W B. Allyn,

Rotary Steam Engine.

No. 38,542. Patented May 19, 1863

Fig. 2.

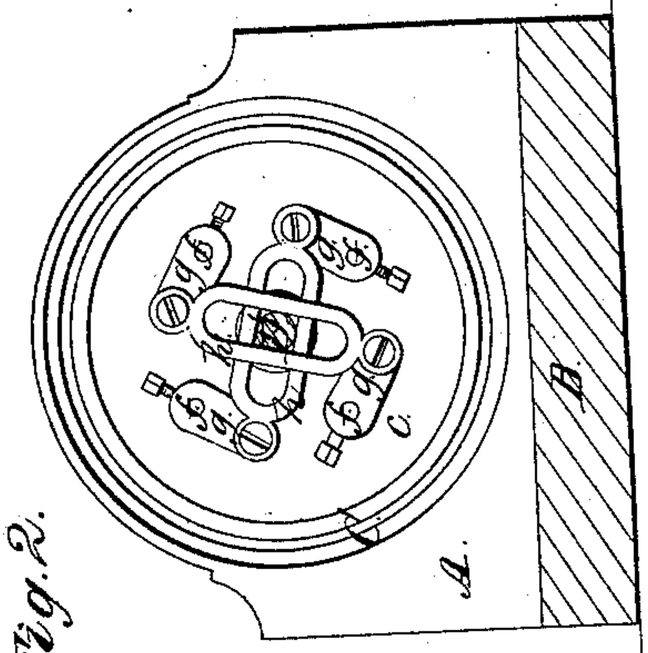


Fig. 5.

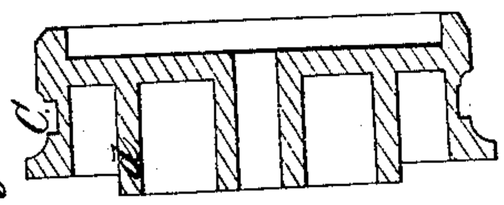


Fig. 4

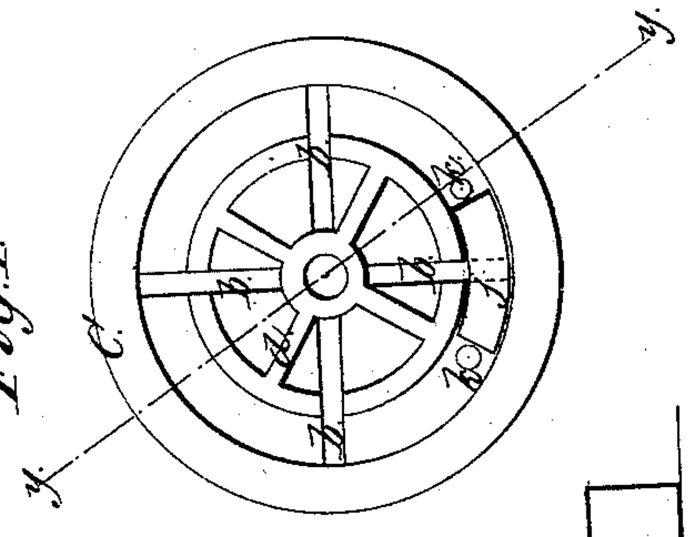


Fig. 1.

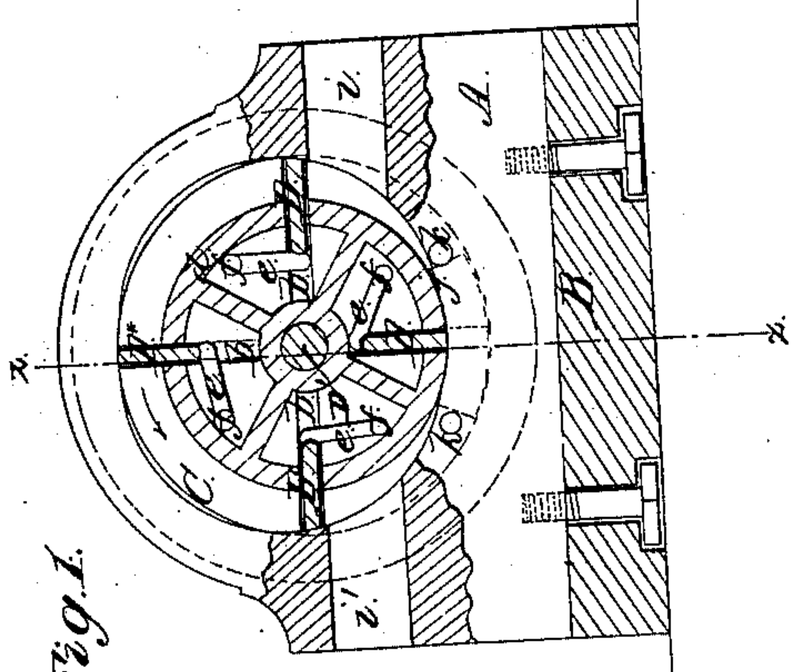
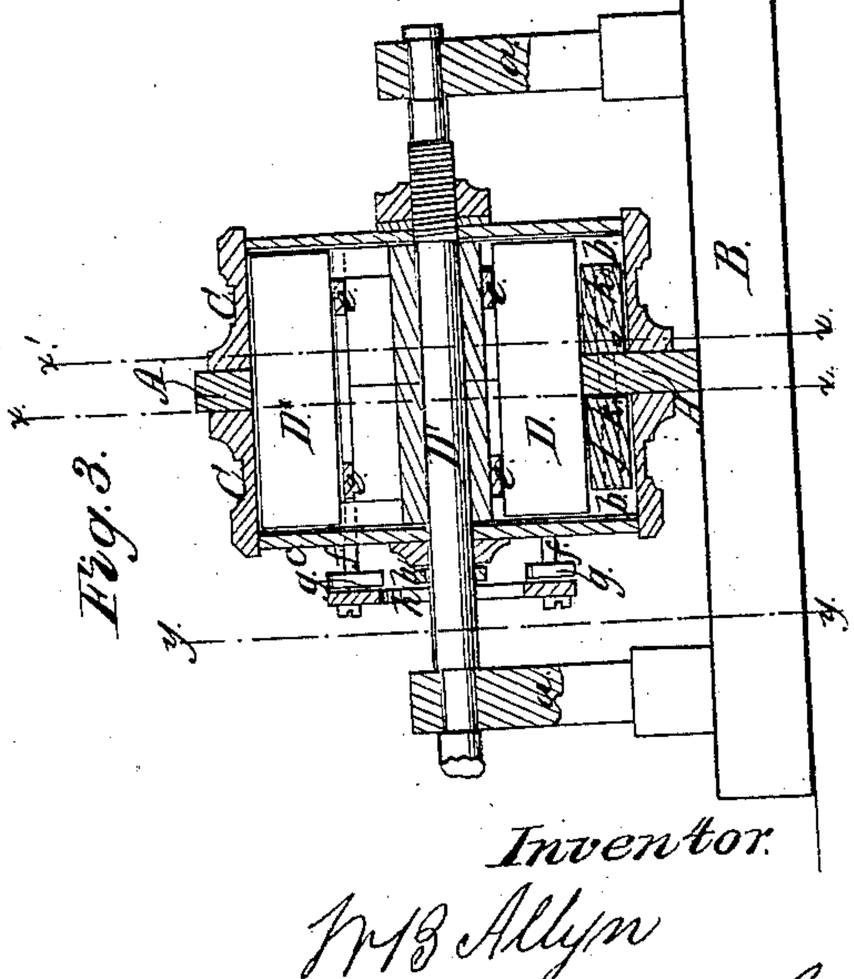


Fig. 3.



Inventor.

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Witnesses.

J W Coombs
G W Reed

UNITED STATES PATENT OFFICE.

W. B. ALLYN, OF WASHINGTON, OHIO.

IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. **38,542**, dated May 19, 1863.

To all whom it may concern:

Be it known that I, W. B. ALLYN, of Washington, in the county of Fayette and State of Ohio, have invented a new and Improved Rotary 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 drawings, making a part of this specification, in which—

Figure 1 represents a transverse vertical section of my invention, taken in the plane indicated by the line *x x*, Fig. 3. Fig. 2 is a similar section of the same, the plane of section being indicated by the line *y y*, Fig. 3. Fig. 3 is a longitudinal vertical section of the same, the line *z z*, Fig. 1, indicating the plane of section. Fig. 4 is a detached transverse section of one of the cylinders, the plane of section being indicated by the line *x' x'*, Fig. 3. Fig. 5 is a transverse section of the same, taken in the plane indicated by the line *y' y'*, Fig. 4.

This invention consists in the arrangement of a stationary annular cam, provided with an induction and exhaust port and situated between two rotary cylinders, in combination with sliding pistons common to both cylinders, and with stationary abutments, in such a manner that by the steam admitted through the induction-port in the cam, and by its action on the sliding pistons, a rotary motion is imparted to the cylinders and to the shaft to which they are attached, and that an extensive surface is offered to the action of the steam.

The invention consists, also, in the arrangement of rock-shafts, provided with arms, which support the sliding pistons, in combination with cranks and links, connecting the opposite rock-shafts in such a manner that the motion of each piston is made dependent upon the piston opposite to it, and that the edges of all the pistons are brought in close contact with the inner circumference of the annular cam and with the inner surfaces of the cylinders.

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 drawings.

A represents an annular cam or plate with an eccentric or elliptical hole, said cam being firmly secured to the bed-plate B by screws or any other suitable means. C C are two cylinders, which are firmly attached to the central shaft, D', that has its bearings in the journal-boxes or pillow-blocks *a*. These cylinders are situated on opposite sides of the cam A, and their inner ends are brought close up to the surfaces of the cam, being fitted to the same by grinding, so as to prevent the escape of steam. Each cylinder is provided with four (more or less) slots, *b*, which form the guides for the sliding portions D. These pistons extend clear through both cylinders, and they are prevented from moving endwise by plates *c*, forming the heads of said cylinders, as clearly shown in Fig. 3. Slotted rings *d* in the interior of the cylinders form additional guides for the pistons, and the space between these rings and the inner surfaces of the cylinders forms the steam-space of my invention. The pistons are supported by arms *e*, which extend from rock-shafts *f*, which are situated inside the rings *d*, and which have their bearings in the plates or heads *c*. These rock-shafts extend through one of the heads, and they are mounted with cranks *g*, as clearly shown in Fig. 2 of the drawings. The opposite cranks are connected by slotted links *h*, which straddle the shaft D', and which cause the opposite rock-shafts to move simultaneously and uniformly. The position of the pistons D is governed by the cam A, and as the cylinders rotate the cam forces the pistons alternately in from and permits them to go out to the inner surfaces of the cylinders. If one piston is forced in by the acting of the cam, the opposite piston is forced out by the action of the rock-shafts and links, and said rock-shafts and links are so adjusted that the outer edges of all the pistons are always in contact with the inner surface of the cam or of the cylinders, according to their position. The annular cam A is so adjusted in relation to the cylinders C C that its lowest point is in contact with the surfaces of the rings *d*, as clearly shown in Fig. 1 of the drawings. Steam enters through the port *i* and exhausts through the port *i'*, or vice versa, and to prevent the steam passing directly from one port to the other, abutments *j* are placed into the steam-spaces of both cylinders opposite to that portion of the cam which is in contact with the rings *d*. These abutments may either be firmly secured to the cam or they are placed

loosely between studs R, which prevent them rotating with the cylinders. These abutments must be so arranged that they fit steam-tight into the steam-spaces, leaving the cylinders free at the same time to revolve without undue friction. To effect this purpose said abutments may either be so arranged that they can be expanded by means of suitable set-screws or they may be provided with suitable packing to effect the desired purpose.

The action of my rotary engine will be readily understood by referring to Fig. 1 of the the drawings. If steam is admitted through the port *i*, it fills the steam-space of both cylinders between the abutments *j* and the piston D*, which is in close contact with the inner surfaces of the cylinders and of the annular cam. By the action of the steam on the piston D* the cylinders begin to rotate in the direction of the arrow marked on them in Fig. 1, and the next succeeding piston takes the place of the piston D*, and so on, imparting to the cylinders a continuous rotary motion.

It is obvious that the motion of the cylinders can be reversed by changing ports, and instead of steam, water or compressed air might be used to impart motion to the cylinders. This rotary engine may also be used with good advantage as a pump.

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

1. The stationary annular cam A, provided with ports *i i'*, and situated between the cylinders C C, in combination with sliding pistons D, common to both cylinders, and with stationary abutments *j*, all constructed and operating as and for the purpose herein shown and described.

2. The rock-shafts *f*, provided with arms *e*, in combination with cranks *g*, links *h*, and with the pistons D, constructed and operating as and for the purpose specified.

W. B. ALLYN.

Witnesses:
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D. M. HAYS.