Crumbie & Briggs,

Steam-Engine Valve-Gear.

No. 23,830. Patented May 3, 1859.

Fig. 1.

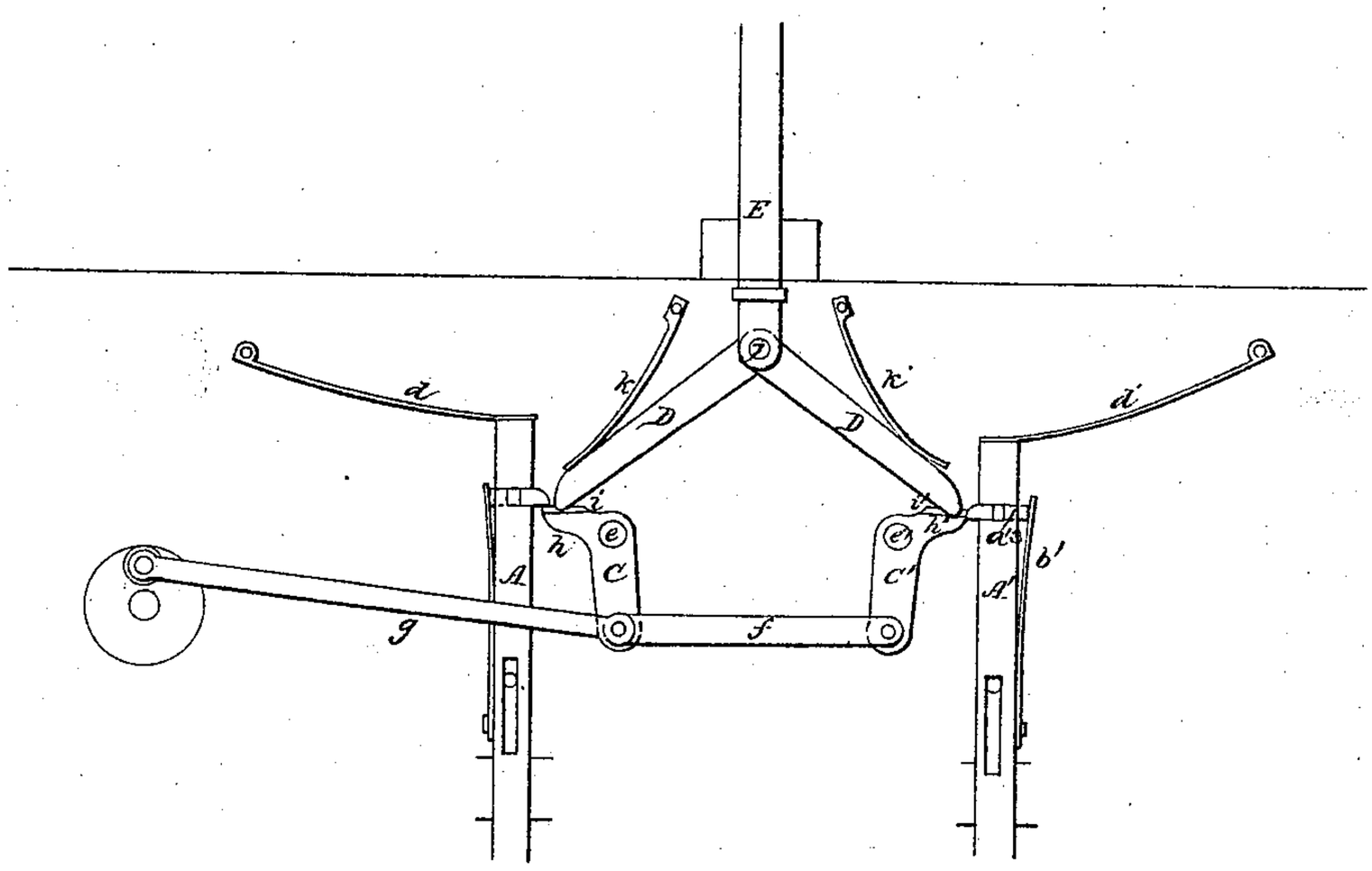
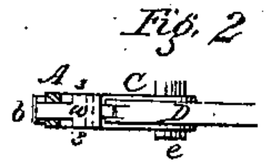


Fig. 2



Witnesses.
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UNITED STATES PATENT OFFICE.

A. CRUMBIE AND R. D. BRIGGS, OF BROOKLYN, NEW YORK.

VARIABLE CUT-OFF FOR STEAM-ENGINES.

Specification of Letters Patent No. 23,830, dated May 3, 1859.

To all whom it may concern:

Be it known that we, ALEXANDER CRUMBIE and RUSSELL D. BRIGGS, both of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Variable Cut-Off Gear for Steam-Engines; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side view of our improved cut-off gear. Fig. 2 is a plan of one of the rocking toes, sliding lifters, and tripping bars.

Similar letters of reference indicate like parts in both figures.

To enable those skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

A, A′, represents either the stems of the cut-off valves or lifting rods connected with them. The valves may be either such as will serve alone for the induction of steam or may be used with other induction valves. These rods are slotted transversely to receive the sliding lifters *a*, *a′*, one each; the under sides of those portions of the said lifters which project from the rods or stems to lift the valves, being square with the rods or stems A, A′, and the upper sides being beveled. These portions of the lifters project from those sides of the rods or stems A, A′, which face each other, and springs *b*, *b′*, are applied on the opposite sides of said rods or stems to force out the operative portions of the lifters, and said lifters are furnished with shoulders 3, 3, to prevent them being forced out by the springs farther than is necessary. Springs *d*, *d′*, are shown as applied to the tops of the rods or stems A, A′, to force them down and close the valves but these may not be in all cases necessary.

C, C′, are two rockers for operating on the lifters *a*, *a′*, to lift the valves, said rockers being of angular form and being arranged upon two stationary pins *e*, *e′*, between the rods or stems A, A′. The pendent arms of these rockers are connected together by a rod *f*, and are also connected by a rod *g*, with an eccentric or its equivalent, for producing the rocking motion necessary to lift the valves. Their toes *h*, *h′*, have raised feathers *i*, *i*, on their working surfaces to enter grooves in the points of the two toggle-like tripping bars D, D′, which are connected by the same pin *j*, with an upright rod or slide E, which may be connected with hand gear or with a governor, and whose joints are held in contact with the working surfaces of the toes by means of springs *k*, *k′*, in case of their own weight being insufficient.

The operation is as follows: The vibratory motion of the rockers C, C′, derived from the eccentric or its equivalent, causes the toes *h*, *h′*, to operate upon the lifters *a*, *a′*, and raise the rods or stems A, A′, and open the valves till their respective tripping bars D, D′, in being raised by the toes and in gradually assuming a less inclined position, have their points moved toward the rods or stems so far that they push back the sliding lifters *a*, *a′*, through the rods or stems till they push them off the toes and thus liberate the valves and allow them to close. The escape of the lifters takes place earlier or later in the stroke of the piston according as the toggle-like tripping bars D, D′, have a less or more inclined position, and said tripping bars may be adjusted permanently by lowering or raising the rod or slide E, to cause the escape of the lifters at an earlier or later point in every stroke of the piston, or they (the lifters) may be so controlled by a governor applied to the rod E, as to make the cut-off variable to regulate the speed of the engine.

We do not claim any portion of the device patented by N. T. Greene, March 13, 1855; but

Having described our invention, we claim and desire to secure by Letters Patent,

The arrangement and combination of the toggle-rods D, D′, slide E, rockers C, C′, stems A′, and lifters (*a*, *a′*,) substantially as and for the purpose herein shown and described.

ALEXANDER CRUMBIE.
RUSSELL D. BRIGGS.

Witnesses:
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S. H. WALES.