G. H. COBB.

Automatic Cut-Off for Steam-Engines.

No. 213,392. Patented Mar. 18, 1879.

Fig. 1.

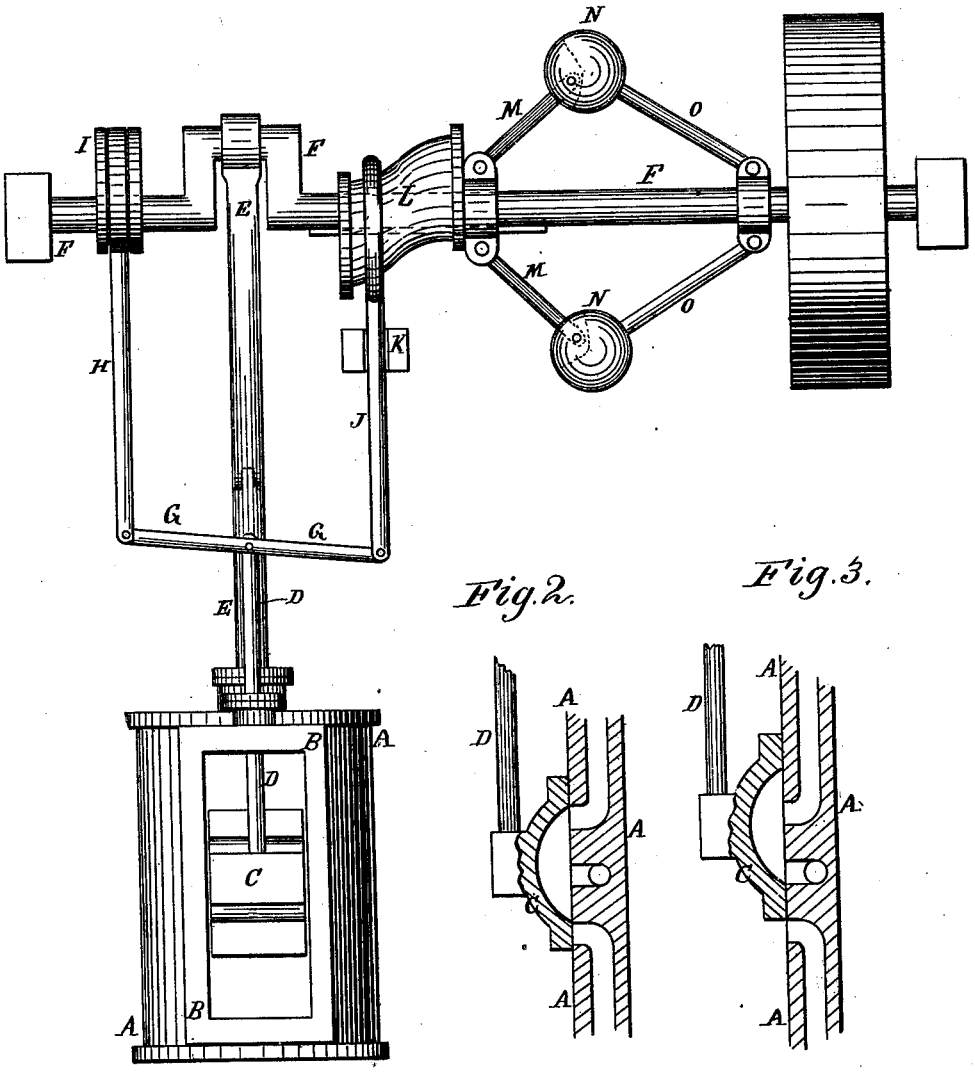
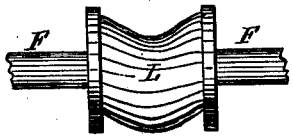


Fig. 2.

Fig. 3.

Fig. 4.



WITNESSES:

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GEORGE H. COBB, OF PALMER, MASSACHUSETTS.

IMPROVEMENT IN AUTOMATIC CUT-OFFS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **213,392**, dated March 18, 1879; application filed December 23, 1878.

To all whom it may concern:

Be it known that I, GEORGE HENRY COBB, of Palmer, in the county of Hampden and State of Massachusetts, have invented a new and Improved Automatic Cut-Off for Steam-Engines, of which the following is a specification:

Figure 1 is a plan view of my improved device. Fig. 2 is a detail section illustrating the position of the valve when the steam is cut off. Fig. 3 is a detail section illustrating the position of the valve when the inlet-port is open, and Fig. 4 is a detail view of the adjustable eccentric.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish steam-engines with a cut-off so constructed that it will be operated automatically to cut off the steam sooner as the speed of the engine increases beyond the desired rate, and to cut it off later when the speed of the engine falls below the desired rate, and which shall be simple in construction, inexpensive in manufacture, and reliable in use.

The invention consists in the combination of the pivoted lever, the rod and eccentric, the rod and adjustable eccentric, and the governor with the valve-rod and the crank-shaft of a steam-engine, as hereinafter fully described.

A represents the steam-cylinder, and B the steam-chest, of an engine. C is the valve, and D is the valve-rod. E is the piston-rod, which is connected to the crank-shaft F, in the usual way.

To the outer end of the valve-rod D is pivoted the lever G at the middle, to one end of which lever is pivoted the end of a rod, H. At the other end of the rod H is attached an eccentric-strap placed over an eccentric, I, attached to the crank-shaft, and by which the valve C is shifted.

To the end of the other arm of the lever G is pivoted the end of a rod, J, which passes through a guide-slot in a post or bar, K, and the other end of which is connected by a strap to a cam, L, placed upon the crank-shaft F. The cam L may be made in spiral form, as shown in Figs. 1 and 4, the eccentricity passing gradually from one side of the shaft F to the other, in which case the said cam L should be connected with the shaft F by a straight key or feather and groove, so that the said cam may be carried around by and with the shaft F in its revolution, but may be moved longitudinally upon it; or, if desired, the cam L may be made in the form of an ordinary eccentric, in which case it should be connected with the shaft F by a spiral thread and groove, so that it may be turned upon the said shaft by moving it longitudinally upon it, and when adjusted will be carried around by and with the shaft F in its revolution.

To the ends of the cam L, upon the opposite sides of the shaft F, are hinged the ends of two rods, M, the other ends of which are hinged to two balls, N. The balls N are formed upon or attached to the ends of two rods, O, the other ends of which are hinged to lugs rigidly attached to the shaft F.

With this construction, as the speed of the engine rises above the desired rate, the governor-balls N will be thrown outward by centrifugal force, and will move the cam L upon the shaft F, causing it to move the valve back to cover the inlet-port and cut off the steam before the piston has reached the point of its stroke at which the engine is set to cut off steam when running at the ordinary rate.

As the speed of the engine falls below the desired rate the governor-balls N move inward toward the shaft F, and will move the cam L in the opposite direction upon the said shaft F, causing it to move the valve back to cut off the steam after the piston has passed the point of its stroke at which the engine is set to cut off steam when running at the ordinary rate.

By this construction the automatic adjustment of the cam L will keep the engine always at about the same rate of speed.

If desired, the governor may be placed in an upright position and connected with the shaft F by gearing.

If desired, a spring or other mechanical de-

vice may be connected with the governor to move the balls inward after being thrown outward by centrifugal force.

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

The combination, in a steam-engine, with the valve-rod and valve, of the governor M N O, the sliding cam L, connected by feather and groove with the crank-shaft F, the lever G, the rod H, the eccentric I, and the rod J, as and for the purpose specified.

GEORGE HENRY COBB.

Witnesses:

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