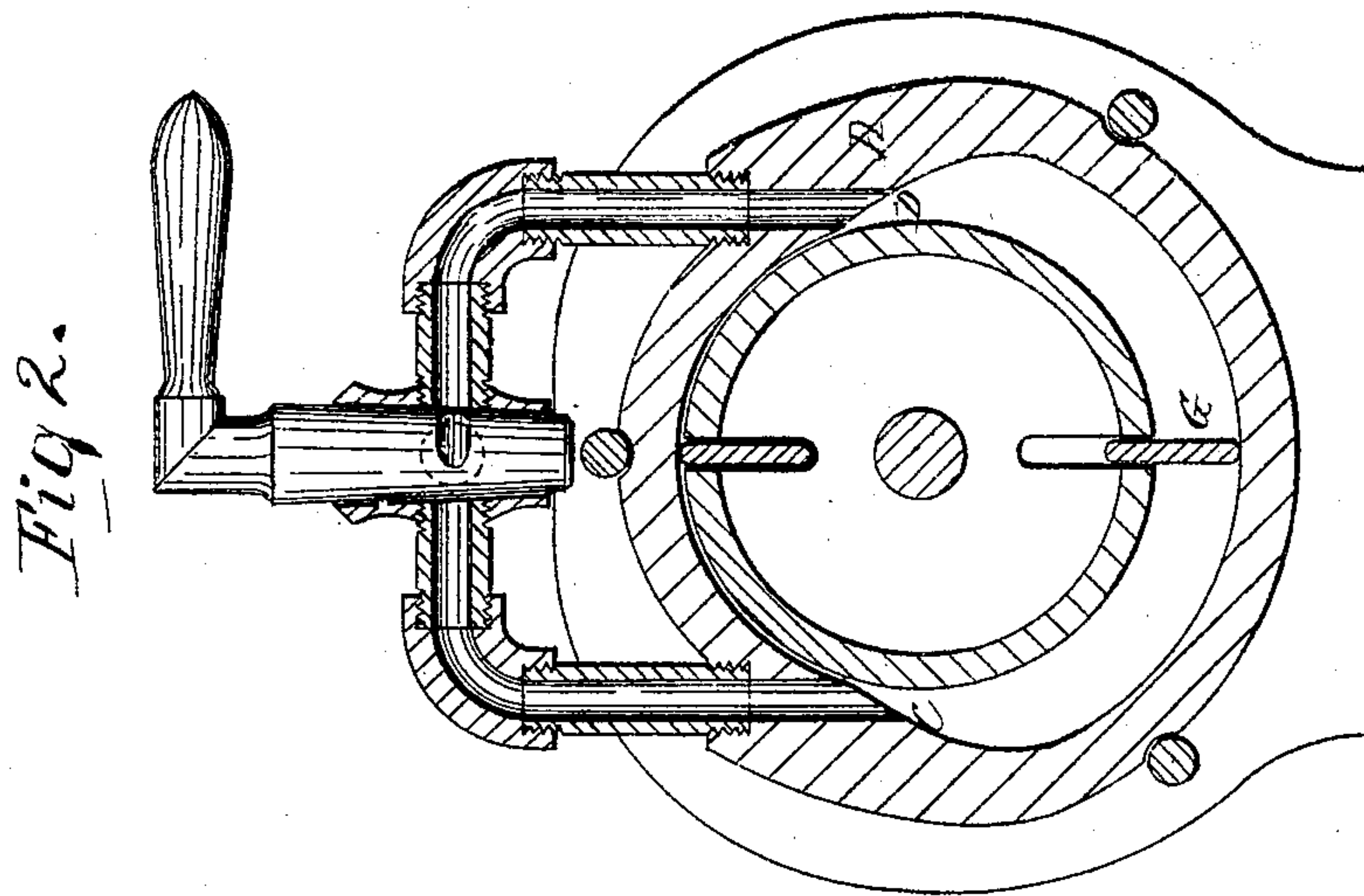
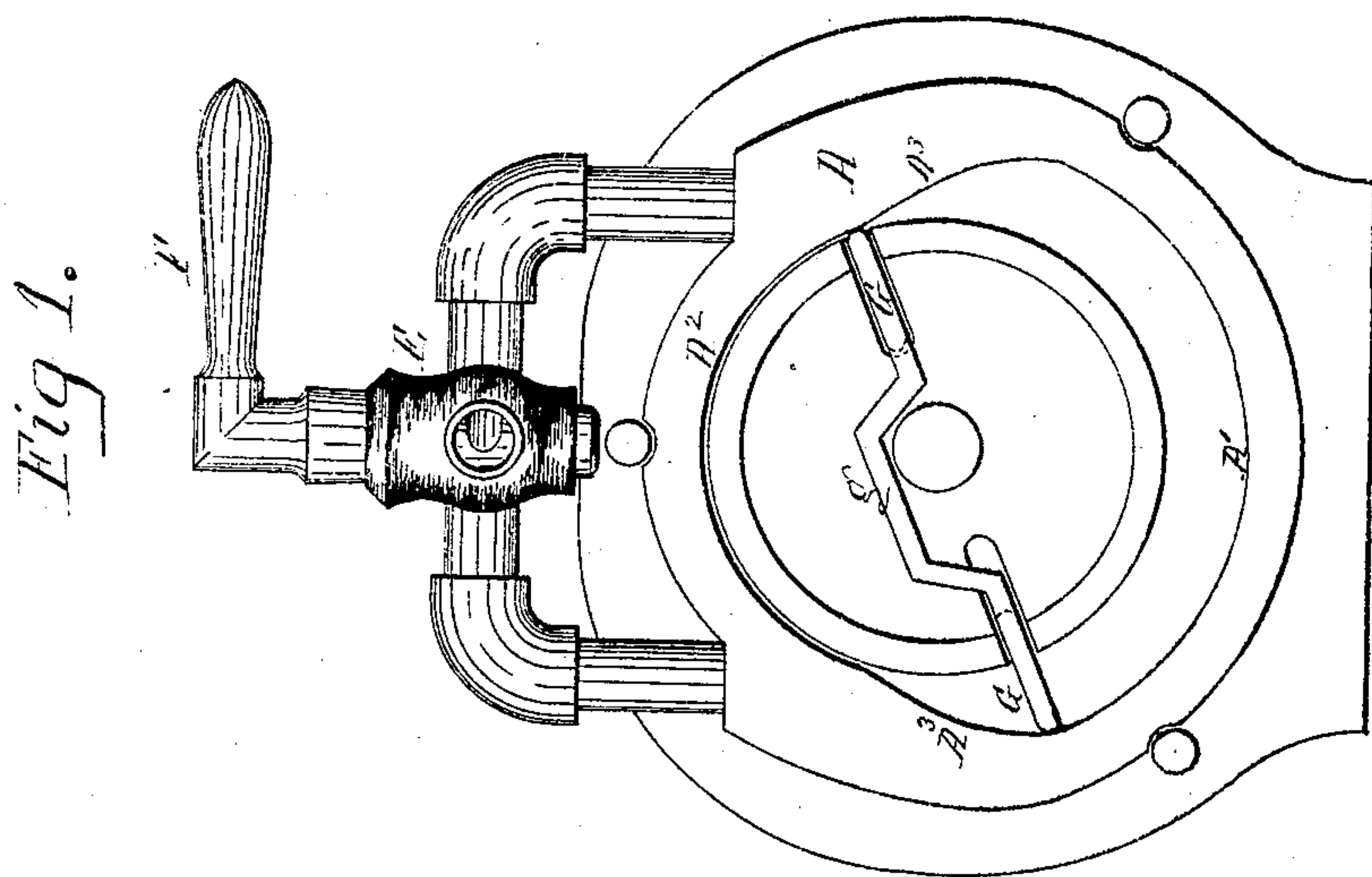


S. BAKER & S. C. McINTIRE.

## Rotary Engines.

No. 144,882.

Patented Nov. 25, 1873.



Witnesses  
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# UNITED STATES PATENT OFFICE.

SAUL BAKER AND SAMUEL C. McINTIRE, OF SPRINGFIELD, OHIO.

## IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. 144,882, dated November 25, 1873; application filed April 12, 1873.

*To all whom it may concern:*

Be it known that we, SAUL BAKER and SAMUEL C. McINTIRE, of Springfield, county of Clark, State of Ohio, have invented a new and useful Improvement in Rotary Engine, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 is a face view of the rotary engine with face-plate removed. Fig. 2 is a transverse vertical section through the engine and pipes.

In the accompanying drawings, A represents the cylinder, the inner face of the rim of which is formed in the arcs of three circles,  $A^1 A^2 A^3$ , the centers of the segments  $A^1 A^2$  being the shaft of the piston-head, the segment  $A^1$  being concentric with, but of larger diameter than, the segment  $A^2$ , which is of the same diameter as, and forms a seat for, the piston-head, as shown. The point at which the segment  $A^2$  intersects the two segments of circles or arcs,  $A^3$ , is at the inside edge of the ports C and D, the segment  $A^3$  stopping at these points on each side, but both being arcs of a common circle. The point of intersection of the segment  $A^3$  with the segment  $A^1$  are so arranged, relatively, that when the piston-head is at the inner edge of the ports C or D, the opposite or projecting end is at the point of connection of the two segments  $A^1 A^3$  diametrically opposite. C and D are the induction and eduction pipes, connected with the induction and eduction ports formed in the cylinder A. These pipes extend up a short distance, and connect with a "two-way" cock, E, which allows the engine to be reversed, by giving the handle F a quarter-turn. G are the pistons, connected together by a steel-spring bow, as shown at g, which curves around the shaft, and by means of which the pistons are held out in proper relation to, or contact with, the several arcs, enabling us to dispense with the packing usually employed.

In constructing large engines or pumps, we make the rim A of two parts, so that we can turn the circles out on any lathe, and then bolt them together by means of lugs or ears on the rim; but, in small engines or pumps,

we make it in one piece and turn the circles out as near as possible, and then true them up with a milling-tool.

By our construction it will be seen that the wear upon the pistons is greatly reduced, as they stand still more than two-thirds of the distance around the cylinder, the piston-head alone moving, the pistons moving only in or out when they reach the segments or arcs of segment  $A^3$ , which is when they are receiving or discharging, or, in other words, when approaching and passing the exhaust-port, or in passing over and slightly beyond the steam-port.

It will also be seen that nothing is allowed to pass the exhaust-pipe, in whichever way the engine is run, the seat of the piston-head extending the entire distance between the ports, and all danger of gravel collecting at the ports, when used as a pump, is consequently obviated.

It will further be seen that, after the piston has passed the steam-port and reached the point of intersection of the arcs  $A A^3$ , where it becomes stationary, relatively to the piston-head, the pressure or force of the steam acting thereon will be equal and continuous until it reaches the opposite extremity of the arc  $A^1$ , and commences its movement past the exhaust-port, thereby giving the regular and even movement, which has long been a desideratum in this class of engines.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

The combination of the pistons G G, connected together by the bow g with the cylinder A, and operating in connection with the inner face of the cylinder, formed as described, whereby said pistons are allowed to remain stationary, relatively to the piston-head, during the greater part of their revolution, and the power of the steam acting thereon is equalized, as set forth.

In testimony whereof we have hereunto set our hands this 29th day of March, A. D. 1873.

S. BAKER.

S. C. McINTIRE.

Witnesses:

A. P. LINN COCHRAN,

D. S. RUNYAN.