(No Model.)

F. MÜLLER.

ROTARY STEAM ENGINE.

No. 268,522. Patented Dec. 5, 1882.

Fig 1

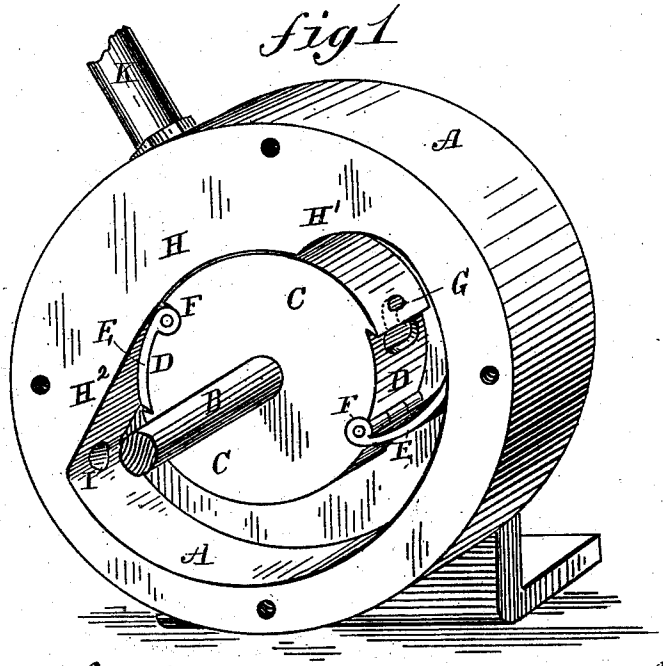


Fig 2

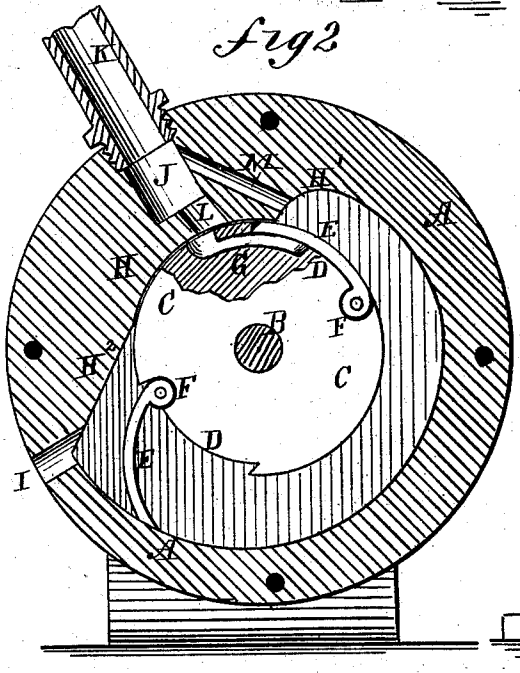
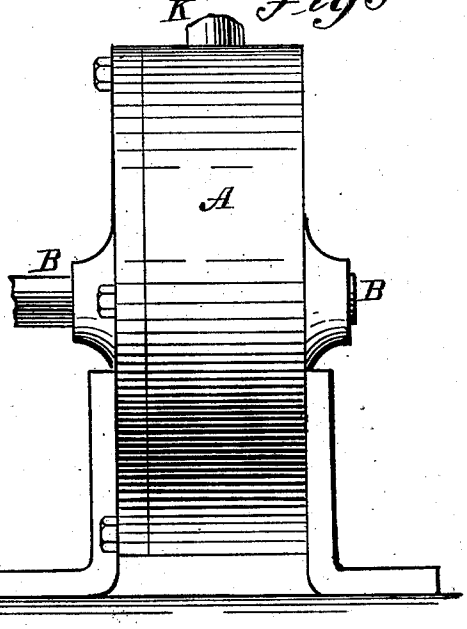


Fig 3



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UNITED STATES PATENT OFFICE.

FRIEDERICH MÜLLER, OF ELIZABETH, NEW JERSEY, ASSIGNOR OF ONE-HALF TO MATHEW MACDOUGALL, OF SAME PLACE.

ROTARY STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 268,522, dated December 5, 1882.

Application filed October 5, 1882. (No model.)

To all whom it may concern:

Be it known that I, FRIEDERICH MÜLLER, of Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Rotary Steam-Engines, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of my improvements, one of the cylinder-heads being removed. Fig. 2 is a sectional side elevation of the same. Fig. 3 is a front elevation of the same.

The object of this invention is to promote efficiency, durability, and economy of steam in the use of rotary steam-engines.

The invention consists in a drum provided with hinged wings, and a cylinder provided with an interior abutment, having its middle part concaved to fit upon the winged drum, and having its forward end concaved to allow the wings to open quickly and its rear end inclined to close the wings. The interior abutment is provided with two inlet-ports—one in the rear of the forward shoulder of the abutment to admit steam intermittently to open the wings, and be then closed by the wing-carrying drum, and the other in advance of the said forward shoulder of the abutment to admit steam continuously to drive the engine. The wing-carrying drum is provided with channels at the rear edges of its wing-receiving recesses to receive steam to open the said wings. The cylinder is made with an eccentric inner surface, whereby the steam-space will be gradually enlarged from the inlet to the outlet ports, as will be hereinafter fully described.

A represents the cylinder of the engine, in bearings in the centers of the heads of which revolves the shaft B, from which motion is taken to the machinery to be driven.

To the shaft B, within the cylinder A, is attached a hub or drum, C, in the opposite sides of which are formed recesses D to receive the wings E. The wings E are hinged at their forward edges to the drum C at one of the edges of the recesses D, and the said wings E and their hinges F are so formed that when the said wings are shut down into the recesses D the outer surfaces of the wings will be flush with the outer surface of the drum.

In the drum C, at and beneath the free edge of each wing E, is formed a channel, G, to allow steam to pass beneath the said wing and swing it outward, so that its said free edge will bear against the inner surface of the cylinder A.

Upon one side of the inner surface of the cylinder A is formed, or to it is attached, an abutment, H, the inner surface of the middle part of which is concaved in the arc of the circumference of the drum C, so as to fit snugly upon the said drum. The inner surface of the forward end, H′, of the abutment H is concaved, so as to pass gradually into the curve of the inner surface of the cylinder A, so that the free edges of the wings E, as the said wings are opened by the steam-pressure, will sweep easily along the said concave. The inner surface of the rear end, H^2, of the abutment H is inclined from the inner surface of the cylinder A to the curved surface of the middle part of the said abutment, so that the wings E, as their outer surfaces come into contact with the said inclined surfaces, will be closed gradually into the recesses D.

The exhaust-port I is formed through the shell of the cylinder A at the outer edge of the inclined rear end of the abutment H, so that the said wings will be relieved from steam-pressure as they begin to close.

J is the inlet-chamber, into which steam is introduced through the pipe K. From the inlet-chamber J a port, L, leads at a slightly-forward inclination through the abutment H, a little forward of its center, so as to introduce steam into each channel G and open the wing E as the free edge of the said wing reaches the curved forward end of the said abutment H, the said port L being closed as soon as the said wing E begins to open by the solid body of the drum C. From the inlet-chamber J a second inlet-port, M, leads in a forwardly-inclined direction through the rear part of the curved surface of the forward end of the abut-

ment H, so as to introduce steam in the rear of the wings E as the said wings begin to open. With this construction the steam that enters through the port L only opens the wings, while the steam that enters through the port M forces the said wings forward and revolves the drum C and shaft B.

The wings and ports are so arranged that as the steam in the rear of each wing E begins to exhaust the other wing begins to open, so that the steam will always be acting upon one or the other of the wings E, and will thus exert a continuous driving-pressure upon the engine. The space between the face of the drum C and the inner surface of the cylinder-shell A gradually increases in breadth from the inlet-port M to the exhaust-port I, as shown in Fig. 2, so that the wings will be constantly approaching a radial position, and will always be held against the said inner surface by the force of the steam. The inner surface of the shell of the cylinder A may, if desired, be made upon the arc of a circle having its center in the axis of the shaft B. With this construction, as the outer edges of the wings E wear, the said wings approach more nearly a radial position, and the wear will have no injurious effect until the said wings have decreased in size sufficiently to allow them to take a radial position, which would throw the steam-pressure upon the hinges F. The edges of the wings E should be provided with some suitable packing to make the joint between the said edges and the inner surface of the cylinder-shell steam-tight, which packing, when worn, can be readily renewed. With this construction there will be no waste of steam and no change of motion, the motion of the shaft B being continuous and uniform. With this construction, also, the steam can be cut off at the port M, and the cut-off can be arranged to operate at any point of the stroke, so that the steam can be used expansively.

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

1. The drum C, having diametrically-opposite and pivoted pistons E E, of the cylinder A, having a steam-inlet, M, an exhaust-port, I, and an intermediate steamway gradually increasing in depth from the inlet M to the outlet I, whereby the pistons will gradually open out from the inlet M until they reach the outlet I, as and for the purpose specified.

2. In a rotary steam-engine, the abutment H, provided with two inlet-ports, substantially as herein shown and described—one, L, in the rear of the forward shoulder of the abutment to admit steam intermittently to open the wings, and be then closed by the wing-carrying drum, and the other, M, in advance of the said forward shoulder of the abutment to admit steam continuously to drive the engine, as set forth.

FRIEDERICH MÜLLER.

Witnesses:
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