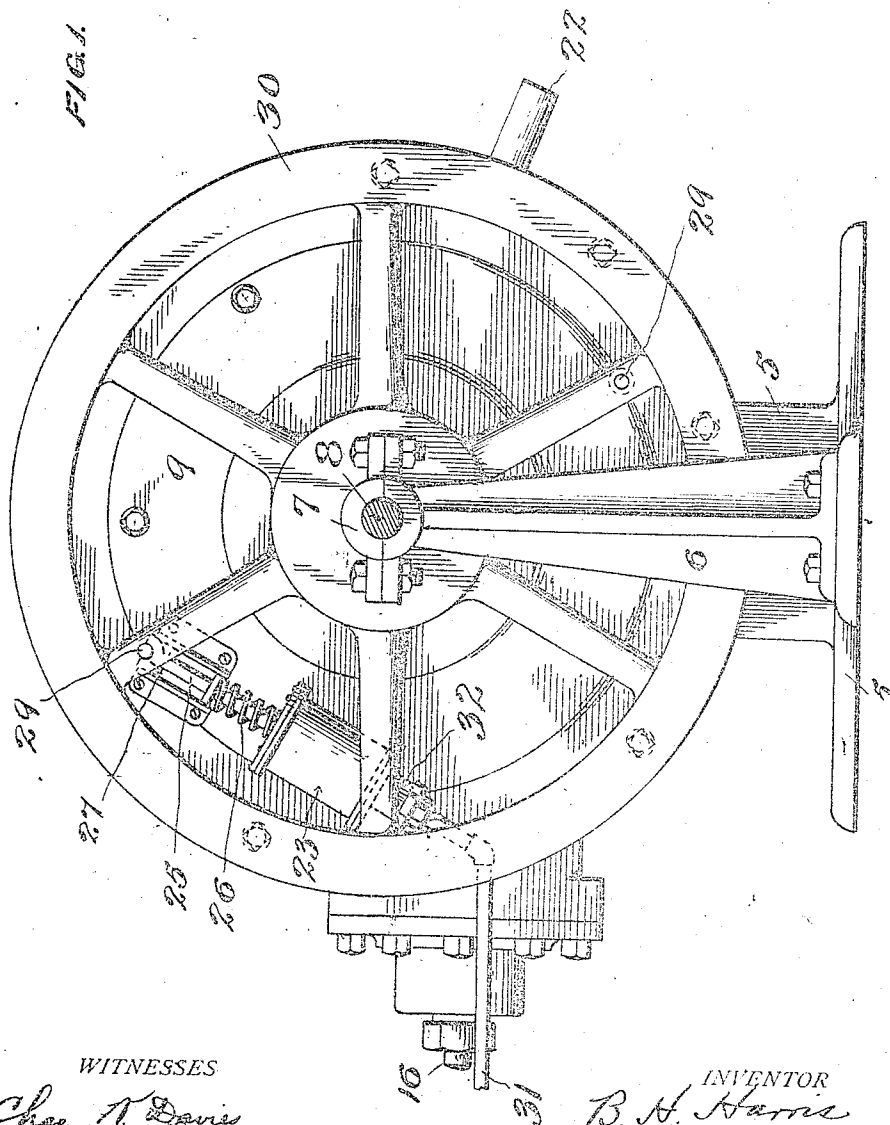


B. H. HARRIS.
ROTARY ENGINE.
APPLICATION FILED MAY 6, 1910.

1,007,100.

Patented Oct. 31, 1911

3 SHEETS—SHEET 1.



WITNESSES
Chas. A. Davis
J. T. Walker.

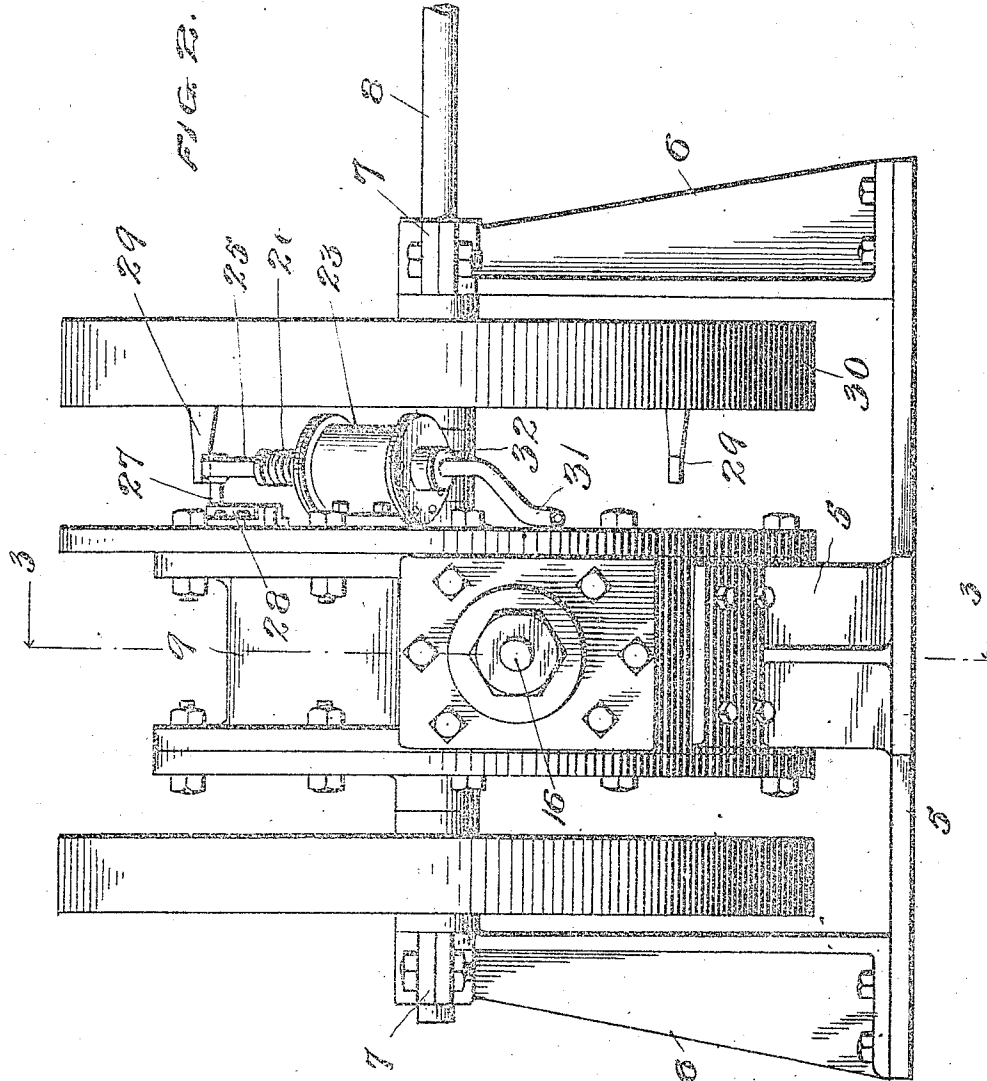
INVENTOR
B. H. Harris
By *[Signature]*
Attorney

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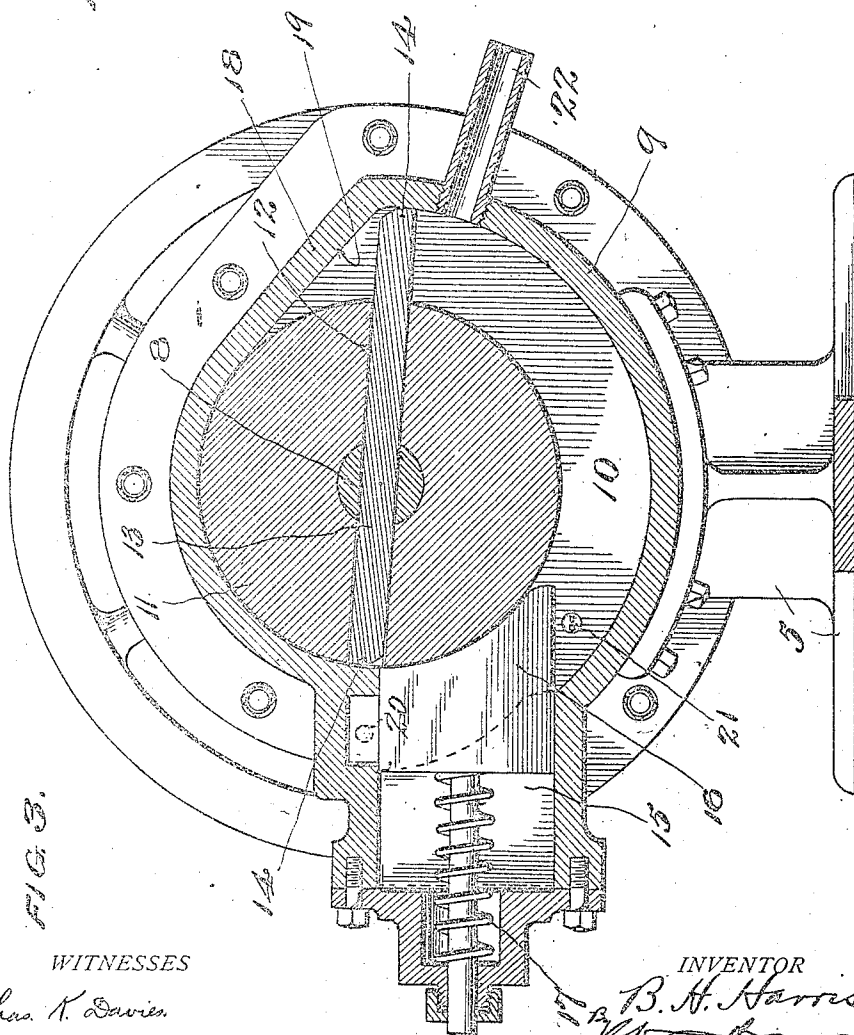
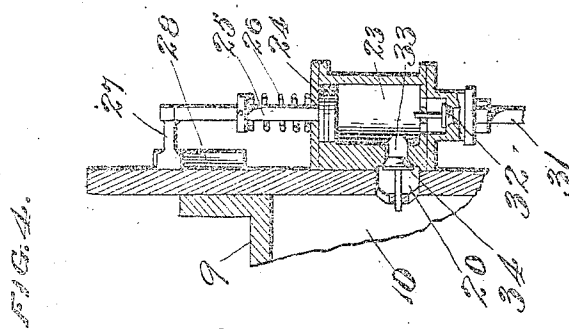
Chas. K. Davies.
 J. T. Walker.

INVENTOR

By B. H. Harris
 Attorney

1,007,100.

3 SHEETS—SHEET 3.



Chas. T. Davies.

J. T. Walker.

B. A. Harris

Attorney

UNITED STATES PATENT OFFICE.

BERT H. HARRIS, OF GOLD HILL, OREGON, ASSIGNOR OF ONE-FOURTH TO W. G. MYERS
AND ONE-FOURTH TO GEORGE W. LANCE, JR., BOTH OF GOLD HILL, OREGON.

ROTARY ENGINE.

1,007,100.

Specification of Letters Patent.

Patented Oct. 31, 1911.

Application filed May 6, 1910. Serial No. 559,669.

To all whom it may concern:

Be it known that I, BERT H. HARRIS, a citizen of the United States of America, residing at Gold Hill, in the county of Jackson and State of Oregon, 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.

The present invention relates to rotary engines, and while features of the same may be employed for use in connection with engines operated by steam, compressed air or explosive charges, it is peculiarly adapted for the last named.

The primary object is to provide a simple and compact engine of few parts, said parts being so arranged and constructed that they are not apt to become deranged or injured.

An embodiment of the invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a side elevation of the same. Fig. 2 is an end elevation. Fig. 3 is a vertical sectional view on the line 3—3 of Fig. 2. Fig. 4 is a detail sectional view through the pump mechanism.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the embodiment disclosed, a suitable base 5 is employed having standards 6 provided at their upper ends with boxes 7, in which is journaled a main driving shaft 8. A cylinder member 9 is mounted on the base, and is provided with an internal piston chamber 10. Mounted on the shaft and located within this piston chamber is a rotary piston 11 having a radial opening 12 therethrough, in which is slidably mounted a reciprocatory device 13 provided with terminal blades 14 that are arranged to alternately project from the periphery of the piston body.

The cylinder member is provided at one side with a recess or chamber 15, in which is slidably mounted a reciprocatory abutment 16, the inner end of which coöperates with the piston, the outer end having a coiled spring 17 bearing thereagainst to maintain such coöperative relation. In the opposite portion of the cylinder member is located a cam 18 having an inclined face 19 that is

disposed diametrically opposite to the abutment. The parts are arranged so that, as indicated in Fig. 3, when one of the blades 14 rides up the inclined face 19, the other blade will be against the inner end of the abutment, and moving outwardly, will move said abutment in a corresponding direction.

The motive fluid is introduced into the cylinder member through a port 20 located on one side of the abutment 16, and arranged in said cylinder member on the opposite side of the abutment, is an igniter 21. An exhaust port 22 opens from the cylinder member contiguous to the inclined face 19 of the cam 18. The preferred means for introducing charges to the cylinder member will now be described. A pump is formed in or upon the cylinder member, and preferably comprises a cylinder 23, within which operates a reciprocatory piston 24 having a piston rod or stem 25 projecting from one end of the cylinder and surrounded by a spring 26, said spring thus serving to normally maintain the piston at one end of the cylinder 23. The stem 26 has an outstanding lug 27 that reciprocates in a suitable guide 28, and this lug is disposed in the path of projections 29 formed upon the inner sides of certain spokes of a balance wheel 30 that is mounted on the engine shaft 8. The explosive mixture brought from any suitable source (not shown) is conducted to the cylinder 23 by a pipe 31, in which is located a valve 32, and the charge is conducted from the cylinder 23 through a conduit 33 to the port 20, a valve 34 being located in said conduit.

Briefly described, the operation of the engine is as follows. Assuming the parts, as illustrated in Fig. 3, when the outermost blade rides up the inclined face 19 of the cam 18, the other blade, as already explained will press against the abutment 16 and force the same outward. At the same time, one of the projections 29 of balance wheel is engaged with the lug 27 of the piston and will move the said rod and consequently the piston against the action of the spring 26. This will cause a charge to be forced through the conduit 33 and out of the port 20 into the cylinder member, said charge having sufficient force to maintain the abutment in open position, even after the blade has passed it. By the time the blade has passed the igniter 21, it will be

against the wall of the cylinder member, and the igniter being operated by any well known means, the charge will follow the blade, and in doing so, pass the abutment 16 as the latter is forced outward by the blade and be exploded as soon as the blade passes the igniting means. The force of this explosion will hold the abutment 16 in open position until the blade has passed the exhaust port 22, whereupon the pressure will be relieved, and the abutment will return to its original position. As the blade that has now been operated by the pressure of the exploded mixture rides up the cam face 19 the opposite blade will be brought into position against the abutment 16, and the action will be repeated. In connection with the operation of the pump, it will be evident that as the projection 29 which is engaged with the lug 27, passes said lug, the latter will be disengaged therefrom and the spring 26 can act to return the piston to its original position, thereby drawing in another charge, which will be next forced into the cylinder member.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In a rotary engine, the combination with a cylinder member, of a rotary piston therein, a reciprocatory device mounted in the piston and having terminal blades, an abutment movably mounted in the cylinder member and cooperating with the piston, and means for causing the device to slide in the piston as one of the blades passes the abutment to push said abutment outwardly.

2. In a rotary engine, the combination with a cylinder member, of a rotary piston therein, a reciprocatory device mounted in the piston and having terminal blades, a sliding abutment mounted in the cylinder member and cooperating with the piston, a spring for urging the abutment inwardly, and a cam projecting into the path of the blades and engaging one of the same to move it inwardly and cause the other to move outwardly as it passes the abutment and push said abutment outwardly.

3. In a rotary engine, the combination with a cylinder member, of a rotary piston having a blade operating in the cylinder

member, a movable abutment in the cylinder member coacting with the piston, means for conveying a charge into the cylinder member on one side of the abutment, and means located on the opposite side of the abutment to ignite the charge after the blade passes the abutment and the igniting means, the charge conveyed to the cylinder member following the blade and passing said abutment upon movement of said abutment in one direction under the action of said blade until it reaches said igniting means when the charge is exploded.

4. In a rotary engine, the combination with a cylinder member, of a rotary piston having a blade operating in the cylinder member, a movable abutment in the cylinder member coacting with the piston, means for conveying a charge into the cylinder member on one side of the abutment, means for igniting the charge located on the opposite side of the abutment, means for causing the blade to move the abutment outwardly as said blade passes the same, and means for introducing a charge under pressure through the conveying means as the blade passes the abutment.

5. In a rotary engine, the combination with a cylinder member, of a rotary piston operating therein, a device slidably mounted in the piston and having diametrically opposite blades, an abutment slidably mounted in the cylinder and coacting with the piston, a spring for urging the abutment inwardly, a cam projecting into the cylinder member and disposed in the path of the blades, said cam causing one blade to move inwardly and the opposite blade to move outwardly and push said abutment outwardly, means for conveying a charge into the cylinder member on one side of the abutment, means located on the opposite side of the abutment for igniting the charge, and means for introducing a charge under pressure into the cylinder member as the blade passes and pushes outwardly the abutment.

6. In a rotary engine, the combination with a cylinder member, of a rotary piston therein, a reciprocatory device mounted in the piston and having terminal blades, an abutment movably mounted in the cylinder member and cooperating with the piston, and a cam projecting into the path of the blades and engaging one of the same to cause the other to push the abutment outwardly as the latter blade passes the same.

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

BERT H. HARRIS.

Witnesses:

HAROLD O. VAN ANTWERP,
JULIUS V. MOULTON.