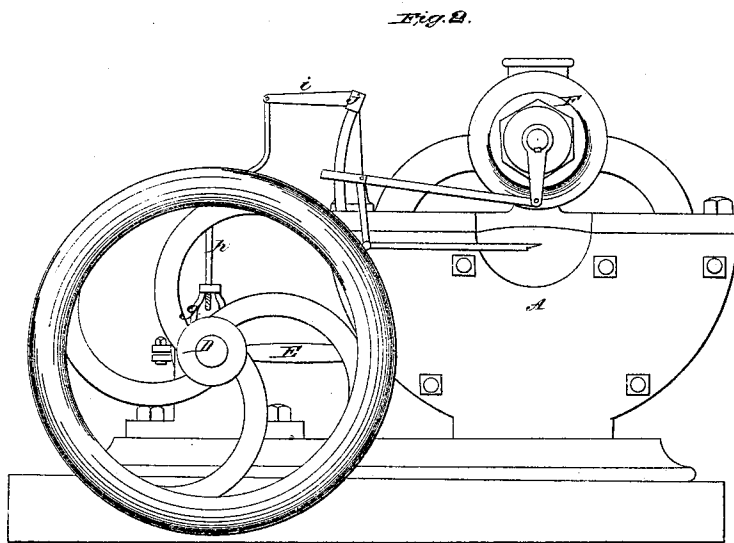
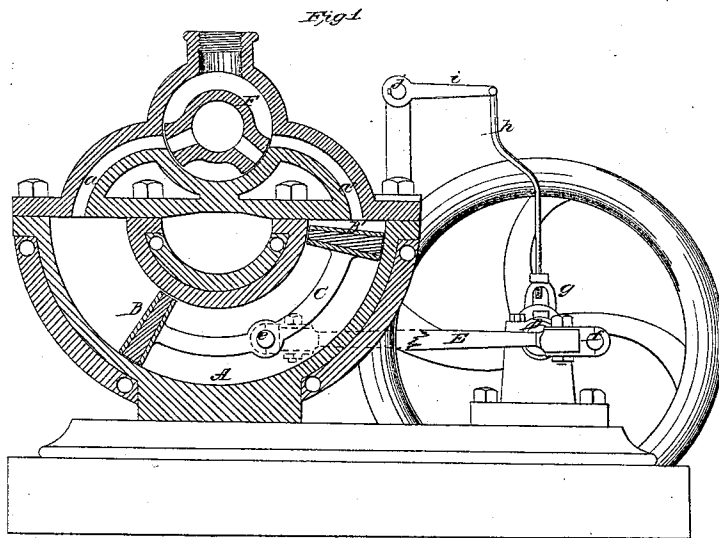


G. W. Van Deren,
Rotary Steam Engine.
N^o 29,642. Patented Aug. 14, 1860.



Attest:
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UNITED STATES PATENT OFFICE.

G. W. VAN DEREN, OF BIGFLATS, NEW YORK.

STEAM-ENGINE.

Specification of Letters Patent No. 29,642, dated August 14, 1860.

To all whom it may concern:

Be it known that I, G. W. VAN DEREN, of Bigflats, in the county of Chemung and State of New York, have invented a new and useful Oscillating-Piston Engine; 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, forming a part of this specification, in which—

Figure 1 represents a longitudinal vertical section of my invention. Fig. 2 is a side elevation of the same.

Similar letters of reference in both views indicate corresponding parts.

This invention consists in arranging in the interior of a semi-circular cylinder to which the steam is admitted, through passages in its end two pistons, connected by a curved piston-rod, so that the steam acts alternately on the two pistons with its full force, and that an oscillating motion of said pistons is produced, which by connecting a pin that projects from the middle of the piston-rod with the crank pin of the fly wheel shaft, is converted into rotary motion.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation with reference to the drawing.

The cylinder A, consists of a half circular shell, the transverse section of which may be rectangular or of any other convenient form. I prefer the rectangular cross section, because it gives me a better chance to pack the pistons. In this cylinder are two pistons B, B', which are connected by a curved rod C.

The steam is admitted through ports *a, a'*, on the ends of the cylinder and it acts alternately on the outside of the pistons, whereby on each half stroke the undiminished area of one of the pistons is exposed to the pressure of the steam. An oscillating motion of the pistons is thereby produced and this motion is transmitted to the fly wheel shaft D, by means of a connection-rod E, which is extended from a pin *e*, on the piston rod to the crank pin *f*, on the fly wheel shaft. The pin *e*, projects from about the middle of the piston rod through a slot in the side of the

cylinder and the communication between the pistons and the fly-wheel-shaft is made direct, dispensing with cross heads and other intermediate devices.

The steam is admitted to the pistons by means of a valve F, which is operated from the fly wheel shaft, by the action of an eccentric *g*, connecting by a rod *h*, and arm *i*, with the rock shaft *j*, from which the motion is communicated to the valve. The valve may either be an oscillating double channeled valve, as shown in Fig. 1, in the drawing or any other valve of ordinary construction may be used.

By the arrangement of my pistons the undiminished surface of each piston is exposed to the action of the steam and by imparting to the pistons an oscillating motion the injurious influence of the momentum at the end of each half stroke is obviated. At the same time the motion of the pin *e*, on the piston rod is brought in such relation to the crank-pin *f* that the pistons are in their most favorable position as the crank passes the centers when it is in its most unfavorable position, whereby the motion of the engine is rendered more uniform, and the strain on the different working parts is equalized.

This engine takes but little room and it can be run at a very high speed without the usual disadvantages. For these reasons it is particularly adapted to locomotive engines, but it may be used to advantage for propelling vessels and also on land in a stationary condition. It can be constructed at less expense than ordinary engines and the effect produced is fully equal to the best engines now in the market.

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

The arrangement of two pistons B, B', connected by a curved piston rod C, in the interior of a semi-circular cylinder A, with steam passages *a, a'*, in the ends constructed and operating substantially as and for the purpose set forth.

G. W. VAN DEREN.

Witnesses:

JOHN HAYGERTY,
M. V. B. GARDINER.