J. R. Ellis,

Rotary Steam Engine.

No. 46,457. Patented Feb. 21, 1865.

Fig. 1.

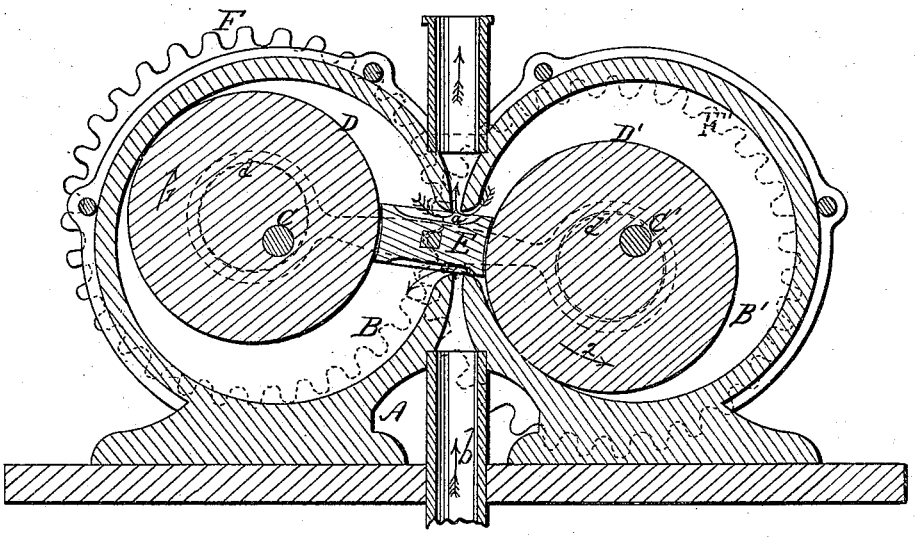
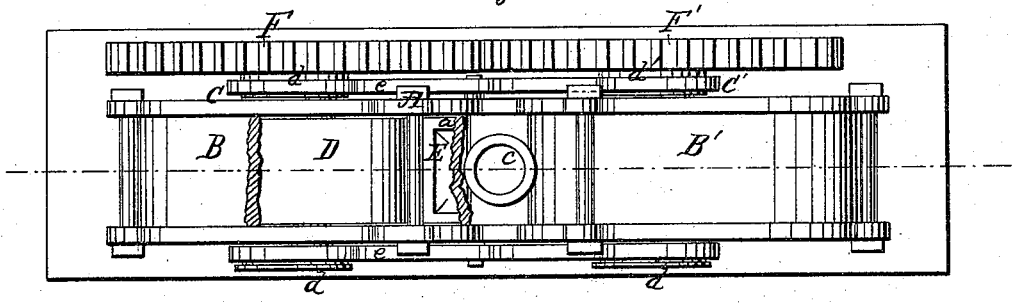


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN R. ELLIS, OF COMPANY F, TWENTY-SECOND REGIMENT, WISCONSIN VOLUNTEERS.

IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. **46,457**, dated February 21, 1865.

To all whom it may concern:

Be it known that I, JOHN R. ELLIS, of Company F, Twenty-Second Regiment Wisconsin Volunteers, have invented a new and Improved Rotary Engine; 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, in which—

Figure 1 represents a longitudinal vertical section of my invention. Fig. 2 is a sectional plan or top view of the same.

Similar letters of reference indicate like parts.

This invention consists in two revolving piston-wheels connected together by cog-wheels placed eccentrically in two adjoining cylinders, in combination with a valve which occupies the channel leading from one cylinder to the other, and to which motion is imparted by eccentrics or other equivalent means, mounted on the shafts of the piston-wheels in such a manner that said piston-wheels and intervening valve are alternately acted upon by the steam passing in through the channel connecting the two cylinders, and that by the action of the valve and piston-wheels one cylinder takes steam while the other exhausts, and vice versa. The cog-wheels which gear the two shafts of the pistons together are eccentric, the same as the pistons, so that their circumferential speed corresponds with that of said pistons.

A represents a case, made of cast-iron or other suitable material, and divided in two distinct parts, which form the cylinders B B′. These cylinders are perfectly cylindrical, and they communicate with each other through a channel, *a*, which connects with two pipes, *b c*, one to form the steam and the other the exhaust pipe. The cylinders are provided with central shafts, C C′, on which the piston-wheels D D′ are mounted. The diameter of these piston-wheels is considerably smaller than the interior diameter of the cylinders, and they are keyed to the axles C C′ in eccentric positions, so that their peripheries at one point are in contact with the inside circumference of the cylinders, as clearly shown in Fig. 1 of the drawings.

The channel *a* between the two cylinders is occupied by the valve E, the ends of which closely fit to the peripheries of the two piston-wheels, while its sides are hollowed out to allow of the steam passing in and out. This valve is operated by eccentric disks *d*, which are secured to the shafts C C′, and which connect with each other and with the valve by means of straps *e*, as clearly shown in the drawings.

The two shafts C C′ are geared together by cog-wheels F F′, which are secured thereon in eccentric positions to correspond to the position of the piston-wheels, so that their circumferential velocity corresponds with that of said pistons.

The operation is as follows: In the positions shown in Fig. 1 of the drawings, the cylinder B takes steam and the cylinder B′ exhausts. The steam acting on the piston-wheel D causes the same to rotate in the direction of arrow 1, and this motion being transmitted to the piston-wheel D′ causes the same to revolve in the direction of arrow 2. As this motion proceeds steam is admitted to the cylinder B′, and both pistons are acted upon by the steam for a short time, until they have completed half a revolution, which brings the piston D in the position corresponding to the position of the piston D′ in the drawings, and vice versa. In that position the cylinder B exhausts and the cylinder B′ takes steam, and the motion of the two shafts proceeds as above described.

It is obvious that either one of the pipes *b c* can be used as the steam or as the exhaust pipe, and, if desired, my engine can be used as a pump, in which case the pipe *b* will occupy the place of the suction, and the pipe *c* that of the exhaust-pipe.

I claim as new and desire to secure by Letters Patent—

The revolving piston-wheels D D′, which are placed eccentrically on shafts C C′, and geared together by eccentric wheels F F′, to operate in combination with the adjoining cylinders B B′ and intervening valve E, substantially in the manner and for the purpose herein shown and described.

JOHN R. ELLIS.

Witnesses:
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