D. Sexton,

Steam Cut-Off.

No. 45,756. Patented Jan. 3, 1865.

Fig. 1

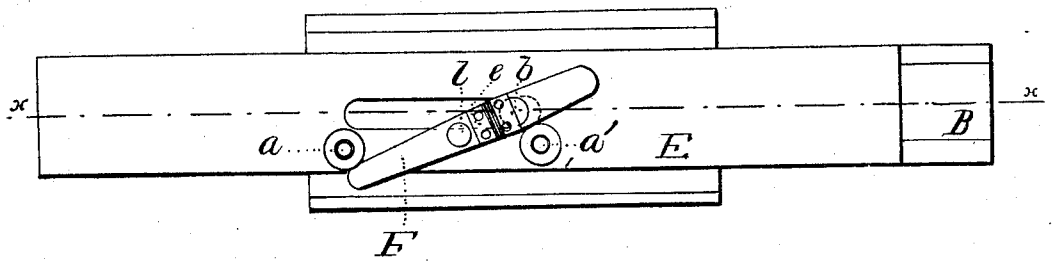


Fig. 2.

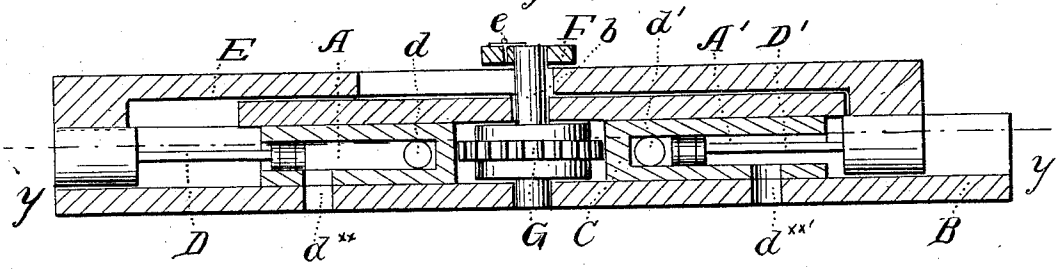
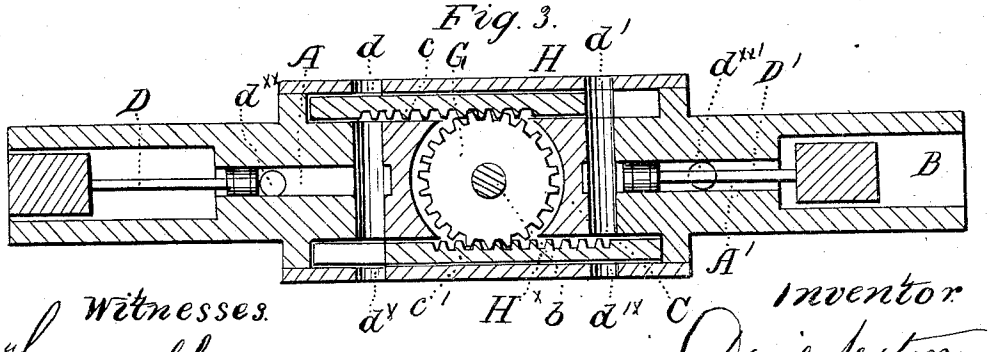


Fig. 3.



Witnesses.
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AM. PHOTO-LITHO. CO. N. Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

DANIEL SEXTON, OF SAN GABRIEL, CALIFORNIA.

IMPROVEMENT IN STEAM-ENGINES.

Specification forming part of Letters Patent No. **45,756**, dated January 3, 1865.

To all whom it may concern:

Be it known that I, DANIEL SEXTON, of San Gabriel, in the county of Los Angeles and State of California, have invented a new and useful Improvement in Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a plan or top view of my invention. Fig. 2 is a longitudinal vertical section of the same, the line *x x*, Fig. 1, indicating the plane of section. Fig. 3 is a horizontal section of the same, the line *y y*, Fig. 2, indicating the plane of section.

Similar letters of reference indicate like parts.

This invention consists in an engine with two pistons which work in separate cylinders and are connected by a rigid bar carrying two studs, in combination with a lever secured to the end of an oscillating shaft, on which is mounted a cog-wheel or pinion-gearing in toothed racks attached to or cast solid with the two slide-valves in such a manner that by the action of the studs striking the oscillating lever the valves are changed at regular intervals, and one cylinder takes steam while the other exhausts, and by these means a continuous reciprocating motion is effected by the action of steam, hot air, or water.

A A′ represent the two cylinders, which are secured in line to the bed-plate B, and so that their open ends are turned from each other. The two cylinders are separated from each other by the stationary abutment C, and two piston rods, D D′, are connected to each other by the longitudinal bar E. This bar extends from the ends of the piston-rods over the top of the cylinders, as clearly shown in Figs. 1 and 2 of the drawings, and it carries two roller-studs, *a a′*, which, by their action on the lever F, change the valves, as will be presently explained.

The lever F is mounted on the end of the shaft *b*, which has its bearings in the abutment C, and to which a pinion, G, is firmly keyed. This pinion gears in two toothed racks, *c c′*, which are rigidly attached or cast solid with the valves H H*. These valves are situated on the opposite sides of the pinion, so that the same, when the pinion revolves, will move in opposite directions. The valve H controls the ports *d d′*, and the valve H* the ports *d** *d′**, and the ports *d d** form the steam and exhaust ports for the cylinder A, whereas the ports *d′ d′** perform the same function for the cylinder A′.

If the steam is admitted to the cylinders through the ports *d d′* and exhausted through the ports *d** *d′**, the operation of the engine will be as follows: In the position shown in Figs. 2 and 3 the cylinder A′ takes steam and the cylinder A exhausts, the ports *d* and *d′** are closed, and the piston in the cylinder A′ moves in the direction of the arrow marked on it in Fig. 3, carrying with it the bar E and piston in cylinder A. As soon as the roller-stud *a* strikes the lever F, the valve begins to change, and by the time the piston in cylinder A′ has completed its stroke the ports *d′ d** are closed and the ports *d d′** are opened. In this position the cylinder A takes steam and the cylinder A′ exhausts, and the pistons move in the direction opposite to the arrow marked thereon in Fig. 3.

In order to allow the steam to exhaust with increased facility, the cylinders A A′ are provided with additional exhaust-ports, *d*** *d***′*. These ports are made in the sides of the cylinders, at about the middle or nearer to their open ends, and the steam exhausts through the port *d*** whenever the piston in the cylinder A arrives in the position shown in Fig. 3, and it exhausts through the port *d***′* when the piston in the cylinder A′ passes beyond it. The bar E takes the place of the cross-head in an ordinary engine, and connects by a rod or other suitable means with the crank.

The lever F forms the starting-bar of the engine, and by taking hold of this lever and turning it by hand the engine can be reversed at any moment. Said lever is made in two parts, which are connected by a hinge, *e*. By turning the hinged part up the action of the roller-stud *a′* on the lever is interrupted and the engine stops.

It is obvious that this engine is equally well adapted for hot air or water.

I claim as new and desire to secure by Letters Patent—

1. The two pistons D D′, connected together by the bar E, and operating in open cylinders A A′, in combination with the abutment C,

valves H H*, and ports *d d* d' d'**, in the manner and for the purpose substantially as herein shown and described.

2. The lever F and studs *a a'*, in combination with the pistons D D', pinion G, and valves H H*, constructed and operating substantially as and for the purpose set forth

3. Hinging the lever F as and for the purpose specified.

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Witnesses:
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