

(No Model.)

2 Sheets—Sheet 1.

C. M. SANDERSON.

ROTARY ENGINE.

No. 273,162.

Patented Feb. 27, 1883.

Fig. 1.

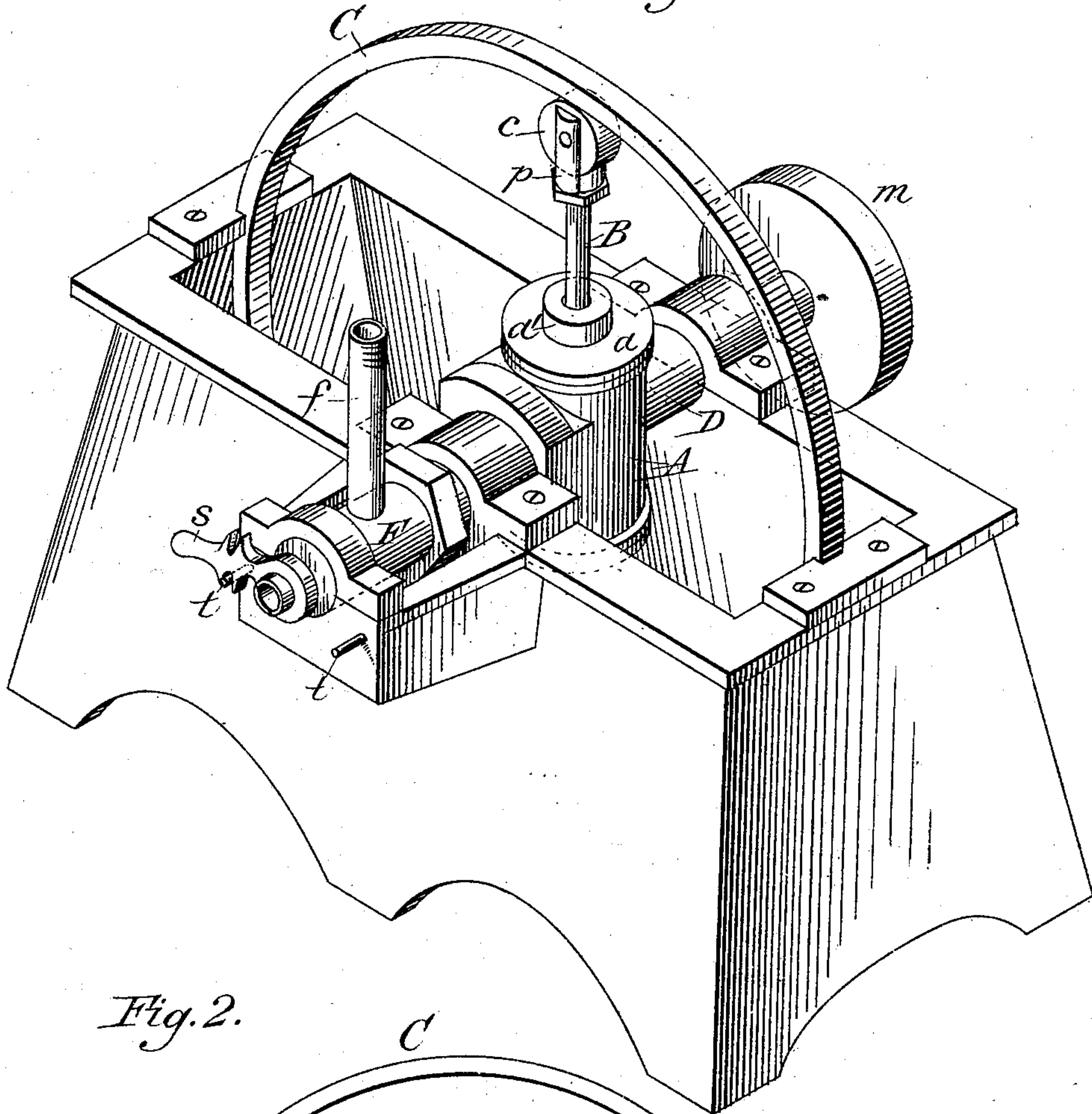
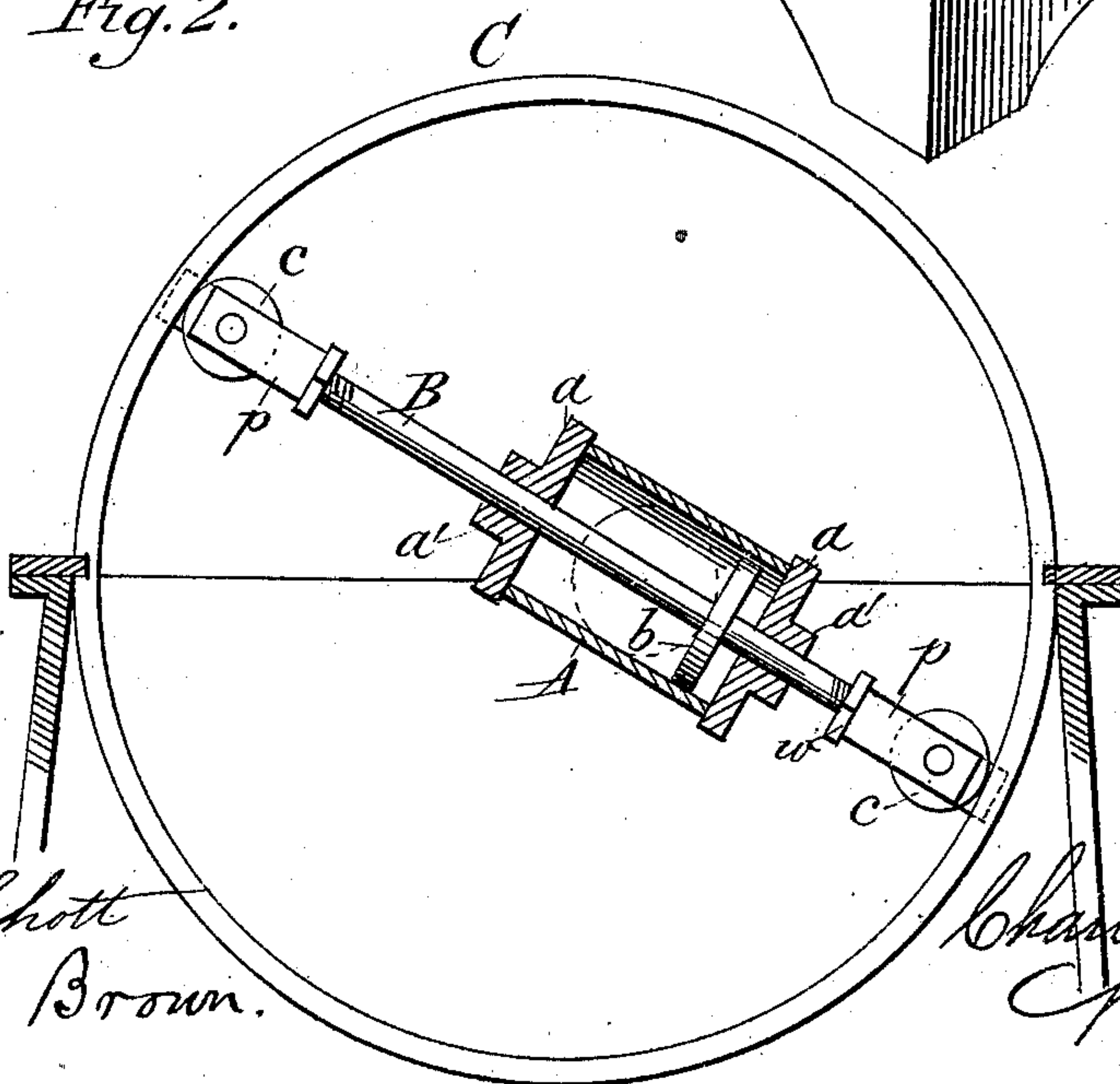


Fig. 2.



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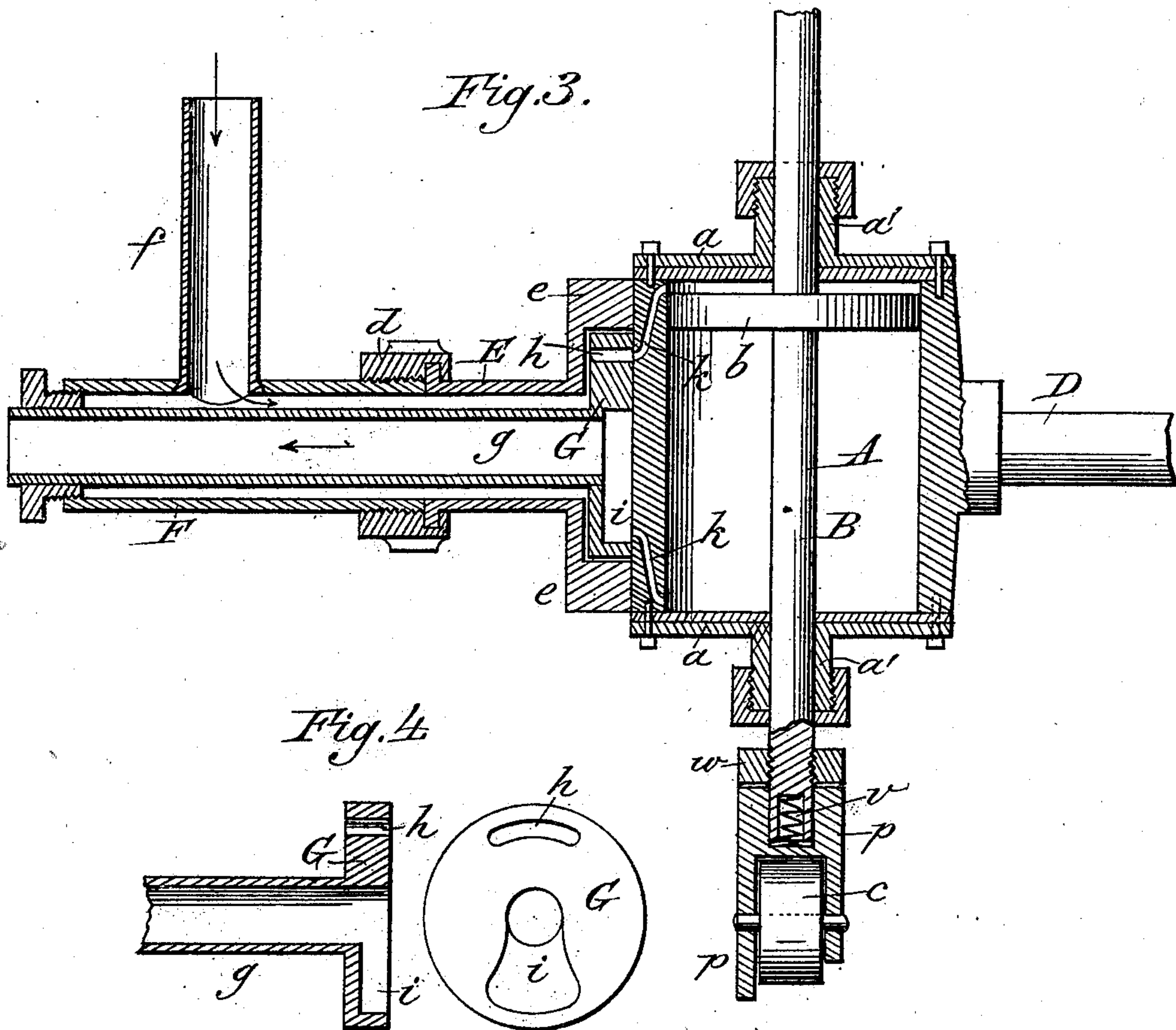
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UNITED STATES PATENT OFFICE.

CHARLES M. SANDERSON, OF WINCHENDON, MASSACHUSETTS, ASSIGNOR
OF ONE-HALF TO GEORGE N. GOODSPEED, OF SAME PLACE.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 273,162, dated February 27, 1883.

Application filed November 28, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. SANDERSON, a citizen of the United States, residing at Winchendon, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Rotary Engines; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to a rotary engine in which the motive power may be supplied by the use of steam, compressed air, or other expansible fluid; and it consists in the construction and arrangement of parts, as hereinafter more fully described and claimed.

In the annexed drawings, illustrating the invention, Figure 1 is a perspective view of my improved rotary piston-engine. Fig. 2 is a sectional side elevation of the same. Fig. 3 is an enlarged sectional detail. Fig. 4 represents an end view and a longitudinal section of valve.

Like letters are used to designate the same parts in the several views.

A represents a rotary cylinder, having suitable heads, *a a*, provided with stuffing-boxes *a' a'*, through which passes a piston-rod, B, carrying a piston-head, *b*. At each end of the piston-rod B is a roller, *c*, that runs on a camway or track, C, as shown in Figs. 1 and 2. The cylinder A is provided on one side with a solid journal or shaft, D, and on the other side it has a tubular journal, E, having a recessed enlargement, *e*, that is firmly secured to said cylinder, the tubular journal E and solid journal D being supported in suitable bearings in any convenient or well-known manner. The tubular journal or pipe E is connected by a coupling, *d*, to the steam chest or cylinder F, which has an inlet, *f*, for steam or compressed air. Within the recessed enlargement *e* of the pipe E is a rotary valve, G, having a hollow valve-stem or pipe, *g*, that passes longitudinally through the pipe E and chest F, and serves as an exhaust-exit. The valve G is cir-

cular in form, and is provided with ports *h i*, as shown in Figs. 3 and 4, said ports being arranged to register with ports *k k*, that are formed in the side of the rotary cylinder, as shown in Fig. 3. It will be seen that when the valve G is in such position that its inlet-port *h* registers with one of the ports *k*, steam or compressed air from the chest F will be admitted to the cylinder A at the back of the piston-head, so as to force the same forward, causing the rollers *c c* at the ends of the piston-rod to travel along the camway C, thus rotating the cylinder A and shaft D. When the cylinder A is rotated sufficiently to cause one of its ports *k* to register with the exhaust-port *i*, the other port *k* will register with the inlet-port *h*, thus admitting steam to one side of the piston-head while it is exhausted from the other side. The piston-head is thus made to move back and forth, while the rollers *c c* on the ends of the piston-rod travel along the camway C, which is placed eccentric to the cylinder-journals D E, thereby rotating said cylinder. The power thus exerted by the rotation of the cylinder may be taken from a pulley, *m*, on the shaft D, or may be applied or transmitted in any convenient manner. The rollers *c c* are journaled in bearings *p p*, that are carried loosely on the ends of the piston-rod, as shown in Fig. 3. A spiral spring, *v*, is placed in an opening drilled in each end of the piston-rod, and presses against the bearing *p*, so as to take up lost motion if there should be any. At the inner end of the bearing *p* is a nut, *w*, that has a screw-threaded connection with the piston-rod, so as to be adjustable thereon to limit the inward movement of the roller-bearing. At the end of the valve-stem or exhaust-pipe *g* is a notched lever, *s*, that may be turned to either side, so as to rotate the valve G and reverse the engine, the lever being locked by the engagement of its notches with a pin, *t*, that limits its movement. It will be observed that the rotary cylinder A and the camway or track C are placed eccentric to each other, so that as the piston-head is moved back and forth the rollers on the ends of the piston-rod always have a bearing on said track or camway. The bearings *p p*, in which these rollers are journaled, may be elongated on

either or both sides of the track, as shown in Figs. 2 and 3, to form guides by which the rollers are held from lateral displacement.

The engine is supported by means of any suitable frame, and will operate in a vertical, horizontal, or inclined position, so that it may be readily applied as a motive power for various purposes.

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

1. In a rotary engine, the combination of the cam-track C, piston-rod B, carrying a piston-head, *b*, and having rollers *c c* at each end, the rotary cylinder A, having ports *k k*, and the rotary valve G, having ports *h i* and hollow valve-stem *g*, substantially as shown and described.

2. In a rotary engine, the combination of the cylinder A, cam-track C, piston-rod B, passing

through said cylinder, and having springs *v* and adjustable bearings *p p* at each end, and the rollers *c c*, journaled in said bearings, substantially as shown and described.

3. In a rotary engine, the combination of the cam-track C, the rotary cylinder A, having ports *k k*, journal D, and hollow journal or pipe E, provided with recessed enlargement *e*, the piston-rod B, carrying piston-head *b* and rollers *c c*, the chest or cylinder F, and the rotary valve G, having ports *h i* and hollow valve-stem *g*, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES M. SANDERSON.

Witnesses:

A. I. GOODSPEED,

H. P. GOODSPEED.