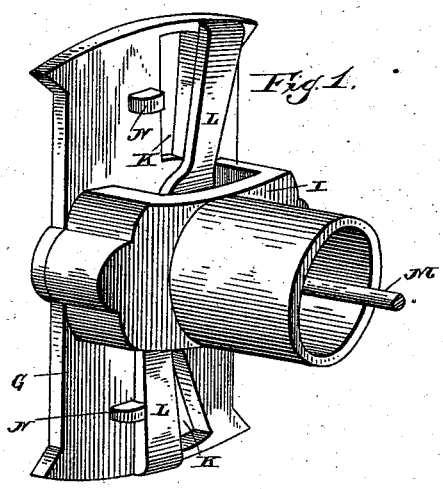
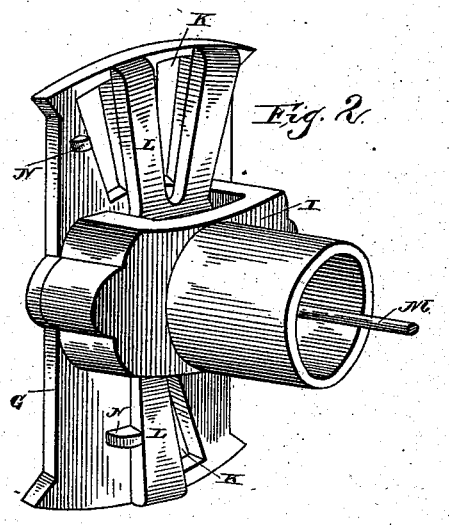
(No Model.) 2 Sheets—Sheet 1.

A. VAN GUYSLING.

CUT-OFF VALVE.

No. 381,190. Patented Apr. 17, 1888.





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(No Model.) 2 Sheets—Sheet 2.

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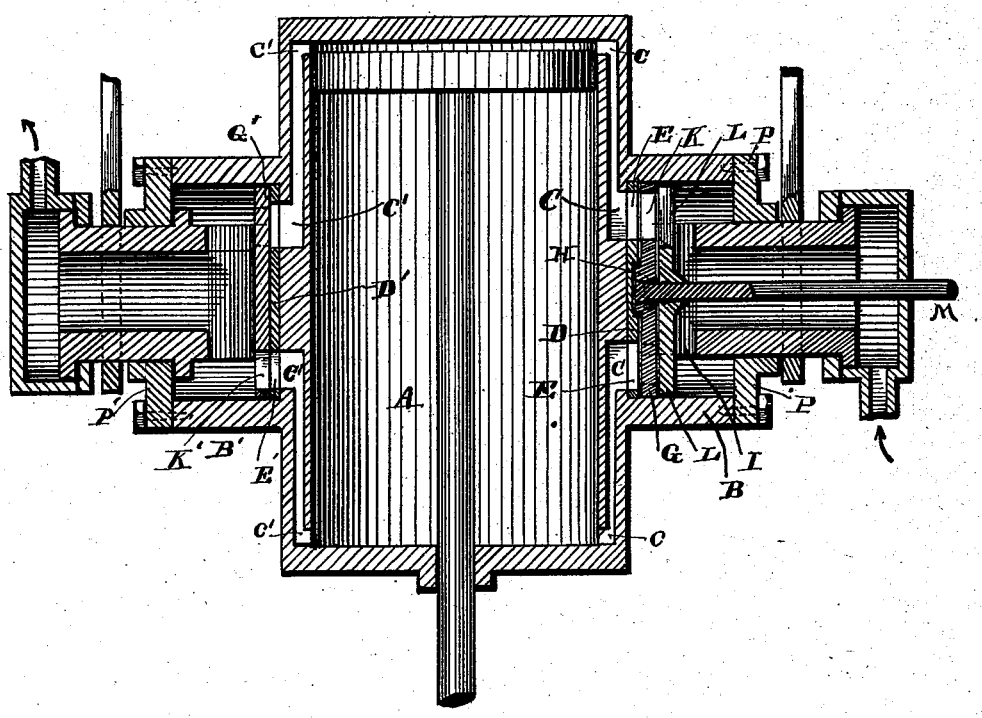
Fig. 3.



Witnesses.
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F. F. Johnson.

Inventor.
Aaron Van Guysling.

By his Attorney.
H. Alexander.

UNITED STATES PATENT OFFICE.

AARON VAN GUYSLING, OF ALBANY, NEW YORK.

CUT-OFF VALVE.

SPECIFICATION forming part of Letters Patent No. 381,190, dated April 17, 1888.

Application filed October 12, 1887. Serial No. 252,107. (No model.)

To all whom it may concern:

Be it known that I, AARON VAN GUYSLING, of Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Cut-Off Valves; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention relates to certain improvements in cut-off mechanism for steam-engines of various descriptions; and it has for its objects to provide for automatically regulating and controlling the admission of steam to the cylinder and to cut it off therefrom at any portion of the travel of the piston, so as to permit the steam to operate expansively when desired, as more fully hereinafter explained, and indicated in the claims.

In the accompanying drawings, Figure 1 represents a perspective view of my improved cut-off mechanism for a stationary engine. Fig. 2 represents a similar view of a modification of the same for a reversible engine; and Fig. 3 represents a longitudinal vertical sectional view of the cylinder and valve-chest of an engine, showing my improved cut-off mechanism applied thereto.

In the present instance my invention is shown in connection with an oscillating engine.

Referring to the drawings, the letter A indicates the cylinder of the engine, which is provided with hollow trunnions B B′, which form the valve-chests of the same.

C C′ indicate the ports through which the steam passes from the valve-chests to and from the cylinder at either side of the piston alternately, as usual. Within each valve-chest, directly adjacent to the ports, are located partition-plates D, having port-apertures E E arranged radially to the axis of oscillation of the cylinder, and preferably of a V or angular form.

The letters G G′ indicate a plate-valve having a flat face at one side, which is seated against the outer face of the partition, before mentioned, when the valve is in place. Of course it is to be understood that a valve must be provided for each hollow trunnion or valve-chest. The valve is provided with a central boss, H, on its bearing-face, which fits in a central recess in the partition-plate, so as to permit the cylinder to move accurately with respect to the valve. The said valve has straight sides and segmental ends, the arc of the segments being struck on a circle slightly less than the interior diameter of the valve-chest, so as to fit accurately therein, and at the same time allow the proper oscillating movement. To the outer face of each valve, and extending transversely across it midway between the segmental ends, is secured a bridge-plate, I, which is provided with a hollow sleeve communicating with the space between said plate and the valve-plate, forming a steam-passage at each side of the bridge-plate. The valve when applied to an oscillating engine is provided with two V-shaped or triangular ports, K, which set radially to the axis of oscillation of the engine and which correspond to the port-apertures E E in the partition-plate, before mentioned, the positions of the ports K in the valve being so arranged relatively that while one of the port-apertures E is in communication with one of the ports K the other port-aperture and port are out of communication, and vice versa.

The letter L indicates the cut-off valve, which consists, as shown in Fig. 1, of two angular wings extending from a central boss, through which passes a valve-stem, M. The wings are so located with respect to each other as to wholly or partially uncover the ports K simultaneously, so as to permit a greater or less volume of steam to pass through said ports, or to cover them entirely and simultaneously, so as to wholly cut off the passage of the steam to allow it to act expansively. The inner end of the valve-stem has a bearing in the central boss of the plate-valve, so as to permit said plate and cut-off valve to oscillate independently of each other, the movement of the cut-off valve being limited by stops N on the plate-valve.

As before mentioned, the valve G is seated closely against the partition-plate D, its central boss being centered in the central aperture in said plate. The hollow sleeve extends outward through a packed aperture in the head or cover P, so as to be secured to a suitable

stationary standard forming part of or secured to the stationary bed of the engine. The outer end of the sleeve is provided with a suitable cap having a central aperture through which the valve-stem passes, and the cap is provided with a branch pipe connecting with a steam-induction pipe leading from the boiler or generator. The projecting end of the valve-stem is to be connected with the governing mechanism of the engine, or any other means by which it may be operated to open and close the ports K, as before mentioned.

When applied to a reversible engine, the partition-plates and the plate-valve are provided, respectively, with three instead of two triangular port-apertures, and the valve-sleeve is journaled so that it may be turned when required, being provided with a suitable lever for the purpose. The cut-off valve in this instance is provided with three wings corresponding to the ports and adapted to cover or uncover the same simultaneously, as before mentioned. By operating the lever so as to change the port-apertures E and K the engine may be reversed; but as the reversible feature forms no part of my present invention further description is unnecessary.

The trunnion B′ constitutes the exhaust-chest of the engine, into which lead the exhaust-ports C′. The said exhaust-chest is provided with a partition, D′, similar to the partition-plate D, and with a valve, G′, provided with ports K′, similar to the ports in the valve G, but so arranged that when one of the ports K of the valve G is open to admit steam to one end of the cylinder the corresponding port, K′, of the valve G′ is closed, and the other port K′ opened for the escape of the steam from the exhaust side of the cylinder, and vice versa.

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

1. The combination of the cylinder, its ingress and egress ports on opposite sides thereof, and the valve-chest, with the main valve G in said chest for alternately opening and closing the ingress-ports, and the oscillating cut-off valve L, pivoted upon the valve G and adapted to regulate the admission of steam therethrough, all constructed and arranged to operate substantially in the manner and for the purpose described.

2. The combination, with the valve-chest of an engine having ports leading to each end of the cylinder, of the plate-valve having corresponding ports, the cut-off valve having wings adapted to cover and uncover the ports simultaneously, and the bridge-plate and hollow sleeve through which steam is admitted to the valve-chest, substantially as specified.

3. The combination, with the steam-chest having ports leading to each end of the cylinder, of the plate-valve having port-openings and a central boss for centering the valve in the chest, and the bridge-plate and hollow sleeve whereby steam is admitted to the valve-chest, substantially as specified.

4. The combination, with the plate-valve having radial ports and a central boss, of the valve having radial wings adapted to simultaneously cover or uncover said ports, and the valve-stem having a bearing in said boss and working independently of the plate-valve, substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

AARON VAN GUYSLING.

Witnesses:
PETER H. ZEH,
E. H. VAN VLIET.