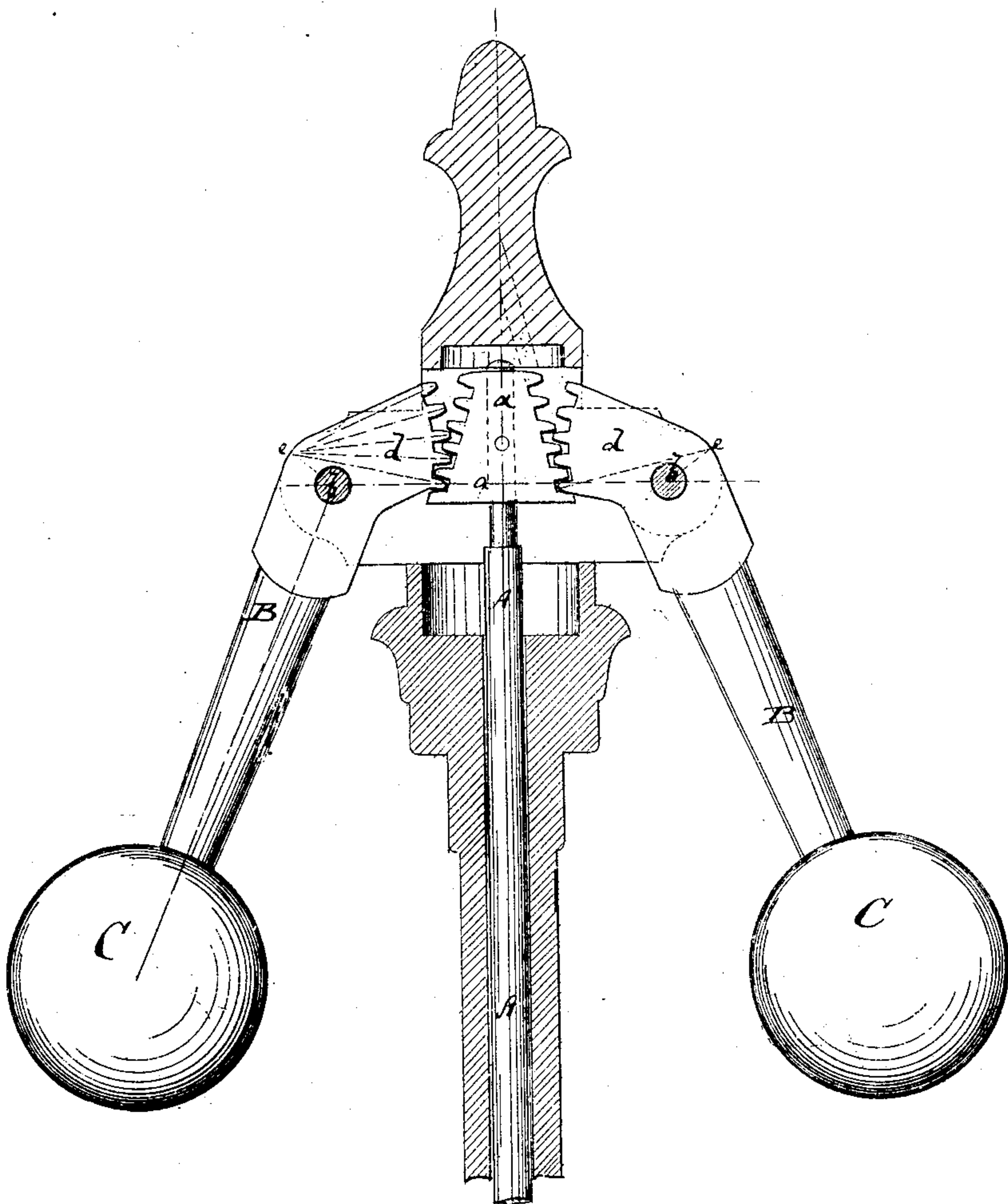


*C.A. Conde's Governor.*

112420

PATENTED MAR 7 1871



*Witnesses:*

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# United States Patent Office.

CHARLES A. CONDÉ, OF INDIANAPOLIS, INDIANA.

Letters Patent No. 112,420, dated March 7, 1871.

## IMPROVEMENT IN STEAM-ENGINE GOVERNORS.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, CHARLES A. CONDÉ, of Indianapolis, in the county of Marion and State of Indiana, have invented a new and improved Governor for Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

The drawing represents a side view, partly in section, of my improved governor.

This invention relates to a new method of regulating the movement of the balls of a steam-governor with a view of adjusting the same in proportion to the increased or diminished centrifugal force.

My invention consists in providing the ball-arms with cam-shaped toothed ends, which mesh into the teeth of a wedge-shaped block fastened to the valve-rod.

The mode in ordinary governors is, the more the balls are caused to expand by centrifugal force the more they will naturally be inclined under increasing speed to retain their assumed position, since proportionately more power is required to increase the expansion than was employed to bring them to the position in which they move. Ordinary governors are therefore unreliable, as their valves are not promptly closed under a high rate of speed, at least not as promptly as they could be were the *vis inertia* of the balls not in excess to the difference of power developed by increased rotation.

To graduate this difference of power is the main object of my invention.

By the use of the cam-shaped segmental gears on the ball-arms the leverage of the latter, as far as their action upon the valve is concerned, decreases with the increased expansion of the balls, and the resistance to be overcome by further elevation and expansion of the balls is increased in the same rate.

A in the drawing represents the valve-rod of a steam-engine governor, carrying at its upper end a wedge-shaped or tapering block, *a*. This block is narrower at its upper end, and has its inclined edges toothed, as shown.

B B are the ball-arms, carrying the balls O, and pivoted, by pins, *b b*, to the shell or frame of the governor.

The inner ends of the arms B carry toothed eccentric segments or cams, *d d*, that mesh into the opposite edges of the block *a*.

The curves of these two edges are struck from centers, *e*, that are higher and outward from the pivots *b*, as indicated by dotted lines in the drawing; thereby the distance between the pivot and the upper tooth of each segment *d* exceeds by so much that between said pivot and the lower tooth as the upper tooth of the rod *a* is nearer to the axis of the valve-rod than the lower tooth of said block; consequently the leverage of the ball-arms decreases the nearer the cam works toward its upper tooth.

The more, consequently, the balls are expanded the less will become their power as applied to the valve-rod, the movement of which is thus increased at the same rate at which the resistance to be overcome by the balls in further expansion is augmented.

Having thus described my invention,

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

The segmental-toothed cams *d*, applied to the ball-arms of a governor, and connected with the toothed tapering block *a* on the valve-rod, substantially as herein shown and described.

CHAS. A. CONDÉ.

Witnesses:

GEO. W. MABEE,  
T. B. MOSHER.