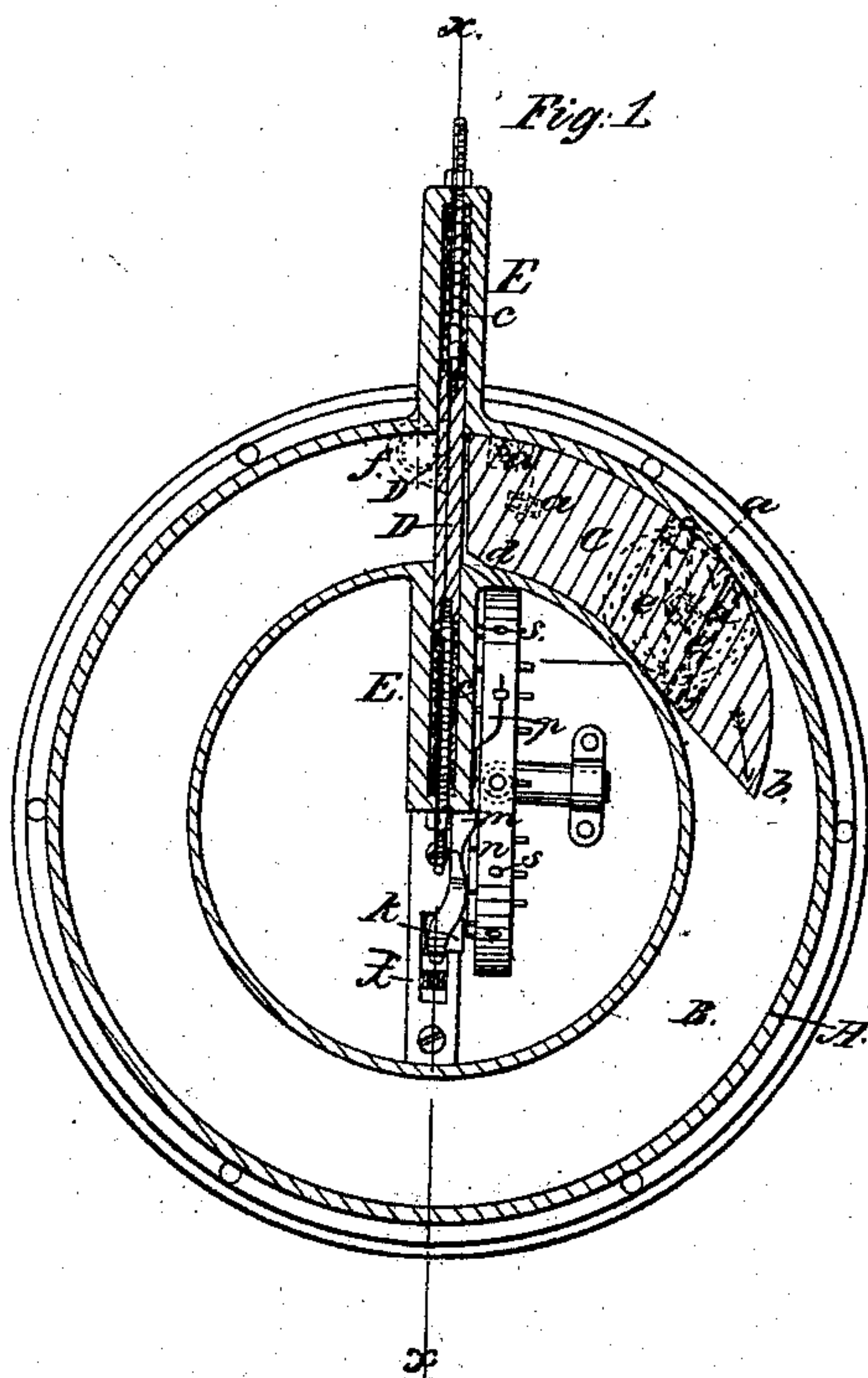
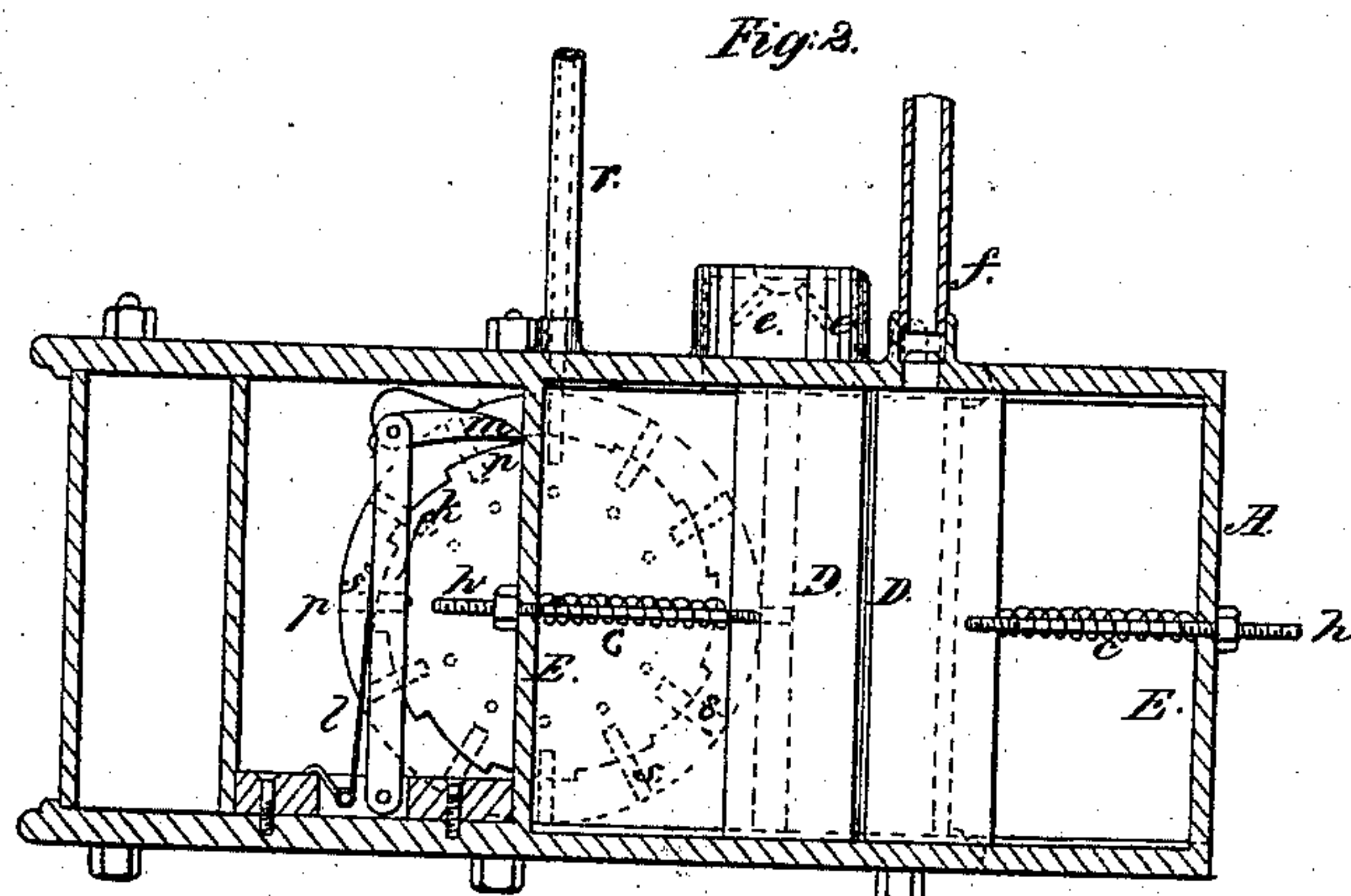


B. T. BABBITT.  
AIR CONDENSING ENGINE.

No. 79,939.

Patented July 14, 1868.



Witnesses:

*McCombs  
A. McClary*

Inventor:

*B. T. Babbitt*

# United States Patent Office.

B. T. BABBITT, OF NEW YORK, N. Y.

*Letters Patent No. 79,939, dated July 14, 1868.*

## IMPROVEMENT IN GAS-EXPLOSIVE ENGINES FOR CONDENSING AIR.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, B. T. BABBITT, of the city, county, and State of New York, have invented a new and useful Improvement in Motors or Power-Generators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a sectional view of the motor, taken transversely through the axis of its cylinder, and Figure 2, a section of the same, at right angles to fig. 1, through the line  $x x$  in the latter figure.

Similar letters of reference indicate corresponding parts.

My invention consists in a novel method of accumulating or generating power through the compression of a fluid, such as air or gas, by means of a detached or independent piston of considerable weight, and having a rotary motion or travel within a cylinder or case provided with a slide or slides, to allow of the passage of the piston, and forming an abutment for the impelling-power, which gives the starting-impetus or force at intervals to establish and continue the motion of the piston, and which may be a powerful gaseous explosion, steam of a high pressure, or other expansive force, to secure to the piston its necessary momentum.

The invention also consists in a certain construction and combination of a detached or independent piston, having a rotary travel with the slide or sliding abutments to the cylinder or case, whereby the piston is made to operate directly on the abutments to open them, and whereby the latter, in closing, may be caused to regulate the admission of the starting or impelling-power.

Referring to the accompanying drawing, A represents the cylinder or case, constructed to form an annular chamber, B, in or through and around which the piston C is made to travel. This piston is of a loose or detached character from any outside connections, and should be of considerable weight, the same running on and being guided by, it may be, rollers  $a a$ , carried by it. Said piston is of a block or solid form, corresponding preferably, for the greater portion of its length, to the annular chamber B, but sharpened at its forward end,  $b$ , so that the piston as it travels will readily enter between slides or abutments D D, provided in the cylinder A, and, operating as a wedge, open said abutments, to permit of the passage of the piston through them, after which the abutments, that may have a radial action in boxes E E, close by the action of springs  $e e$ , or their equivalents.

If desired to produce a gradual closing of the abutments, the rear end of the piston may also be sharpened or tapered off. Either one or more swinging abutments may, if preferred, be substituted for the radially sliding ones, and, if desired, the annular space B may be divided by more than one abutment, or set of abutments, at different points in its length.

The piston C, however, is here shown as made with a straight back, to prevent loss of the expansive force employed to start or impel it, and, as seen in fig. 2, is represented in the position when its impetus should be imparted to it, say, by a jet of steam of high pressure, or explosion or expansion of gas introduced, for a limited period of action, by a passage,  $d$ , to the back of the piston, and between it and the closed abutments, and which, giving a starting-impetus to the piston, causes it, by the aid of its momentum, to be shot or worked as a projectile round the annular space B, and, as its velocity slackens, but previously to the expenditure of its force, to open the abutments D D, for a repetition of the like action, on the abutments closing again in rear of the piston, which, as it is thus made to rotate, compresses air or gas, received through inlet-valves  $e e$ , from any suitable source before it, and expels the same through an outlet-pipe,  $f$ , provided with a valve opening outwards, to any suitable reservoir or otherwise, for direct use in any required manner, as a motive-power or force.

A passage,  $g$ , may be cut through the piston, near its forward end, to allow of the escape of compressed air from its inner face to its outer one, and from thence through the outlet-pipe  $f$ , on the piston approaching and entering between the abutments.

The abutments D D may be provided with adjusting-rods  $h h$ , the one of which, as its slide or abutment is opened and closed again, may serve to let in the jet of impelling steam or gas through the passage  $d$  by said rod, as the abutment opens, striking and moving backwards a lever,  $k$ , acted upon by a spring,  $l$ , and carrying a pawl,  $m$ , which slips over a tooth of a ratchet-wheel,  $n$ , and, on the abutment closing, urges the wheel forward



a tooth by the action of the spring *l*, and in so doing temporarily opens a valve for the admission of the impelling fluid or gas, or, as shown in the drawing, rotates a cylinder or magazine, *p*, having powder-chambers *s*, supplied by a vessel or tube, *r*, in such manner as to bring the one of said chambers opposite the passage *d*, when the same is fixed by an electric current or otherwise; but as this forms no part of my present invention, and is described in another pending application by me for Letters Patent of the United States, and the details of which may be varied at pleasure, or any suitable impelling-jet let in to give a starting-impetus to the piston, as the abutments are closed over or in rear of it, there is no necessity here to further refer to the same.

By the rotary motion of the piston, in contradistinction to a reciprocating one, the momentum of the piston, operating as a projectile, is made continuous, and its capacity for generating power thereby increased.

What is here claimed, and desired to be secured by Letters Patent, is—

1. A motor or power-generator, operating to compress air or gas by the rotary travel or action, within a cylinder or annular chamber, provided with one or more abutments and suitable inlet and outlet-passages of a loose or detached and independent piston, having imparted to it at intervals power to establish and continue its momentum by any suitable explosive force or expansion of gas or vapor, substantially as specified.

2. The combination of a loose or independent piston operating within a cylinder or annular chamber, substantially as described, with a sliding abutment or abutments in such manner, and said parts or devices being so constructed as that the piston in its rotation is caused to open and operate the abutment or abutments by contact with the same, essentially as and for the purpose or purposes herein set forth.

B. T. BABBITT.

Witnesses:

J. W. COOMBS,

A. LE CLERC.