

(No Model.)

2 Sheets—Sheet 1

J. L. LAMPE, Jr.
ROTARY STEAM ENGINE.

No. 571,378.

Patented Nov. 17, 1896.

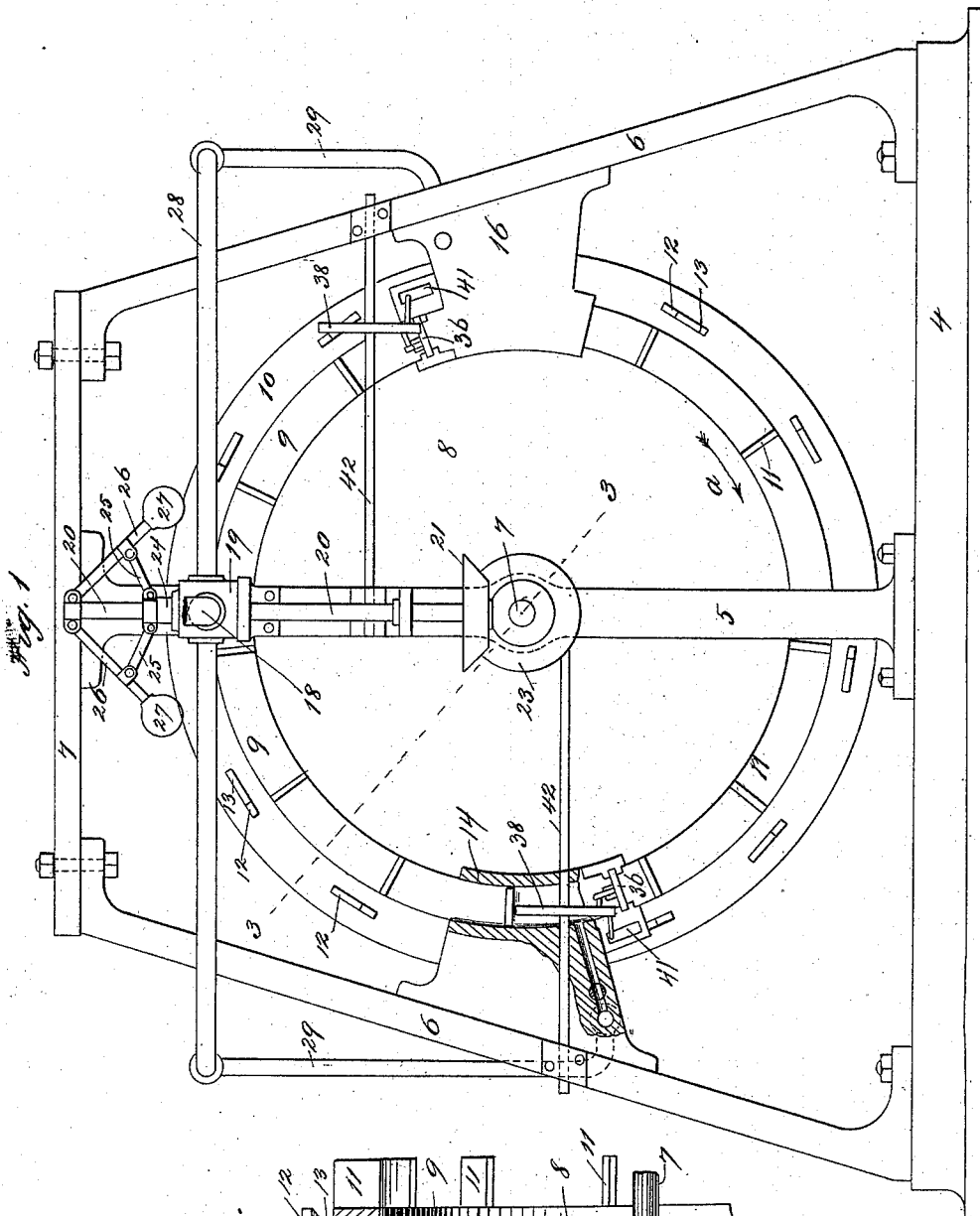
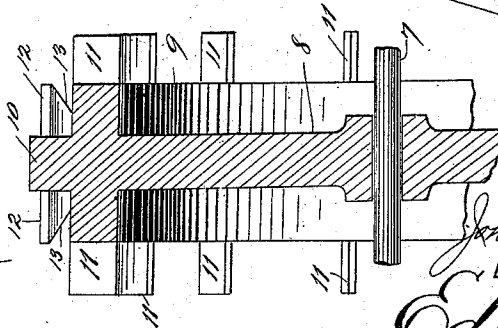


Fig. 3.



WITNESSES

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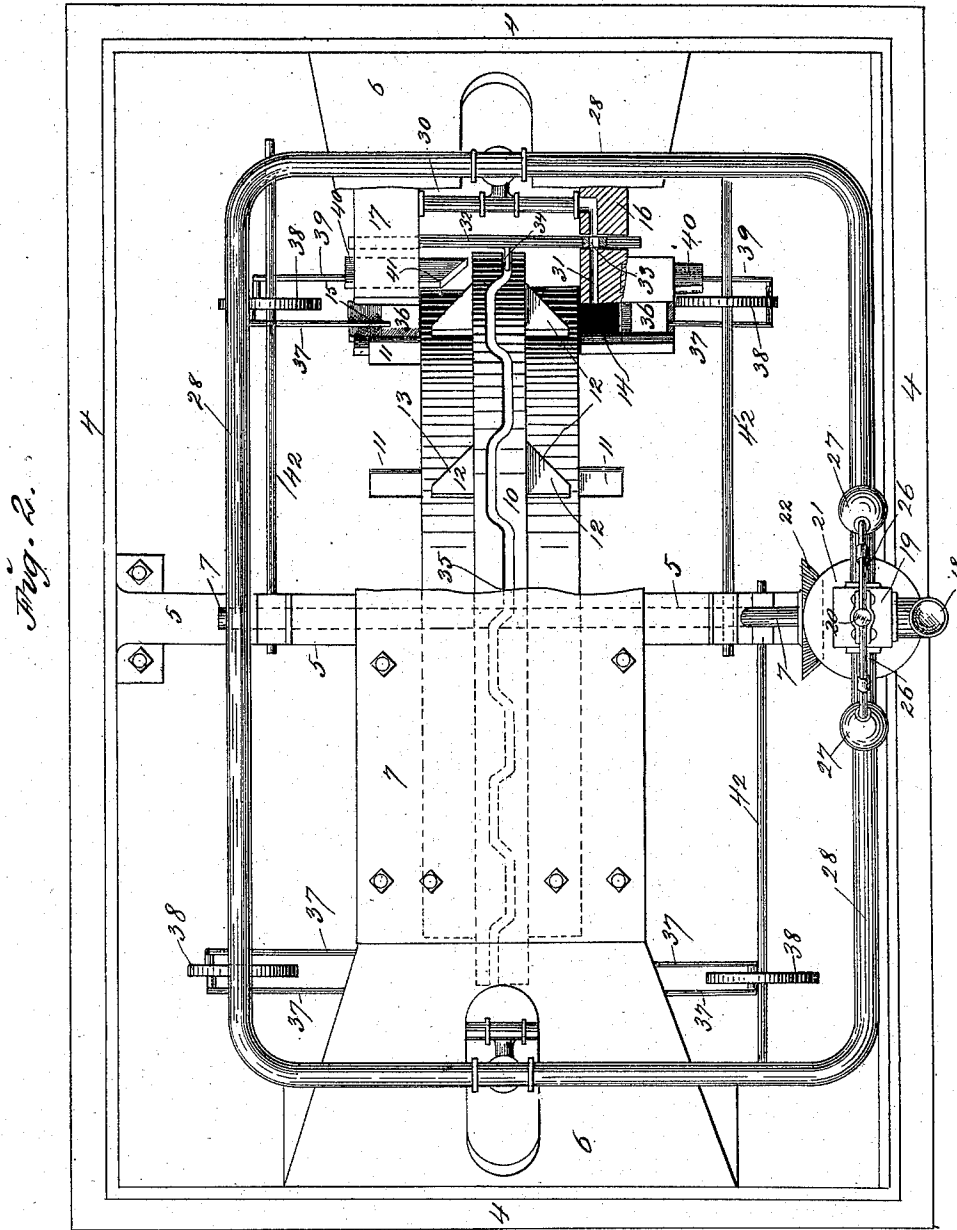
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2 Sheets—Sheet 2.

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WITNESSES

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2

INVENTOR

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UNITED STATES PATENT OFFICE.

JOHANNES LOUIS LAMPE, JR., OF BLOOMINGTON, ILLINOIS.

ROTARY STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 571,378, dated November 17, 1896.

Application filed May 21, 1896. Serial No. 592,429. (No model.)

To all whom it may concern:

Be it known that I, JOHANNES LOUIS LAMPE, Jr., a citizen of the United States, and a resident of Bloomington, in the county of McLean and State of Illinois, have invented certain new and useful Improvements in Rotary Steam-Engines, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar numerals of reference indicate corresponding parts.

This invention relates to rotary steam-engines, and the object thereof is to provide an improved device of this class in which there is no dead-center, and the invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 is a side view of my improved rotary engine, part of the construction being shown in section; Fig. 2, a plan view thereof with parts of the construction in section, a part of the frame being broken away; and Fig. 3, a partial section on the line 3 3 of Fig. 1.

In the practice of my invention I provide a frame which consists of a suitable base 4, which is angular in form and to each side of which are secured upwardly and inwardly directed braces 5, which are arranged centrally of said frame, and at each end are similar upwardly and inwardly directed braces 6, and the side and end braces are connected by a top or cross plate 7, and it will be observed on reference to Figs. 1 and 2 that both the side braces 5 and the end braces 6 are inclined upwardly and inwardly from the base of the frame, and passing centrally through the side braces 5 is a shaft 7, on which is mounted centrally thereof a wheel 8, on which is formed a band or rim 9, which is provided centrally of its outer surface with an annular outwardly-directed flange 10, and formed at regular intervals on each side of the annular band or rim 9 of the wheel 8 are radial plates 11, and the annular flange 10, which is arranged centrally of the rim or band 9, is provided in direct radial line with the plates 11, with projecting wings or flanges 12, one being arranged on each side of said flange and each of which is beveled on one side, as shown at 13, the sides on which the bevel or incline is formed being that in the direction of which

the wheel 8 is turned in the operation of the engine, as hereinafter described.

Mounted on or secured to the inner sides of the end braces 6 and centrally thereof are two steam-chests 14 and 15, and said steam-chests are supported by brackets 16 and 17, which are formed integrally therewith and secured to the end braces 6, and said steam-chests are segmental or arc-shaped in form, the arc on which they are formed being the same as that of the circle formed by the rim or band 9 of the wheel 8, and said rim or band 9 of the wheel 8 is polished on each of its outer surfaces, and the construction is such that these polished surfaces pass between the steam-chests 14 and 15, which are open on their inner sides and also at the top and bottom, and the plates 11 on each side of said rim or band 9 of the wheel 8 pass through said steam-chests as the wheel 8 revolves.

The steam for operating the engine is supplied through a pipe 18, which may be connected with any desired source of steam supply and which communicates with a steam-chest 19, through which passes a vertically-movable shaft 20, on the lower end of which is a beveled gear-wheel 21, which operates in connection with a corresponding gear-wheel 22, which is mounted on the shaft 7, and the upper end of the shaft 20 passes through the steam-chest 19, and mounted thereon is a sleeve 24, to the upper end of which are pivoted rods 25, the outer ends of which are pivotally connected with the levers 26, which are pivotally connected with the upper end of the shaft 20, and the lower ends of which are weighted, as shown at 27, and this constitutes the governor by which the supply of steam which passes through the steam-chest 19 is regulated, it being understood that the sleeve 24 is provided with a valve which controls the passage of the steam through said steam-chests. This particular construction, however, may be varied as desired and any preferred form of governor may be employed, and the construction therefor is not shown in detail.

I also provide a steam-pipe 28, which, as shown in the drawings, may extend entirely around the upper portion of the frame or engine, and said pipe is provided at each end of the frame with supplemental pipes 29,

which communicate therewith, and which also communicate with cross-pipes 30, which extend transversely of the brackets 16 and 17, by which the steam-chests 14 and 15 are supported, and said pipes 30 communicate with steam-passages 31, arranged in each of said brackets, and which communicate with the separate steam-chests; and I also provide a sliding bar or rod 32, one of which is employed on each side, and each of which passes transversely through the brackets 16 and 17, and each of which is provided at each end with a passage 33, and said rods or bars are adapted to control the flow of steam through the passages 31. In Fig. 2 but one of these rods or bars 32 is shown and but one of the passages 31, but it will be understood that this construction is duplicated on each side of the wheel 8, and said rods or bars are each provided centrally with inwardly-directed pins 34, which are adapted to move in a groove 35, which is formed in the perimeter of the flange 10, and said groove is of the form shown in Fig. 2, being irregular or tortuous in its course and being provided with two bends or curves between each set of the flanges or projections 12, said flanges or projections being arranged in pairs on opposite sides of the annular flange 10, and it will also be observed that the plates 11 are also arranged in pairs on opposite sides of the rim or band 9 of the wheel 8.

The steam-chests 14 and 15 are provided with sliding covers 36, which are adapted to be moved back and forth, so as to cover the opening at the upper end of said steam-chest, and each of the covers 36 is provided with a rod 37, which is eccentrically connected with a balance-wheel 38, with which is also concentrically connected on its opposite side a rod 39, the inner ends of which are connected with sliding plates 40, which are beveled on their inner ends, as shown at 41, and which are adapted to slide back and forth through the brackets 16 and 17, and the balance-wheels 38 are mounted on rods 42, which are suitably supported in the frame; and the operation will be readily understood from the foregoing description when taken in connection with the accompanying drawings and the following statement thereof.

The steam is admitted, as hereinbefore described, through the pipe 18 and passes through the passages 31 in the brackets 16 and 17 into the steam-chests 14 and 15, and as the wheel 8 revolves the plates 11 pass through said steam-chests, entering the same at the right of the frame at the upper and passing out at the lower sides thereof, and in this operation the sliding plates or covers 36 of the steam-chests on one side are simultaneously operated, but said covers on the opposite sides of the motor are alternatively operated, and the steam passes into the steam-chests and acts upon the plates 11 to revolve the wheel in the direction of the arrow *a*. (Shown in Fig. 1.)

The balance-wheels 38 are revolved so as to operate the plates or covers 36 of the steam-chests by means of the flanges or projections 12, which operate in connection with the sliding plates 40, and it will be understood that one of the plates 11 is always in each of the steam-chests on the opposite sides of the wheel 8, the arrangement of these plates being such that when one pair thereof enters the steam-chest on each side another is passing through the opposite side or end thereof, and the groove 35 is such that the rod or bar 32 is caused to move in opposite directions twice while one pair of the plates 11 is passing through the steam-chests, and the steam-passages 31 are consequently opened and closed twice during said intervals.

It will be apparent that the plates 11 may be arranged in a different manner or that they may be arranged alternately on opposite sides and not in pairs, and this is also true of the flanges or projections 12, and other changes in and modifications of the construction herein described may be made without departing from the spirit of my invention or sacrificing its advantages.

An ordinary power-wheel may be mounted on the shaft 7 and the power transmitted to any desired point and used for any desired purpose.

In a rotary engine constructed as herein described it is evident that there can be no dead-center, and my improved engine is also simple in construction; and,

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

1. In a rotary steam-engine, the combination with a suitable frame, of a shaft passing transversely therethrough, a wheel mounted on said shaft, and provided at its perimeter with a band or rim on the outer surface of which is formed a central annular flange, said band or rim being provided at regular intervals in each side with plates which project therefrom, and said frame being provided with steam-chests between which said rim or band passes, said steam-chests being open at their upper and lower sides, and said plates which are secured to the rim or band being adapted to pass therethrough, each of said steam-chests being also provided with means for admitting steam thereto, and with sliding covers, which are adapted to close the entrance to the steam-chests, as the plates on the rim or band pass therethrough, and devices connected with said plates or covers and with the central annular flange on the wheel for operating the former, so as to open and cover the entrance to the steam-chests through which the plates on the rim or band pass, substantially as shown and described.

2. In a rotary steam-engine, the combination with a suitable frame, of a shaft passing transversely therethrough, a wheel mounted on said shaft and provided at its perimeter with a band or rim on the outer surface of

which is formed a central annular flange, said band or rim being provided at regular intervals on each side with plates which project therefrom, and said frame being provided at 5 each end with two steam-chests between which said rim or band passes, said steam-chests being open at their upper and lower sides, and said plates which are secured to the rim or band being adapted to pass therethrough, 10 each of said steam-chests being also provided with means for admitting steam thereto, and with sliding covers, which are adapted to close the entrance to the steam-chests, as the plates on the rim or band pass therethrough, and 15 devices connected with said plates or covers, and with the central annular flange on the wheel for operating the former, so as to open and cover the entrance to the steam-chests through which the plates on the rim or band 20 pass, and said frame being also provided with a governor which is in connection with the central shaft on which the wheel is mounted, by means of suitable gearing, and also with the steam-supply pipe, substantially as shown 25 and described.

3. In a rotary steam-engine, the combination with a suitable frame, of a shaft passing transversely and centrally therethrough, a wheel mounted on said shaft and provided at 30 its perimeter with a band or rim on the outer surface of which and centrally thereof, is

formed a central annular outwardly-directed flange, said band or rim being provided at regular intervals on its opposite sides with projecting plates, and said frame being provided at its opposite ends with two steam- 35 chests through which the opposite sides of the rim or band of the wheel pass, said steam-chest being open at each end so as to admit of the passage of the plates, connected with or 40 formed on the band or rim of the wheel therethrough, and said steam-chest being provided with steam-passages which communicate therewith, said passages being provided with sliding cut-offs, and said steam- 45 chests being also provided at the ends thereof into which the plates on the rim or band pass, with sliding covers and devices connected with said sliding covers and said cut-offs, and with the central annular flange on the band 50 or rim of the wheel, for operating said covers and said cut-offs, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 12th 55 day of May, 1896.

JOHANNES LOUIS LAMPE, JR.

Witnesses:

FRANKLIN DU BOIS MARQUIS,
JAMES OSCAR WILLSON.