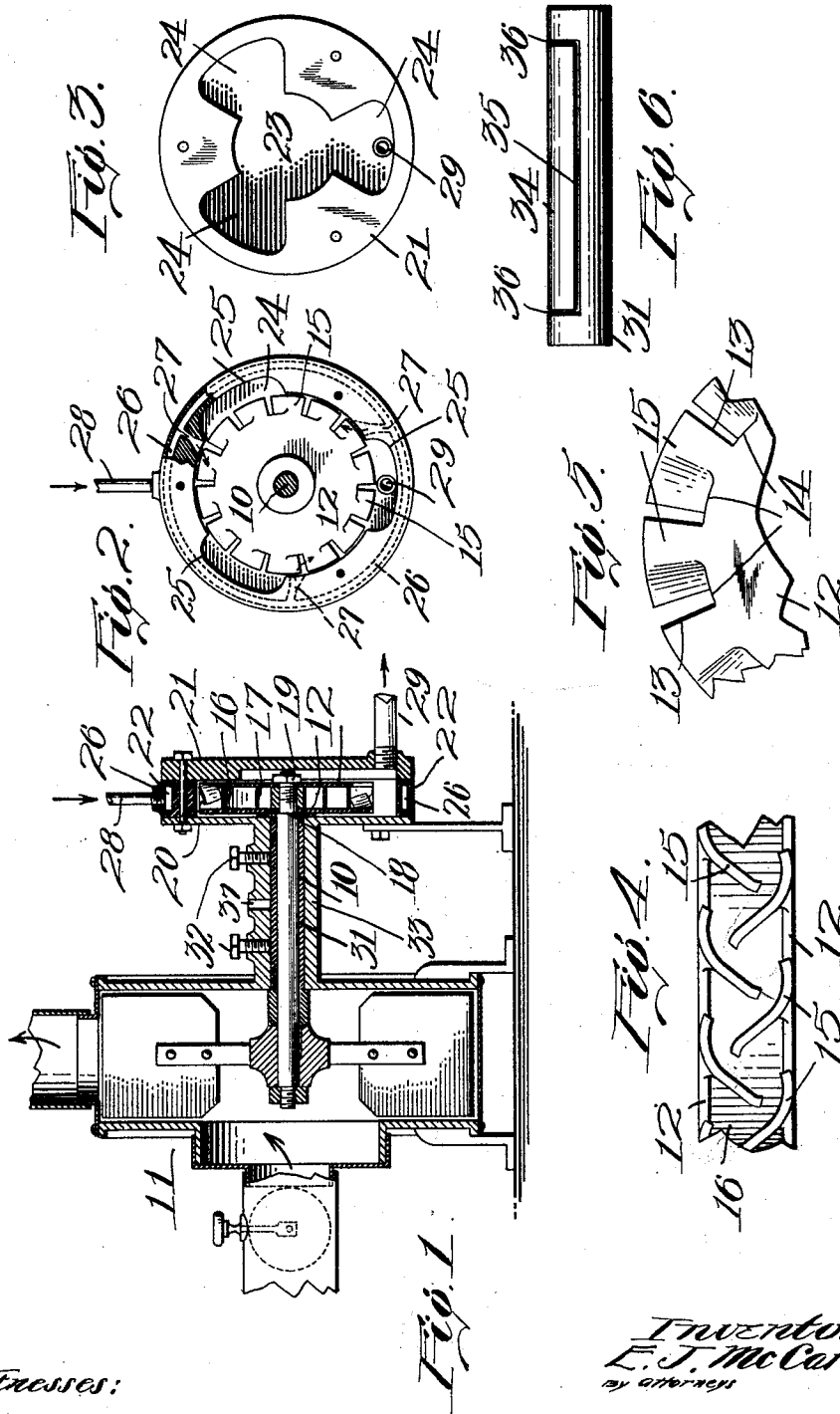


E. J. McCARTY.
STEAM TURBINE.
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1,047,967.

Patented Dec. 24, 1912.



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UNITED STATES PATENT OFFICE.

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STEAM-TURBINE.

1,047,967.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EUGENE J. McCARTY, a citizen of the United States, residing at Clinton, in the county of Worcester and State of Massachusetts, have invented a new and useful Steam-Turbine, of which the following is a specification.

The principal objects of this invention are to provide a construction of steam turbine in which the amount of power developed as compared with the entire weight of the device shall be larger than has been the case heretofore; to provide a construction in which the vanes are formed in an exceedingly simple and inexpensive manner and formed integral with the supporting plates therefor so that they shall be extremely strong and durable; also to provide an improved construction of casing for the rotary vanes; and in general to improve and simplify the construction of the steam turbine.

Reference is to be had to the accompanying drawings in which—

Figure 1 is a central sectional view of a steam turbine set up for the purpose of operating a blower. Fig. 2 is an end view of the same with parts shown in section and one end plate removed. Fig. 3 is a view of the inner surface of the other end plate. Fig. 4 is a fragmentary plan of the rotary disk and vanes on an enlarged scale. Fig. 5 is a side view of the same, and Fig. 6 is a side view of a bushing used with the turbine.

The invention is shown in a form in which a shaft 10, carries a blower 11 on one end. On the other end it is provided with a pair of separated parallel circular plates 12 of sheet metal each having radial slits 13 intersecting circular ones 14 to form vanes 15 projecting inwardly therefrom. These vanes on the opposite sides of the rotor are staggered so that each vane projects more than half way over the rotor into the concave portion of the nearest vane on the other side. In this way it will be seen that these vanes are formed integrally from the plates in a very simple manner and that the two plates being right and left, they can be pressed into their exact forms with a set of dies almost instantly, doing away with the insertion of blades in the rotor. To increase the power it is simply necessary to increase the diameter of the rotor or to set

any number in one casing side by side, and bolted together. The plates 12 are held apart by a cylindrical body shown as composed of two circular sheet metal rings 16 and 17 against the outer one of which the vanes bear. This furnishes an exceedingly inexpensive construction to make and one in which the weight of the parts is reduced to a minimum. The plates are held on the shaft by a shoulder 18 and nut 19. This rotor with its vanes is designed to rotate in a casing formed of two end plates 20 and 21 and annulus 22 between them. One of the end plates is provided with a central cavity 23 having a plurality of radially projecting extensions 24. In this case three of these are shown spaced equally around the circle. The annulus has cavities 25 registering with the ends of the extensions 24. It also has a circular passage 26 having ports 27 adjacent to one edge of each extension and opening into the space in which the vanes are located. The steam enters through a pipe 28 into the passage 26, and comes into the vanes through the ports 27. It is discharged at a plurality of points (in this case, three) through the cavities 25 and 23 into the exhaust pipe 29. It will be seen therefore, that the turbine is constructed in an exceedingly simple and inexpensive way and that it is comparatively efficient in operation.

The shaft 10 is shown as mounted in a bushing 31 which is held by set screws 32 in a bearing 33. This bushing is shown as of a cylindrical form but having a section 34 free from the body of the bushing along a longitudinal slit 35 and two transverse slits 36. This is to permit the set screws 32 to bear on this spring piece 34 and adjust it toward the shaft. Its natural resiliency holds it away from it. The oil is applied through a hole 37 where it will spread into the slits so as to flow readily to all parts of the bearing.

Although I have illustrated and described a preferred embodiment of the invention, I am aware that many modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited to all the details of construction herein shown and described, but

What I do claim is:—

1. As an article of manufacture, a steam turbine rotor having on opposite sides thereof sheet metal plates having their edges cut 5 by radial and annular slits to form a plurality of inwardly extending vanes.
2. As an article of manufacture, a steam turbine rotor having on opposite ends thereof a pair of circular plates each having its 10 edges slit and inwardly turned to form flanges constituting vanes extending radially from the edge of the rotor.
3. As an article of manufacture, a turbine rotor comprising a pair of circular plates 15 spaced apart and each having a series of slits extending inwardly, and alternately arranged on the two plates, the metal on one side of each slit being bent inwardly toward the other plate.
- 20 4. As an article of manufacture, a turbine rotor comprising a rotary body having a circular plate on the end thereof extending beyond the body and having its edges beyond said body cut by annular and radial 25 slits, the metal at one side of each slit being bent inwardly to form a series of vanes around said body.
5. In a steam turbine, the combination

with a rotor having inwardly extending vanes circumferentially arranged around it 30 alternately on opposite sides, of a casing therefor comprising end plates, one having exhaust passages, and an annulus between the end plates provided with a circular passage for steam and having a plurality 35 of ports from said passage extending inwardly toward the vanes.

6. In a steam turbine, the combination of a casing comprising two end plates, one having a central depression provided with 40 radial extensions therefrom, an exhaust connected with said depression, an annulus between said plates for receiving live steam and having ports extending inwardly therefrom adjacent to one edge of each of said 45 extensions, and a rotor within the casing and annulus provided with vanes on its circumference in position to receive the steam from said ports.

In testimony whereof I have hereunto set 50 my hand, in the presence of two subscribing witnesses.

EUGENE J. McCARTY.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."