

(No Model.)

3 Sheets—Sheet 1.

T. WISE.  
ROTARY STEAM MOTOR.

No. 303,781.

Patented Aug. 19, 1884.

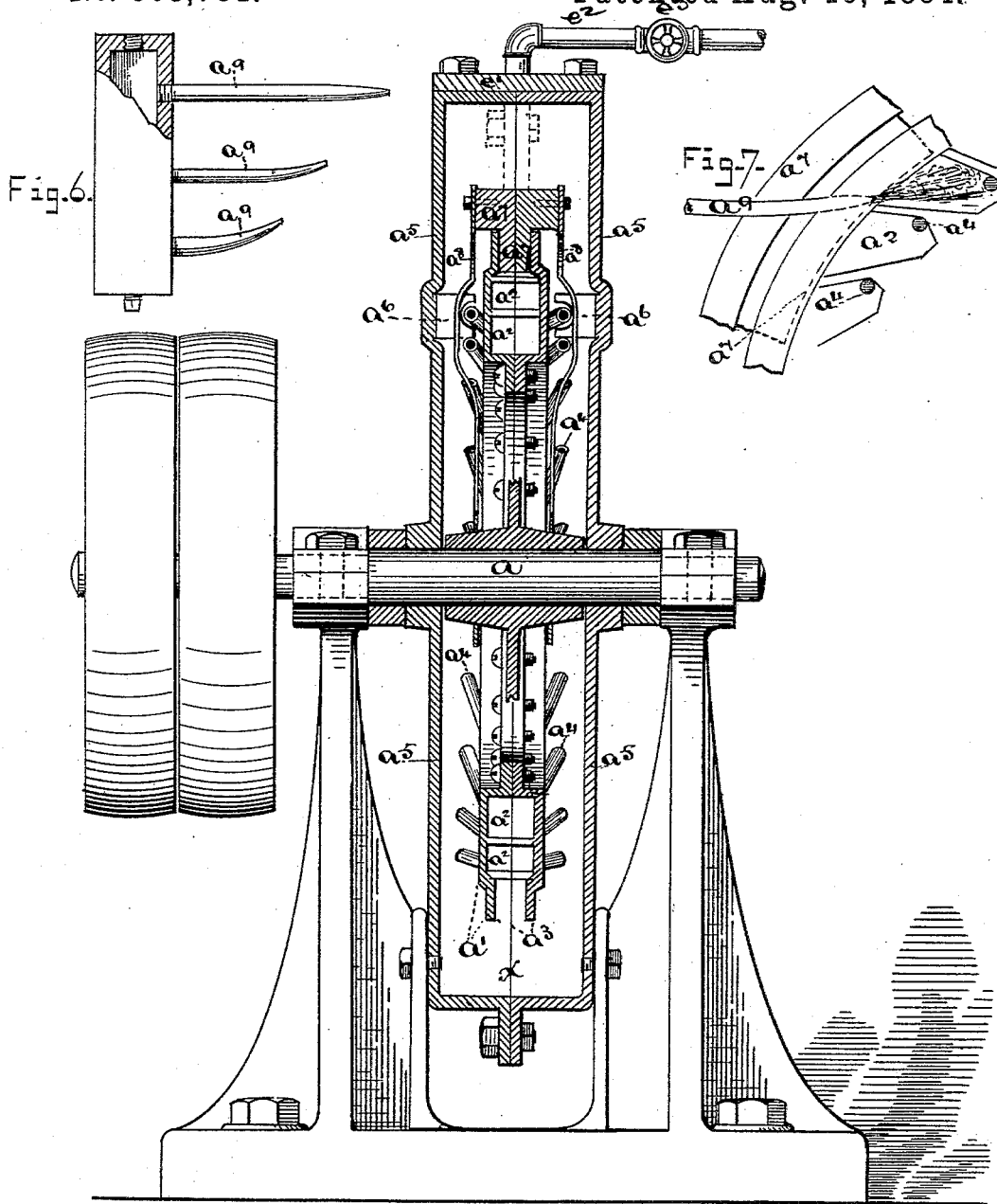


Fig. 1.

Witnesses:  
Henry D. ...  
Amos P. ...

Inventor:  
Thomas Wise

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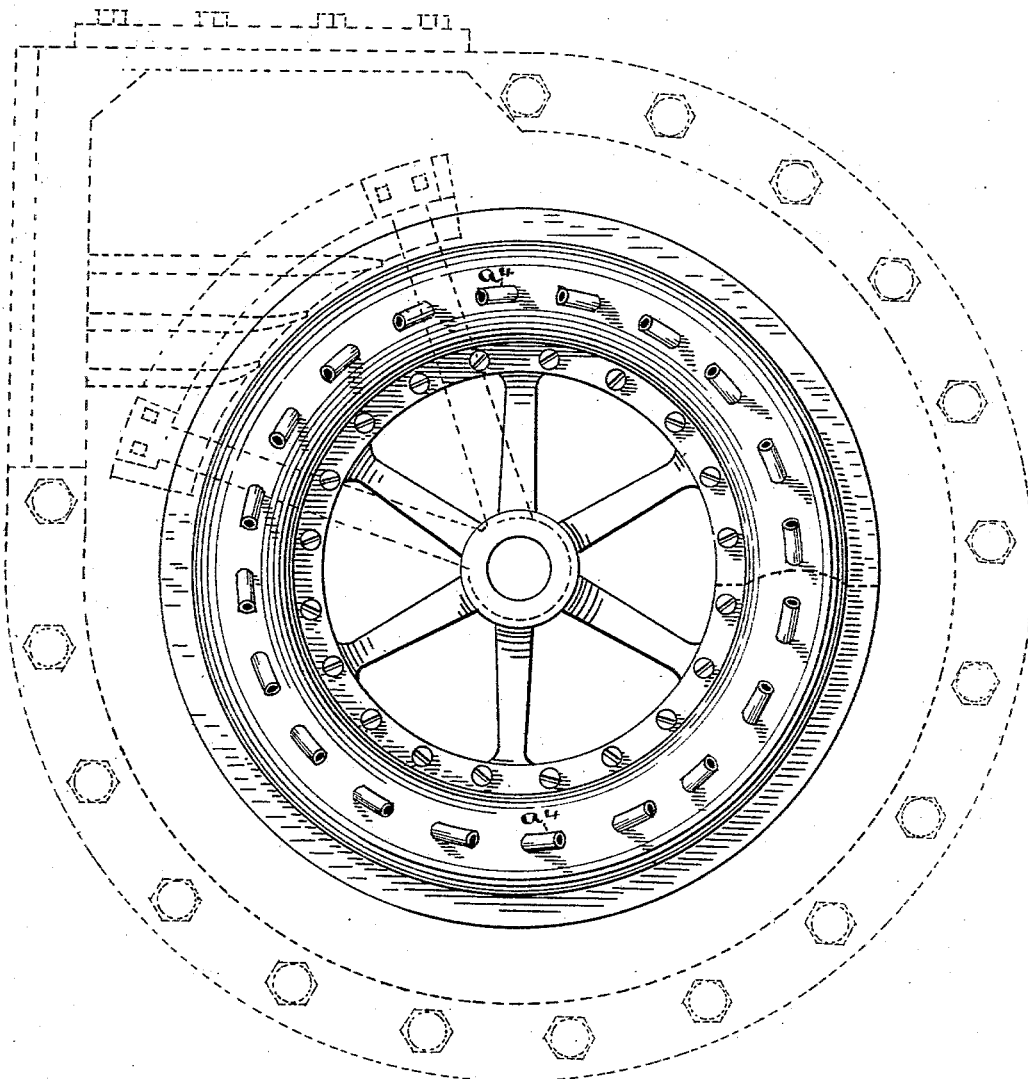


Fig. 2.

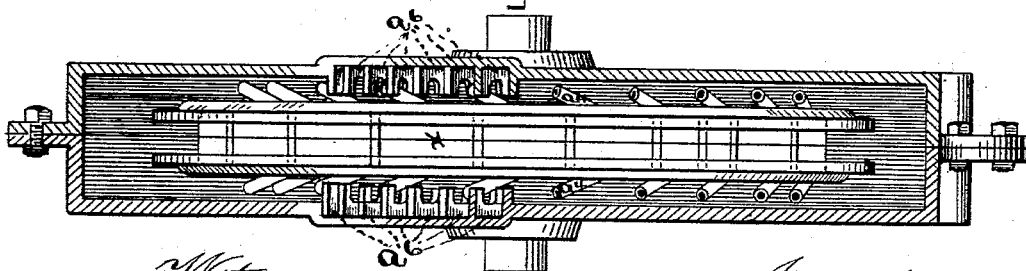


Fig. 3.

Witnesses  
Henry Berno  
Amory P. Kessler

Inventor  
Thomas Wise

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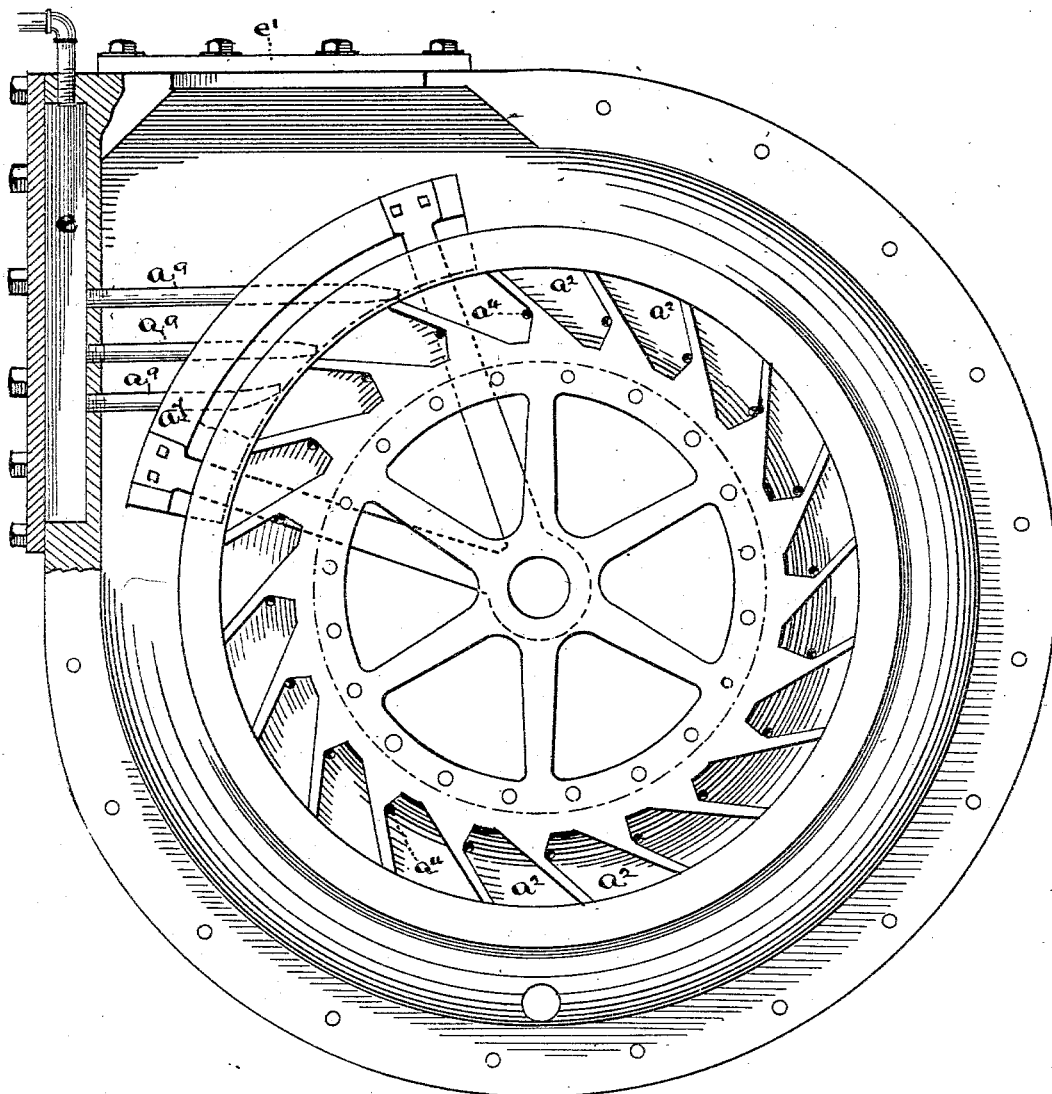


Fig. 4.

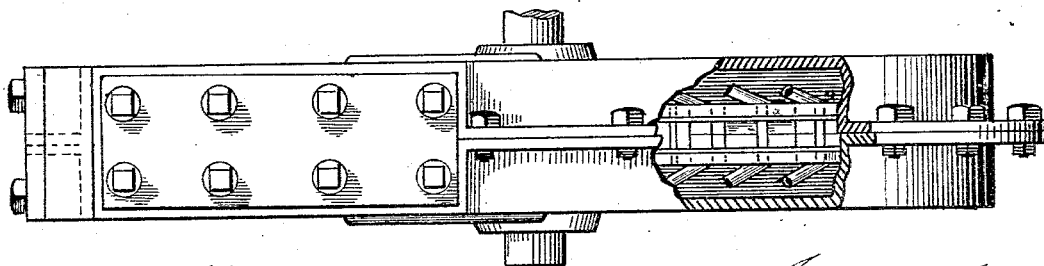


Fig. 5.

Witnesses:  
Henry D. Jones  
Amory J. Kibler

Inventor,  
Thomas Wise

# UNITED STATES PATENT OFFICE.

THOMAS WISE, OF FRAMINGHAM, MASSACHUSETTS.

## ROTARY STEAM-MOTOR.

SPECIFICATION forming part of Letters Patent No. 303,781, dated August 19, 1884.

Application filed March 17, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS WISE, of Framingham, in the county of Middlesex and Commonwealth of Massachusetts, have invented a new and useful Improvement in Rotary Steam-Motors, of which the following is a specification.

The object of my invention is to provide a rotary steam-motor which can be run with economy at a rate of speed as high as may be required to run a circular saw, fan-blower, or other similar machine, on the same shaft or journal on which the motor is placed; and it consists in the devices hereinafter described, and the combination and arrangement thereof.

To put my invention into practice I construct on a suitable shaft or journal a metallic disk, with a series of pockets in its periphery extending entirely around it, into one, two, or three, or more of which, as they pass a point, I admit a jet or jets of steam through a pipe or pipes properly located and directed, the delivering ends of which pass through a stationary cover, which closes one or more of the pockets while under it. For convenience, I usually make the metallic disk in two parts and put them together on the line *x*.

In the drawings annexed, consisting of three sheets, Figure 1 shows a vertical cross-section of my improved steam-motor, its central shaft and supporters, and the inclosing-case in which the motor rotates. Fig. 2 shows a side elevation of the steam-motor, with the case in dotted lines. Fig. 3 shows a cross-section of the case and an edge view of the steam-motor in it. Fig. 4 shows a vertical diametrical section of the steam-motor and an inside view of one side of its case. Fig. 5 shows a top plan of the case with a portion broken away, exposing a portion of the edge of the steam-motor. Fig. 6 on Sheet I shows a side view of the steam-chest, partly in section, with the steam-delivery tubes. Fig. 7 shows a side view of the cover which closes the pockets in the periphery of the steam-motor as they pass under it when in motion, and a steam-pipe through it delivering steam into the pocket in the periphery of the motor, shown in section.

*a* is the shaft upon which the steam-motor is affixed, and with which it revolves.

*a'* is the disk which constitutes the rotary

steam-motor, made of two parts, put together on the line *x*.

*a''* marks a series of pockets in and around the periphery of the steam-motor, which extend inwardly a distance equal to about one-eighth of the diameter of the motor, on a line oblique to a right line through the center of the motor about forty-five degrees.

*a'''* are annular lips on each side of the periphery of the motor *a'*, which serve to partially cover the pockets *a''*, and to some extent prevent the escape of steam.

*a<sup>1</sup>* marks openings on both sides of the pockets *a''*, near the bottom of them, which are fitted with short tubes standing obliquely to the plane of the motor at about thirty degrees, pointing in the direction opposite to the rotation of the motor.

*a<sup>2</sup>* is the metallic case in which the motor is inclosed. It is a simple shell, the main purpose of it being to keep the steam used from spreading in the surrounding air. It has on both its inner sides a series of abutments for the steam escaping from the pockets *a''* through the tubes *a<sup>1</sup>* to impinge against.

*a<sup>3</sup>* marks the series of abutments on the inside surfaces of the case *a<sup>2</sup>*, against which the steam escaping from the bottom of the pockets *a''* through the tube openings *a<sup>1</sup>* will impinge.

*a<sup>4</sup>* is a stationary cover over a portion of the edge of the periphery of the motor, between the lips *a'''* of the motor and over the outer edge of them, as close to the periphery of the motor and the pocket-openings as possible, and leave the motor free to move under it without friction against it, and it extends over three or four pockets, closing the opening into them, so that but little steam will escape. This cover is supported in its place by V-shaped brackets, the inner ends of which rest on the central shaft of the motor, and which are made of the same metal as the motor, so that its expansion by heat of the steam will be the same as the expansion of the motor, thus keeping the cover *a<sup>4</sup>* from contact with the motor as it rotates.

*a<sup>5</sup>* marks the brackets supporting the cover *a<sup>4</sup>*.

*a<sup>6</sup>* is a steam-pipe which conducts steam from a steam-chest to and into the pockets *a''*. There may be several of these steam-pipes; but in most cases one, two, or three will be found

sufficient. The direction of these pipes will be such that the current of steam passing through them will impinge against the forward side of the pockets in such direction as not to rebound or react against the rear or back side of the pocket, but, on the contrary, having a tendency to make a vacuum between the jet of steam as it flows into the pocket and the rear side of the pocket.

10  $e$  is a steam-chest affixed to the case of the motor, into which steam is introduced from a boiler, and from which it flows through the tubes  $a^9$  into the pockets  $a^2$ .

15  $e'$  is a cover to an opening in the case for the motor, which, being removed, gives opportunity to inspect the steam-pipes  $a^9$ , the cover  $a'$ , and the edge of the disk and the pockets.

20  $e^2$  is a steam-pipe conducting steam from the boiler, where it is generated, to the steam-chest  $e$ .

$e^3$  is a valve in the steam-pipe  $e^2$ .

The steam conductor or conductors from the steam-chest to the pockets in the motor, may be provided with valves by which to regulate or wholly cut off the steam from the pockets.

25 When the steam-chest is charged with steam, the passage of it through the pipes  $a^9$  will, by its impact against the forward side of the pocket, cause the motor to rotate with greater

or less rapidity, according to the quantity of steam used. A moderate power may be obtained by one steam-conductor from the steam-chest, and by the use of two or three conductors a greater power is produced, and also greater velocity of rotation is given to the motor.

35 The shaft of the motor may be coupled to the shaft of a circular saw, or to the shaft of a fan-blower, and other similar machinery, or they may be put on the same shaft with the motor, or the power may be taken off by pulleys and belts or gearing, and used as circumstances may require.

I claim as new and my invention—

1. The above-described improved rotary steam-motor, consisting of a combination, with the shaft  $a$  and disk  $a'$ , of the pockets  $a^2$ , the annular lips  $a^3$ , the steam-nozzles  $a^4$ , the abutments  $a^6$ , the cover  $a'$ , and the steam-conductors  $a^9$ , all substantially as described, for the purposes set forth.

2. In a rotary steam-motor, the disk  $a'$ , provided with pockets  $a^2$ , having steam-openings  $a^4$ , arranged as shown, in combination with the abutments  $a^6$ , as set forth.

THOMAS WISE.

Witnesses:

HENRY FENNO,

AMORY J. KEBLER.