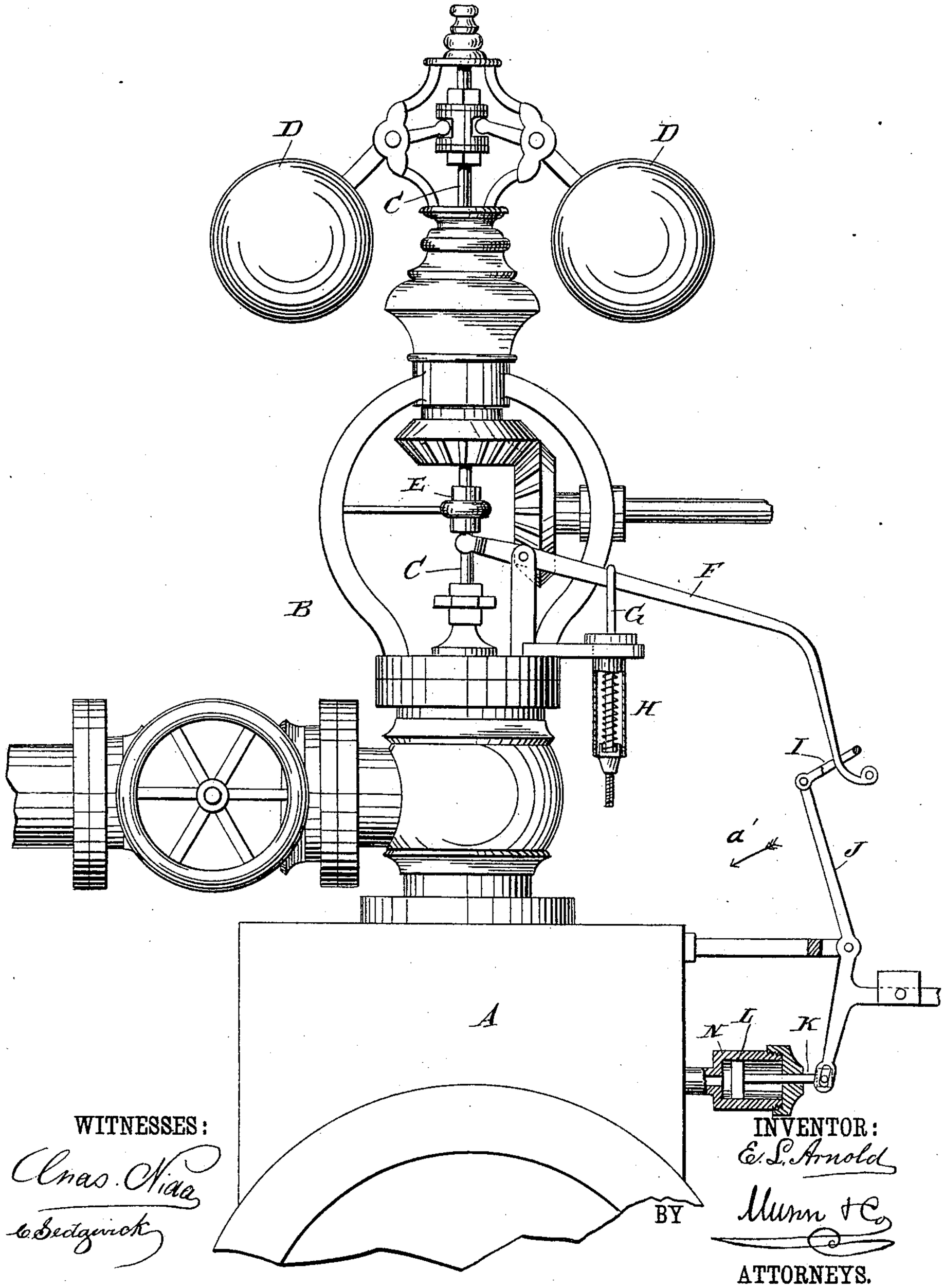
(No Model.)

E. L. ARNOLD.

STEAM ENGINE GOVERNOR.

No. 368,370. Patented Aug. 16, 1887.



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ELIPHALET L. ARNOLD, OF MONTGOMERY, TEXAS.

STEAM-ENGINE GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 368,370, dated August 16, 1887.

Application filed December 29, 1886. Serial No. 222,921. (No model.)

To all whom it may concern:

Be it known that I, ELIPHALET L. ARNOLD, of Montgomery, in the county of Montgomery and State of Texas, have invented a new and Improved Attachment for Steam-Engine Governors, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved steam-engine-governor attachment which permits of operating the engine to its full capacity when the pressure in the steam-chest increases.

The invention consists of the construction and arrangement of various parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawing, forming a part of this specification, in which the figure represents a side elevation of my improvement, with parts in section.

On the steam-chest A is secured a governor, B, of any approved construction and provided with the usual valve-stem, C, carrying on its lower end the usual valve (not shown) which regulates the amount of steam admitted to the steam-chest. On the upper part of the valve-stem C are connected, in any suitable manner, the balls D, operating on the said valve-stem C. The valve-stem C is provided with the collar E, resting on the lever F, fulcrumed on a standard attached to the governor-frame. A rod, G, is secured by one end to the said lever F, and operates with its other end against a coiled spring held in a casing, H, supported on a bracket fastened to the governor-frame. The outer end of the lever F connects by a link, I, with one end of the weighted lever J, fulcrumed on a bracket secured to the steam-chest A. The other end of the lever J is connected with the piston-rod K, carrying the piston L, operating in a small cylinder, N, connected at its inner end, by a pipe or other means, with the interior of the steam-chest A.

My improved governor is specially adapted for engines operating saw-mills and similar machinery, in which the load which the engine is to carry is suddenly changed, and which, as heretofore constructed, are open to the objection or difficulty that the governor closes the valve at a moment when the engine attains its full speed and the heavy load is thrown upon the engine—as, for instance, in starting the saw into the log to be cut.

The device consisting of the spring-rod G and the lever F, operating on the collar E, has heretofore been used to obviate the said difficulty to a certain extent, but not sufficiently. The spring in the casing H has the tendency to pull the rod G downward, so that the lever F exerts an upward pressure on the collar E and the valve-stem C, whereby the balls D are held in a nearly-closed position, so that a free admission of steam to the valve-chest A is obtained; but when the engine attains its full speed and the pressure is at its highest point, then the balls D are forced outward and close the valve at the moment when the load is added to the engine—that is, for instance, starting the saws into the log. The engine, in consequence of this, will run slower, as very little steam is admitted to the steam-chest, and the engine is not able to start the saws into the log to be cut until the speed of the engine has increased.

With my device I prevent the slow speed of the engine at the moment when the saws are starting to cut into the log. It will be seen that when the steam-pressure in the steam-chest A increases, then the steam-pressure is exerted against the piston L in the small cylinder N, and the piston L and its rod K are forced outward and cause the lever J to swing in the direction of the arrow *a'*, so that one end of the lever F is pulled downward, while the other end, acting on the collar E, forces the valve-stem C upward and holds the balls D firmly closed and the valve open, so that the engine can operate to its full capacity.

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

1. In a governor for steam-engines, the combination, with the valve-stem and the governor-balls, of a lever connected with the said valve-stem, a weighted lever connected with the said valve-stem lever, a piston-rod connected with the said weighted lever, a piston attached to the said piston-rod, and a small cylinder in which the said piston operates, and which is connected at one end with the interior of the steam-chest, substantially as shown and described.

2. The combination, with a valve-chest and

a governor, of a lever operating on the valve-stem of the said governor, a weighted lever connected with the said valve-stem lever, a piston-rod connected with the said weighted lever, a piston attached to the said piston-rod, and a small cylinder in which operates the said piston, and which is connected at one end with the interior of the said steam-chest, substantially as shown and described.

3. In a governor, the cylinder N, connected with the interior of the steam-chest, the piston L, operating in the said cylinder, the piston-rod K, carrying the said piston L, the lever J, connected with the piston-rod K, and the link I, pivotally attached to the said lever J, in combination with the lever F, connected with the said link I, the collar E, operating on the said lever F, the governor-valve stem C, carrying the said collar E, and the governor-balls D, operating on the said governor-valve stem C, substantially as shown and described.

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