(No Model.)

M. D. GRAY.

ROTARY ENGINE.

No. 582,417. Patented May 11, 1897.

Fig. 1.

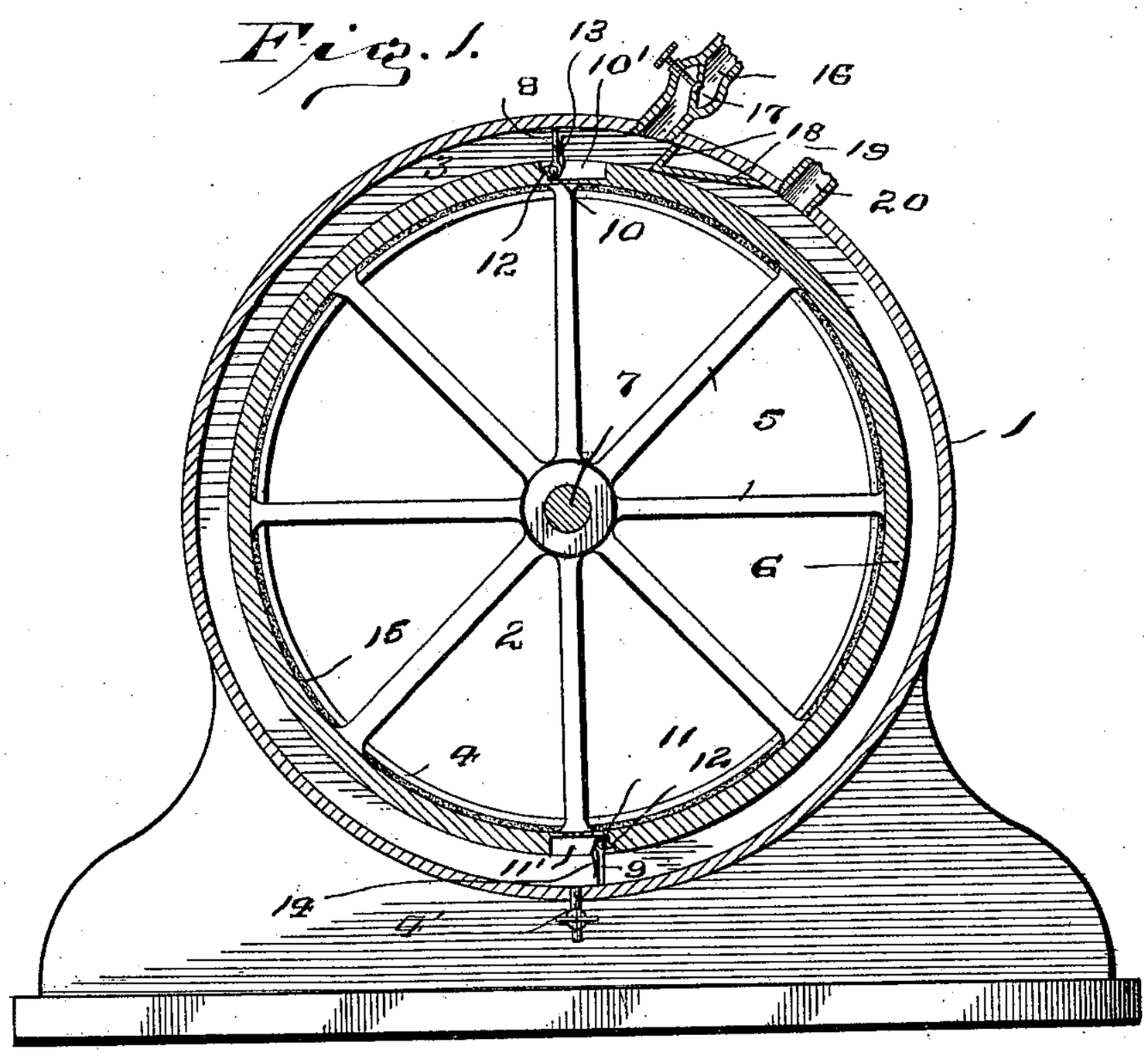


Fig. 2.

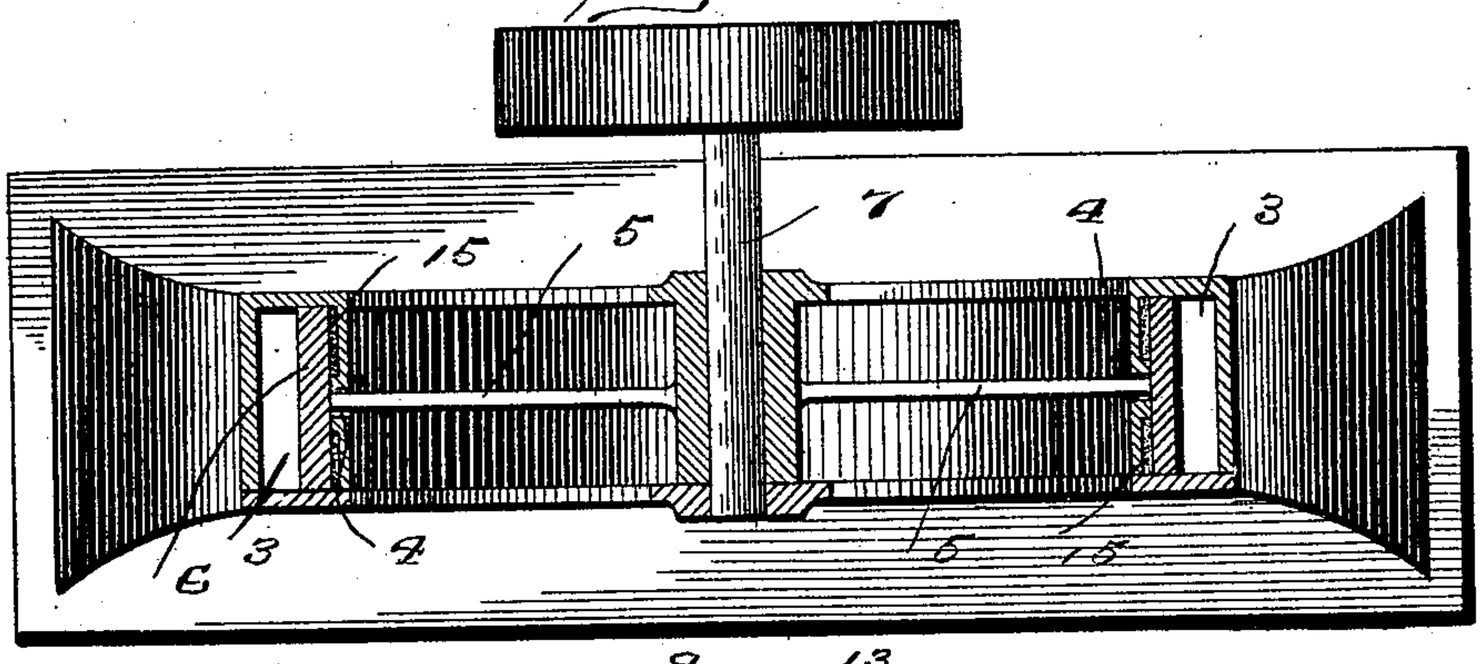
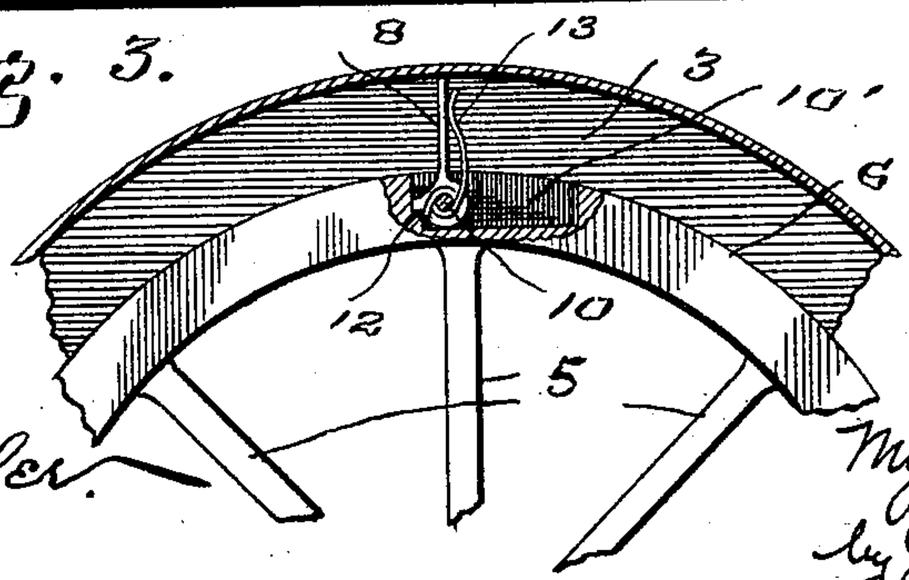


Fig. 3.



WITNESSES

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ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 582,417, dated May 11, 1897.

Application filed October 29, 1896. Serial No. 610,406. (No model.)

To all whom it may concern:

Be it known that I, MYRON D. GRAY, a citizen of the United States, residing at Cambridgeborough, in the county of Crawford and State of Pennsylvania, have invented certain new and useful Improvements in Rotary Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to rotary steam-engines.

My object is to provide a steam-engine of the class described which will be extremely simple in construction, being composed of but few parts, and one which, owing to the peculiar arrangement and coöperation of its various mechanisms, will be adapted to run smoothly and easily with but a small supply of steam-pressure and will generate a large amount of power, and one which will be of such construction that it can, if desirable, be operated by a suitable motor and used as a ventilating-fan.

Having this object in view, the invention consists of a rotary steam-engine of improved and peculiar construction, comprising certain novel features and combinations of parts appearing more in detail hereinafter.

In the accompanying drawings, Figure 1 is a sectional elevation of my improved engine; Fig. 2, a plan in cross-section, and Fig. 3 a detail of one of the valves or pistons.

The numeral 1 designates a casing or housing which is provided with a suitable base, so that it can be secured in position. Said casing or housing is cut away to provide a circular opening 2, which extends therethrough. The casing or housing is formed with an annular channel or recess 3, which has a solid top and sides and a bottom that is provided with a circular slot 4. A cock 4′ is used to draw off the condensed steam.

The numeral 5 designates the spokes of a wheel which has an annular rim 6. This rim is located inside the annular recess and runs snugly against the bottom of the latter, while the spokes operate in the slot.

The numeral 7 designates the spindle or shaft from which the spokes radiate, said spindle being journaled in suitable bearings. There are two pistons or valves which are designated by the numerals 8 and 9, and they are duplicates. Said valves or pistons are located at diametrically opposite points and are hinged to the rim at 10 and 11, so that they can fold down into recesses 10′ and 11′ in the face of the rim and lie flush with the latter. They are provided with shoulders 12, whereby they are prevented from folding but in one direction. These pistons fit snugly within the annular recess.

The numerals 13 and 14 designate springs which are connected to the rim and serve to hold the pistons normally at right angles to the diameter of the wheel.

It will be observed that the shoulders of the pistons are located on the opposite side from that which receives the steam, so that said pistons will not be folded by the pressure of the steam, but only by certain devices which will be described later on. The packing 15 is employed so that the spokes and pistons will fit snugly and be steam-tight.

There is a delivery-pipe 16, and 17 designates a gate or valve adapted to govern the flow of steam through said pipe. At one side of said delivery-pipe there is located a partition 18, which extends across the annular space and bears snugly yet easily on the rim. Said partition prevents the steam from passing back into the annular space, and hence the steam-pressure is exerted in one direction only. At 19 there is shown an inclined guide which is fixed in relation to the casing, and this guide is located in the annular recess of the latter, its lower edge lying immediately adjacent to the lower edge of the partition. The exhaust is shown at 20, said exhaust being located immediately to the right of the guide.

The operation is as follows: When steam is admitted through the delivery-pipe, it presses against piston 10, forcing the latter around in the annular chamber and rotating the wheel. After the piston 10 has passed the exhaust and the steam been exhausted that has hitherto pressed against the face of said piston, the free portion of the piston strikes against the inclined guide, which gradually folds said piston until it lies in the recess in the rim. It can then pass under the partition, but immediately after it has passed said

partition the spring exerts itself and the piston opens out again and receives a fresh supply of steam. Both pistons operate in this manner, and just before one piston allows the steam to exhaust the other piston begins to receive steam, so that a continuous rotation is effected. It will be observed that there are no dead-centers.

It is obvious that by employing a suitable motor to rotate the wheel the device could be used as a ventilating-fan and would deliver a powerful current of air.

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

In a rotary engine, the combination with a casing and delivery and exhaust ports leading thereto, of an inclined guide connected to the casing adjacent the delivery-port, a piston adapted to rotate in said casing and provided with a pocket or recess and a shoulder therein, a valve pivoted on a pin in said pocket and having a lug adapted to engage with the shoulder when the said valve is extended, and a spring abutting against the shoulder and coiled around the pin and having a free end pressing against the valve whereby said valve is kept normally extended, and said valve being so related to the guide that the latter is adapted to engage with and fold the valve into its recess.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

MYRON D. GRAY.

Witnesses:
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