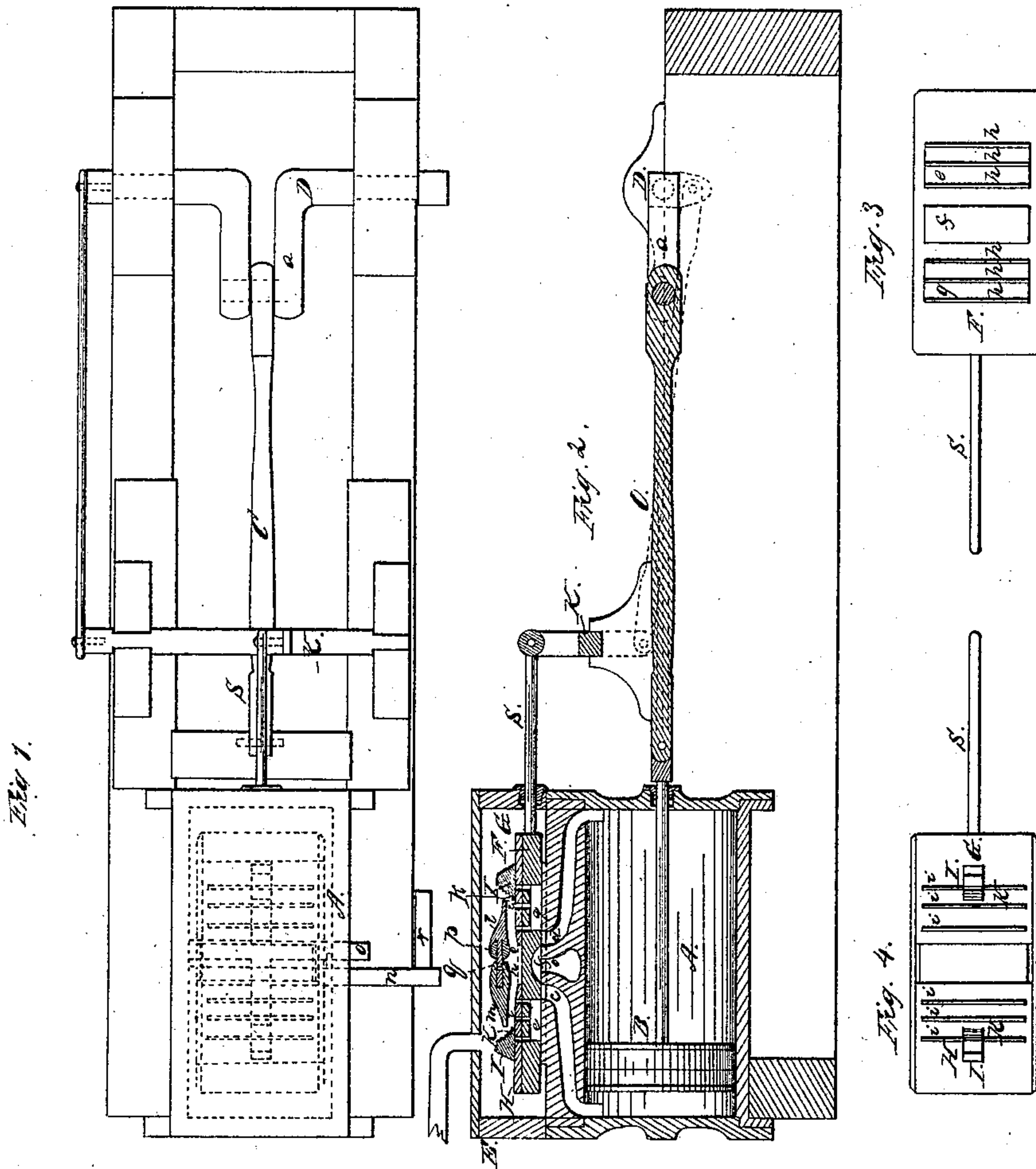


*W. Wright,
Steam Cut-Off.*

N^o 62,797.

Patented Mar. 12, 1867.



Witnesses

*R. H. Andrews,
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Inventor.

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by his attorney
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United States Patent Office.

WALTER WRIGHT, OF DANVERS CENTER, MASSACHUSETTS.

Letters Patent No. 62,797, dated March 12, 1867.

IMPROVEMENT IN CUT-OFF VALVE-GEAR OF STEAM ENGINES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL PERSONS TO WHOM THESE PRESENTS SHALL COME:

Be it known that I, WALTER WRIGHT, of Danvers Center, in the county of Essex, and State of Massachusetts, have invented a new and useful or improved Variable Cut-Off for Steam Engines; and I do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a top view; and

Figure 2, a longitudinal section of my invention as applied to an engine.

This cut-off is designed to be worked by a governor, to be applied so as to raise and lower the main arm of the main shaft, to be hereinafter explained.

In the drawings, A denotes the cylinder of the engine; B, the piston; C, the connecting-rod; D, the main shaft; and *a*, the bell-crank of such shaft.

The steam chest is shown at E as provided with one eduction passage, *b*, and two induction passages, *c d*, leading from its valve-seat. The two passages or ports, *c d*, go to opposite ends of the cylinder, and the eduction passage *b* should lead to an escape pipe in the ordinary way. The steam chest is to be capped by a cover, and to be provided with an induction pipe, to lead steam into such chest. The slide-valve of the chest is shown at F as provided with three rectangular chambers, *e f g*, arranged within it and with respect to the ports, as exhibited in fig. 2, an under side view of the valve being shown in Figure 3, and a top view of it in Figure 4. Each of the two extreme chambers, *e* and *g*, has three or any other suitable number of slots, *h h h*, leading upward from it to and through the top surface of the valve. On this surface, and over the two extreme chambers, *e g*, are placed two auxiliary valves or registers, G H, which are flat plates of metal, designed to slide freely on the slide-valve F in longitudinal directions. Each of these auxiliary valves has a series of slots, *i i i*, made through it, corresponding in number, distance, arrangement, and size, with those of the chambers *e* or *g* with which the valve G or H is to act; and it also has a trapezoidal projection or stop, I, extended upward from it. The inner inclined side of this projection is formed with a series of steps, as shown at *k*, they being to operate with one of two arms, *l m*, projecting from two stop-shafts, *n o*, arranged transversely in the steam chest, and connected by a tooth, *p*, from one of them, being extended into a fork or notched projection, *q*, of the other. This connection of the two shafts should be such that, when the longer of them is revolved any distance, it shall revolve the other a like distance, but in a contrary direction. To an arm, *r*, projecting from the main stop-shaft *n*, a ball-governor of the engine is to be applied so as to enable it to operate such arm in such manner as to turn the shaft on its axis, in either direction, in order to raise or depress the arms *l m*, as circumstances may require. The slide-valve is designed to be operated in the usual way, viz, by a rocker-shaft, K, provided with one crank-arm, having a pin to enter a notch in the valve-rod *s*. The said rocker-shaft may have a reciprocating rotary motion given to it by cranks and a connecting-rod applied to it and the main shaft. It matters not what well-known means are adopted to produce the proper and necessary movements of the valve F in order that steam from the valve chest may be caused by such movements to pass alternately into the extreme parts of the cylinder, and be exhausted through the middle or exhaust port. Each of the auxiliary valves will be carried, alternately, back and forth by the main slide-valve, and by it will be forced against the next adjacent end of the steam chest, which will stop the motion of the auxiliary valve during or while the main slide-valve may continue in its movement. At the close of the movement of the slide-valve the openings of the auxiliary valve will be directly over its fellow openings of the main slide-valve, so as to allow steam to flow from the steam chest into the cylinder. The steam will continue to so flow until, by the next movement of the main slide-valve, the trapezoidal stop of the auxiliary valve is carried against the next adjacent arm *l* or *m*; when the motion of the auxiliary valve will be arrested. The main slide-valve, continuing its movement underneath the auxiliary valve, the latter will at once close or cut off the passage of steam into the cylinder. The higher the arms *l m* may be elevated, the longer will be the time before the auxiliary valve will cut off the steam, because the longer it will be before the stop of the auxiliary valve will reach its arresting arm. Thus it will be seen that, by the action of the governor, the cut-off, when more steam may be wanted, will be longer in movement prior to cutting off the steam, and thus a greater amount of steam will flow into the cylinder than would be the case were the auxiliary valve sooner arrested.

I do not claim the combination of the two registers or valves G H, and mechanism for operating them, by means of a governor, with the slide-valve F, made with passages and chambers, as described; nor do I claim the application of trapezoidal projections to the auxiliary valves G H, in manner and to be operated by mechanism such as is described in the United States Patent No. 11,055, dated June 13 1854. What I claim as my invention or improvement has special reference to the mechanism for operating the two auxiliary valves applied to the main valve, and having trapezoidal projections I I, as described. By making each of the said projections with a series of steps in its working side, as described, they will operate to better advantage than an inclined plane, as there is no such tendency of them to counteract the effect of the governor, when the slide-valve F is in movement, as is incident to an inclined plane. Furthermore, my mechanism, arranged between the projections, and for operating with them, has advantages in the application and working of the governor.

Therefore, what I claim as my invention or improvement, is as follows:

I claim the construction of each of the trapezoidal projections I I, with offsets or steps, as set forth, to operate in combination with the arms *l m* and the two shafts, *n o*, arranged and connected in manner and to operate as described.

I also claim the combination and arrangement of the shafts *n o*, the arms *l m* and *r*, when arranged in manner and to operate with the trapezoidal projections I I, fixed to the auxiliary valves G H, applied to the main slide-valve F, as described.

WALTER WRIGHT.

Witnesses:

R. H. EDDY,

F. P. HALE, JR.