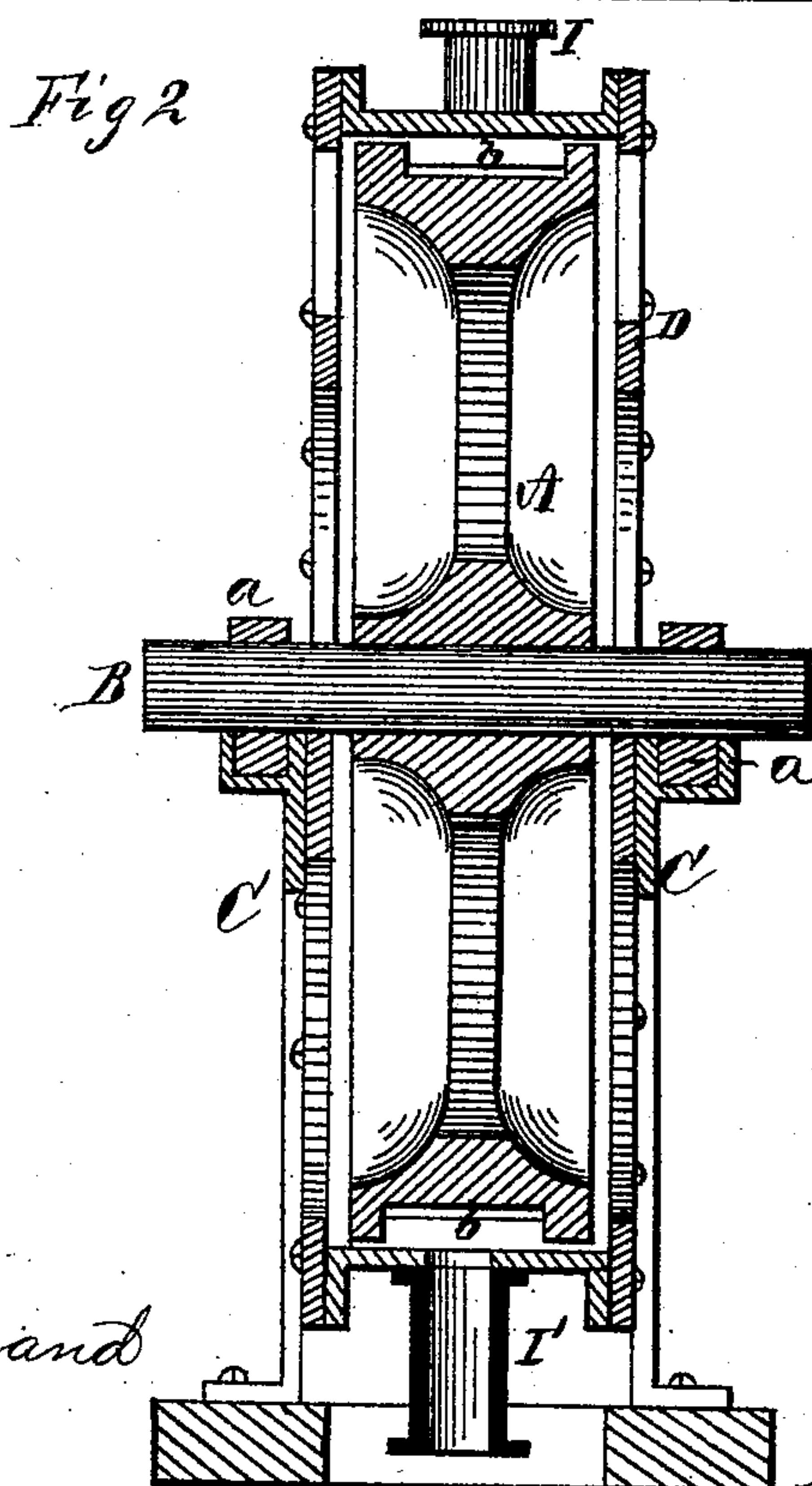
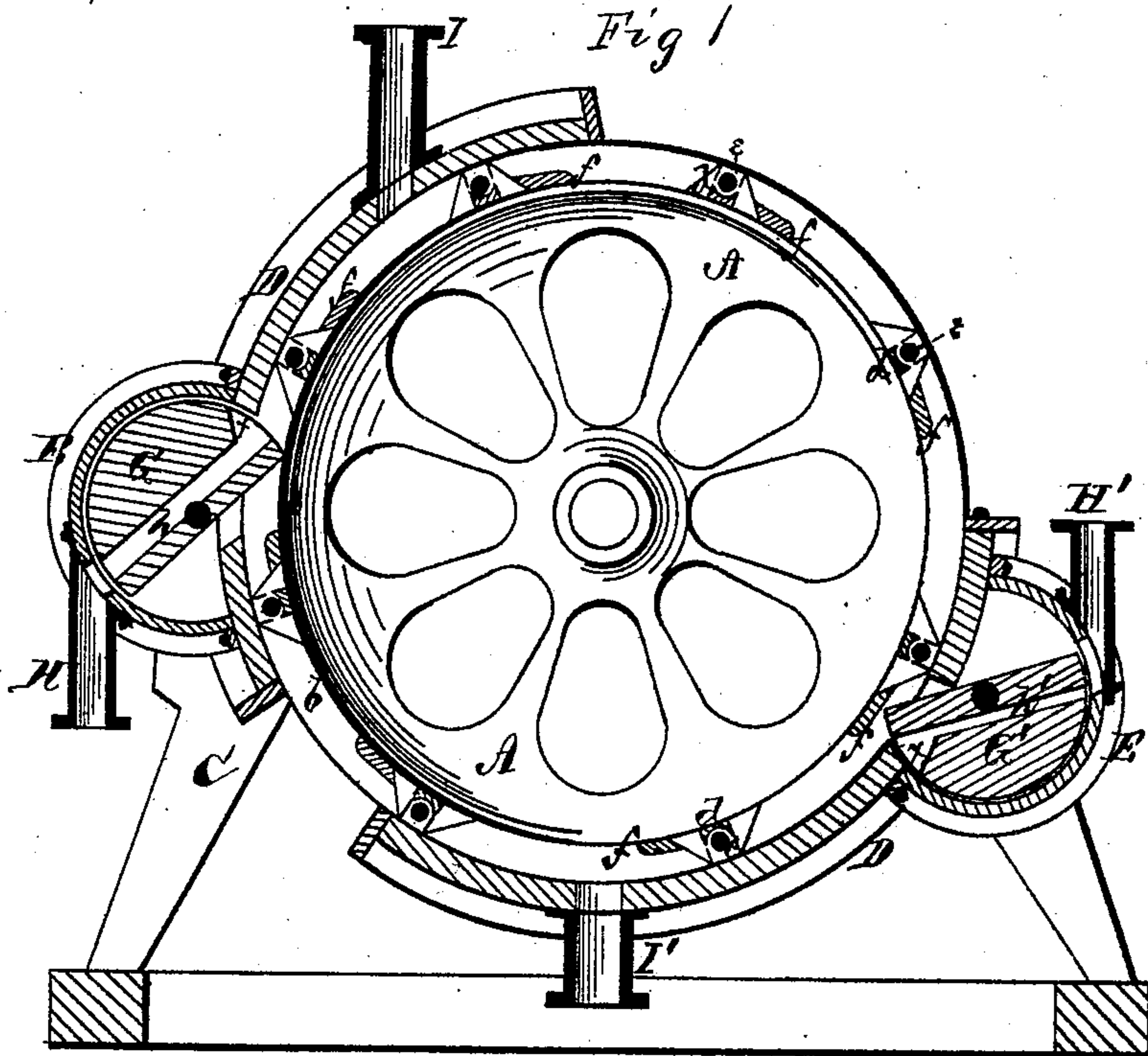


W. P. EAYRS.  
Rotary-Engines.

No. 141,128.

Patented July 22, 1873.



Witnesses:  
Frank L. Curand  
C. L. Everts

Inventor.  
Winlow P. Eayrs  
Per  
Alexander Mather  
Attorneys.



# UNITED STATES PATENT OFFICE.

WINSLOW P. EAYRS, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF HIS RIGHT TO TIMOTHY E. STUART, OF SAME PLACE.

## IMPROVEMENT IN ROTARY ENGINES:

Specification forming part of Letters Patent No. **141,128**, dated July 22, 1873; application filed May 14, 1873.

*To all whom it may concern:*

Be it known that I, WINSLOW P. EAYRS, of Boston, in the county of Suffolk and in the State of Massachusetts, have invented certain new and useful Improvements in Rotary Engine; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a rotary engine, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a longitudinal vertical section, and Fig. 2 a transverse vertical section, of my engine.

A represents a wheel of any suitable dimensions, secured on a shaft, B, resting in bearings *a a* in a skeleton frame, C. These bearings *a a* I propose to make of ground or pulverized flint and clay, molded and baked. This composition is capable of being highly polished, has great tenacity, and is almost impossible, on account of its hardness, to wear. The wheel A is provided with a circumferential steam channel or passage, *b*, in which, at suitable regular intervals, are abutments *d d*, in each of which is a roller, *e*, extending across the channel *b*, and forced outward by steam to form packing, the steam passing into the abutments under the rollers through suitable steam-passages. At opposite points on the wheel A are arranged segmental casings D D, each having a valve-box, E, within which is hung a valve, G, these valves and boxes being constructed in the same manner as described in a former patent granted to me March 18, 1873. For better convenience in describing the operation of the engine, I have marked one valve-box E and the other E', and the cor-

responding valves G and G'. H H' are the steam-inlets into the valve-boxes; *h* and *h'*, the steam-passages in the valves, and I I' the exhaust or outlet ports. In front of each abutment *d*, in the steam-channel *b*, on the wheel, is secured a cleat, *f*, which is the thickness of the passage in the valve.

The steam passes in through the inlet H and through the port *h* in the valve G, thence into the steam-channel *b*, striking against the abutment *d* directly opposite, forcing the wheel A around to the exhaust I, and passes out. At the same time steam passes through the inlet H' into the valve-port *h'*. When the valve G' is on the cleat *f*, as shown in Fig. 1, the steam is shut off at the mouth of the port *h'*, and allows the use of the expansion of the steam while the wheel turns to bring the valve G' over the next abutment; therefore, the valve G' is working on expansion when the valve G is working on full steam; and vice versa, the steam in the valve-ports *h* and *h'* forming a piston at *x*, to keep the valve in position against the wheel.

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

1. The cleats *f f*, arranged in front of the abutments *d d*, in the steam-channel of the wheel A, and operating on the valves G G', substantially as and for the purposes herein set forth.

2. The combination of the wheel A having steam-channel *b*, abutments *d*, rollers *e*, and cleats *f*, the casings D, valve-boxes E E', valves G G', inlets H H', and outlets I I', all constructed and arranged substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 11th day of April, 1873.

WINSLOW P. EAYRS.

Witnesses:

ALPHEUS M. LEACH,  
GEORGE TESCZY.