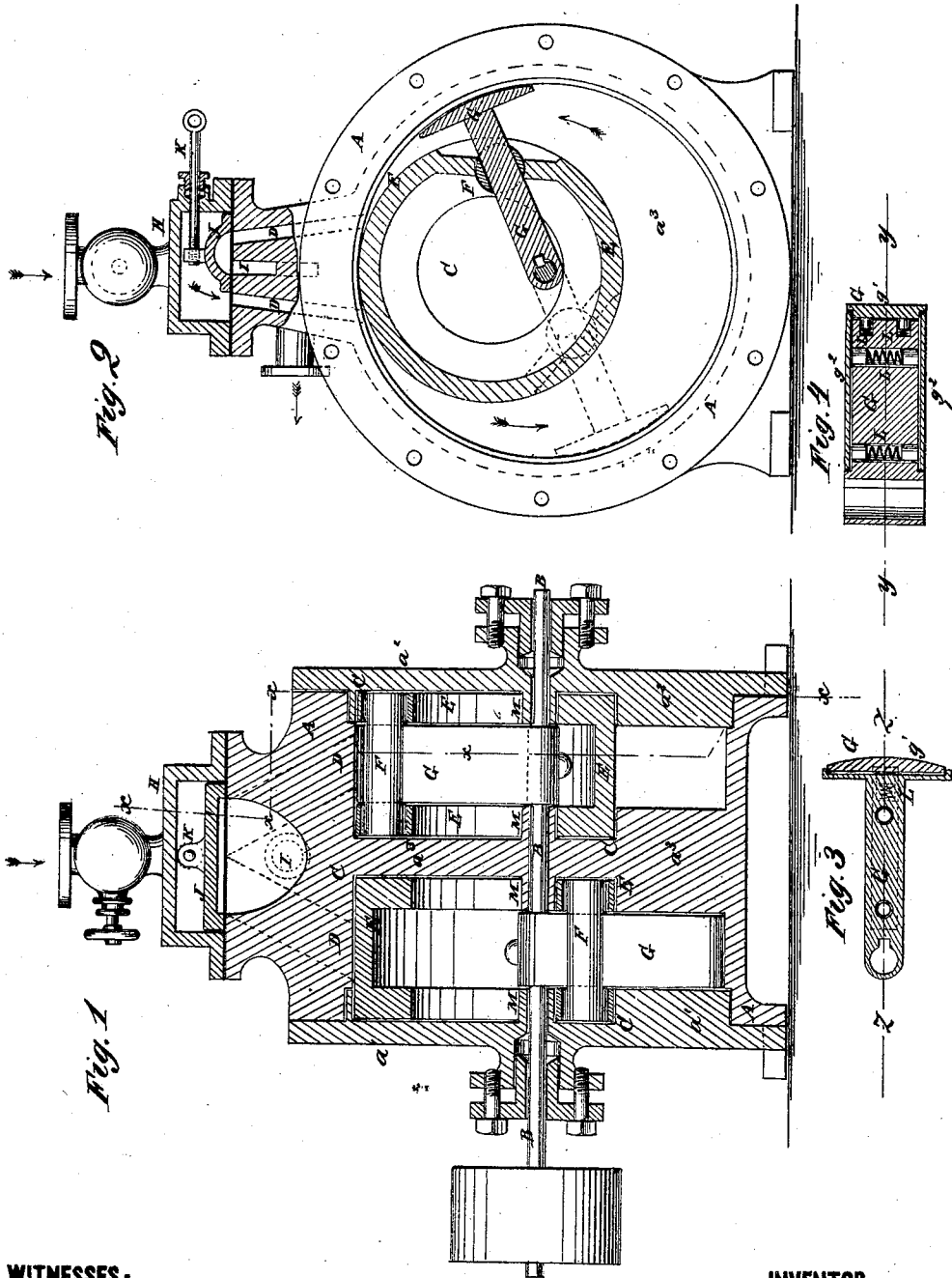


E. MYERS.
Rotary Engines.

No. 152,157.

Patented June 16, 1874.



WITNESSES:

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INVENTOR:

E. Myers

BY

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Fig. 5

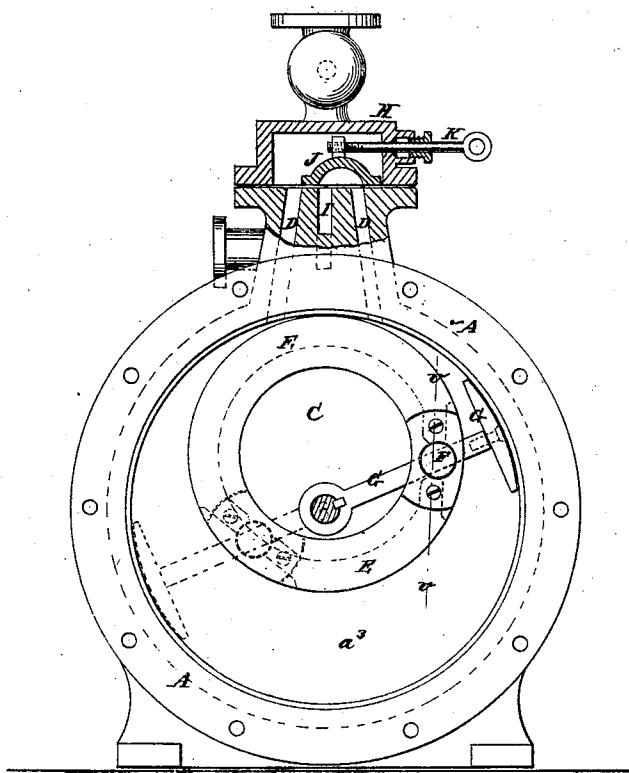


Fig. 6

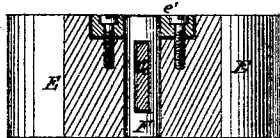


Fig. 7

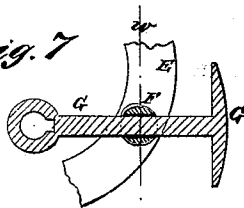


Fig. 11

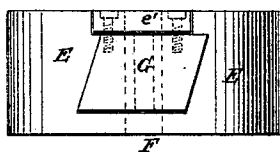


Fig. 8

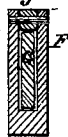


Fig. 9

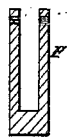
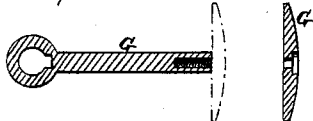


Fig. 10



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UNITED STATES PATENT OFFICE.

EDWARD MYERS, OF NEW YORK, N. Y.

IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. **152,157**, dated June 16, 1874; application filed March 21, 1874.

To all whom it may concern:

Be it known that I, EDWARD MYERS, of the city, county, and State of New York, have invented a new and useful Improvement in Rotary Engines, of which the following is a specification:

Figure 1, Sheet 1, is a vertical longitudinal section of my improved rotary engine. Fig. 2, Sheet 1, is a detail cross-section of the same, taken through the line *x x x x*, Fig. 1. Fig. 3, Sheet 1, is a longitudinal section of the piston, taken through the line *y y*, Fig. 4. Fig. 4, Sheet 1, is a longitudinal section of the same, taken through the line *z z*, Fig. 3. Fig. 5, Sheet 2, is an end view of the same, the cylinder-head being removed, and the steam-chest being shown in section. Fig. 6, Sheet 2, is a detail section, taken through the line *v v*, Fig. 5. Fig. 7, Sheet 2, is a detail longitudinal section of the piston. Fig. 8, Sheet 2, is a detail cross-section of the same, taken through the line *w w*, Fig. 7. Fig. 9, Sheet 2, is the same section as Fig. 8, the piston-stem and fastening-block and pin being removed. Fig. 10 are detail sections, showing a modification of the same. Fig. 11 is a detail view, showing a modification of the flanged or fluked head of the piston.

Similar letters of reference indicate corresponding parts.

The invention will first be fully described, and then pointed out in the claims.

A is the cylinder, which is provided with heads a^1 a^2 in the ordinary manner, and with a central partition or head, a^3 . B is the shaft, which passes through the centers of the three heads a^1 a^2 a^3 , and revolves in stuffing-boxes in said centers. In the inner sides of the two outer heads a^1 a^2 , and in the opposite sides of the central head a^3 , are formed circular cavities C, concentric with respect to each other, eccentric with respect to the heads a^1 a^2 a^3 , and tangent to the inner surface of the cylinder A, between the ports D. E are hollow drums or cylinders, which are made of such a size that their ends may fit into the cavities C, and abut against the heads a^1 a^2 a^3 , as shown in Fig. 1. The cavities of the hollow cylinders or drums E are made of such a size that the shaft B may pass through them, and that the said cylinders or drums may roll in the cavities C around

the said shaft B. In the ring ends of the cylinders or drums E, close to the circumference of said ends, and extending longitudinally through said shell, are formed round holes, in which are placed cylinders or bearings F, the face of the drums being slotted directly opposite the said cylinders F. The cylinders F are slotted longitudinally, as shown in Figs. 2, 6, 7, 8, 9, 10, to receive the shanks or stems of the pistons G, which stems are made rectangular in their cross-section, and in their inner ends are formed holes to receive the shaft B, to which they are secured by a feather, key, or other suitable means, so that the said pistons may carry the said shaft with them in their revolution. The outer end or head of the pistons G is made with flanges or flukes upon its opposite sides, fitting into a recess in the face of the drums E, as shown in Figs. 2, 5, and 11, and its outer surface is curved to correspond with the curvature of the inner surface of the cylinder A, as shown in Figs. 2 and 5. H is the steam-chest, from which two branch ports, D, lead into the cylinder A upon the opposite sides of the central head a^3 , and at a little distance from each other, as shown in dotted lines in Figs. 1, 2, and 5. I is the exhaust-port, which is placed between the ports D, and may be connected with either of said ports D, according to the direction in which it is desired to have the engine run by the slide-valve J, the stem K of which passes out through a stuffing-box in the side of the steam-chest H, so that the engine can be reversed by simply shifting the valve J. By this construction, as the steam is admitted through one of the ports D, it forces the piston G around the inner surface of the cylinder A, the steam in front of said piston all the time exhausting through the other port D. The stem of the piston G being rigidly attached to the shaft B and passing through the shell of the drum E, the movement of the piston will rotate the said shaft and drum about their separate axes. The eccentricity of the drum E and shaft B with respect to each other, and the location of the ports D with respect to said axes, gives more space for the steam as it expands, said space being the greatest when the piston is at the side of the cylinder A opposite to the ports D.

If desired, the piston G may be made with

detachable top and edge plates g^1 g^2 , as shown in Figs. 3 and 4, which may be kept in place by dowel-pins, and held out against the concave surface of the cylinder A and the end parts of the cylinder F by coiled springs L, placed in the dowel-pin holes, and pressing against the inner ends of said dowel-pins. The two pistons, G, upon the opposite sides of the central head a^3 , are so arranged upon the shaft B as to be directly opposite each other, so that the one will be acting with its greatest power as the other is approaching its dead-point. When the piston G is made in one solid piece, or with detachable top and edge plates, and is slipped into the cylinder F from the outer side, the body and inner end of said piston have to be of the same thickness, and the inner end has to be thick enough to give the requisite strength when perforated for the passage of the shaft B. This requires the shank or stem of the piston G to be made unnecessarily heavy. To avoid this useless weight, the head of the piston may be made separate from its stem, and secured to it by screws, as shown in Figs. 5 and 10, so that the head may be detached and the stem inserted and withdrawn through the interior of the drum E; or a portion of one end of the drum E around the hole for the slotted cylinder F may be cut out and replaced by a piece, e' , secured by screws, so as to be readily detached and replaced. This allows the piston G and cylinder F to be removed together from the drum E, the piston-stem passing out edgewise. In this case the slot in the cylinder F should be extended out through one end of said cylinder, and closed, when the pis-

ton-stem is inserted, by a block, f' , fitted into the open end and secured by a cross-pin, as shown in Figs. 8 and 9. The outer edges of the flanges or flukes of the piston-heads G may be made parallel with the sides of the piston-stem, or they may be inclined, as shown in Fig. 11, to cut off and admit the steam gradually.

Upon the inner side of the heads a^1 a^2 , and upon both sides of the central head a^3 , around the holes through which the shaft B passes, are formed stationary collars M, the free ends of which rest against the side edges of the inner ends of the pistons-G, to prevent said pistons from moving longitudinally upon the shaft B, and thus cause the said pistons to work squarely and freely in the slots of the cylinders F.

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

1. The slotted cylinder or bearing F, made with a detachable piece, f' , in its end, to allow the piston-stem to be removed from it edgewise, substantially as herein shown and described.

2. The hollow slotted drum E, made with a detachable piece, e' , at one end, to allow the stem of the piston to be removed from said drum edgewise, substantially as herein shown and described.

EDWARD MYERS.

Witnesses:

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T. B. MOSHER.