

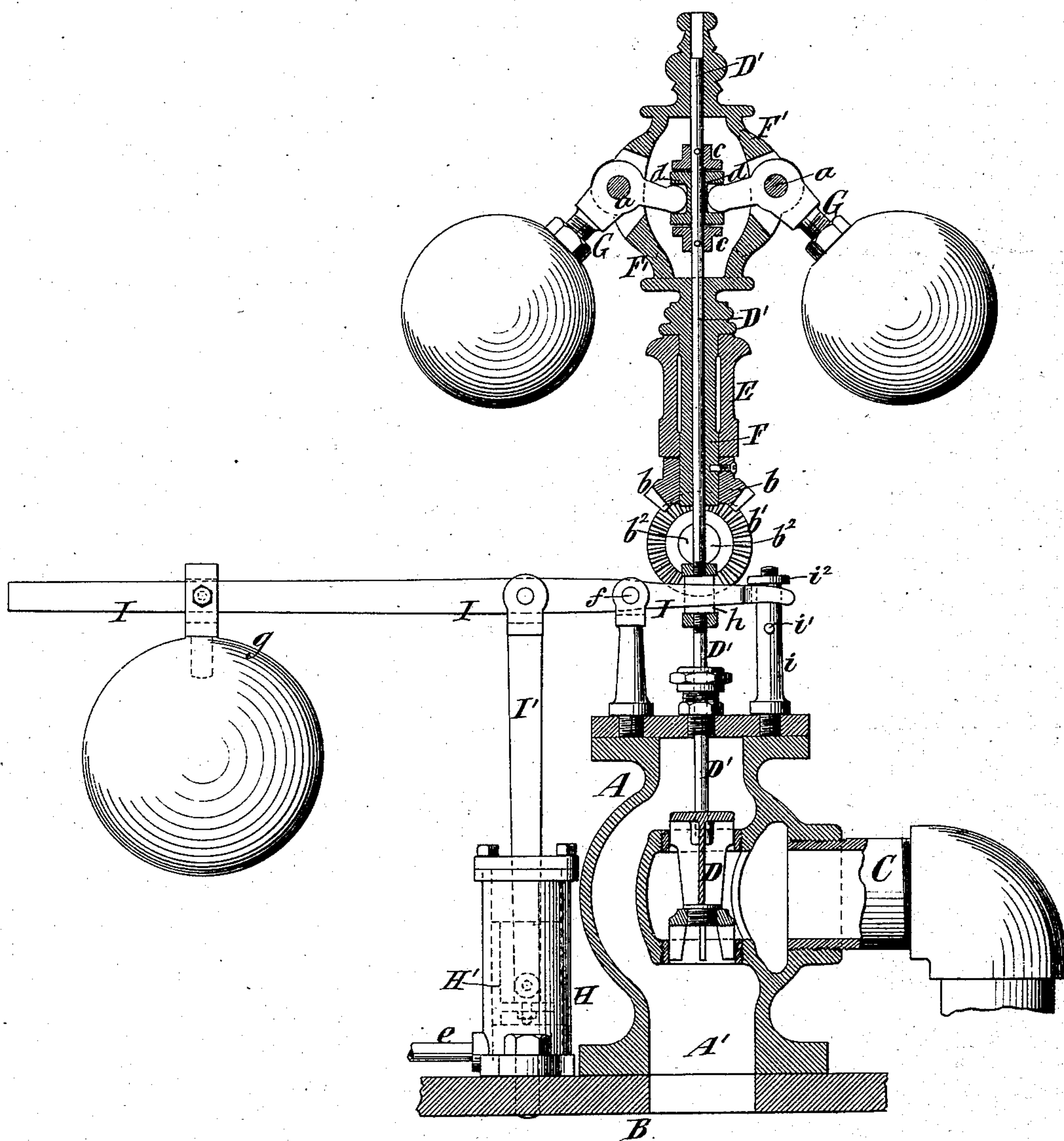
(No Model.)

J. CLAYTON.

COMBINED PRESSURE AND SPEED GOVERNOR.

No. 315,244.

Patented Apr. 7, 1885.



Witnesses:

Matthew Pollock  
Emil Schwartz

Inventor:  
James Clayton  
by his attys.  
Brown & Hall



# UNITED STATES PATENT OFFICE.

JAMES CLAYTON, OF BROOKLYN, NEW YORK.

## COMBINED PRESSURE AND SPEED GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 315,244, dated April 7, 1885.

Application filed July 8, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES CLAYTON, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Combined Pressure and Speed Governors, of which the following is a specification.

My invention relates to governors which are to be applied to engines employed in working air-compressors or other pumps for controlling the admission of steam or other motive agent to the engine.

In connection with the usual speed-governor and governor-valve with which engines are provided for regulating or controlling the supply of steam to the engine, it is also very desirable, when such engines are employed for working air-compressors, to provide means whereby the supply of steam to the engines will be regulated according to the pressure of compressed air, and whereby the supply of steam to the engine will be diminished or cut off upon any increase of air-pressure beyond that desired to be maintained. When an air-compressor is employed to pump into a receiver from which a number of pumps, rock-drills; or other machines are supplied, the stoppage of one or more of the drills or other machines will produce an increase of pressure in the receiver, and to the end that a uniform air-pressure be maintained in a receiver it becomes desirable to decrease the supply of steam to the engine.

My invention consists in the combination, with an ordinary speed-governor and its valve upon the stem thereof, and arranged in a valve-casing to be secured upon the steam-chest of an engine, of a lever connected at one end to the valve-stem and weighted at the other end, and a pressure-governor consisting of a cylinder having an inlet for compressed air and a plunger or piston connected with and operating said lever, whereby I provide an inexpensive combination of parts which may be applied at small cost to a steam-engine employed in working an air-compressor.

The accompanying drawing represents a combined speed and pressure governor embodying my invention.

A designates the shell or casing of the governor-valve, which is bolted to the top B of the steam-chest of an engine, and which is

supplied with steam through a pipe, C. The passage of steam through the shell A from the pipe C to the outlet A', opening into the steam-chest, is controlled by a valve, D, such as is commonly employed for speed-governors, and which is usually a balanced valve, as here shown. The valve D is entirely separate from and independent of the valve or valves of the engine to which the speed-governor is applied, and is capable of being shifted and controlled independently of the engine valve or valves.

E designates a fixed portion of the frame of the governor, in which is a bearing for the governor-spindle F, and the said spindle is surmounted by a yoke, F', wherein are pivoted at a the two weighted arms G. The spindle F is rotated, as usual, by bevel-gears b b', the former on the lower end of the spindle F and the latter on a horizontal shaft, b<sup>2</sup>, journaled in the frame of the governor and driven by a belt and pulley (not here shown) from some moving shaft of the engine, as is usual with governors. The valve spindle D' passes upward through the spindle F, and has a bearing in the yoke F'.

Fast on the valve spindle or stem D' and within the yoke F' are two collars, c, between which is a loose collar, d, and the toes of the governor-arms G engage with said loose collar and raise and lower the spindle and valve D' as their outer weighted ends rise and fall through variations in centrifugal force.

Upon any suitable support adjacent to the valve-shell A is secured a pressure-governor operated on by compressed air. As here shown, the pressure-governor consists of a cylinder, H, bolted on the top B of the steam-chest, and fitted with a piston or plunger, H', capable of rising and falling therein. I have shown this piston or plunger only in dotted outline in the cylinder; but it is constructed similarly to the pistons of many other pressure-governors, and is provided with any suitable packing. A pipe, e, enters the cylinder H below the piston H', and is connected with the compressed-air receiver or other vessel wherein it is desired to maintain a uniform or very nearly uniform pressure. The piston H' is loaded by a lever, I, fulcrumed at f and having an adjustable weight, g, on its outer end. The lever I is passed through a slot, h, in the valve spindle or stem D', and at the



side of the valve-spindle opposite to the pivot or fulcrum *f* are stops which limit the upward and downward movement of the lever. As here shown, the lever is forked to embrace a post, *i*, on which are the necessary stops, *i' i''*. The lever *I* has sufficient play or lost motion in the slot *h* to allow the speed-governor to shift its valve without affecting the lever, or without in any way being restricted in its action by the said lever or by the pressure-governor until there occurs in the compressed-air receiver an increase of air-pressure beyond that desired, when the piston *H'* of the pressure-governor is raised, and through the rod *I'* raises the lever *I* and depresses the valve-spindle *D'*, thereby also overcoming the action of the speed-governor and raising the arms *G* thereof and more or less closing the governor-valve *D*. By combining the speed-governor and pressure-governor with a single governor-valve, so that either may operate independently, the two are made to constitute a single attachment to the engine which is more desirable and less expensive than two separate and distinct governors, each provided with a single governor-valve or throttle-valve.

I am aware that it is not new to employ in connection with an engine for driving an air-compressor, and which is provided with a cut-off valve-gear, a speed-governor by means of which the point of cutting off steam may be varied, and a pressure-governor consisting of a cylinder and plunger capable of operation by compressed air and serving to shift the point of cut-off through the spindle of the speed-governor, the speed-governor and pressure-governor being so organized that the former can operate independently of the latter. I am also aware that it is not new to employ, in combination with a speed-governor having a specially-constructed valve box or cylinder, and a piston-valve working therein and attached to the governor-spindle, a second pis-

ton or plunger arranged below the governor-valve and serving to raise it when acted upon by compressed air admitted below it.

The essential object of my invention is to provide, in connection with the ordinary speed-governor which is used upon engines, and which is bolted, as usual, to the exterior of the steam-chest of an engine, a simple and desirable pressure-regulator consisting only of a small piston and cylinder which are separate from the ordinary valve-casing of the speed-governor, and have a lever connection with the spindle of the speed-governor. By this arrangement of parts I am enabled to apply the invention to any engine having a speed-governor the valve-box of which is bolted on the steam-chest without changing the construction of the valve or modifying the engine in any way.

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

1. The combination, with the speed-governor with its valve *D*, valve-stem *D'*, and valve-box *A*, adapted to be secured to the steam-chest of a steam-engine, of a lever, *I*, connected at one end with the valve-stem *D'*, and weighted at the other end, and a pressure-governor consisting of a cylinder having an air-inlet, *e*, and a piston or plunger connected with and operating upon the lever *I*, substantially as herein described.

2. The combination, with the valve-shell *A*, valve *D*, and valve-spindle *D'* of a speed-governor, of the weighted lever *I*, so connected with said valve-spindle as to afford lost motion or play between them, the pressure-governor *H H'*, and the rod *I'*, connecting the said lever and pressure-governor, substantially as herein described.

JAMES CLAYTON.

Witnesses:

FRED. HAYNES,  
MATTHEW POLLOCK.