No. 807,266. PATENTED DEC. 12, 1905.

S. S. HALL.

GOVERNOR HEAD.

APPLICATION FILED JUNE 26, 1905.

Fig. 1

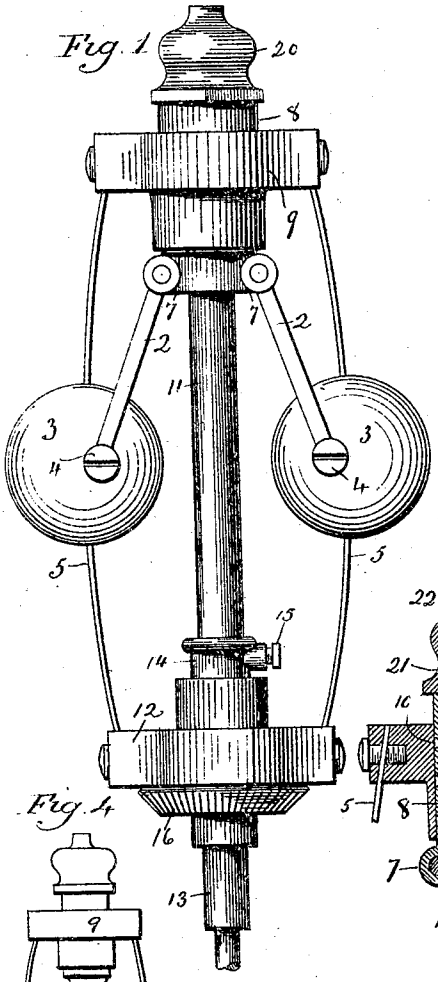


Fig. 2

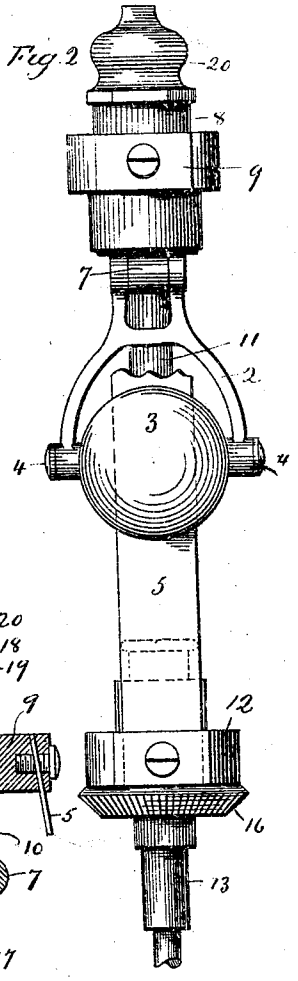


Fig. 3

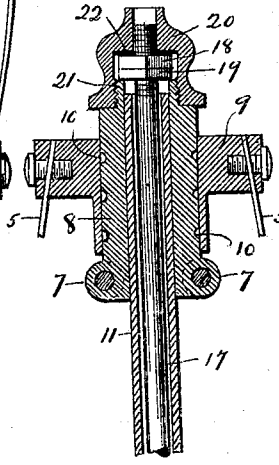
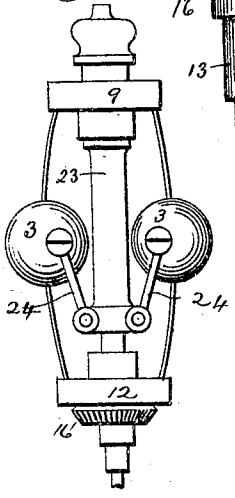
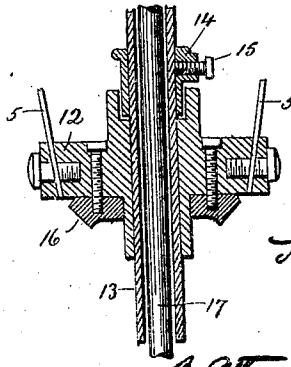


Fig. 4





Witnesses.

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UNITED STATES PATENT OFFICE.

STEPHEN S. HALL, OF PORTLAND, CONNECTICUT, ASSIGNOR TO THE PICKERING GOVERNOR CO., OF PORTLAND, CONNECTICUT, A CORPORATION.

GOVERNOR-HEAD.

No. 807,266. Specification of Letters Patent. Patented Dec. 12, 1905.

Application filed June 26, 1905. Serial No. 267,036.

To all whom it may concern:

Be it known that I, STEPHEN S. HALL, a citizen of the United States, residing at Portland, in the county of Middlesex and State of Connecticut, have invented a new and useful Improvement in Governor-Heads; and I do hereby declare the following, when taken in connection with the accompanying drawings, and the figures of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a view in side elevation of a governor-head constructed in accordance with my invention; Fig. 2, an edge view thereof; Fig. 3, a broken view thereof in vertical central section; Fig. 4, a view in side elevation, on a smaller scale, of one of the modified forms which the device may assume.

This invention relates to an improvement in controlling mechanism for governors, the object being to produce a simple, compact, and reliable "governor-head" (as such controlling mechanism is commonly called) constructed with particular reference to securing stability of operation, and so avoiding the common objection of excessive sensitiveness.

With these ends in view my invention consists in a governor-head having certain details of construction and combination of parts, as will be hereinafter described, and pointed out in the claims.

In carrying out my invention as shown in Figs. 1 to 3, inclusive, of the drawings, I employ two corresponding frame-like yoke-shaped links 2, adapted at their lower ends to embrace balls 3, with which they are pivotally connected by screws 4, these balls being mounted in the usual manner upon springs 5. The upper ends of the links 2 are pivotally connected with ears 7, formed opposite each other at the lower end of an operating-sleeve 8, passing upward through and free to move up and down independently of the upper frame-piece 9, (frequently called in this art the "upper sleeve,") having the upper ends of the springs 5 connected with it. As a matter of fact the operating-sleeve 8 and frame-piece 9 turn together and have but slight longitudinal movement independent of each other. As shown, the sleeve 8 is formed with three circumferential oil-channels 10 for the lubrication of the bearing between it and the frame-piece 9. The said sleeve 8 receives the upper end of a spindle 11, upon which it revolves and the lower end of which extends downward through the lower frame-piece 12, (commonly called the "lower sleeve,") through which it projects to form a stem 13, by means of which the entire controlling mechanism or governor-head is secured in place in the frame of the governor or some part thereof. The lower ends of the said springs 5 are secured to the ends of the lower frame-piece 12, which is prevented from rising on the spindle by means of a collar 14, having a set-screw 15, whereby the teeth of the beveled gear 16, secured to the lower face of the frame-piece 12, are prevented from being lifted out of engagement with the teeth of the corresponding beveled wheel (not shown) with which they are intermeshed and through which the head is revolved. The valve-rod 17 passes upward through the spindle 13 and projects above the upper end of the operating-sleeve 8, with which it is coupled by means of a pair of locking-nuts 18 and 19, applied to the threaded upper end of the rod. These nuts are housed within an internally-threaded cap 20, which screws down upon a threaded neck 21, formed by reducing the upper end of the sleeve 8, a bearing-surface 22 in the top of the cap 20 engaging with the check-nut 18 to couple the valve-rod 17 to the operating-sleeve 8.

In the operation of the device the balls 3 move toward and away from each other as the centrifugal force developed by the rotation of the governor-head decreases or increases. When the balls move away from each other, the links 2 draw the operating-sleeve 8, and hence the valve-rod 17, directly downward irrespective of the slight downward movement of the upper frame-piece 9, caused by the separation of the balls. On the other hand, when the balls move toward each other the links 2 push the operating-sleeve 8 upward, and hence lift the valve-rod 17 irrespective of the upward movement of the upper frame-piece 9, caused by the approach of the balls. It will be seen that the action of the balls 2 is transmitted directly to the operating-sleeve 8, and hence to the valve-rod 17, by the links 2 rather than through the springs 5 and upper frame-piece 9, which is the usual way. Obviously the action of the balls as transmitted to the valve-rod through

the links will be far more stable and less sensitive than the action of the balls if transmitted through the springs 5.

If desired, the same principle of construction and operation may be embodied in a governor-head, reversing the construction described and acting by lifting the valve-rod 17 as the balls move away from each other and depressing it as they move toward each other instead of depressing it as the balls move away from each other and lifting it as they move toward each other. Such a construction is shown by Fig. 4 of the drawings, in which the operating-sleeve 23 without being essentially changed in construction is greatly lengthened, so as to extend downward below the centers of the balls 3, which are connected with the lower end of the sleeve by means of links 24, like the links 2, already described. It will be apparent that this construction just reverses the operation first explained. This modified form would, as explained, be used in conjunction with those governors constructed on the principle of lifting the valve-rod to close the valve and depressing it to open the valve, whereas my device, as shown in Figs. 1 to 3, inclusive, is designed to be used with governors constructed on the principle of depressing the valve-rod to close the valve and lifting the valve-rod to open the valve. I would therefore have it understood that I do not limit myself to the exact construction shown and described, but hold myself at liberty to make such changes and alterations therein as fairly fall within the spirit and scope of my invention. Thus the number of balls may be varied as found desirable, the form of the links, the mode of connecting the springs with the frame-pieces, &c.

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

1. In a governor-head, the combination with the springs thereof, of balls mounted thereupon, a valve-rod, and connection, independent of the springs, between the balls and the valve-rod, including links.

2. In a governor-head, the combination with the springs thereof, of an upper and a lower frame-piece with which the ends of the springs are connected, of balls mounted upon the springs, a valve-rod, and connection, independent of the said frame-pieces, between the balls and the valve-rod, including links.

3. In a governor-head, the combination with the springs thereof, of an upper and a lower frame-piece with which the ends of the springs are connected, of balls mounted upon the springs, a valve-rod, an operating-sleeve, and connection, independent of the said frame-pieces, between the valve-rod and operating-sleeve, including links.

4. In a governor-head, the combination with the springs thereof, of an upper and a lower frame-piece, balls mounted upon the said springs, a valve-rod, an operating-sleeve, link connection, independent of the said frame-pieces, between the balls and the operating-sleeve, and means for coupling the valve-rod with the operating-sleeve.

5. In a governor-head, the combination with the springs thereof, of an upper and a lower frame-piece, balls mounted upon the said springs, a valve-rod, an operating-sleeve located within the upper frame-piece, and link connection, independent of the upper frame-piece, between the balls and the operating-sleeve, and means for connecting the operating-sleeve with the valve-rod.

6. In a governor-head, the combination with the springs thereof, of balls mounted thereupon, an upper and a lower frame-piece with which the ends of the springs are connected, a spindle on which the frame-pieces turn, an operating-sleeve turning upon the spindle, a valve-rod passing through the said spindle and coupled with the operating-sleeve, and links connecting the balls and operating-sleeve.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

STEPHEN S. HALL.

Witnesses:
JAMES G. STRONG,
GEORGE F. CRAMER.