W. G. Pike,

Steam-Engine Valve-Gear.

No. 51,081. Patented Nov. 21, 1865.

Fig. 1.

Fig. 2.

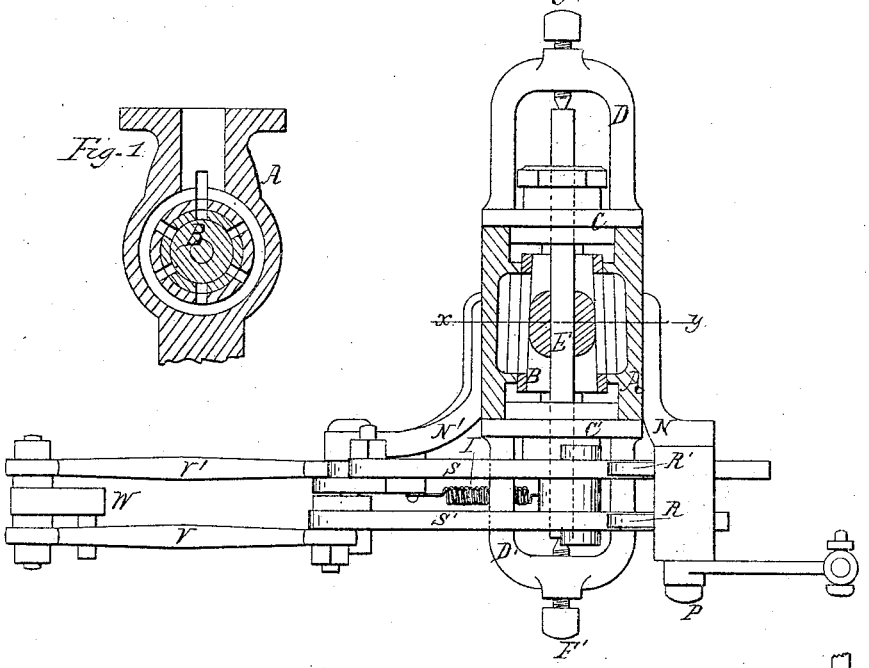
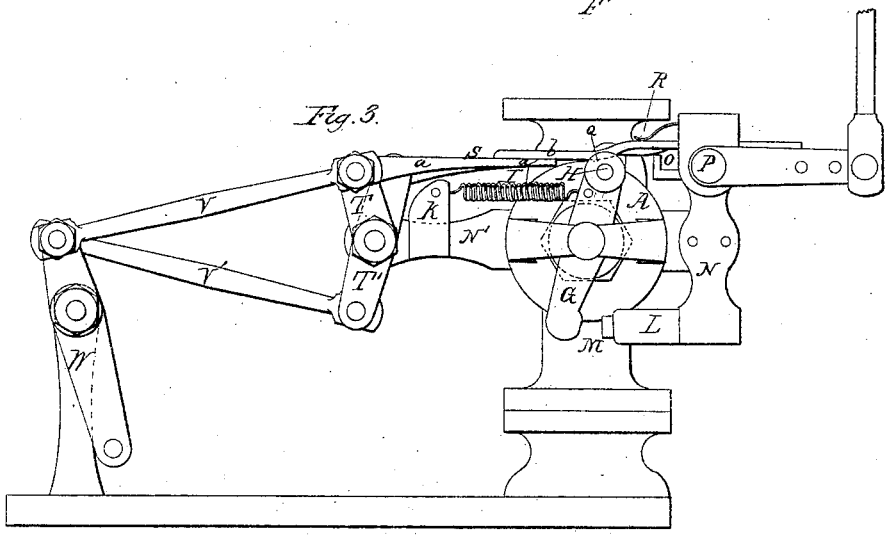


Fig. 3.



Witnesses:

J. E. Shaw

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UNITED STATES PATENT OFFICE.

WILLIAM G. PIKE, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN VARIABLE CUT-OFFS.

Specification forming part of Letters Patent No. **51,081**, dated November 21, 1865.

To all whom it may concern:

Be it known that I, WILLIAM G. PIKE, of the city of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Variable Cut-Offs for Steam Engines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, forming a part hereof, in which—

Figure 1 is a vertical section, on the line *x y*, Fig. 2, of the plug and shell of the valve. Fig. 2 is a horizontal section of said plug and shell, and a top view of the yokes for suspending the plug, the several devices used for operating the valve, and of the lever, and of a part of the rod by which the trip is connected with the governor of the engine. Fig. 3 is a front view of the devices represented in Fig. 2.

To enable others skilled in the art to make and use my improvements, I will now proceed to describe their construction and mode of operation.

A, Figs. 1 and 2, is the valve-shell; B the valve-plug. The ends of the shell A are closed by removable heads C C′. These heads are provided with yokes D D′, through which screw-pivots F F′ pass, as shown in Fig. 2, to adjust the plug in the shell, so that it shall fit the shell and wear all parts alike. The spindle E of the plug projects through apertures (made tight by packing) in the heads C C′, and is supported by the adjustable pivots F F′. A double arm, G, is secured to the front end of the spindle E. This arm is operated by the rods S S′ to open the valve, and by the spring I to close the valve.

H is a wrist-pin, into a groove or recess in which a hardened-steel key, Q, is fitted for the rods S S′ to strike against in order to open the valve. I is a spiral spring, one end of which is attached to the arm G and the other end to a support K. This spring closes the valve. L is a bumper provided with a spring, M. This spring is represented in the drawings as made of a piece of gum affixed to the end of the bumper; but in practice I bore out the bumper and insert into the bore a spiral spring, to the end of which I apply a follower, and to this fasten a piece of hard wood to receive the bump of the arm G at the closing of the valve.

N N′ are stands fastened to and projecting from the sides of the valve-shell. The stand N furnishes support for the bumper L and the trip O which works on its spindle P, to which latter are attached the lever and rod shown, to connect it with the governor of the engine. Two springs, R R′, are attached to the top of the stand N. Their free ends bear on the rods S S′ to steady them. The rods S S′ are shaped as shown, each having an inclination or offset which strikes against the trip O. Each of the rods S S′ is made in two sections, *a b*, the sections *b* being made of hardened steel and joined to the sections *a*, respectively, by screws or rivets. The inner ends of the sections *a* are made square, as shown in Fig. 3, in order that they can strike against the key Q to open the valve. Of the rods S S′, the rod S is connected with the single arm T by a wrist-pin, and the rod S′ to the double arm T′ by a wrist-pin, as shown in Fig. 3, the stand N′ furnishing the support for these parts. The rods S S′ are worked by the two rods V V′, which are attached directly to the rock-shaft W of the engine. In case of the application of my improvement to an old engine, where the rods S S′ do not come in line with the rock-shaft, it is necessary to use an intermediate rock-lever.

It will be observed that the rod V and the rod S are attached to the same end of the arm T by the same wrist-pin, and that the rod V′ is attached to the lower end of the double-arm T′, while the rod S′ is attached by a wrist-pin to the upper end of the same arm T′. The effect of this is, through the intermediate parts already described, to open the valve twice at each revolution of the engine.

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

1. The arrangement of the plug B and the spindle E, in combination with the adjustable pivots F F′, the whole constructed substantially as herein set forth.

2. The combination of the rods V V′, the single and double arms T T′, the rods S S′, the springs R R′, and the arm G, whereby the valve is opened twice at each revolution of the engine, substantially as shown and described.

3. The combination of the double-arm G with the spring-bumper L, to adjust the closing of the valve, substantially as shown and described.

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Witnesses:
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