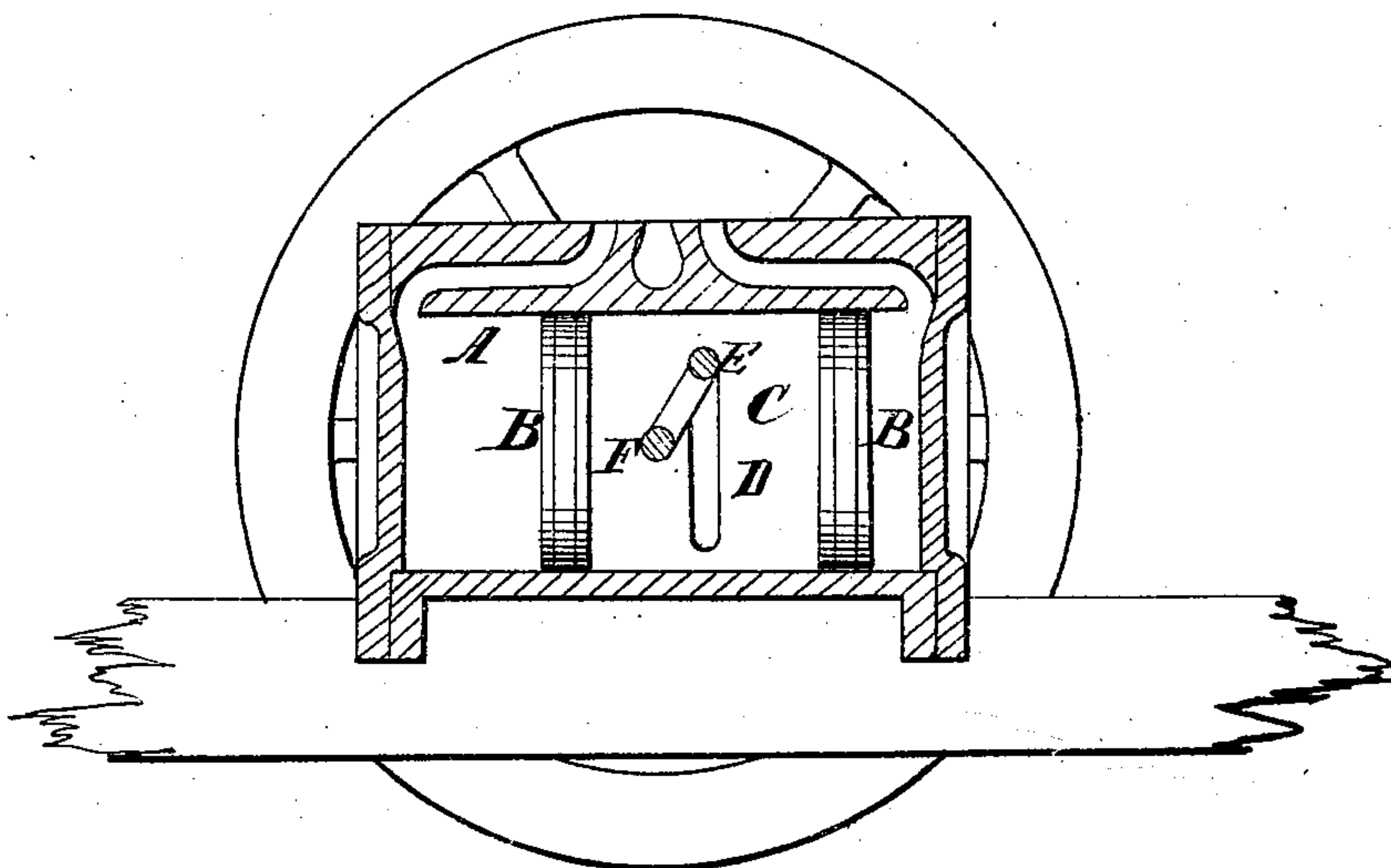
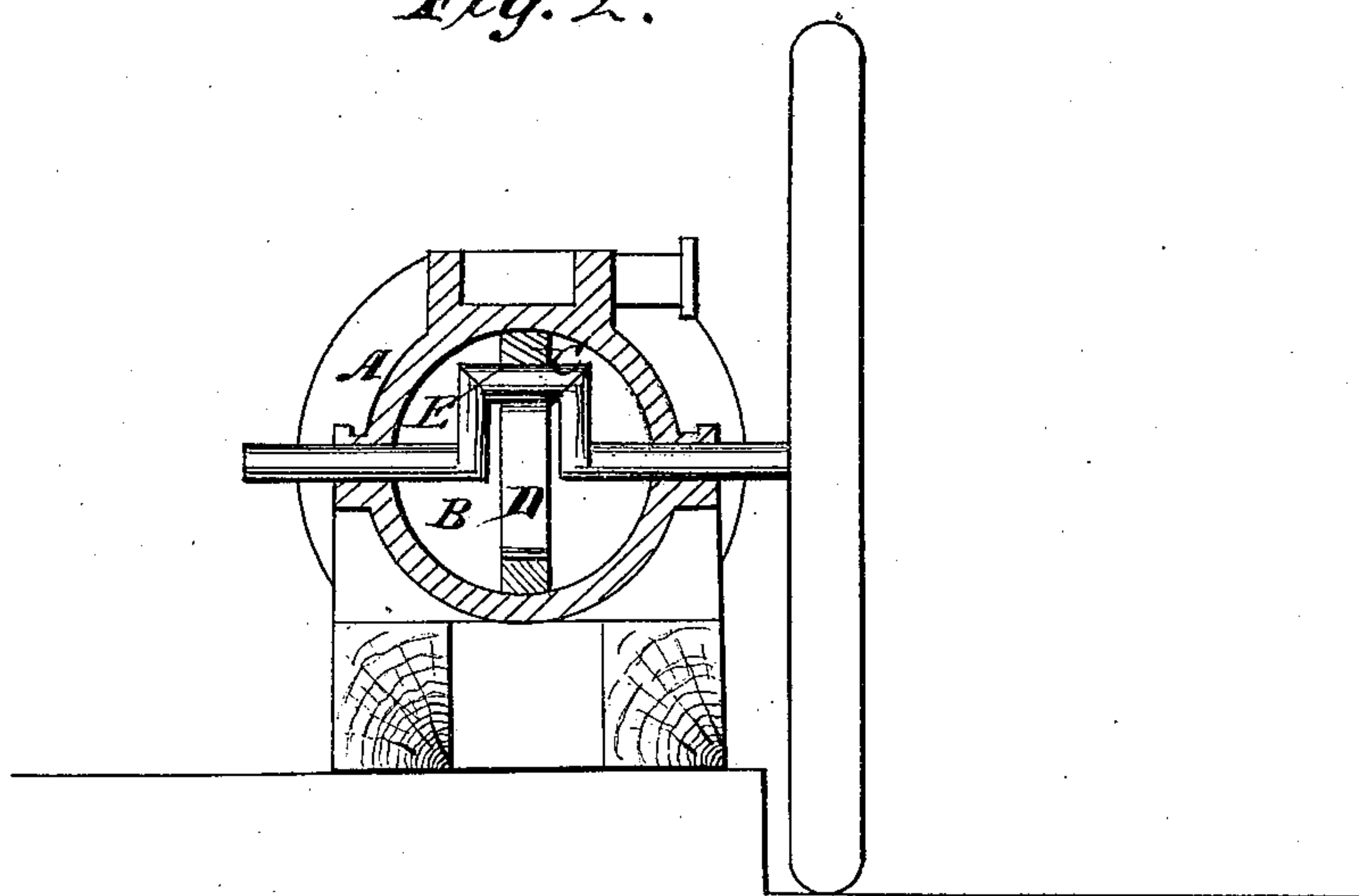


*J. Smith,*  
*Reciprocating Steam Engine,*  
*Nº 12,187, Patented Jan. 2, 1855.*

*Fig. 1.*



*Fig. 2.*



# UNITED STATES PATENT OFFICE.

JOHN SMITH, OF CINCINNATI, OHIO.

IMPROVED CRANK-CONNECTION IN DOUBLE-PISTON STEAM-ENGINES.

Specification forming part of Letters Patent No. **12,187**, dated January 2, 1855.

*To all whom it may concern:*

Be it known that I, JOHN SMITH, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement 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 annexed drawings, making a part of this specification, in which—

Figure 1 is a longitudinal section of a steam-cylinder, the pistons within it not being bisected. Fig. 2 is a transverse section of the same.

Similar letters of reference indicate corresponding parts in the two figures.

This invention relates to an improvement in reciprocating steam-engines; and it consists in having two pistons within a cylinder, said pistons being connected with a crank, as will be hereinafter shown, so that the pistons act directly upon it without the intervention of a piston and connecting rods, and transmit the power of the steam directly to the driving or crank shaft.

A represents a steam-cylinder provided with the usual slide-valve, and B B are two pistons which are connected by a cross head or plate, C, which is sufficiently long to allow a requisite distance or space between the two pistons.

At about the center of the cross head or plate C there is a vertical slot, D, in which the crank E fits, said crank being on a shaft, F, which passes transversely through the cylinder, as shown in Fig. 2. The steam is admitted alternately into the ends of the cylinder A

and acts against the outer faces of the pistons B B, first against one piston and then against the other, and as the pistons work back and forth the crank E is turned and a rotary motion given the shaft F.

By the above improvement the ordinary piston and connecting rods are dispensed with, the pistons being connected directly with the crank. The engine is economical to manufacture, having but few parts, and works well in practice.

The pistons B B and cross head or plate C may be composed of one casting. The steam is admitted into the ends of the cylinder and exhausted or allowed to escape in the usual manner, there being no peculiarity in the construction of the valve, which, as before stated, is the ordinary slide-valve.

I do not claim the employment of two pistons within a cylinder separately; but

What I do claim as new, and desire to secure by Letters Patent, is—

The employment or use of two pistons, B B, connected by a cross head or plate, C, which has a slot, D, through it, in which the crank E of the shaft F fits, whereby the pistons are directly connected to the crank, and a rotary motion given the crank-shaft without the intervention of the usual piston and connecting rods, as herein shown.

JOHN SMITH.

Witnesses:

W. L. NEWILL,  
N. MARCHANT.