

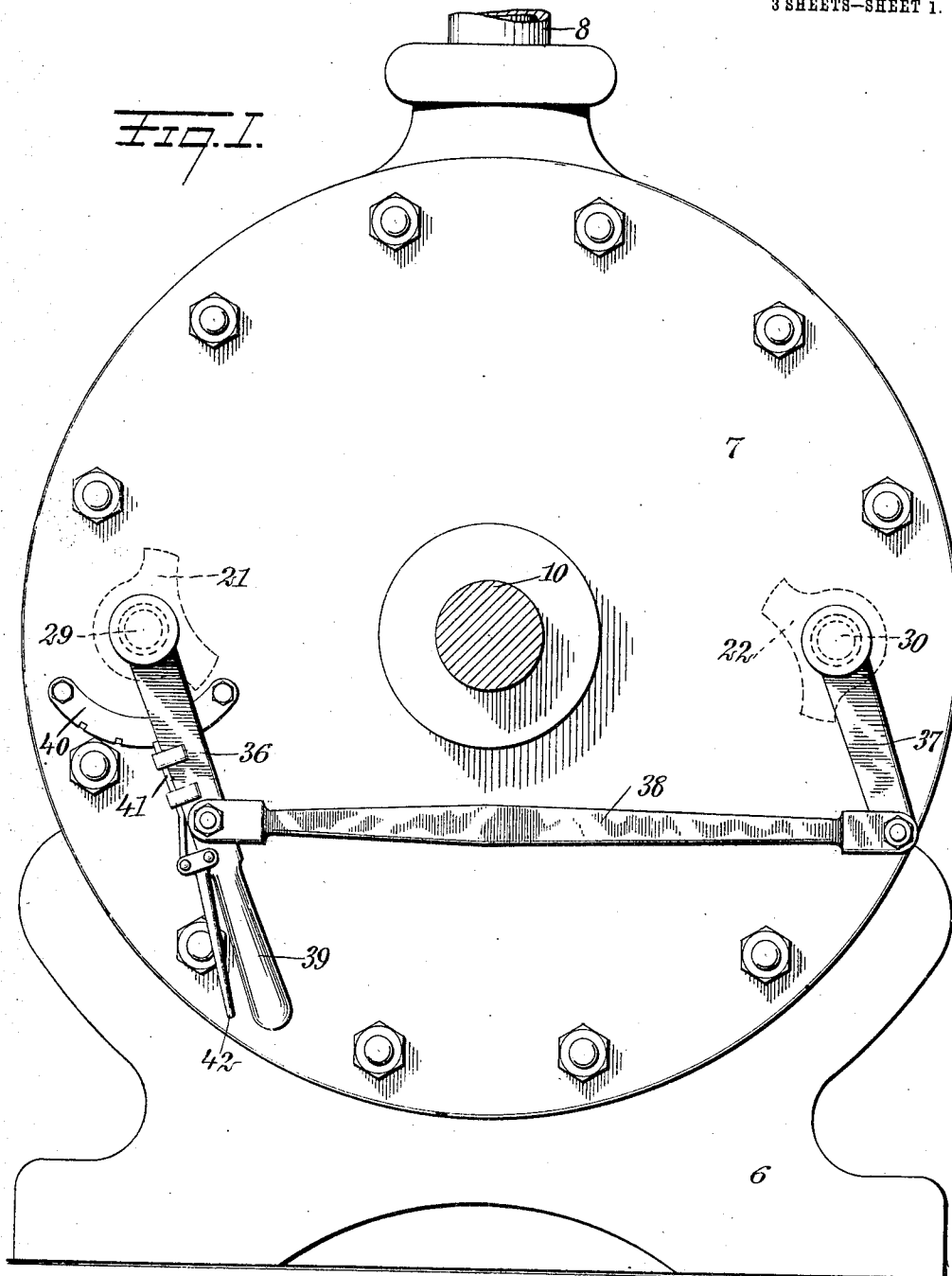
No. 872,234.

PATENTED NOV. 26, 1907.

T. C. HENRY.
ROTARY ENGINE.

APPLICATION FILED JUNE 22, 1907.

3 SHEETS—SHEET 1.



WITNESSES
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INVENTOR
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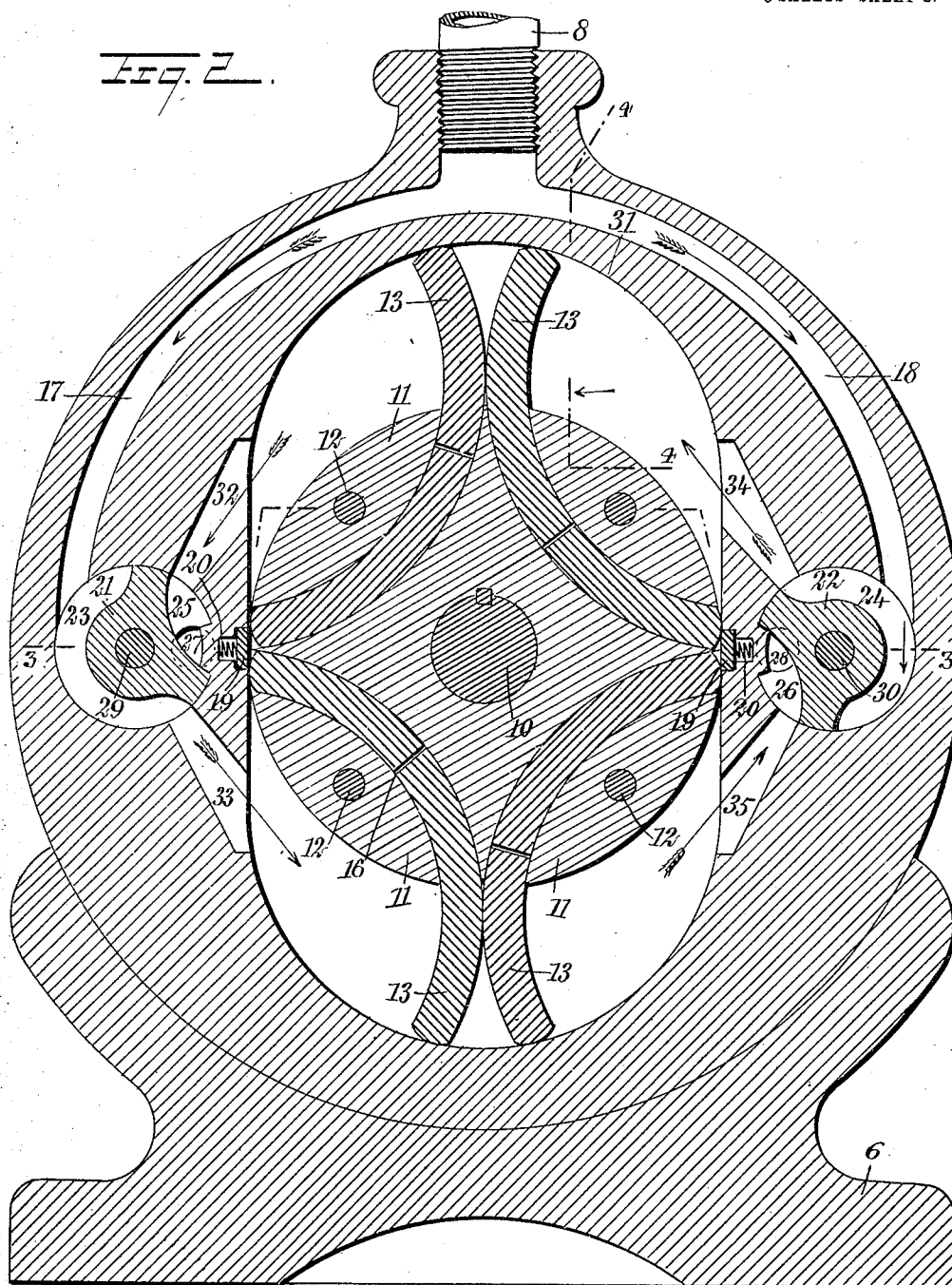
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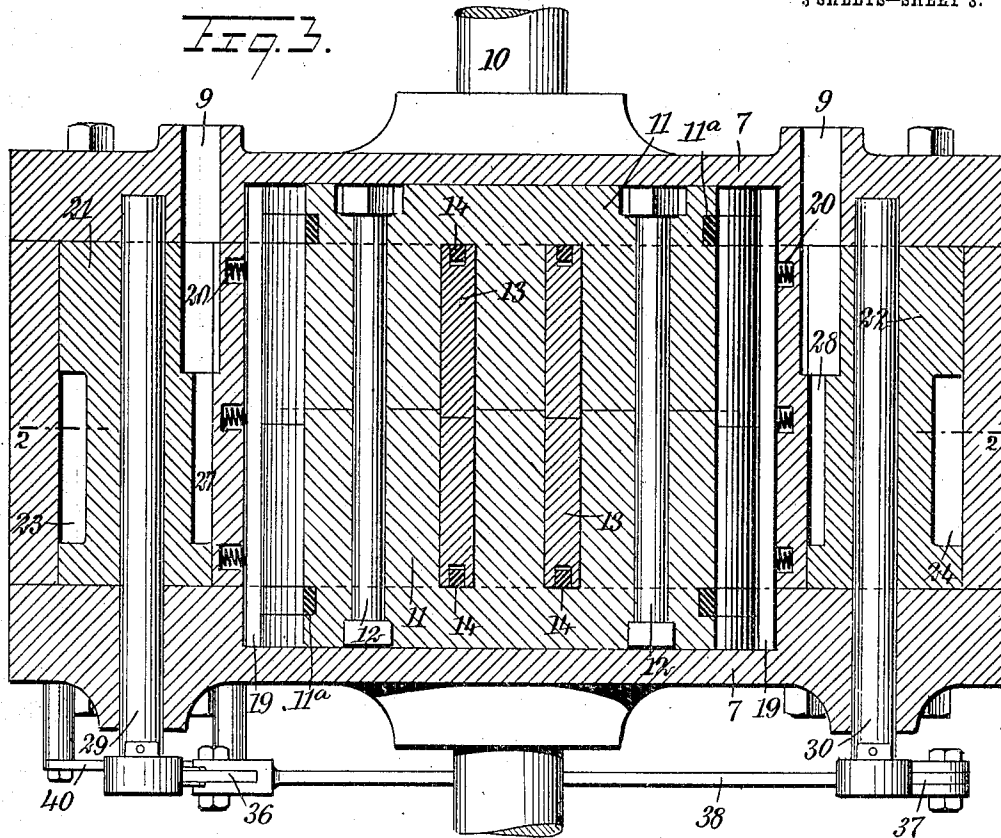
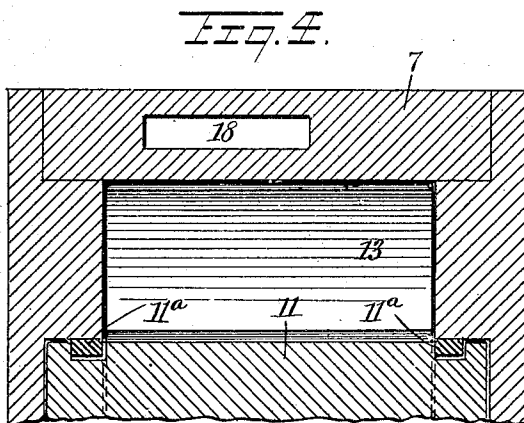
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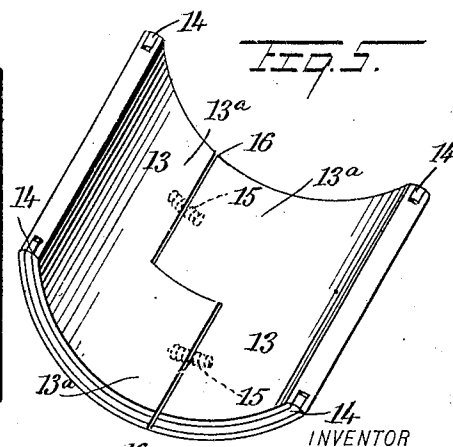
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3 SHEETS—SHEET 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

THOMAS CLAUD HENRY, OF MONTGOMERY, LOUISIANA.

ROTARY ENGINE.

No. 872,234.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed June 22, 1907. Serial No. 380,234.

To all whom it may concern:

Be it known that I, THOMAS CLAUD HENRY, a citizen of the United States, and a resident of Montgomery, in the parish of Grant and State of Louisiana, have invented a new and Improved Rotary Engine, of which the following is a full, clear, and exact description.

My invention relates to rotary engines, my more particular object being to provide a type of such engine employing a minimum number of parts, so as to reduce the loss from friction and vibration.

My invention further relates to certain improvements in construction, whereby the efficiency of engines of this type is greatly improved.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, and in which

Figure 1 is a front elevation of my engine, showing the hand lever in such a position that the rotation of the steam wheel is in a so-called "contra-clockwise" direction; Fig. 2 is a substantially central vertical section through the engine, on the line 2—2 of Fig. 3, showing the arrangement of the slides and the revoluble cylinder in which they are mounted within the steam space, this view further showing the arrangement of the various valves and ports; Figs. 3 is a horizontal section upon the line 3—3 of Fig. 2, looking in the direction of the arrow and showing how the parts of the steam wheel are put together and the relative arrangement of the various valves and slides; Fig. 4 is a fragmentary section upon the line 4—4 of Fig. 2, looking in the direction of the arrow and showing the packings for rendering the central cylinder steam-tight, and also showing how the slides are fitted in position; and Fig. 5 is a reduced perspective of one of the arcuate slides removed from the engine, and showing how the slides are made in halves and fitted together.

A base is shown at 6 and upon opposite sides of it are the heads 7 of substantially cylindrical form. An inlet pipe is shown at 8 and two outlets at 9. The main shaft is shown at 10 and mounted rigidly upon it is a cylindrical drum 11 made for the most part solid. This drum is made in halves secured together by bolts 12 extending entirely therethrough. Slides 13, each having in cross section an arcuate form, are fitted

neatly within the drum 11 and are adapted to slide therein within reasonable limits. For this purpose the drum is provided with arcuate slots which are entirely filled by the slides. Each slide is provided at its edges with packings 14 and is made in halves as indicated in Fig. 5. Each half is provided with a projecting tongue 13^a integral therewith, the halves being pressed apart by spiral springs 15. The halves are separated by a space 16 which varies in width according to the play of the two halves. Passages 17 and 18 communicate with the inlet 8, and through these passages the steam or other expansive medium flows into the engine. Metal packings 19 are disposed upon opposite sides of the drum 11 and are pressed inward by spiral springs 20 arranged as shown in Fig. 3. Plug valves 21 and 22 are provided with inlet ports 23 and 24 and with exhaust ports 25 and 26. The exhaust ports of the valves are adapted to register with stationary exhaust ports 27 and 28, each communicating with the outlets 9 for the purpose of allowing the steam or other expansive medium to finally escape from the engine.

The valves 21 and 22 are mounted rigidly upon shafts 29 and 30, and are adapted to be turned by the rotation thereof. A steam space 31 having a cross section which is substantially elliptical, as shown in Fig. 2, is provided centrally within the engine. This steam space communicates with ports 32, 33, 34 and 35, and these ports are in turn adapted to be connected with the ports 23, 24, 25 and 26 of the plug valves. A hand lever 36 is connected with the valve 21, and an arm 37 is similarly connected with the valve 22. The hand lever 36 and arm 37 are connected together by a pitman 38. The hand lever 36 is provided with a handle 39, and disposed adjacent to this hand lever is a toothed sector 40, which is engaged by a pawl 41, the latter being controllable by a handle 42. By grasping the handles 39 and 42, the hand lever may be moved to the right or left and secured in position relatively to the sector. The hand lever is used for reversing the direction of rotation of the revoluble parts of the engine.

It will be noted that by the arrangement above described, the steam or other elastic medium is free to expand after entering the steam space. This permits economy in the use of the steam or other elastic fluid.

For convenience I designate the revoluble drum as a steam wheel, and the space of oblong or elliptical form encircling it as the steam space.

5 The operation of my device is as follows: Steam or other elastic fluid is admitted through the inlet 8 and both of the passages 17 and 18 in all instances when the engine is to be operated. The plug valves 21 and 22
10 being geared positively together by the lever 36, arm 37 and pitman 38 are necessarily turned together when the lever 36 is operated by hand. The relative position of the plug valves, however, is such that whenever
15 the port 25 communicates with the port 32, for instance, as in Fig. 2, the port 26 always communicates with the port 35, and when the port 25 communicates with the port 33, the port 26 always communicates with the
20 port 34. With the hand lever 36 thrown to the right, according to Fig. 1, the valves 21 and 22 occupy the position indicated in Fig. 2. The live steam now enters through both passages 17 and 18, and through both ports
25 23 and 24, passing downwardly through port 33 and thence moving to the right and also upwardly through port 34, and thence moving to the left. It follows that steam is thus admitted at two oppositely disposed parts
30 of the steam space, and that it presses upon two of the slides 13 in such manner as to cause the steam wheel to turn in a contra-clockwise direction, according to Fig. 2. Meanwhile, any exhaust steam or air in the
35 engine can make its escape by passing through ports 32, 25, 27 and 9, and through ports 35, 26, 28 and 9; two independent exhausts are thus in action. As steam or other elastic medium enters the engine, say, through
40 the passage 17, port 23 and port 33, the slide 13 prevents its immediate escape, thus causing it to turn the steam wheel. Each slide 13 is free to move edgewise, and as the wheel turns each slide has a creeping movement
45 through its slot, two oppositely disposed edges, however, engaging the inner wall of the engine. As shown at the bottom and also at the top of Fig. 2, the slides 13 have at certain portions of their revolution, a

gentle rolling movement toward each other, 50 owing to the fact that their convex surfaces or backs are in engagement with each other. In instances, therefore, where both slides happen to be moving toward or from the center of rotation, the two slides have comparatively little friction in their movement. 55 The two halves of each slide having relative movement toward each other by the expansion and contraction of the space 16, adapt the slide to fit into any part of the steam space as the rotation proceeds. 60 The result is that the space 16 may expand and contract periodically as the steam wheel turns, but, in all events, the fit of each slide 13 relatively to the inner wall of the engine is maintained at all times. 65 The overlapping tongues 13^a (see Fig. 5) and springs 15 serve not only to maintain the two halves of each slide 13 in alinement with each other, but also to prevent the escape of the elastic fluid 70 through the space 16. In order to reverse the movement the operator merely throws the hand lever 36 to the left according to Fig. 1, and this changes the direction of the steam or other elastic medium, so that the 75 steam wheel now turns in the opposite direction.

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

80 In an elastic fluid engine, the combination of a body portion provided with a steam space having a substantially elliptical cross section, a steam wheel mounted within said portion and provided with slots of arcuate conformity, and a slide of arcuate conformity 85 mounted within each of said slots, said slide being made in a plurality of parts overlapping each other for the purpose of forming a steam-tight joint. 90

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS CLAUD HENRY.

Witnesses:

JNO. I. MCCAIN,
HARDY C. DODSON.