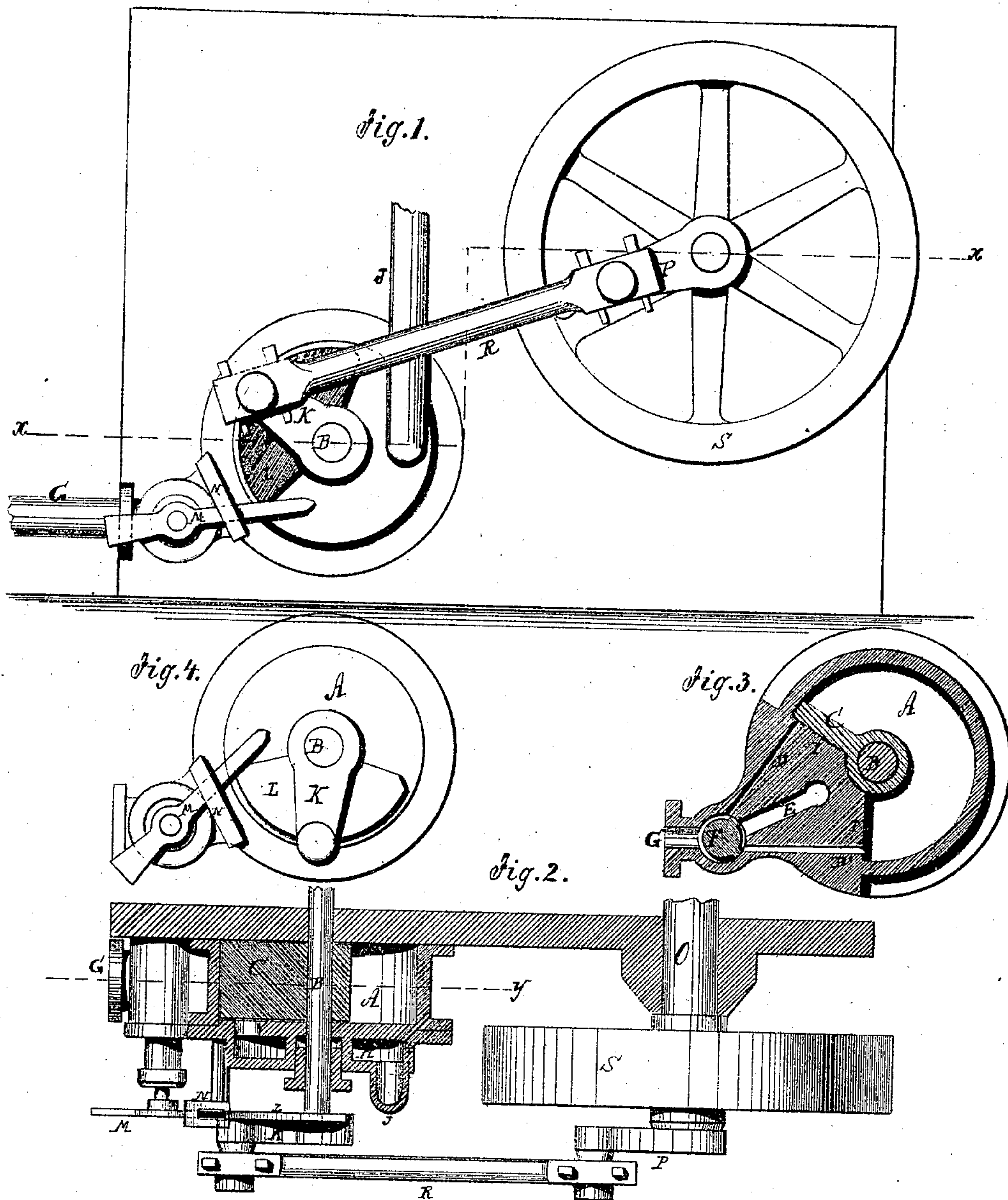


S. D. GILSON.  
ROTARY ENGINE.

No. 103,869.

Patented June 7, 1870.



Witnesses:

A. Bennekenhoff.

Isaac H. Brooks

Inventor:

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# UNITED STATES PATENT OFFICE.

SAMUEL D. GILSON, OF SYRACUSE, NEW YORK.

## ROTARY ENGINE.

Specification forming part of Letters Patent No. 103,869, dated June 7, 1870.

*To all whom it may concern:*

Be it known that I, SAMUEL D. GILSON, of Syracuse, Onondaga county, in the State of New York, have invented a new and useful Improvement in Steam Pumping-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, forming part of this specification.

This invention relates to new and important improvements in the manner of admitting, exhausting, and applying the steam, as hereinafter more fully described.

In the accompanying drawings, Figure 1 represents a side elevation of the engine. Fig. 2 is a horizontal section of Fig. 1 on the line *x x*. Fig. 3 is a vertical section of Fig. 2 on the line *y y*. Fig. 4 is a detailed view, showing the engine-crank reversed from the position seen in Fig. 1.

Similar letters of reference indicate corresponding parts.

A is the cylinder. B is the engine-shaft. C is the piston. D D' are the induction-ports. E is the exhaust-port. F is the valve, which is a rocking or oscillating valve. G is the steam-pipe connecting with the boiler. H is the exhaust-chamber at the end of the cylinder. From this it will be seen that the piston does not make a full revolution in the cylinder, but has a reciprocating motion, the steam being applied alternately on each of its sides. The valve is so arranged that the piston is cushioned by steam on the heads I I at the termination of each vibration. As seen in Fig. 3, the piston is taking steam from the port D and exhausting it from the port D'. The exhaust-steam passes into the chamber H on the end of the cylinder and escapes through the pipe J, Fig. 1.

K is a crank on the end of the shaft B. L is a cam connected with the crank, by means of which the valve F is operated. M is an arm on the end of the valve-stem, which works in and is guided by a slot in the stand N. As the crank moves back and forth with a motion corresponding with that of the piston the angles of the cam are brought in contact with

arm M, raising and lowering it, and consequently oscillating the valve F. The manner in which the cam operates upon the arm is plainly shown in Figs. 1 and 4.

O is a revolving-shaft, supported by the engine-frame, which is connected with the engine-shaft B by means of the crank P on its end and the connecting-rod R. S is a fly-wheel on the shaft. The crank K on the engine-shaft B is carried more than half of a revolution and less than a whole one at each half-stroke of the piston, a whole stroke of the piston being performed when it returns to the head I, from whence it started. The crank K is carried past the vertical center line at each vibration, and it is longer or has a broader sweep than the crank P, so that at the termination of each vibration of K the crank P is carried past the central line of the connecting-rod R and performs a whole revolution while the piston performs a single vibration or half-stroke.

In applying this engine to pumping purposes (or completing a fire-engine) the cylinder of the pump is attached to the engine-shaft B, and the pump itself is constructed and operated upon the same principle as the engine in all respects.

It will be seen that by varying the position or throw of the valve the steam may be cut off at any part of the stroke, so that it may be worked expansively to any desired extent.

In applying the engine to other purposes than pumping in the manner described, the power is taken from the rotating shaft O.

In using the engine exclusively for pumping, the shaft O and the parts connected therewith are dispensed with.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The piston-shaft B, cam L, moving in the arc described, arm M, and slotted guide-stand N, all combined, arranged, and relatively constructed as and for the purpose set forth.

The above specification of my invention signed by me this 5th day of January, 1870.

SAML. D. GILSON.

Witnesses:

DAVID MISELL,  
ALEX. F. ROBERTS.