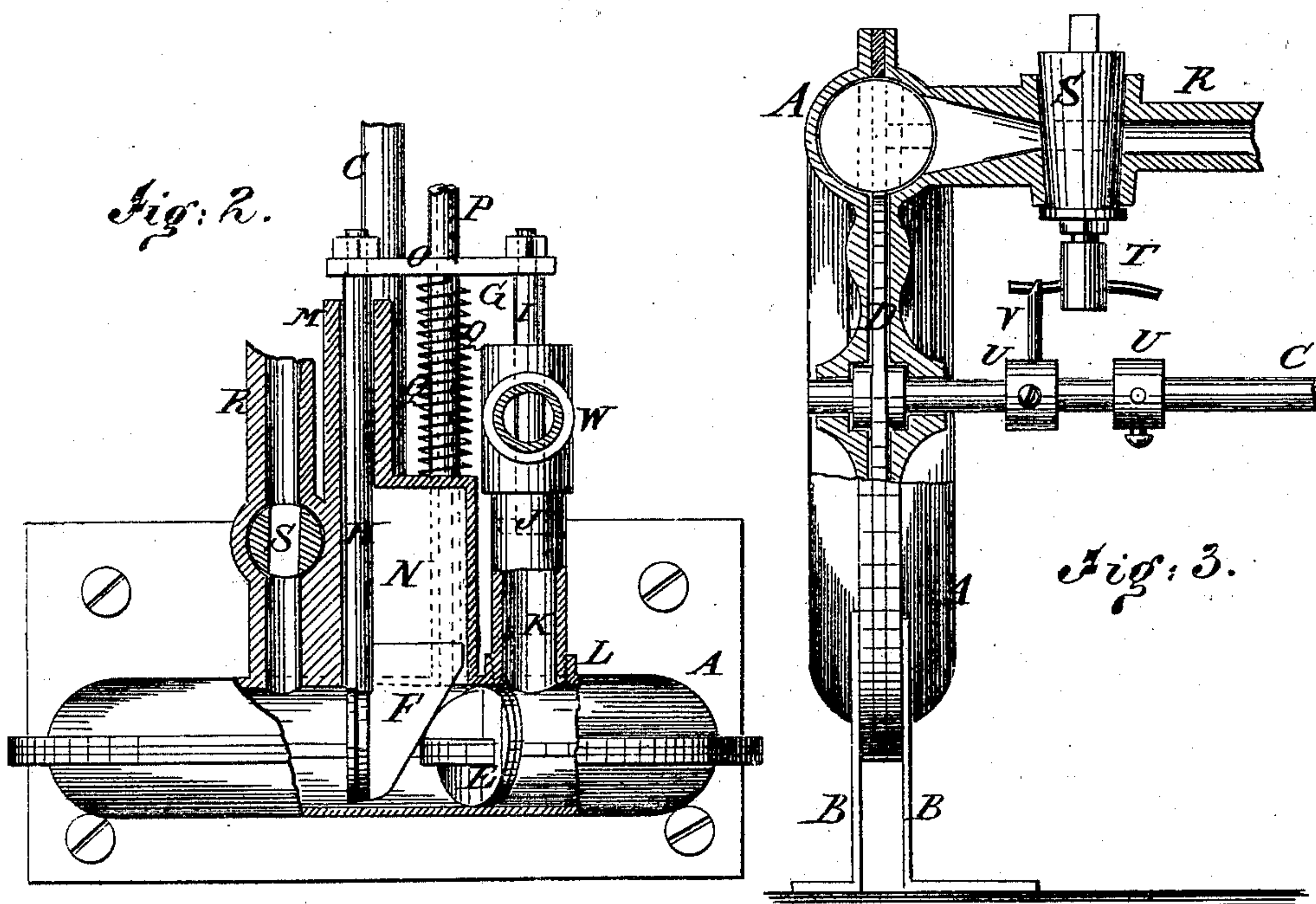
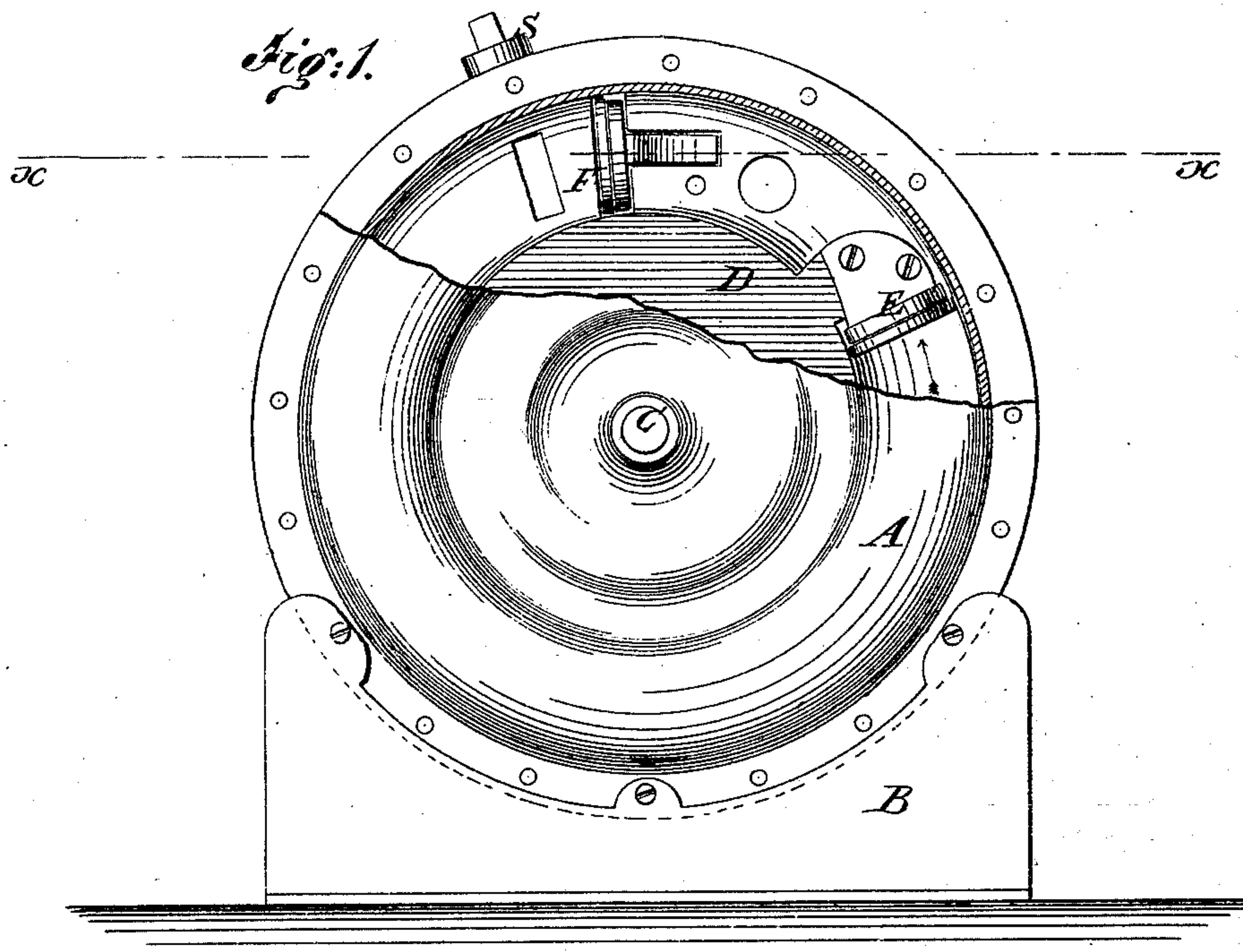


W. HAAB.
Rotary-Steam Engines.

No. 156,082.

Patented Oct. 20, 1874.



WITNESSES:

Chas. Nida.
A. J. Terry

INVENTOR:

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UNITED STATES PATENT OFFICE.

WILLIAM HAAB, OF NEW YORK, N. Y.

IMPROVEMENT IN ROTARY STEAM-ENGINES.

Specification forming part of Letters Patent No. **156,082**, dated October 20, 1874; application filed September 5, 1874.

To all whom it may concern:

Be it known that I, WILLIAM HAAB, of the city, county, and State of New York, have invented a new and useful Improvement in Rotary Steam-Engines, of which the following is a specification:

The invention will first be fully described, and then pointed out in the claim.

In the accompanying drawing, Figure 1 is a side elevation partly in section. Fig. 2 is a sectional top view taken on the line *x x* of Fig. 1. Fig. 3 is a sectional edge view.

Similar letters of reference indicate corresponding parts.

A represents the cylinder which is attached to pedestal plates B. C is the shaft to which is attached the piston-plate D, inclosed between the two parts of the cylinder. E is the piston which revolves in the cylinder attached to the plate D. F is the abutment which is given a horizontal reciprocating motion by the exhaust steam. G is a gate, consisting of the two legs H and I. One of these legs, H, is attached to the abutment F. On the other leg is a piston, J, which works in the small straight cylinder K, which cylinder is connected with the main cylinder A by a collar and screw-thread, as seen at L. The gate is guided by the tube M and cylinder K. The abutment plays back and forth in the inclosed space N. The two legs are connected at their outer ends by the cross-piece O, through which passes the small stationary exhaust-tube P. This tube is connected with the cylinder A, and is for the purpose of exhausting any steam that may remain between the piston

and the abutment after the piston has passed the exhaust-cylinder K. Q is a spiral-spring on this tube, the reaction of which throws the abutment and the piston J back, the former into the cylinder and the latter to the cylinder, at each revolution of the piston E. The steam is admitted through the tube R, in which is a rotating steam-valve, S. T is a pin through the bottom end of this valve. U U are collars on the central shaft C, which are made fast by means of set-screws, as seen in the drawing. Each of these collars has a tappet, V, which, as they revolve with the shaft, alternately strike the pin T, one to open the valve and the other to close it. The exhaust steam will force the piston J back beyond the exhaust aperture W, which gives a free exhaust each revolution of the engine.

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

1. In combination with a rotary steam-engine, the cylinder K, piston J, and aperture W, substantially as and for the purposes described.

2. The supplementary exhaust, consisting of the abutment chamber N and tube P, arranged as shown and described.

3. The combination of abutment F and exhaust J K W, the two connected by gate G, as shown and described, for the purpose specified.

WM. HAAB.

Witnesses:

T. B. MOSHER,
ALEX. F. ROBERTS.