

No. 610,498.

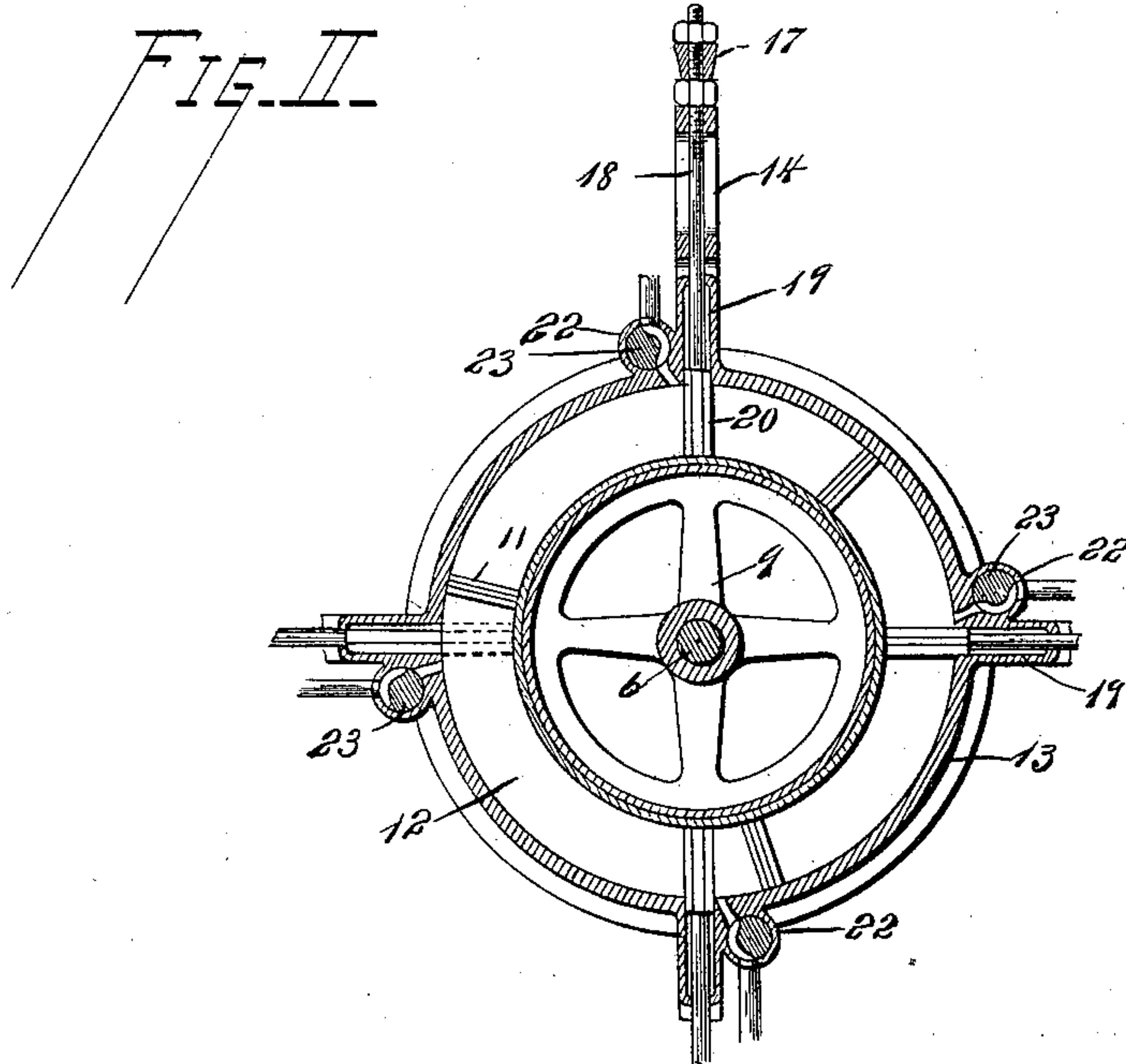
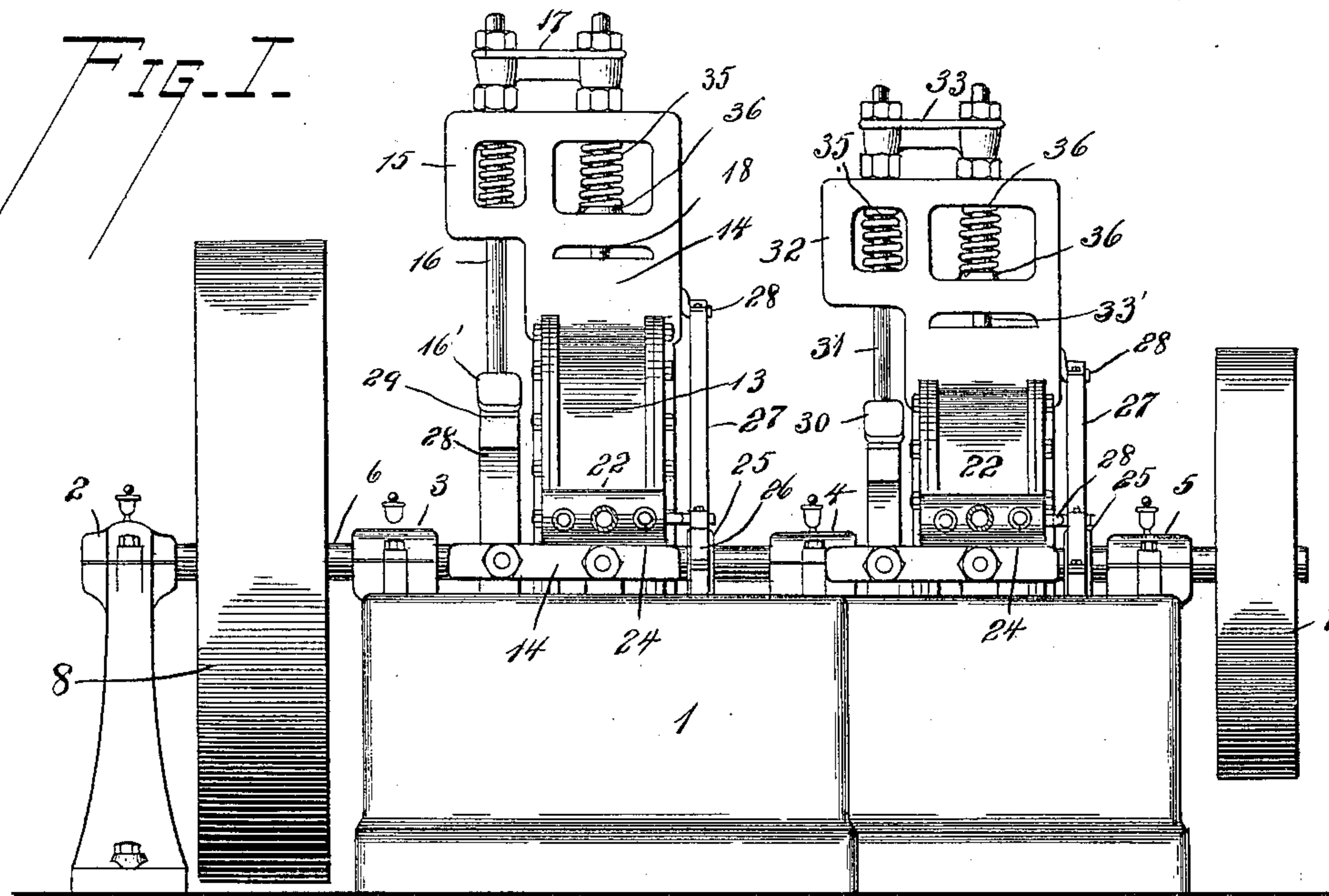
Patented Sept. 6, 1898.

F. W. ROSS.  
ROTARY ENGINE.

(Application filed Aug. 26, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

*A. Chas. Corner.*  
*Victor J. Evans*

Inventor

*Finlay W. Ross*

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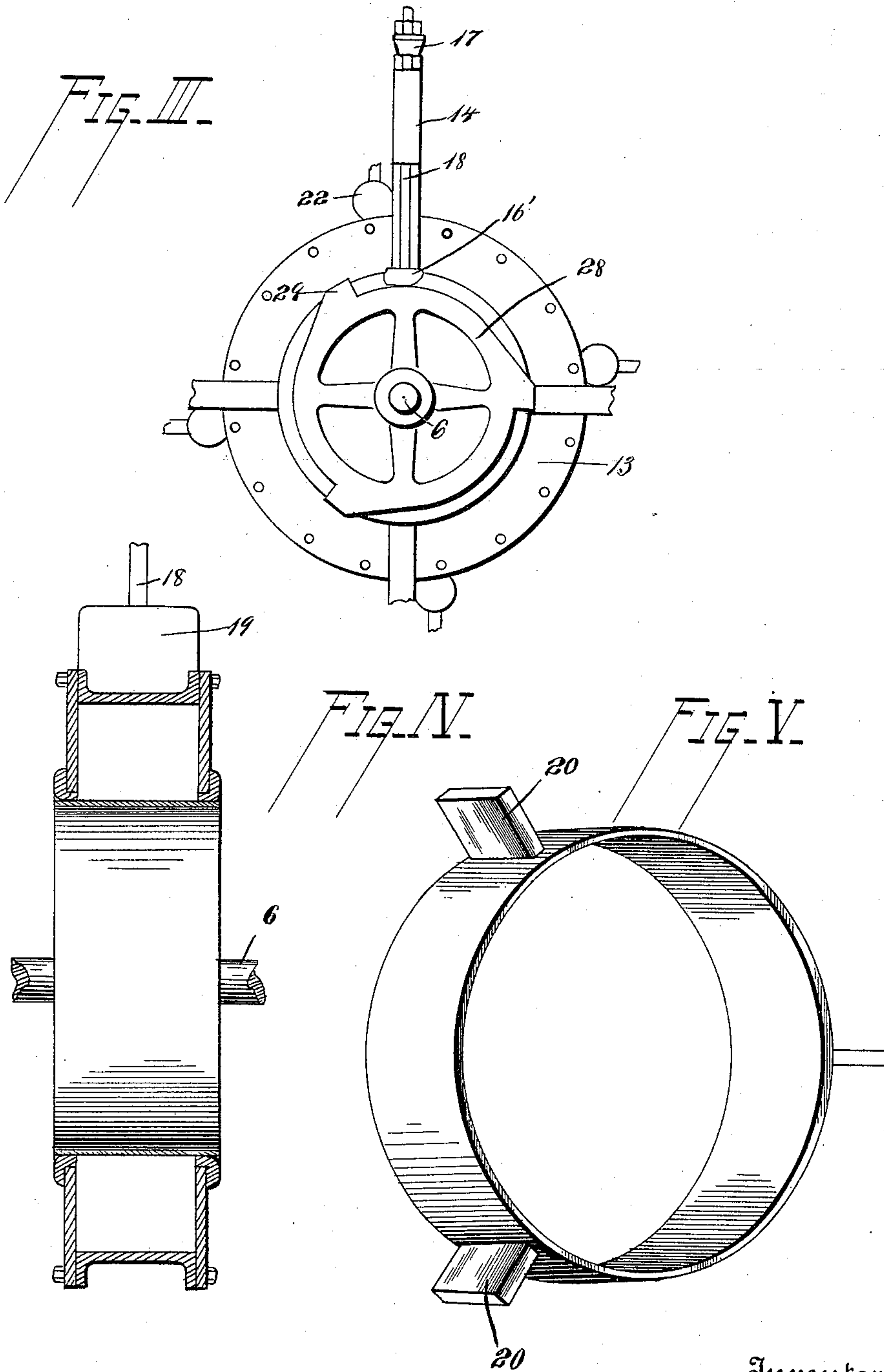
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G. Chas. Conner.  
Victor J. Evans

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Finlay W. Ross.  
by John Wedderburn. Attorney



# UNITED STATES PATENT OFFICE.

FINLAY W. ROSS, OF BRITILE, CANADA.

## ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 610,498, dated September 6, 1898.

Application filed August 26, 1897. Serial No. 649,598. (No model.)

*To all whom it may concern:*

Be it known that I, FINLAY W. ROSS, of Britile, in the Province of Manitoba and Dominion of Canada, 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 engines of that class known as "rotary" engines, and has for its object to provide an engine in which the economical use of steam will be facilitated.

Other objects and advantages of my invention will become apparent in the course of the following description, and the points of novelty will be particularly pointed out in the claim.

I am enabled to accomplish the objects of my invention by the means illustrated in the accompanying drawings, in which—

Figure 1 represents a front elevation of my improved engine, showing a large cylinder and a small one adapted to exhaust therein, thus compounding the engine. Fig. 2 represents a central vertical section of one of the cylinders. Fig. 3 is a side elevation of one cylinder, showing the mechanism for raising the pressure-gates. Fig. 4 is a transverse section of one of the cylinders, and Fig. 5 is a perspective view of the piston.

For convenience I will proceed to describe one of the cylinders and its connections, the cylinders being identical, except in size.

Referring to the drawings, the numeral 1 indicates a suitable base, which is provided with pillar-blocks 2, 3, 4, and 5, which form bearings for the shaft 6, which is provided near one end with a band wheel or pulley 7 and at or near the other end with a fly-wheel 8, both of said wheels being keyed to said shaft.

The numeral 9 indicates a wheel carried on the shaft 6 and keyed thereto and adapted to carry the piston-ring, which is formed with three radially-projecting piston-wings 11, which are adapted to enter the circular steam-space 12 of the cylinder 13. The cylinder is provided at its edge with the circular openings in its body and flanges 13', which are

adapted to fit snugly against the edge of the piston-ring and serve to make a steam-tight joint between said parts.

The numeral 14 indicates a frame which is mounted upon the top of the cylinder and provided with a laterally-extended portion 15, through which passes a rod 16, provided at its lower end with an inclined shoe 16', and at its upper portion is adapted to pass through the end of a short horizontal arm 17. This horizontal arm 17 is provided at its other end with a perforation, through which passes the upper end of a vertical rod 18, which is adapted to enter through an opening in the top of the chamber 19, where it is provided with a gate or slide 19'. The vertical rods 16 and 18 are screw-threaded at their upper ends and provided with adjusting-nuts, between which the short horizontal bar 17 rests and is adapted to be adjusted vertically on said rod. In addition to the gates 19' I provide a series of similar gates 20, which normally rest in the steam-space in the cylinder and are adapted to be lifted therefrom at proper intervals to allow the piston to pass. The movement of these gates is so timed and regulated that they will be forced into the steam-space immediately after the passage of each piston, thereby forming an immovable gate or stop, causing the live steam which is admitted to the cylinder to act upon the piston and rotate the shaft and force the piston to the point of exhaust.

The numeral 22 indicates a series of steam-chests which are provided with openings which communicate with the steam-space, the entrance through said openings to said space being controlled by valves 23 to admit and exhaust the steam.

The numeral 24 indicates a series of exhaust-ports which are arranged in close proximity to the inlet-ports in order that the steam will be permitted to exhaust from the cylinder at a time just before the sliding gates are lifted to allow the pistons to pass. Just after the pistons have passed the gates said gates are forced into the steam-space, and the steam-inlet ports are opened to admit steam between the gates and the pistons.

The numeral 25 indicates an eccentric which is keyed to the shaft 6 and provided with collars 26, which are connected to a series of connecting-rods 27, which are connected at



their outer ends with a series of short later-  
ally-extending crank-arms 28 on the valves 23.  
The eccentric 25 and its connecting-rod are  
so arranged with relation to the piston that  
5 the steam will be admitted through three of  
the inlet-ports simultaneously to operate upon  
all of the piston-wings and shut steam off  
from the other piston. The numeral 28 in-  
10 dicates a wheel which is provided with cam  
projections 29 on its periphery, which are  
adapted to engage the shoe 16' for the pur-  
pose described. The cam projections on the  
wheel 28 are adapted to engage the shoes 16'  
15 on the rods 16 at proper intervals to raise the  
gates and allow the pistons to pass. The  
said gates are kept normally seated in the  
steam-space of the engine by a series of springs  
30, which are attached to the rods at one end  
and bear against the shoulders 31 in their re-  
20 spective frames.

Many modifications involving mechanical  
skill may be made in my invention without  
changing its character or departing from the  
spirit thereof.

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

In a rotary engine, the combination of a  
shaft having a band wheel or pulley at one  
30 end and a fly-wheel near the opposite end, a  
wheel mounted on the said shaft and carry-  
ing a piston-ring formed with three radially-  
projecting piston-wings, a cylinder in which  
said parts are mounted having a circular  
35 steam-space through which the said wings  
have movement, and said cylinder also hav-

ing a series of steam-chests which are pro-  
vided with openings communicating with the  
said steam-space, the said openings being  
controlled by valves to admit and exhaust 40  
the steam, and also located adjacent to a se-  
ries of exhaust-ports, a frame mounted on  
the cylinder having a laterally-extended por-  
tion, a gate or slide movably mounted in con-  
nection with the cylinder, a vertical rod at- 45  
tached thereto and adjustable in the said  
frame, a horizontal rod connected to the said  
vertical rod, a second vertical rod movably  
mounted in the laterally-extended portion of  
the frame and having its upper end attached 50  
to the said horizontal rod, a shoe on the lower  
end of the second vertical rod, a wheel on the  
shaft having cam projections engaged by the  
said shoe, an eccentric keyed to the shaft and  
provided with collars attached to a series of 55  
connecting-rods which are in turn secured to  
a series of short laterally-extending crank-  
arms of the valves in the cylinder, springs on  
the vertical rods in the frame and the exten-  
sion thereof, and a similar smaller cylinder 60  
adjacent to the aforesaid cylinder having  
similar mechanism in connection therewith,  
substantially as and for the purposes speci-  
fied.

In testimony whereof I have signed this 65  
specification in the presence of two subscrib-  
ing witnesses.

FINLAY W. ROSS.

Witnesses:

JAMES A. JOHNSTON,

ARCHD. R. TINGLEY.