(No Model.)

# H. CHADBOURNE.

## AUTOMATIC CUT-OFF GOVERNOR.

No. 467,080. Patented Jan. 12, 1892.

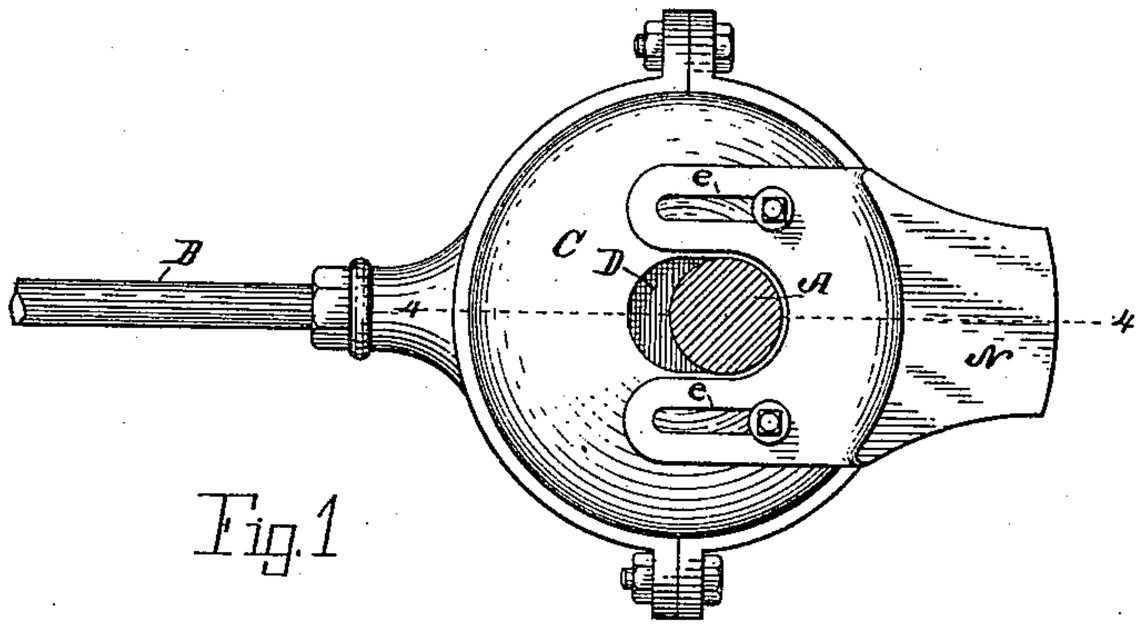


Fig. 1

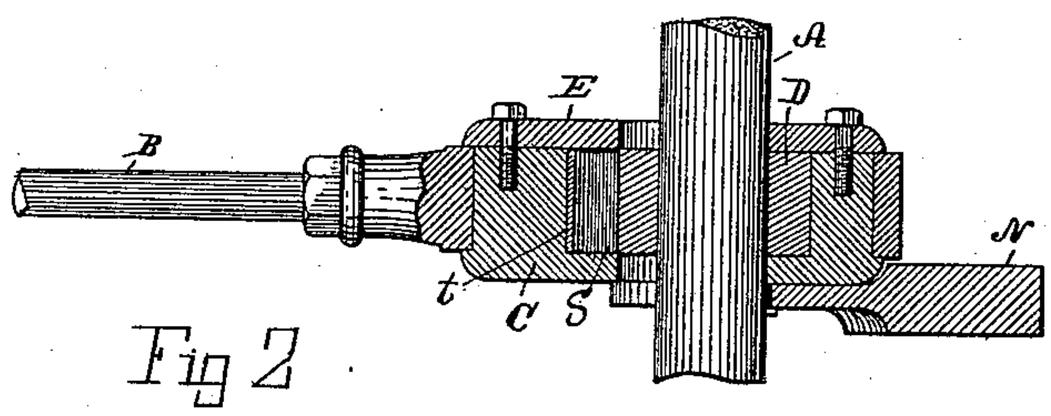


Fig 2

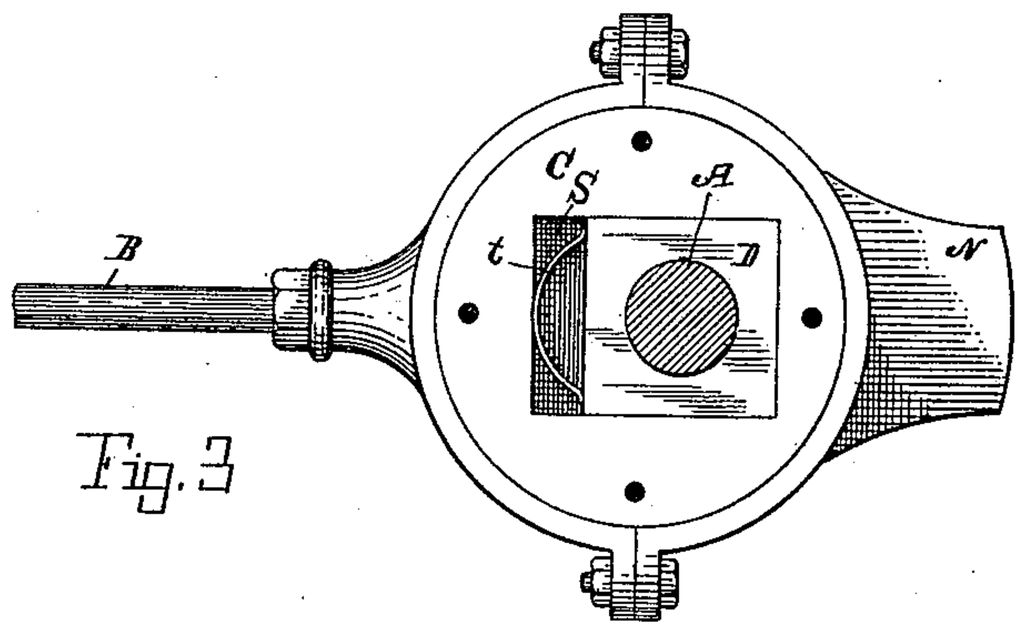


Fig. 3

Witnesses:
Walter S. Wood
E. L. Perkins

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Horace Chadbourne
By Lucius C. West
Att'y.

# UNITED STATES PATENT OFFICE.

HORACE CHADBOURNE, OF KALAMAZOO, MICHIGAN.

## AUTOMATIC CUT-OFF GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 467,080, dated January 12, 1892.

Application filed January 22, 1891. Serial No. 378,742. (No model.)

*To all whom it may concern:*

Be it known that I, HORACE CHADBOURNE, a citizen of the United States, residing at Kalamazoo, county of Kalamazoo, State of Michigan, have invented a new and useful Automatic Cut-Off Governor, of which the following is a specification.

This invention relates to that class of automatic cut-off governors the eccentrics of which are provided with a weight or weights which govern the movements of the valve by centrifugal force.

This invention has for its object the below described and claimed peculiarities of construction designed to secure greater simplicity and facilitate the operation.

In the drawings forming part of this specification, Figure 1 is a side elevation. Fig. 2 is a section on line 4 4 in Fig. 1, and Fig. 3 is an elevation showing opposite side of Fig. 1 with a part removed.

Referring to the letters of reference on the drawings, A is an ordinary shaft of an engine which carries the balance-wheel. C is an eccentric on said shaft, and B is the valve-rod, here shown broken, but which in use of course extends to the valve-chest, and is attached to the valve in the ordinary manner. The eccentric C is provided with a rectangular chamber S, one of the side walls of which is detached, as shown at E. The holes through the side walls of this eccentric are diametrically (when viewed vertically) of the size to receive the shaft A, and are elongated, when viewed horizontally, in the usual manner.

In the chamber S is loosely placed a block D, which is of the same width of the chamber, but of less length, so as to admit of the semi-elliptic spring *i* being placed in the end of the chamber, so as to bear against said block D, as clearly shown in Fig. 3. The block D is mounted upon the shaft A and is rigidly attached there.

The eccentric C is provided with a weight N, attached thereto and projecting rearwardly from said eccentric. This weight is provided with elongated slots *e e*, through which bolts are passed in attaching said weight to the eccentric. By this means the weight is adjustably attached to the eccentric, so that by loosening the nuts of said bolts the weights can be adjusted farther away or nearer to the shaft A in accordance with the desired action of the valve under varying peculiarities of construction and the resistance of the work being done. It will be readily seen that the tendency of the spring *t* is to throw the eccentric off from the center, and that the tendency of the weight is to keep the eccentric on the center. To illustrate, referring to Fig. 3 and supposing the engine to be running at a given rate of speed, so long as said rate of speed is preserved the position of the eccentric C and block D will remain the same; but if the rate of speed is increased the centrifugal force overcomes the resistance of the spring to a certain extent, and the eccentric is brought nearer to the center, which of course diminishes the stroke of the valve-rod, and consequently diminishes the volume of steam being inducted into the cylinder. Thus the spring and weight act in opposition to each other in accordance with the speed of the engine and automatically govern the supply of steam.

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

The combination of a power-shaft, a valve-rod, the rectangular block on said shaft, the eccentric having the chamber in which the block is loosely placed, a weight adjustably attached to and projecting from said eccentric, and the spring in the chamber of the eccentric and exerting a resistance against the centrifugal force of the weight, substantially as set forth.

In testimony of the foregoing I have hereunto subscribed my name in the presence of two witnesses.

HORACE CHADBOURNE.

Witnesses:

RICHARD L. FROST,

E. L. PERKINS.