F. Taggart,

Governor.

No. 60,084. Patented Nov. 27, 1866.

Fig. 2.

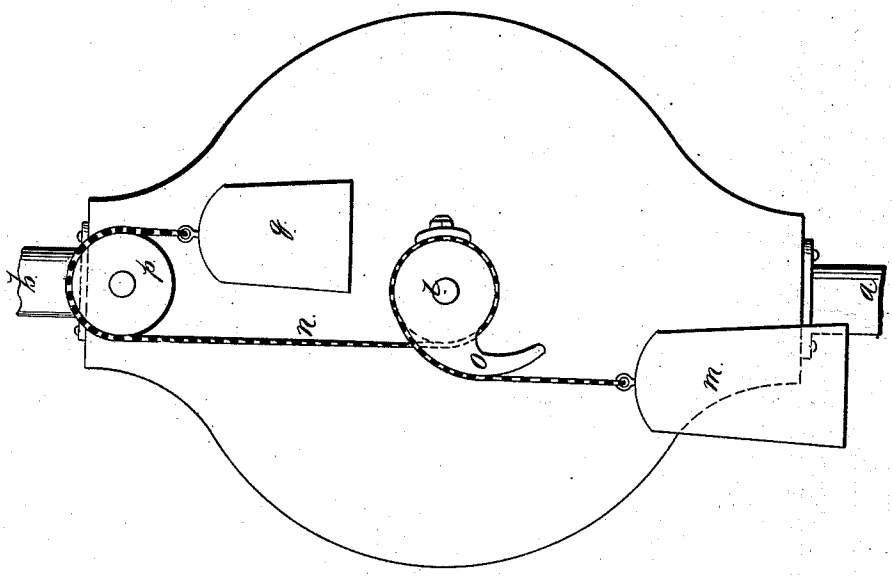
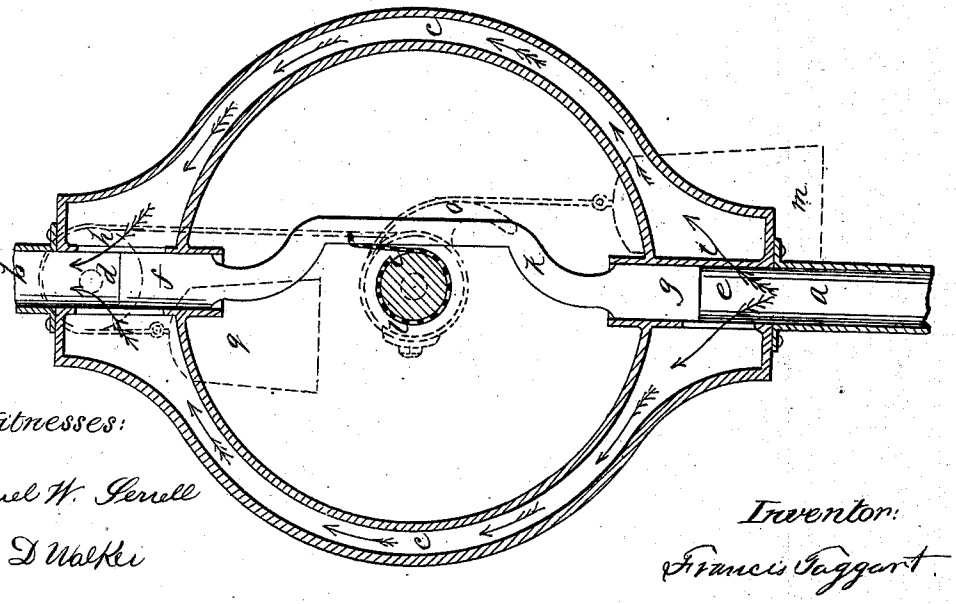


Fig. 1.



Witnesses:

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United States Patent Office.

IMPROVEMENT IN GOVERNORS FOR STEAM ENGINES.

FRANCIS TAGGART, OF BROOKLYN, NEW YORK.

Letters Patent No. 60,084, *dated November* 27, 1866.

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, FRANCIS TAGGART, of Brooklyn, in the county of Kings, and State of New York, have invented and made a certain new and useful Improvement in Regulators for Engines; and I do hereby declare the following to be a full, clear, and exact description of my said invention, reference being had to the annexed drawing, making part of this specification, wherein—.

Figure 1 is a vertical section of the said improved regulator; and

Figure 2 is an elevation of the same showing the counter-weights.

Similar marks of reference denote the same parts.

Governors and regulators for engines have heretofore been made in which the velocity of the engine has been employed as the regulator of the speed; the object of my invention is to produce a regulation of the supply of steam from the relative pressure in the cylinder and boiler so that a difference in the pressure shall produce motion to act on the cut-off and open the same as the pressures approach equality, and close the valve as the pressures increase in difference. By these means I am enabled to effect a more perfect regulation of the speed than with governors that depend upon velocity, because in such governors, to make them efficient, they have to be adjusted by hand in case of unusual increase or decrease of pressure in the boiler.

In the drawing, *a* represents the steam pipe passing to the boiler, *b* the steam pipe passing to the engine cylinder; *c* is a pipe or casing of suitable size and shape connecting the pipes *a* and *b*, and forming the steam-way; *d* and *e* are cylinders fitted into the casing, *c*, and provided with pistons, *f* and *g*, that are ground to fit steam-tight, but to move freely endwise in the respective cylinders; and these cylinders are formed with slots or steam-ways at *h* and *i*. The pistons, *f* and *g*, are connected to each other by the rod *k*, from which a flat linked chain or equivalent device is passed around and connected with the shaft, *l*. On this shaft, *l*, is a cam or scroll, *o*, around which passes a belt or flat chain, one end being connected at the smaller portion of the said scroll, the other passing to a weight, *m*. *n* is a belt, one end of which is attached to the hub of the cam, *o*; the other passes over a roller, *p*, and carries a weight, *q*.

The operation is as follows: The parts are so adjusted that the weights, *m* and *q*, will balance when the pistons, *f* and *g*, are in a given position, leaving a certain portion of the slots, *h*, open sufficient to supply steam to the cylinder of the engine when running with the average pressure in the boiler. If the speed increases, the pressure in the pipe, *b*, will lessen, and the pistons, *f*, will move upwards, closing off a portion of the slots, *h*, and shutting the supply of steam partly off; and the partial rotation of the shaft, *l*, will bring the parts to a balance, because the scroll, *o*, turning up, the weight, *m*, will have greater leverage, and hence more power in preventing the said shaft turning too far. If the pressure in the cylinder of the engine increases in consequence of moving more slowly, the pistons, *f* and *g*, will move downwards by the increased pressure on the piston *f*, opening the steam-supply slots, *h*, wider, and hence giving more steam to the engine, and the parts again come to a balance and remain stationary, because the scroll, *o*, descending from under the band of the weight, *m*, that has less power in consequence of the lessened leverage, and the weight, *q*, prevents a further rotation of the shaft, *l*. From the shaft, *l*, there may be a connection to any desired character of throttle-valve; and it will be apparent that this apparatus may itself regulate the steam as it passes through it to the cylinder, or be the motive power for actuating a throttle-valve in the steam pipe, according to the relative pressures in the cylinder and in the boiler, so as to increase the supply of steam with the increase of pressure, and decrease the supply of steam with the decrease of pressure. It will be evident that the pistons, *f* and *g*, might be connected with a straight rod and controlled by weights and levers or springs, so that a preponderance of relative pressure on the pistons *f* or *g* shall cause an endwise movement for opening or closing the steam passage to the engine. If the piston *g* is used alone, with a connection to a throttle-valve, in place of using the piston *f*, the pressure of steam in the boiler will be made to open or close the steam-way to the engine; but where both pistons, *f* and *g*, are used, the pressure in the engine also comes in as one of the elements in the regulation by the apparatus.

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

A regulator for engines, fitted substantially in the manner specified, so that the pressure from the boiler shall act in the opposite direction to the pressure from the engine, and the difference of pressure produce a movement to regulate the supply of steam, substantially as set forth.

In witness whereof I have hereunto set my signature this nineteenth day of July, A. D. 1866.

FRANCIS TAGGART.

Witnesses:

GEO. D. WALKER,

LEMUEL W. SERRELL.