No. 717,461. Patented Dec. 30, 1902.

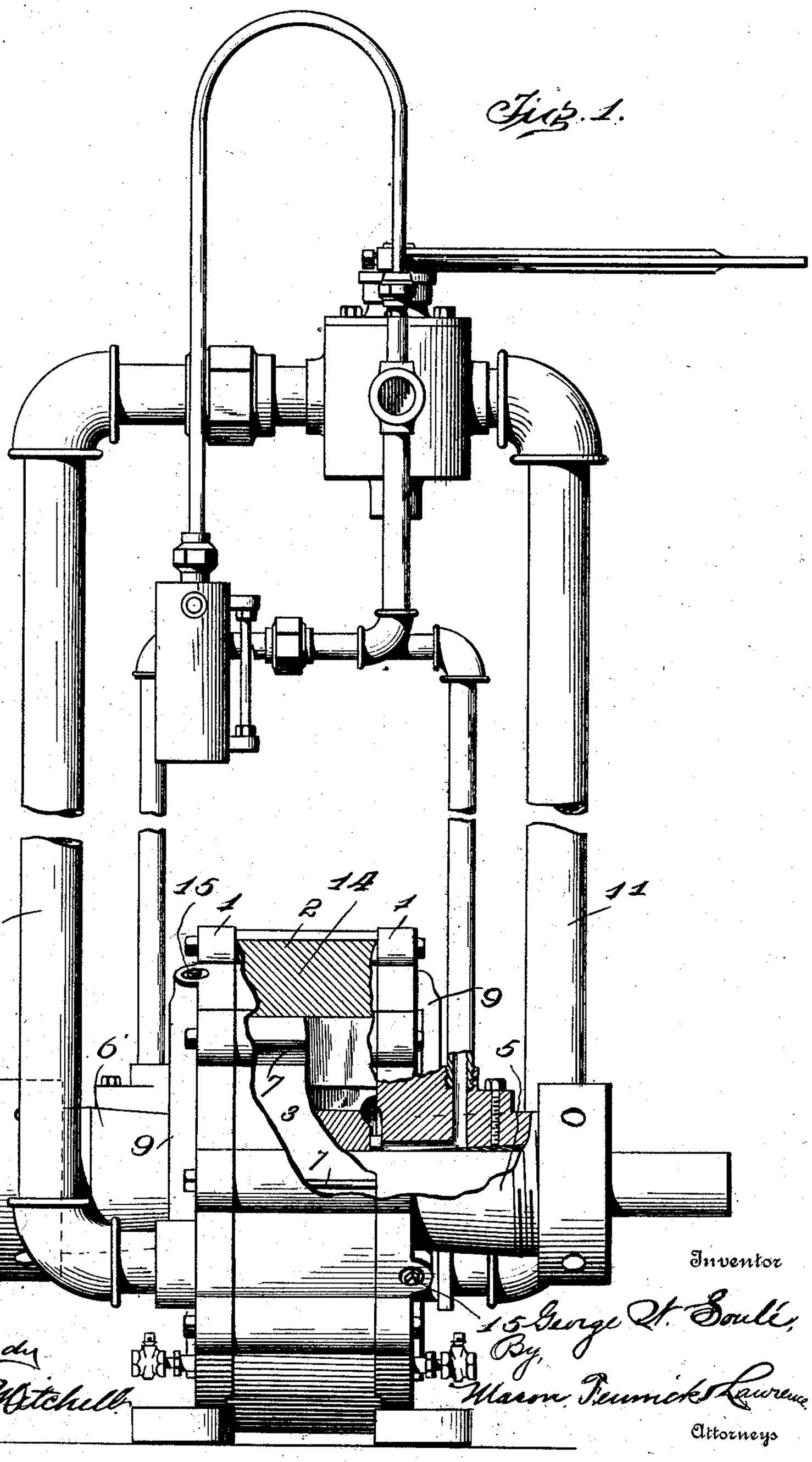
G. W. SOULÉ.

ROTARY ENGINE.

(Application filed May 22, 1902.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



No. 717,461. Patented Dec. 30, 1902.

G. W. SOULÉ.

ROTARY ENGINE.

(Application filed May 22, 1902.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 2.

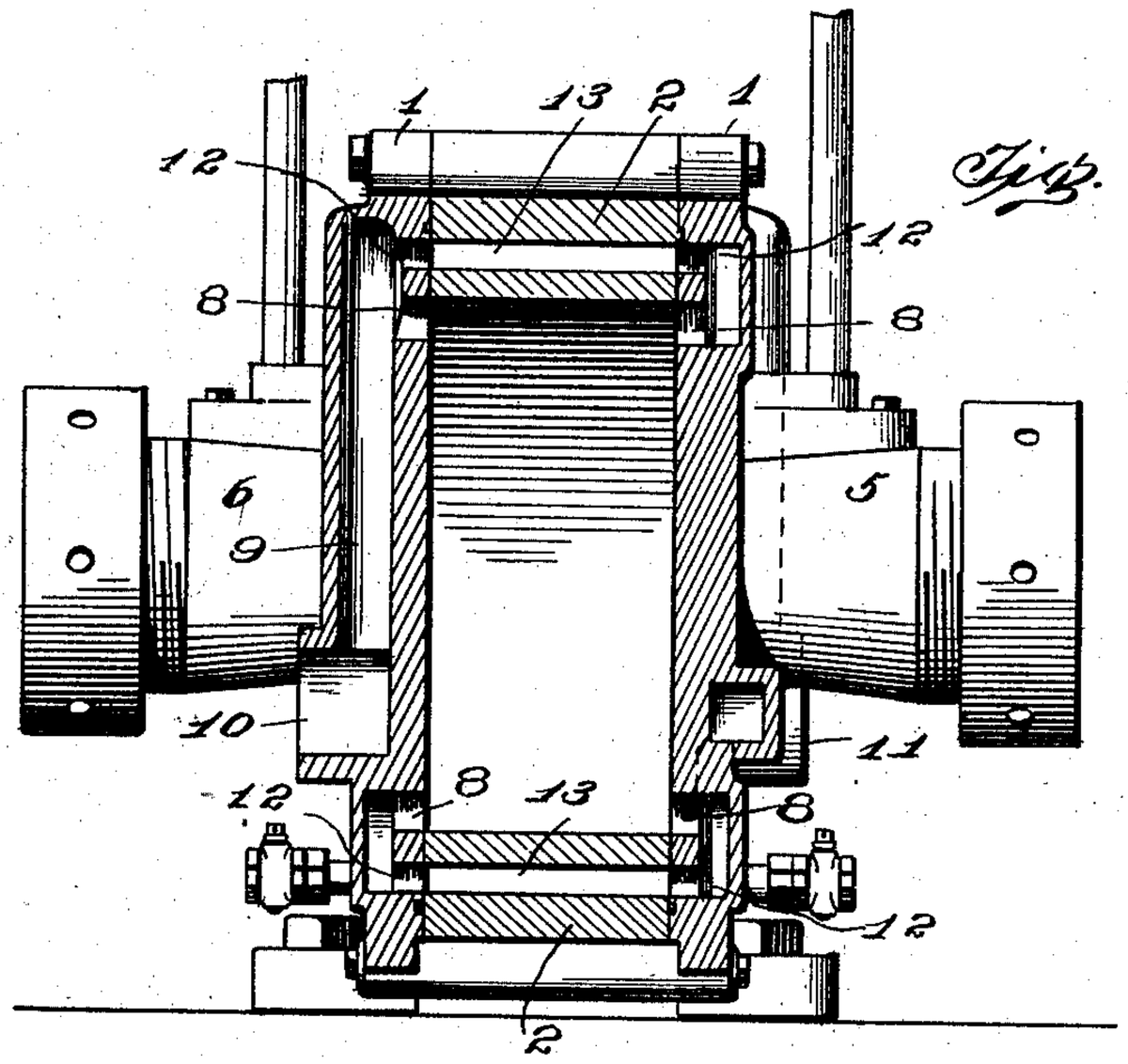
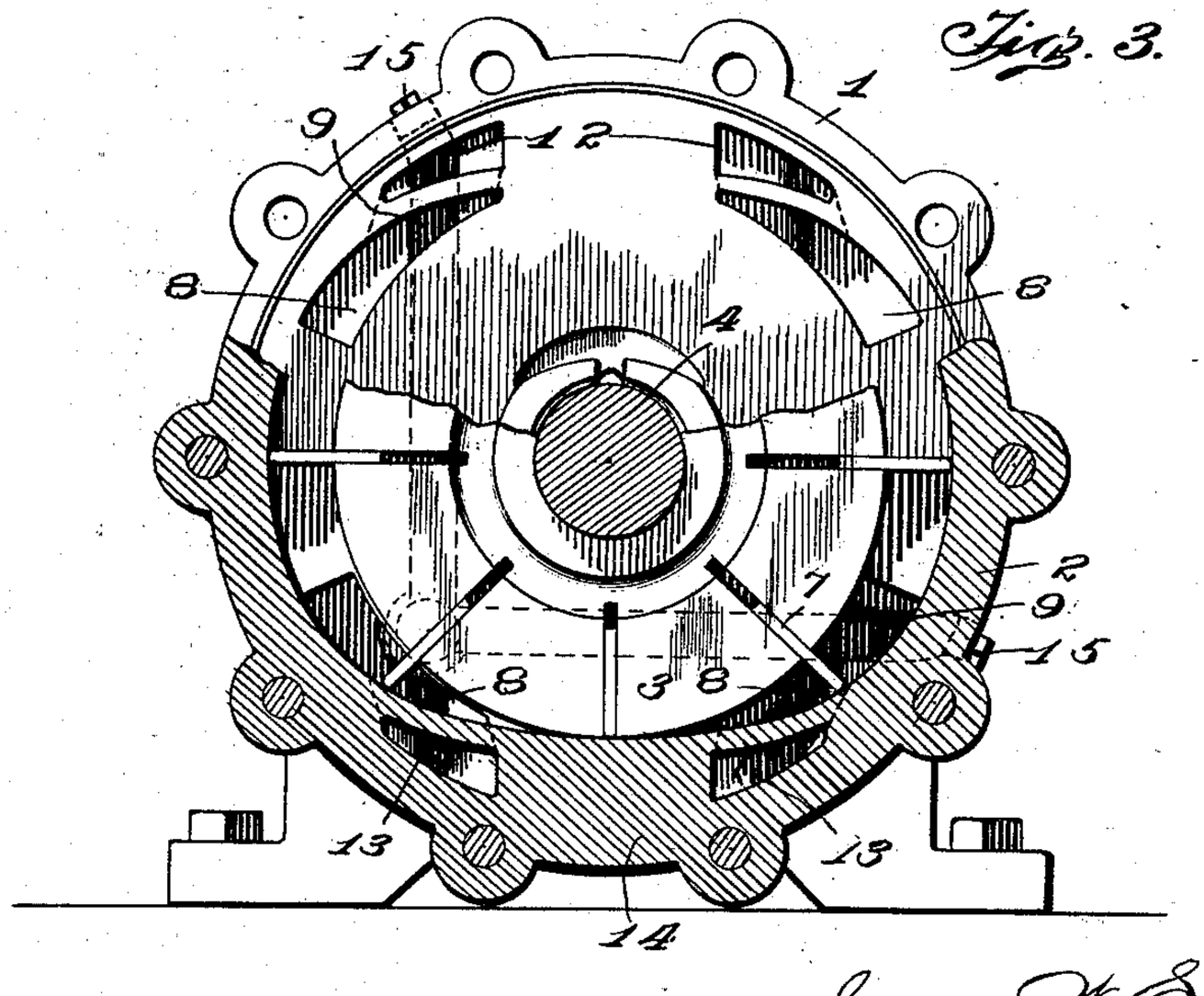


Fig. 3.



Witnesses
L. G. Handy
Ruth J. Mitchell

Inventor
George W. Soulé
By Mason, Fennick & Lawrence.
Attorneys

UNITED STATES PATENT OFFICE.

GEORGE W. SOULÉ, OF MERIDIAN, MISSISSIPPI.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 717,461, dated December 30, 1902.

Application filed May 22, 1902. Serial No. 108,569. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. SOULÉ, a citizen of the United States, residing at Meridian, in the county of Lauderdale and State of Mississippi, 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.

This invention relates to improvements in rotary engines, and particularly to the class of rotary engines which is especially adapted for the operations of such mechanisms as the carriages of sawmills.

The present invention is an improvement upon a steam-feed rotary engine patented by me May 26, 1896, and numbered 560,760.

It consists in certain novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 represents an edge elevation of my improved engine, showing the piping for introducing the steam-feed and exhaust-piping, together with piping for lubricating the engine. Fig. 2 is a vertical sectional view through the body portion of the engine, taken upon the line of the inlet-ports of the engine-heads to one side of the center of the engine. Fig. 3 is a vertical sectional view through the central portion of the engine, taken at right angles to the axis of the engine, a portion of the piston and the casing-ring being broken away to show the inner face of one of the engine-heads.

This invention, as above intimated, is an improvement upon my previous engine and, like it, is formed with a casing composed of heads 1 and a ring 2, connecting the heads and interposed between them, forming a chamber, in which rotates the piston 3 of the engine. The piston actuates a shaft 4, which is secured thereto, and the said shaft finds suitable bearings, as at 5 and 6, in the heads 1 of the engine. The piston 3 carries piston-slides 7, like those shown and described in my previous patent, the said piston being engaged by steam or other pressure in the same manner as previously. The construction of the ring 2 of the casing, however, is quite different from the rings previously employed by me and forms one of the important features of the invention in connection with an improved arrangement of the ports in the heads of the engine. In the form of engine previously used by me the steam was introduced and exhausted from the same side of the engine, entering the said engine to one side of the piston, so that the piston was found to receive an unequal pressure upon the side and was caused thereby to wear somewhat unduly. By the present invention steam or other pressure can be introduced simultaneously to both sides of the piston, but needs only to enter through one of the heads of the engine.

Each of the heads 1 of the engine is formed with inlet-ports 8, arranged in pairs at each side of the head. Two of the diagonally opposite ports 8 in each head are connected by passage-ways 9, formed in the metal of the head, and a steam-inlet pipe 10 or 11 is connected with the passage-ways 9 of one head or the other. The passage-ways 9 are preferably arranged to branch from their juncture with the steam-pipes 10 and 11 in the form of right angles, as indicated in dotted lines in Fig. 3, one branch coming to one of the upper ports 8, while the other branch comes to one of the lower ports 8. The heads 1 are also provided with auxiliary ports 12, somewhat smaller than the ports 8 and arranged outside the same, so as to come opposite the ring 2. These auxiliary ports 12 are each connected with its adjacent inlet-port by a passage-way arranged within the thickness of the metal of each head. The ring 2 is formed with passages 13 13, arranged so as to register with the auxiliary ports 12 of the heads and connect them, the ports 12 of one head being directly opposite the ports 12 of the other head, as clearly shown in Fig. 2. By still further regarding Fig. 2 it will be seen that pressure which is introduced through passage 9 of one head will pass through the passage-way 13 to the opposite head and will thus enter the piston-chamber of the engine through the inlet-ports 8 8 in each head simultaneously, producing a perfectly even pressure upon the piston from each side thereof, and thus not tending to force it against either of said heads. Of course the steam will exhaust from the engine in the same manner that it enters, but using the opposite set of ports

from the set which is being employed to introduce live steam. The engine is so constructed, as heretofore described and fully set forth in my previous patent above referred to, that when steam is introduced through the pipe 10, for instance, it will pass through the branch passage-ways 9 to the diagonally opposite inlet-ports 8 in one head of the engine, the other diagonally opposite inlet-ports 8 in the opposite head of the engine acting as exhaust-ports and delivering the exhaust into the branch passages 9 of that head and permitting it to pass through the pipe 11. When the pipe 11 is employed to introduce the live steam to the engine, the opposite condition of affairs will be established and the exhaust will pass out through the pipe 10 and the engine will be reversed.

The shape of the heads of the engine and the intermediate ring-casing 2 may be varied, of course, without departing in the least from the spirit of the invention; but I find that a good way to form these parts is to make the heads circular in general contour and form the outer periphery of the ring 2 circular to fit between the same. The center of the ring is formed with a piston-chamber by flattening opposite sides of the inner surface of the ring, the said flattening being produced by thickening the ring at opposite sides, as at 14. In this thickened portion are formed the passage-ways 13 13. Thus it will be seen that the inner contour of the ring is the same as that heretofore used in my engine when constructed in accordance with my patent above referred to; but the outer contour of the ring and of the engine-heads is changed, being more rounded out to accommodate the thickened portions of the ring and the passage-ways within the same. The end of the branch passage-ways 9 9 are provided with openings which are normally closed by screw-plugs 15. By the removal of these plugs access can be had to the passage-ways formed in the heads of the engine without difficulty.

It is found in practice that the improvements contemplated by this invention add materially to the operation of my rotary engine, reducing friction to a large degree and causing the parts to wear more evenly, and thus lengthening the life of the mechanism.

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

1. A rotary engine formed with a casing, a revoluble piston mounted therein, means for introducing steam or other pressure to the engine through one head thereof, and means for leading the said pressure simultaneously to both sides of the piston, comprising passage-ways formed in the heads of the engine and in the connecting-ring between the same, substantially as described.

2. A rotary engine formed with heads and a ring-casing between them, a piston working within said ring, the heads being formed with passage-ways and with inlet-ports and auxiliary ports, means for introducing steam or other pressure into the passages of one head or the other in accordance with the direction in which it is desired to drive the piston, the ring-casing being provided with passages connecting the auxiliary ports so that such pressure is directed simultaneously to both sides of the piston, substantially as described.

3. A rotary engine, comprising heads formed with a series of inlet-ports, the ports of one head being arranged directly opposite the ports of the other, branch passage-ways formed in the heads and connecting the diagonally opposite inlet-ports, auxiliary ports formed in the piston-heads adjacent to the inlet-ports, and passage-ways arranged in the ring between the said heads for connecting the auxiliary ports of one head with those of the other, so that steam or other pressure introduced at one side or head of the engine will be simultaneously delivered to both edges of the piston, substantially as described.

4. A rotary engine, comprising opposing heads formed with inlet-ports and auxiliary ports, a casing-ring interposed between the said heads and formed with oppositely-disposed thickened portions in which connecting passage-ways are arranged so as to connect the opposite auxiliary ports of the engine-heads, a piston moving in the said ring, and means for delivering steam or other pressure to one set of diagonally opposite inlet-ports in one head for driving the engine in one direction, means for delivering steam to the diagonally opposite inlet-ports in the other head for reversing the engine, the said ports and means, when not delivering live steam, acting as exhaust-ports and means, substantially as described.

5. A rotary engine, provided with heads and an intermediate connecting-ring casing forming a piston-closure, a piston operating therein, the heads being provided with inlet-ports and auxiliary ports, means for delivering steam or other pressure to each of said heads, straight converging passage-ways being formed in each of said heads for connecting the said pressure-supply with each of the inlet-ports, the heads being provided with apertures at the ends of each of said straight passage-ways, removable means for closing the said passage-ways, the removal of such means affording an opportunity of inspecting the interior thereof, and means for connecting the auxiliary ports for admitting the pressure to both sides of the engine simultaneously, substantially as described.

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

GEORGE W. SOULÉ.

Witnesses:
J. J. HODGES,
M. E. BELL.