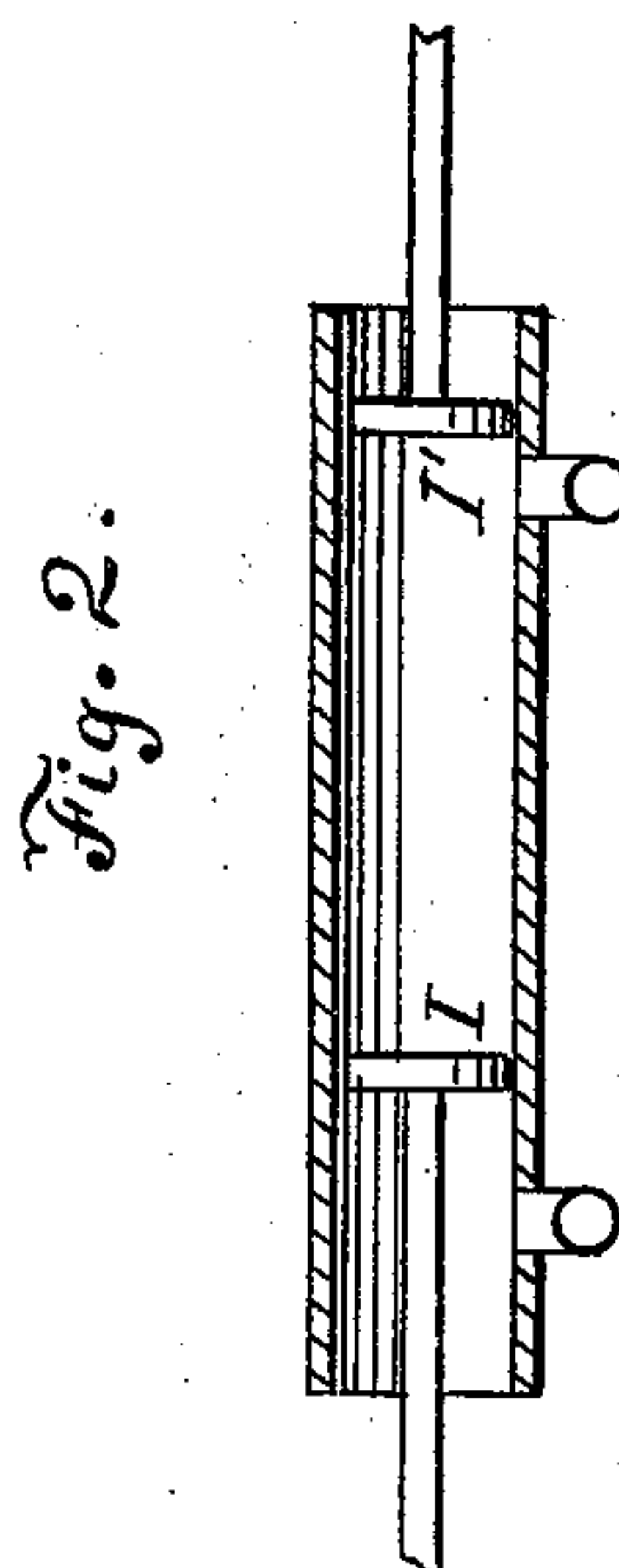
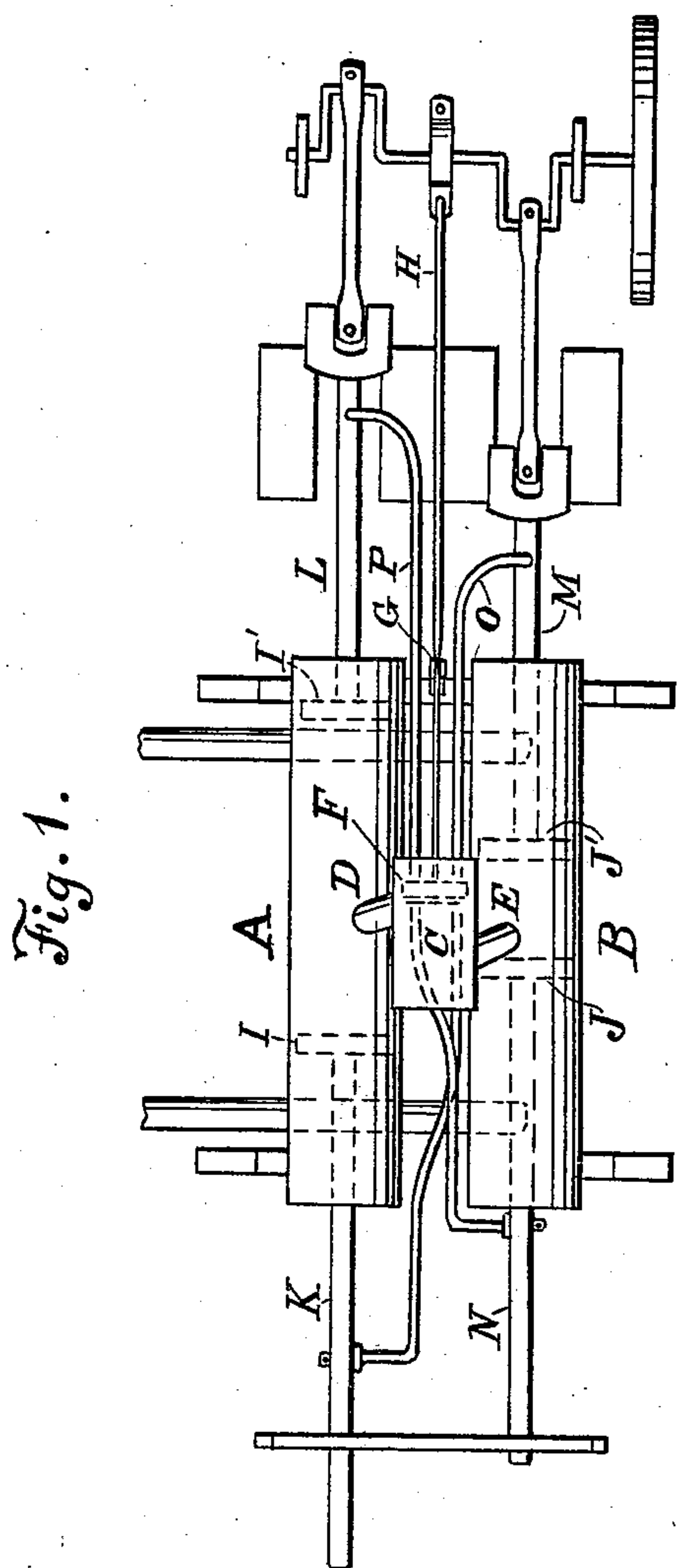


A. KISSELL.
Reciprocating Steam-Engine.

No. 206,460.

Patented July 30, 1878.



Witnesses :
H. A. Daniels
C. B. Fowler

Inventor :
Aaron Kissell,
by Theodore Mungen
Attorney.

UNITED STATES PATENT OFFICE.

AARON KISSELL, OF FINDLAY, OHIO.

IMPROVEMENT IN RECIPROCATING STEAM-ENGINES.

Specification forming part of Letters Patent No. **206,460**, dated July 30, 1878; application filed June 7, 1878.

To all whom it may concern:

Be it known that I, AARON KISSELL, of Findlay, in the county of Hancock and State of Ohio, have invented certain new and useful Improvements in 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 drawing, making a part of this specification, in which—

Figure 1 is a plan of my invention. Fig. 2 represents, in section, one of the steam-cylinders.

This invention relates to an improvement in steam-engines; and consists of two parallel headless steam-cylinders, having induction-ports, which enter the cylinders at their longitudinal centers between two pistons, provided with piston-rods that project from opposite ends of the cylinders, the piston-rods at one end of the cylinders being connected by cross-rods to opposite piston-rods at the other ends of the cylinders, in such a manner that when the pistons in one cylinder are driven outwardly the pistons in the other cylinder are at the same time forced inwardly, and vice versa, the object of the invention being to increase the capacity of the engine without increasing the volume of steam.

In the accompanying drawing similar letters of reference indicate like parts in the invention.

A and B are the cylinders, neither of which is provided with the usual heads. C is the steam-chest, located over the cylinders and

connected with them at their longitudinal centers. D and E are the steam-ports, and F is the slide-valve. G is the rocking-lever, and H the eccentric-rod.

Each cylinder A and B is provided with two pistons, I I' and J J', which are provided with rods K L M N, projecting from the ends of said cylinders. The rods K and M are connected by the cross-rod O, and the rods L and N are connected by the cross-rod P.

When the steam enters the port D the pistons I I' are driven apart, and at the same time the pistons J J' are forced toward each other until the steam enters the port E, when a reverse movement of the pistons takes place. The motion thus produced is imparted to the shaft and thence to the machinery.

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

In a steam-engine, the combination of the headless cylinders A and B, provided with the pistons I I' and J J', having their rods K L M N connected by the cross-rods O and P, constructed and arranged substantially as and for the purposes set forth.

In testimony that I claim the foregoing improvements, as above described, I have hereunto set my hand and seal this 13th day of May, 1878.

AARON KISSELL. [L. S.]

Witnesses:

W. MUGEN,
J. C. STRICKLER.