

R. Stewart,
Steam-Engine Valve-Gear.
N^o 39,075. Patented June 30, 1863.

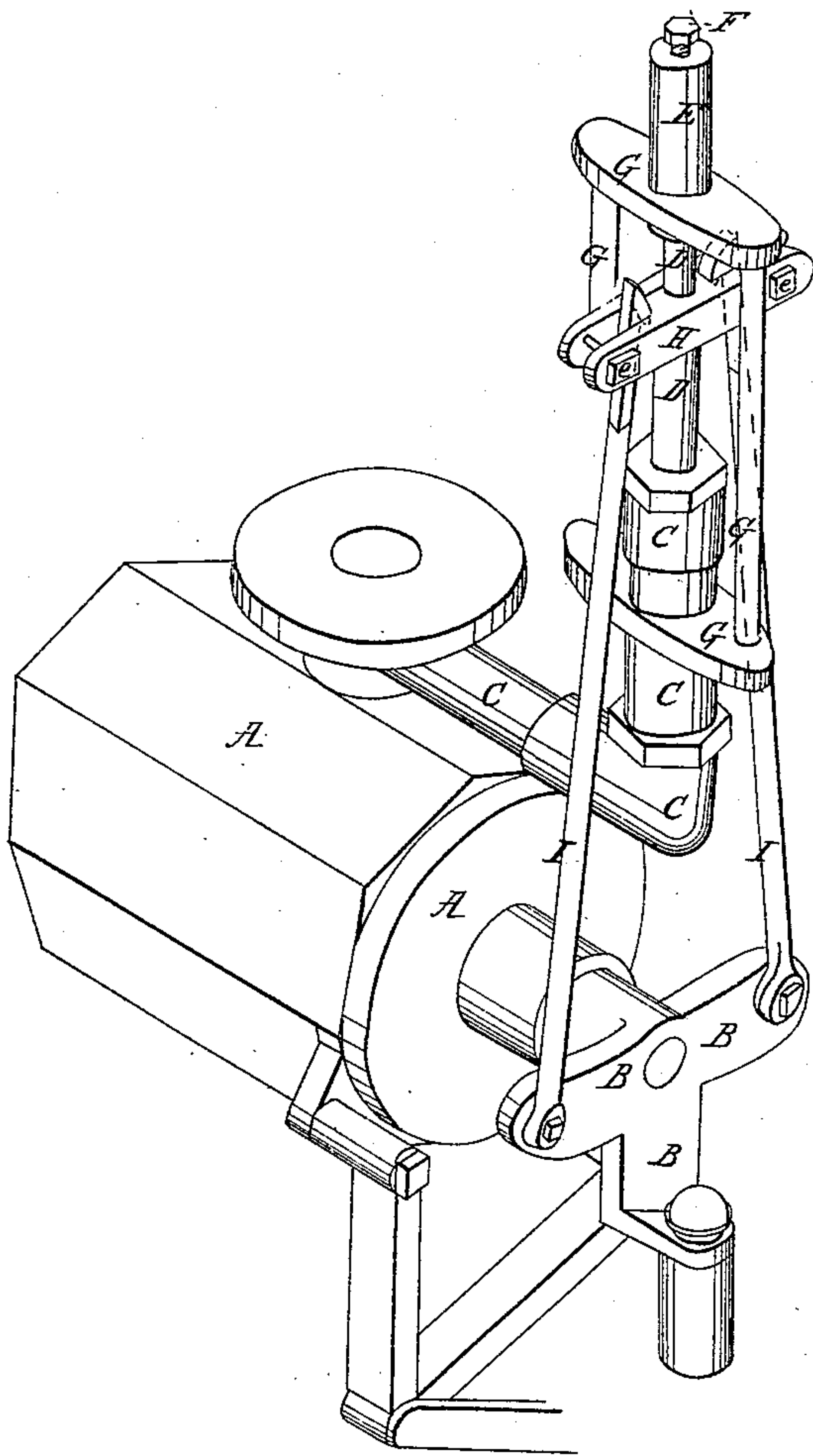


Fig. 1.

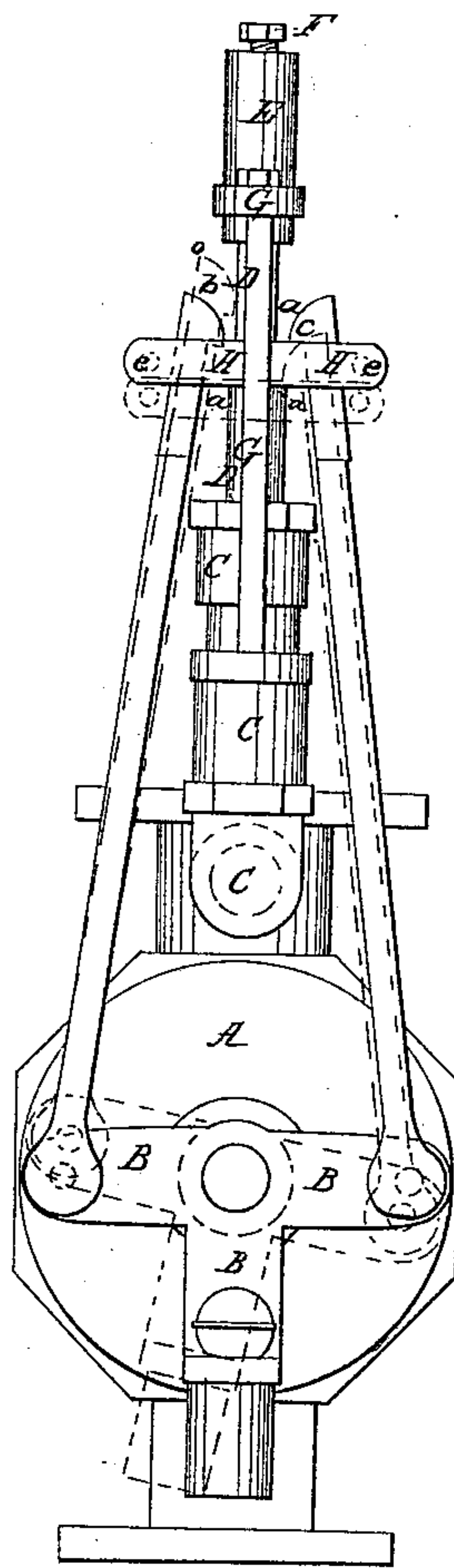


Fig. 2.

Witnesses:
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Inventor:
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UNITED STATES PATENT OFFICE.

ROBERT STEWART, OF ELMIRA, NEW YORK.

IMPROVEMENT IN CUT-OFF-VALVE GEAR.

Specification forming part of Letters Patent No. 39,075, dated June 30, 1863.

To all whom it may concern:

Be it known that I, ROBERT STEWART, of Elmira, in the county of Chemung, in the State of New York, have invented certain new and useful improvements in the mode of operating the cut-off valves of steam-engines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to their letters of reference.

To enable others to make and use my invention, I will describe its construction and operation.

In the drawings I have shown my improvement attached to the device for operating "cut-off valves," which has already been secured to me by Letters Patent.

Figure 1 is an isometrical projection. Fig. 2 is a front elevation, the red lines representing the position when the steam is let on.

In the drawings, A is the valve.

B is the valve crank.

C is a steam-pipe in connection either with the valve or the boiler.

D is a piston working in the vertical limb of the steam pipe or cylinder C.

E is a hollow cylinder in which the upper end of the piston D plays. In the top of this cylinder is a set-screw, F, which rests upon a cushion or packing to ease the concussion of the upper head of the piston.

G is the platform and brace-rods for cylinder E.

H is a cross-head resting upon a shoulder on piston D at *a*.

I I are connecting-hooks, having their lower ends pivoted to the outer ends of the operating lever B, attached to the valve stem. The upper ends of the rods I are provided with hooks, as at *c*, Fig. 2, made to catch against the cross-head H at *c*. This cross-head is slotted in an **I** form, so as to receive and guide the hooked ends of the rods I. *e e* are bolts through the ends of the cross-head, to keep the hooks in place.

In the operation of my invention it will be understood that when the valve is at rest, as shown in Fig. 1, the steam is entirely cut off.

Now, the object of my invention is to cut off

the steam instantly, after it has been let on, either by the devices patented to me, or by any other device operating the valve-crank B.

In the devices formerly patented to me for a similar purpose I make use of a spring of metal to return the valve to its normal position and cut-off. In this improvement the steam in the cylinder C operates against the lower head of the piston D, forcing it upward with a constant, equal pressure, at all times the same. When the steam is let on, one arm of the crank B descends, carrying with it the connecting hook-rod I, which carries with it the cross-head H. At the same time the other end of the crank ascends, carrying with it the other rod I, which slips up through the cross-head H, as shown at *o*, Fig. 2. As soon, now, as the device which has thus operated upon the crank releases it, the constant upward pressure of the steam in the cylinder C throws up the cross-head, which carries with it the rod I, which has been depressed. This rod then raises with it the depressed end of the crank, carrying it back to its normal position, thus cutting off the steam instantly. Upon the return-motion of the eccentric, (or the movement of the crank B in the opposite direction,) the same effect is produced by the cross-head and piston acting upon the crank through the other rod I. It will thus be seen that by this device I am enabled to cut off the steam instantly and surely at any point of the stroke, and without any danger from the breaking of a spring.

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

1. The cylinder C and piston D, in combination with the vertical platform and braces G, when constructed and operating substantially as described, and for the purposes set forth.

2. The combination of a cross-head, H, and connecting-rods I, with a cut off valve, substantially as and for the purpose described.

ROBERT STEWART.

Witnesses:

JO. C. CLAYTON,
EDM. F. BROWN.