a full, clear, and exact description of the same.

Our invention is an improved governor for horse-powers of that class in which the brake is applied to the main driving-wheel to control the speed to any desired degree without interfering with or causing loss of power when the full force of the machine is required.

In the accompanying drawings, Figure 1 shows a side elevation of a horse-power with our governor attached. Fig. 2 shows an elevation (enlarged) of the inside of the governor, the weighted levers being represented in their outward position. Fig. 3 shows a section on line *x x* of Fig. 2, with the levers in. Fig. 4 shows a section of the governor on line *y y* of Fig. 3, with the weighted levers in cross-section.

In these drawings the governor-wheel is shown at A. It is made with a rim, *p*, extending laterally from the spokes, forming an interior peripheral bearing-surface. This wheel is loose on the shaft of the main driving-wheel B, and has a hub with a pulley, *a*, fixed to the hub. The rim of the wheel is shown as extending inwardly toward the machine, and next to the rim is placed a bar, C, through which the shaft passes, the bar being fixed to the shaft by a set-screw, *c*, and forming arms for the brake mechanism. Near each outer end of this bar is pivoted thereto one of a pair of weighted levers, D, the pivoted ends of which are shown as curved, and the free ends of which, *d*, are enlarged to increase their weight. Each of these is pivoted at its curved end on the inner face of and at each end of the bar C, so that they lie in the cavity formed by the laterally-extending rim of the wheel. As shown in Fig. 2, they are exactly alike, and placed in position reversed to each other upon opposite ends of the bar C. These levers are connected to each other by a link, *e*, which is pivoted to one lever at the end and outside of the pivotal bolt which connects the lever to the bar, while at the other end the link is pivoted to the other weighted lever inside of the pivot. Thus the movement of one weighted lever controls the movement of the other. On the curved end of each of the weighted levers, which are located near the inner periphery of the laterally-extending rim, is pivoted a brake-shoe, 3, with its curved face (when the levers are drawn in toward the bar) lying near the inner surface of the rim, but not in contact therewith; but when the weighted ends of the levers are thrown out the brake-shoes are caused to bear on the inner surface of the rim and more forcibly as the weighted ends are more forcibly thrown out. These shoes are made symmetrical—that is, with backs and faces formed on the same curve, but reversed to each other—so that when worn on one side they may be turned, and thus their life prolonged. The shoes are held in place by means of a flange, *o*, on the inner edge of the rim *p*. These levers are thrown out by the centrifugal force generated by the revolution of the bar with the shaft. The levers are drawn back by means of a retracting-spring connecting one lever to the bar C. The spring is applied by means of a rod, *g*, pivoted on the lever between the weighted ends and the pivot. This rod extends through a lug, 6, on the inside of the bar, and on it is placed a coiled spring. A nut on the end of the rod holds the spring, and by compressing it against the face of the lug puts it under any required tension. This spring is arranged to return the arms toward the bar, and acts against the centrifugal force generated by the revolution of the bars and arms with the shaft.

The main driving-wheel B on the outer end of the shaft has its periphery near a brake-shoe, *k*, on a lever, K′, pivoted on the front end of the machine. The rear of the free end is connected by a strap or rope to the pulley on the hub of the wheel A. Thus when the pulley turns, the strap or rope is wound thereon and the lever drawn down and the brake applied to the main wheel, which retards the movement of the power. The wheel A, being loose ordinarily, does not turn and does not act on the brake; but when the shaft of the main driving-wheel is moved too rapidly or beyond the designated limit the centrifugal force throws out the weighted arm, and thus applies the brake-shoes to the inner surfaces of the flange on wheel A. This tends

to hold the wheel A to the shaft, and thus the brake is applied to the main wheel. The proper limit of speed is determined by the tension of the spring, which may be changed by turning the nut on the end of the rod *g*.

We have described our governor in connection with a horse-power, with which it is especially designed to be used; but we do not limit ourselves to this combination, as it may be used with other motive powers.

We claim as our invention—

1. In combination with the loose wheel, the bar fixed to the shaft, and the weighted levers carrying brake-shoes and connected by a link pivoted directly to the bar, substantially as described.

2. In combination with the weighted levers pivoted on the fixed bar C, and in the described relation to the wheel A, the connecting-bar *e*, connected directly to the levers, and the brake-shoes pivoted upon the weighted levers, substantially as described.

3. In combination with the levers and the wheel having the lateral extending rim, the reversible brake-shoe adapted to the fixed bar, as and for the purpose set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

LEONIDAS GRAY.
ALBERT Y. GRAY.

Witnesses:
A. A. GREENE,
L. W. HOWARD.