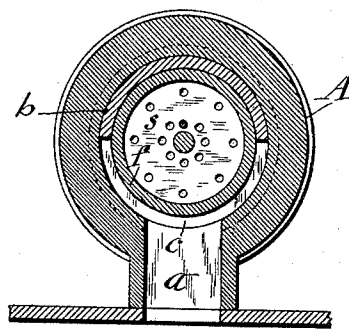
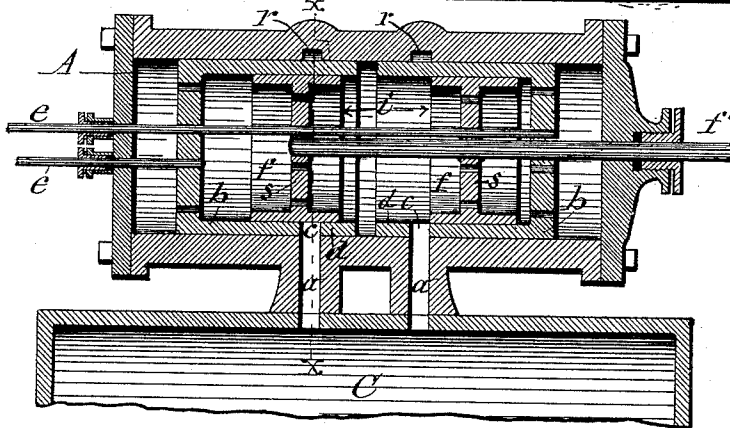
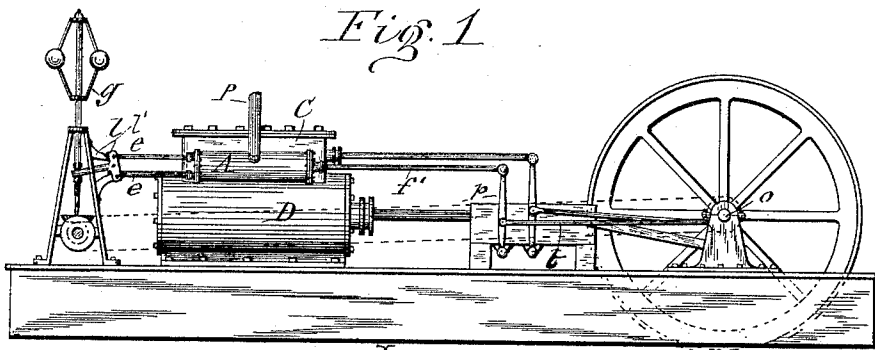


(No Model.)

G. V. PUTMAN.
CUT-OFF VALVE.

No. 477,022.

Patented June 14, 1892.



WITNESSES:

J. J. Gaass
H. M. Beaman

Fig. 3

INVENTOR:

Gideon V. Putman
By Overy L. L. Smith
his ATTORNEYS.

UNITED STATES PATENT OFFICE.

GIDEON V. PUTMAN, OF GLOVERSVILLE, NEW YORK.

CUT-OFF VALVE.

SPECIFICATION forming part of Letters Patent No. 477,022, dated June 14, 1892.

Application filed October 24, 1891. Serial No. 409,705. (No model.)

To all whom it may concern:

Be it known that I, GIDEON V. PUTMAN, of Gloversville, in the county of Fulton, in the State of New York, have invented new and useful Improvements in Cut-Off Valves for Steam-Engines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to a cut-off valve adapted to be used on stationary engines as well as on locomotives; and the invention consists in a novel construction of said cut-off valve whereby the same is rendered very sensitive and very efficient in its operation, all as hereinafter more fully described, and set forth in the claims.

In the annexed drawings, Figure 1 is a side view illustrating one of the modes of applying my improved cut-off valve to a stationary engine. Fig. 2 is an enlarged longitudinal section of the cut-off valve, and Fig. 3 is a transverse section on line *x x* in Fig. 2.

Similar letters of reference indicate corresponding parts.

A represents the steam-chest of the cut-off valve, which steam-chest I preferably make of cylindrical form, as shown. It is secured either to the top or side of the main-valve steam-chest C, which is provided with the usual valve by which steam is admitted to and emitted from the cylinder D of the engine in the usual and well-known manner, not necessary to be here illustrated.

P denotes the steam-pipe, by which live steam is admitted into the cut-off-valve chest A, which is provided in its side with two steam-ports *a a*, by which it communicates with the interior of the main-valve steam-chest C. In the chest A are arranged two cylindrical throttling-slides *b b*, which are of the same or nearly the same diameter as the interior of said chest and movable toward and from each other. Each of said slides is provided with a steam-port *c* in the side adjacent to the ports *a a* and a sufficient distance from the inner end or end adjacent to the companion slide to form a bridge *d*. Each of these throttling-slides has attached to it a separate rod *e*, and the two rods extend through one and the same end of the chest A and are connected to opposite ends of a centrally-pivoted lever *l*.

The pivotal support may be a bracket *l'* on the governor-stand, as shown. When the throttle-valve is applied to a stationary engine, the said lever is suitably arranged to be operated by a suitable governor *g*, driven by the engine; but when connected to a locomotive the lever *l* is to be operated by another lever suitably connected thereto and under control of the engineer. By operating the lever *l* the two throttling-slides are caused to move either toward or from each other, and thus carry the ports *c c* of said slides to a greater or less degree in or out of communication with the ports *a a* of the chest A, and consequently the admission of steam to the main-valve steam-chest is varied in volume. This is effected automatically by the governor *g*, which in its dormant position holds the lever *l* so as to cause the throttling-slides *b b* to stand with their ports *c c* directly over the ports *a a* of the chest A, and when the engine is in motion the governor *g* turns the lever *l* so as to carry the throttling-slides toward opposite ends of the chest A to a greater or less distance, according to the velocity of the governor, and said movement of the throttling-slides carries the ports thereof to a corresponding degree out of communication with the ports *a a*, the steam being thereby cut off or partly cut off from the main-valve steam-chest and the speed of the engine is checked. Within the throttling-slides is located a cylindrical slide-valve *f*, preferably composed of two cylinders rigidly secured to one and the same stem *f'* and a proper distance apart to form between them a steam-port *i* of about the same width as the bridge *a'* between the ports *a a* of the chest A. The valve-stem *f'* extends through the end of the chest A, and is connected to an eccentric secured to the main shaft or crank-shaft *o* of the engine. The connection of the stem *f'* with the said eccentric may be made in various ways, one of which is indicated by the lever *p* and eccentric-rod *t* in Fig. 1 of the drawings. The valve *f* thus has a uniform stroke, and the throttling of the steam is effected by the movement of the slides *b b*.

In order to balance the described throttle-valve, I form the interior of the chest A with circumferential grooves *r r* in line with the

ports *a a* to allow the steam to circulate between the slides and valve *f*, and I perforate the heads of the throttling-slides *b b* and also the diaphragms *s s* of the valve *f*, to which the stem *f'* is attached, to allow steam to pass to the ends of the chest A. The pressure of the steam on the throttling-slides and cut-off valve is thus equalized as near as possible, and consequently wear and tear is greatly ob-

viated.

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

1. In combination with the main-valve steam-chest of an engine, a cut-off-valve chest receiving the live steam and provided with steam-ports communicating with said steam-chest, throttling-slides seated movably toward and from each other within the cut off-valve chest and provided with steam-ports and bridges at their adjacent ends, rods extending from the throttling-slides, a centrally-pivoted lever connected at opposite ends to said rods to regulate the throttling, and a cut-off valve placed movably over the ports of the throttling-slides and actuated by the motion of the engine, as set forth.

2. In combination with the main-valve steam-chest of an engine, a cut-off-valve chest of cylindrical form receiving the live steam and having in its side steam-ports communicating with the main steam-chest, two cylindri-

cal throttling-slides in said cut-off-valve chest and of the same or nearly the same diameter and provided each with a steam-port in its side and with a bridge at its inner end, two rods extending, respectively, from the two throttling-slides through one and the same end of the cut-off-valve chest, a centrally-pivoted lever connected at opposite ends to the said rods to move the slides simultaneously in opposite directions, a governor actuating said lever, a cylindrical slide-valve located in the throttling-slides and provided in its side with a port of about the same width as the bridge between the ports of the cut-off-valve chest, and a rod extending from said valve through the end of said chest and receiving reciprocating motion from the engine, as set forth.

3. The combination of the cut-off-valve chest A of cylindrical form and provided with the ports *a a* and circumferential grooves *r r*, the cylindrical throttling-slides *b b*, having perforated heads, and the valve *f*, having perforated diaphragms *s s*, substantially as described and shown.

In testimony whereof I have hereunto signed my name this 19th day of October, 1891.

GIDEON V. PUTMAN. [L. S.]

Witnesses:

L. CATEN,

LYMAN K. BROWN.