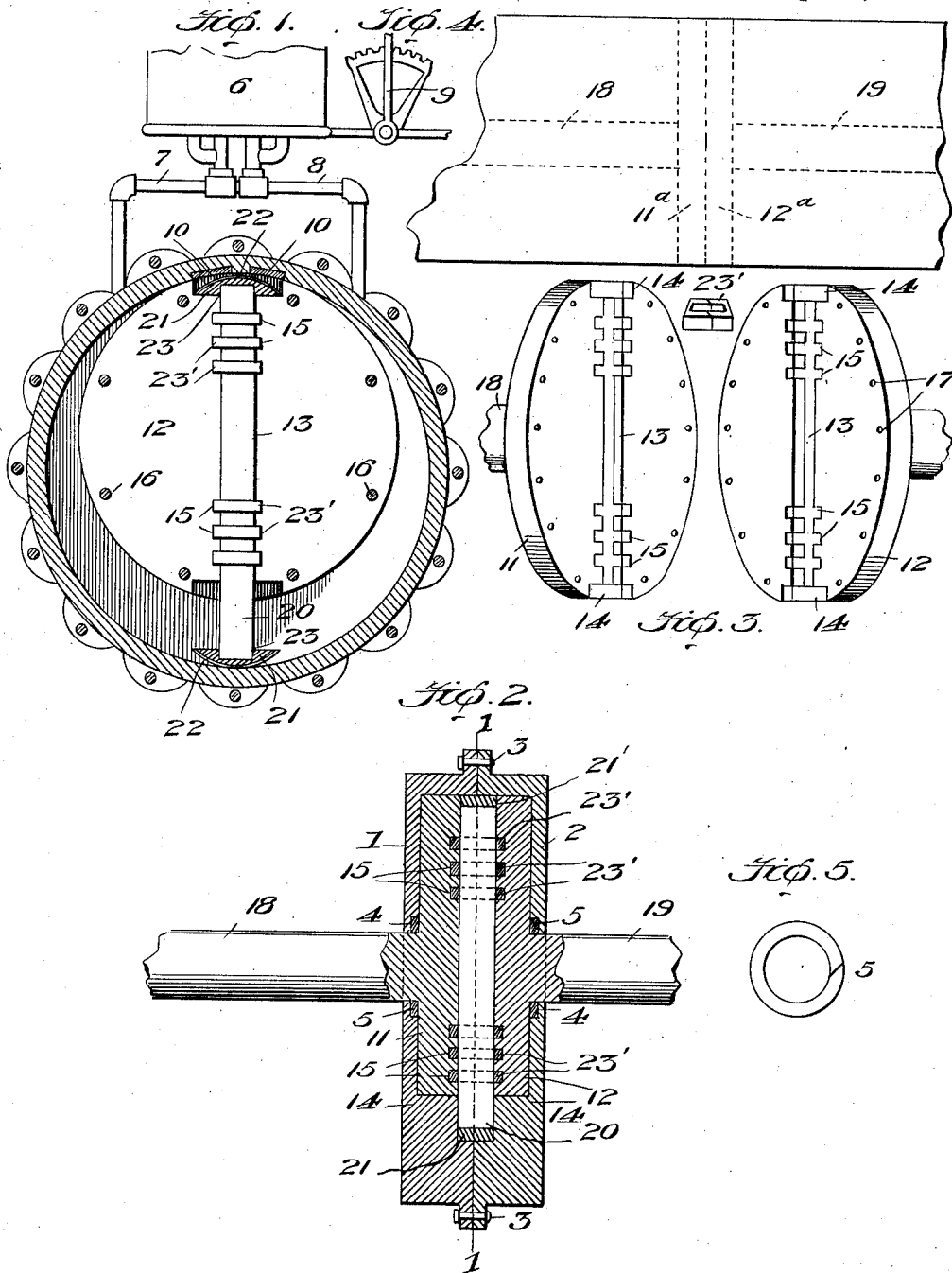


O. H. EATON.  
 ROTARY STEAM ENGINE.  
 APPLICATION FILED MAY 23, 1911.

1,038,321.

Patented Sept. 10, 1912.



Witnesses  
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# UNITED STATES PATENT OFFICE.

OWEN HENRY EATON, OF MERCED, CALIFORNIA.

## ROTARY STEAM-ENGINE.

1,038,321.

Specification of Letters Patent. Patented Sept. 10, 1912.

Application filed May 23, 1911. Serial No. 628,950.

*To all whom it may concern:*

Be it known that I, OWEN HENRY EATON, a citizen of the United States, residing at Merced, county of Merced, and State of California, have invented certain new and useful Improvements in Rotary Steam-Engines, of which the following is a specification.

This invention relates to rotary steam engines.

My object is the provision of a rotary steam engine having a rotary eccentrically mounted piston constructed in an improved manner; a double sliding vane carried by the piston and packet in an improved manner; removable shoes for the vane and means for packing the sides of the piston.

The invention is carried out in the manner set forth hereinafter and shown in the accompanying drawings, in which:

Figure 1 is a vertical section on line 1—1, Fig. 2; Fig. 2, a longitudinal section; Fig. 3, a detail of the two halves of the piston facing each other and separated with one of the packing rings shown in detail therebetween; Fig. 4, a view showing how the piston and shafts may be formed from a single solid piece of metal; and Fig. 5, a detail of a packing ring.

The shell or casing of the engine is formed of twin parts 1 and 2 which are adapted to be connected together by bolts or other fasteners 3. Any suitable packing may be interposed between the flanges which connect these parts of the casing. On their inner faces, at their centers, the sections 1 and 2 of the casing are provided with concavities 4 in which are seated annular packing rings 5 which are preferably of the form shown in Fig. 5.

The numeral 6 designates a valve chest having suitable pipe connections 7 and 8 with the interior of the shell or casing for the admission of steam to either side of the piston to control the direction of revolution thereof. The slide valve of said valve chest 6 may be controlled by any suitable lever mechanism 9.

Set into the casing where the vane is adapted to strike, are a plurality of wear plates 10 which prevent the friction at its point from forming a depression which would cause leakage of the steam.

The rotary piston is composed of separable parts 11 and 12 which are duplicates, each having in its face a diametrically ar-

ranged channel 13 leading therethrough from edge to edge, the peripheries of the halves of the piston being provided with notches 14. The piston sections 11 and 12 are provided with recesses 15, those of one part of the piston being adapted to register with those of the opposite part thereof. The piston sections are secured together by fastenings 16 passing through holes 17. In the smaller sizes of my engine I prefer to take the solid cylindrical piece of metal as shown in Fig. 4, turn it down to form the shaft sections 18 and 19, represented by dotted lines, Fig. 4, thereby forming the piston itself as shown by dotted lines 11<sup>a</sup>, 12<sup>a</sup> and to subsequently cut this solid piston in half to form the two piston sections 11, 12 and then to provide the slots 13. Prior to cutting the piston in half, or afterward, the recesses or notches 14 may be formed. In manufacturing the piston in the foregoing manner, the absolute rigidity of the piston and shaft sections is insured.

Fitting snugly yet easily within the channels 13 and adapted to slide diametrically of the piston is the vane 20 which is provided on its opposite ends with removable shoes 21, said shoes having outer rounded or convexed soles or faces 22 and sockets or seats 23 adapted to receive the ends of the vane 20, without any fastening means being employed to connect them to the said vane, the parts being so proportioned that the shoes will snugly yet easily fit within the casing, 1, 2, and said shoes being of the same width as the interior of the casing as shown in Fig. 2, and their ends being squared, they will revolve easily with the piston and vane. As before stated, the shoes strike against the wear plates 10 when at that point of their rotation and thus their friction on the casing at that point is compensated for and wearing out of the casing by them and by the periphery of the piston is prevented. The shoes 21 are adapted to seat in the notches or recesses 14 when uppermost as shown in Fig. 1. The packing rings 5, shown in Fig. 5, encircle the shaft sections 18, 19 and bear against the sides of the piston, thus preventing leakage of steam thereat.

In the recesses 15 there are seated the hollow, square, packing members 23', shown in detail in Fig. 3, which are formed internally to bear snugly yet easily against the four sides of the cross-sectionally square

vane 20, and thus prevent leakage of the steam through the channels 13 from one side of the piston to the other side thereof. Preferably the packing members 23' will be split but not necessarily so.

I preferably provide the interior faces of the casing sections 1 and 2 with circular concavities in which are received the piston members 11 and 12 and have the notches 14 extending not quite through the edges of the piston sections, thus the more perfectly effecting a packing of the parts.

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

1. In a rotary steam engine, the combination with a casing, of a rotary piston composed of separable disk shaped parts whose surfaces abut and have a channel therebetween, and a sliding vane carried by the piston and slidable in the channel between the separable parts thereof.

2. In a rotary steam engine, the combination with a casing, of a rotary piston eccentrically mounted therein and consisting of separable disk-shaped parts abutting each other face to face and having registering grooves or channels, and registering recesses intersecting said channels, a vane slidable in the registering channels, and packing set in the recesses and bearing on said vane.

3. In a rotary steam engine, the combina-

tion with a casing, of a rotary piston eccentrically mounted in said casing and composed of twin separable disk-shaped parts each having an integral stub shaft section, the said parts abutting face to face and having a channel therebetween, and a sliding vane located in said channel between the separable parts of the piston.

4. The herein described rotary steam engine, comprising, in combination, a casing, a rotary piston eccentrically mounted in said casing and composed of twin disk-shaped parts abutting each other face to face each having an integral shaft section, the twin parts being provided with registering diametrically disposed channels or grooves and registering recesses in their inner adjacent faces, members connecting the parts of the piston together, the peripheries of the sections of the piston being notched where the channels emerge, packing set in the recesses, a vane slidable in the channels, and shoes carried by the ends of the vane which bear against the casing and are adapted for reception in the notches.

In testimony whereof, I hereunto affix my signature in presence of two witnesses.

OWEN HENRY EATON.

Witnesses:

FRED G. OSTRANDER,  
ED F. MUGLER.

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