

C. Kaiser,
Rotary Steam Engine.

Nº 84,280.

Patented Nov. 24, 1868.

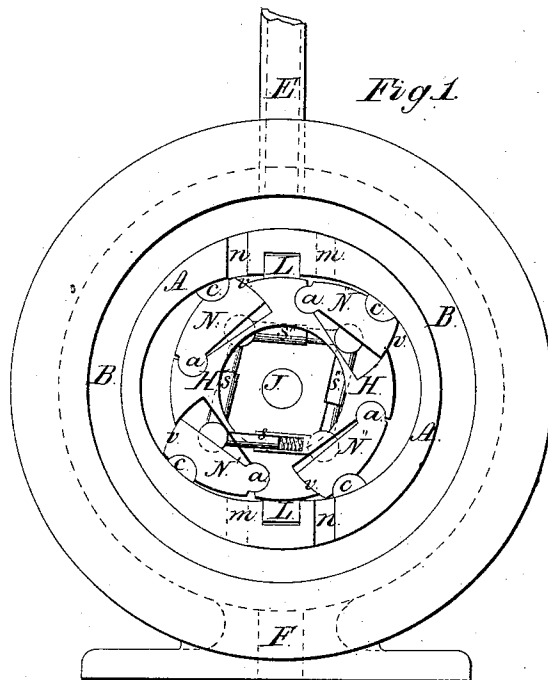


Fig. 1

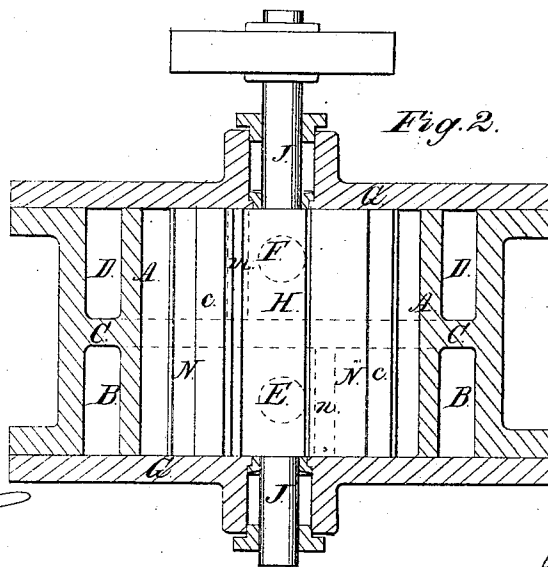


Fig. 2.

Witnesses.

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CHARLES KAISER, OF NEW YORK, N. Y.

Letters Patent No. 84,280, dated November 24, 1868.

IMPROVEMENT IN ROTARY STEAM-ENGINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, CHARLES KAISER, of New York, in the county and State of New York, have invented a new and useful "Rotary Engine and Pump;" and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure I represents a longitudinal elevation, with the front cover removed, and

Figure II shows a horizontal section of the same.

Similar letters represent similar parts.

The nature of my invention consists in the arrangement of fly-valves, fitted into the circumference of the revolving piston, said valves being provided with half-circular self-adjusting packing-pieces, and operating so as to present their end surfaces to the pressure of the air, steam, or fluid used.

Further, in the arrangement of two induction and of two eduction-passages, directly opposite each other, so as to cause the air, steam, or fluid to act against the end surfaces of the fly-valves simultaneously at the opposite sides of the revolving shaft or piston; and,

Further, in the arrangement of spring-levers, connected with the inner surfaces of the fly-valves, and forming a parallelogram, to regulate the opening of said valves.

In the accompanying drawings—

A represents the cylinder-casing, arranged with two surrounding channels, B and D, divided by the partition C. (See Fig. II.)

The channel B, forming the steam or induction-passage, connects with the steam-pipe E, and the channel D, forming the exhaust or eduction-passage, connects with the exhaust-pipe F.

The central opening of this cylinder A is bored out oval or oblong, in the centre of which the circular piston H is made to revolve, supported on its shaft or axis J, running in suitable stuffing-boxes or bearings in the two covers G G, which fit tight against the ends of the piston and its fly-valves, so as to prevent any escape of steam at the ends or sides.

L L are two packing-pieces, acting against the top and bottom of the circumference of the revolving piston H, exactly opposite each other, and forming, at the same time, abutments.

In the circumference of this revolving circular piston H, four fly-valves, N, N', N'', and N''', are arranged. These valves are made circular at their ends *a*, and upon which the same turn in corresponding circular cavities made near the circumference in the body of the piston. The end surfaces, *v*, of these valves are likewise made so as to form a part of a circle, with the centre of motion of said valves as the centre of the radius, and are fitted, steam-tight, into corresponding recesses in the piston.

Near the end of these valves, half-circular packing-

pieces *c* are fitted into the outer surfaces of said valves, having curved outer surfaces, corresponding with the circumference of the inside of the cylinder A, and forming the packing for said valves against the surface of the cylinder at every position of the valves.

The end surfaces *v* of the valves are made of such a length that, at their greatest extent of outward motion, said surfaces will never come out of the recesses made in the piston.

The revolving piston H being circular, and corresponding in diameter with the smallest diameter of the bore of the cylinder, which latter, as before described, is bored out oval or oblong, a space is left on each side of the piston, into which the fly-valves are made to open, so as to be acted upon by the pressure.

n n are passages communicating between the steam-channel B and the spaces on each side of the piston, and are situated, the one above the centre of the shaft, and the other below the centre, opposite each other.

On the other side of the packing-pieces L, similar openings *m m* (shown in dotted lines in Fig. I) are made, forming a communication between those spaces on each side of the piston H and the exhaust-channel D.

In the central part of the piston H, spring-rods, *s s'* *s'' s'''*, are arranged, acting against the inner sides of the fly-valves, and forming together a parallelogram, whereby the closing of two valves is made to operate the other two valves, so as to force the same open.

These rods are made in two parts, one part fitting into the other part, and provided with small springs, (see section of rod S, Fig. I,) whereby these rods are capable of lengthening or of shortening themselves, as the case may require, to allow for any irregularity, or for the wearing away of the packing-pieces *c*.

Instead of these rods, springs may be arranged, acting against the inside of the fly-valves, and bearing against the body of the piston.

Instead of the passages *n n*, to form a communication for admitting the steam from the steam-channel B, against the ends of the valves, while opening outwards in the spaces at the sides of the piston, the steam may be admitted through suitable passages, made in the body of the piston, and communicating with suitable cavities in one or both of the covers G, and so arranged as to allow the steam to enter, so as to act against the ends of the fly-valves as soon as the same have passed the packing-pieces L. By this arrangement, the exhaust-passages *m m* may be made nearly the whole width of the piston, and only one channel for the exhaust steam will be required outside the cylinder A.

Steam being admitted, the same will act simultaneously against the end surface *v* of the valves N and N'', which, being at the opposite sides of the shaft J, and directly opposite each other, will relieve the shaft from any undue or one-sided strain, and bring the pressure, whereby the piston H will be made to

revolve, into the circular cavity, in which the fly-valves turn, or near the circumference of the piston. The steam will thus act against the ends of the fly-valves until the same pass the exhaust-openings *m m*, (shown in dotted lines,) and escape then into the eduction-passage *D* and escape-pipe *F*.

It will be readily understood that this machine may be advantageously used for a pump, and likewise for a water-meter.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The arrangement of the circular piston *H* in an oblong or oval cylinder *A*, when said piston is provided with fly-valves, *N N' N'' N'''*, constructed and fitted into the circumference of the piston, substantially as described.

2. The construction and arrangement of the fly-

valves *N N' N'' N'''* in the circumference of the piston *H*, with circular packing-pieces *c* near the outer ends of said valves, substantially as herein set forth.

3. In combination with a circular piston, *H*, provided with fly-valves, constructed as above described, and working in an oval cylinder, the arrangement of two induction-passages *n n*, and of two eduction-passages *m m*, directly opposite each other, whereby to admit and exhaust the steam simultaneously, at the opposite sides of the revolving piston, substantially as described.

4. Rods or levers *s s' s'' s'''*, forming a parallelogram, in combination with the fly-valves, said levers being provided with springs, substantially as set forth.

Witnesses:

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LOUIS STUMM.

CHARLES KAISER.