N. Sutton,

Steam Slide Valve.

No. 27,168. Patented Feb. 14, 1860.

Fig. 1.

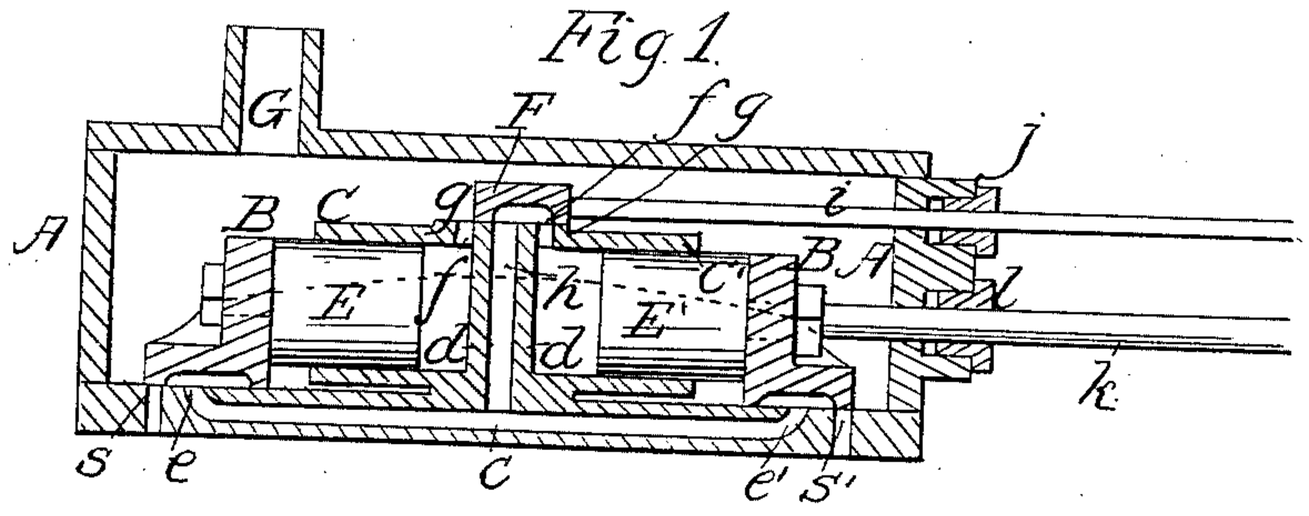
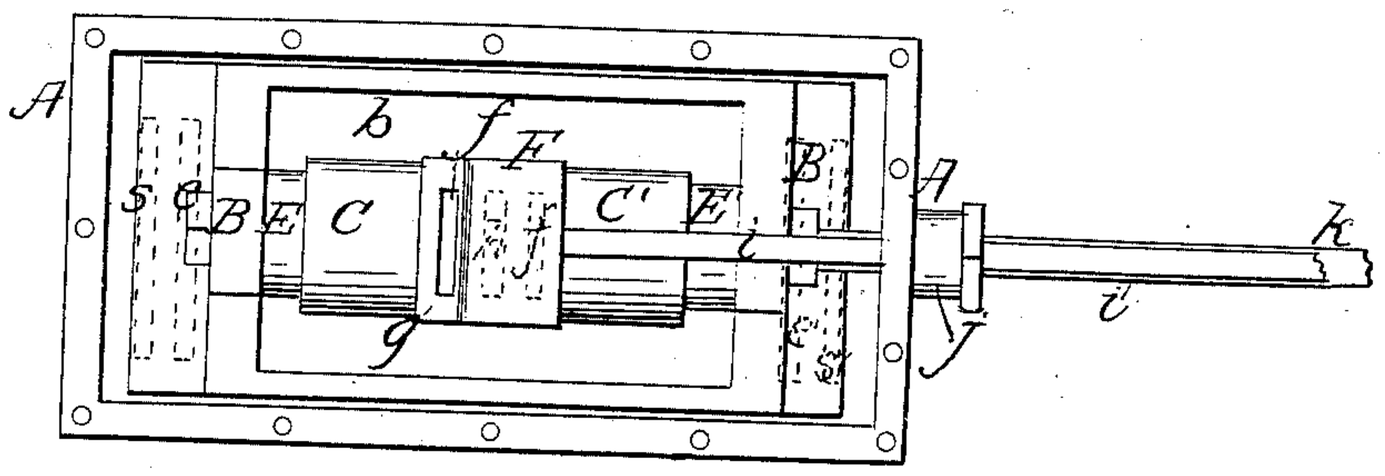


Fig. 2.



Witnesses:

J. F. Buckley

Mich Hughes

Inventor:

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UNITED STATES PATENT OFFICE.

NOAH SUTTON, OF NEW YORK, N. Y.

SLIDE-VALVE.

Specification of Letters Patent No. 27,168, dated February 14, 1860.

To all whom it may concern:

Be it known that I, NOAH SUTTON, of the city, county, and State of New York, have invented a new and useful Improvement in Means of Operating the Slide-Valves of Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a longitudinal section of the valve chest and slide valve of a steam engine exhibiting the application of my invention. Fig. 2, is a plan of the same with the cover of the valve chest removed.

Similar letters of reference indicate corresponding parts in both figures.

My invention relates to the operation of the slide valves of steam engines by the direct pressure of steam upon pistons attached to the valves themselves; and it consists in a novel manner of applying such pistons and the cylinders in which they operate, and of arranging the parts and passages of such cylinders, whereby great simplicity of construction is obtained.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

A, is the ordinary valve chest of a steam engine and *a*, *a*, the seat of the main valve B, which is of what is known as the double D, kind, having a large opening *b*, *b*, within which are arranged the two cylinders C, C′, and the two pistons E, E′, by which the valve is worked. Instead of the double D, valve two short D, valves may be used connected together in such a way as to leave room for the cylinders and pistons between them.

s, *s*′, are the steam ports in the main valve seat and *e*, *e*′, the exhaust ports connected by a long passage *c*, with the main exhaust pipe.

The two pistons E, E′, are attached without rods directly to the inner sides of the two heads of the valve or to the two valves if separate valves are used, by bolts or otherwise, with their axes in line with each other and parallel with the valve seat.

The two cylinders C, C′, are cast together and separated by a partition *d*, and may be either cast on the main valve seat or bolted thereto within the valve chest A. They have no heads in their outer ends but are entirely open and each is provided with a single port *f*, close to the partition *d*, opening into a flat seat *g*, *g*, parallel with the main valve seat *a*, *a*. Between the ports *f*, *f*, is the exhaust port *h*, serving for both cylinders C, C′, and having a passage leading through the partition *d*, into the main exhaust passage *c*.

F, is a small short D, valve of ordinary construction for controlling the induction and eduction of steam to and from the cylinders C, C′, to produce the operation of the main valve, having a stem *i*, passing through a stuffing box *j*, in the end of the valve chest A, to be operated by tappets on the main piston rod of the engine or by any other means.

The main valve does not absolutely require any stem or rod, but I have represented it with a stem *k*, passing through a stuffing box *l*, in the end of the steam chest to enable it to be worked by hand or to permit the application of cut off apparatus if desired.

G, is the steam pipe for the admission of steam to the valve chest A, to supply the main engine with steam.

The steam for operating on the pistons E, E′, to work the main valve is admitted to the cylinders C, C′, from the valve chest A. The valve F, is operated by the action of the tappets or other devices on its stem *i*, and thereby caused to admit steam to one or other of the cylinders C, C′, at the end of each stroke of the main piston of the engine for the purpose of giving to the main valve the necessary movement to effect the induction and eduction of steam to and from the main cylinder for the next stroke of the main piston. The exhaust from the cylinders C, C′, is effected through the port *h*, the main exhaust passage *c*, and main exhaust pipe.

I do not claim broadly the operation of the slide valve of a steam engine by the direct action of steam upon a piston attached

to said valve and working in a cylinder arranged within the main steam chest. But

What I claim as my invention and desire to secure by Letters Patent, is—

The arrangement of the two pistons E, E′, and cylinders C, C′, between the two heads of the double D, valve or what is equivalent, between two short connected D, valves, with a single steam passage in each of said cylinders and an exhaust passage common to both of said cylinders communicating through the partition between the said cylinders with the main exhaust passage, substantially as herein described.

N. SUTTON.

Witnesses:
J. F. Buckley,
Mich Hughes.