

No. 754,153.

PATENTED MAR. 8, 1904.

C. MACARTHUR & F. SMITH.

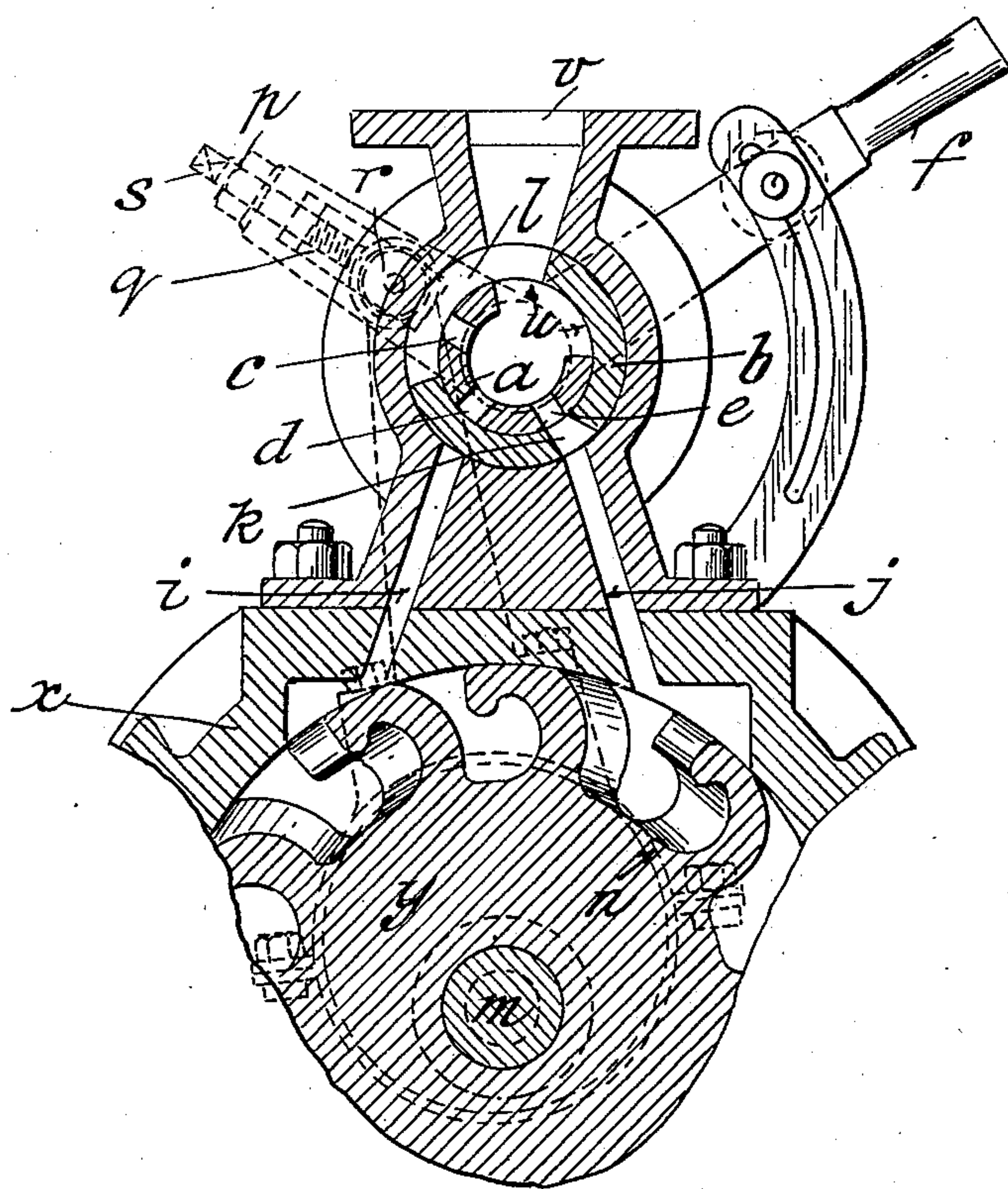
ROTARY ENGINE.

APPLICATION FILED FEB. 12, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses  
C. J. Hadden  
O. Pickering.

Inventors  
Christopher MacArthur  
Frank Smith  
by their Attorney C. J. Hadden

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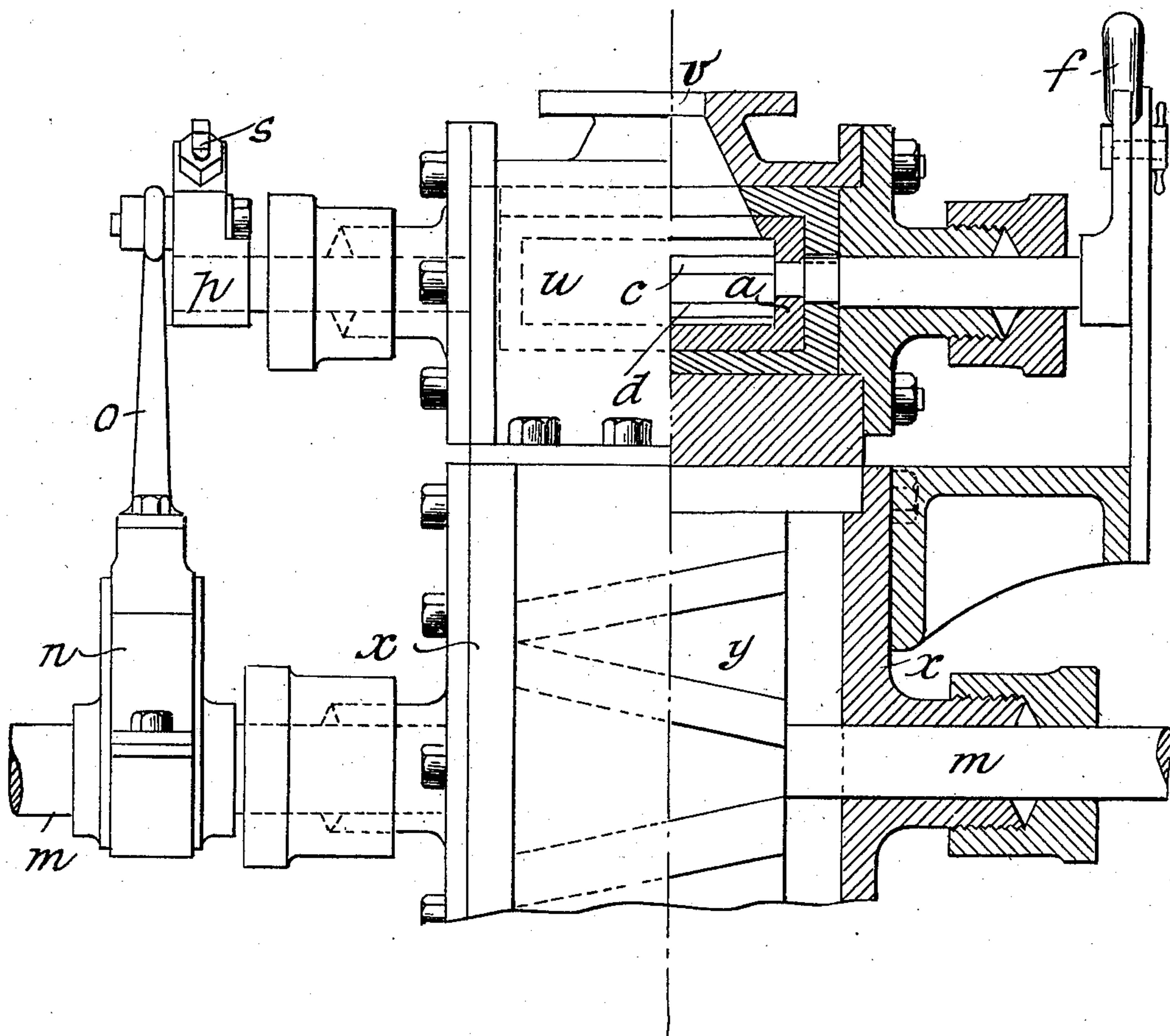
ROTARY ENGINE.

APPLICATION FILED FEB. 12, 1903.

NO MODEL.

2 SHEETS—SHEET 2.

*Fig. 2*



*Witnesses*

*A. J. Hadden*

*O. Pickering.*

*Inventors*

*Christopher MacArthur*  
*Frank Smith*

*by their Attorney A. Hadden*



# UNITED STATES PATENT OFFICE.

CHRISTOPHER MACARTHUR AND FRANK SMITH, OF WOOLSTON, ENGLAND.

## ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 754,153, dated March 8, 1904.

Application filed February 12, 1903. Serial No. 143,140. (No model.)

*To all whom it may concern:*

Be it known that we, CHRISTOPHER MACARTHUR and FRANK SMITH, subjects of the King of England, and residents of Woolston, near Southampton, England, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification.

This invention relates to the admission and reversing valves of high-speed rotary engines, especially adapted for propelling vessels, but also for any other suitable purpose.

In the annexed drawings, Figure 1 is a vertical section of part of such an engine, and Fig. 2 a half end elevation and half cross-section thereof.

The invention relates to a partially-rotary valve *a* for the admission of the motive fluid to the cylinder *x* in conjunction with a partially-rotary sleeve *b*. The valve *a* is provided with an inlet-port *u* of such width that it is always open to the motive-fluid inlet *v* throughout the different positions of the valve. The valve *a* has also three outlet-ports *c d e*, the ports *e* and *c* being equally spaced from the port *d* and corresponding with the space between the entrances of the two passage-ways *i j*, leading to the cylinder *x*, one of these passage-ways *j* being for use with the forward travel of the rotary piston *y* and the other passage-way *i* for use with reverse travel of said piston *y*.

The sleeve *b* has an inlet-port *l* of such width that it is always open to the motive-fluid inlet in the different positions given to the sleeve *b*. The sleeve *b* has also a port *k* so placed that it may be made to coincide with either passage *i* or *j*, according as the sleeve *b* is moved by means of the handle *f* to the one or other end position thereof.

The port *k* is so shaped that it may be used for throttling the motive fluid more or less as required.

If the sleeve *b* is placed as in the drawings, Fig. 1, the admission of fluid to the cylinder *x* takes place by passage *j* alternately by the valve-ports *d e* when the valve *a* is rocked by its lever *p*, rod *o* and eccentric-strap *n* working on an eccentric on the main shaft *m*. By moving the sleeve *b* to the other end position admission to the cylinder *x* takes place by passage *i* alternately through the valve-ports *c d*.

Means of adjustment between the link *p* and rod *o* may be provided for the purpose of varying the cut-off according to requirements—for instance, by pivoting said rod in a block *r*, sliding in a slot *q* in the link and provided with a screw *s*, adapted to act on said block.

We declare that what we claim is—

In a rotary engine the combination of a cylinder *x* and valve-casing having alternative admission-passages *i j* leading from said valve-chamber to cylinder for forward and reverse travel respectively, a reciprocating valve having ports *c d e*, said ports *c e* being spaced at equal distance from said port *d*, said distance corresponding to that between passages *i j* and a reciprocating reversing-valve *b* having a port *k* and means for adjusting the valve *b* so that said port coöperates alternatively with passage *i* or *j* for the purpose set forth.

In witness whereof we have signed this specification in the presence of two witnesses.

CHRISTOPHER MACARTHUR.  
FRANK SMITH.

Witnesses:

RICHD. JONES,  
WALTER MOULAND.