

(No Model.)

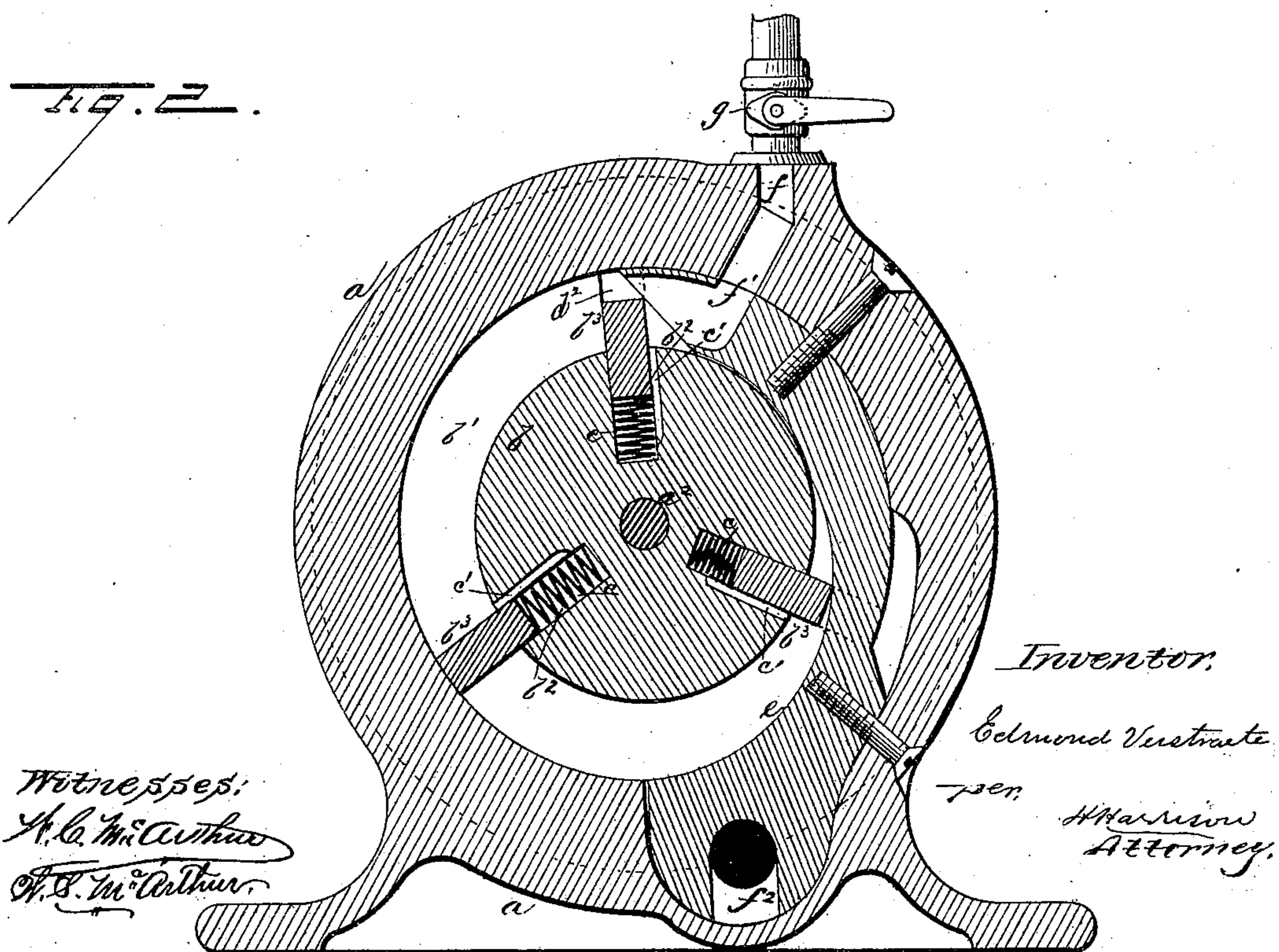
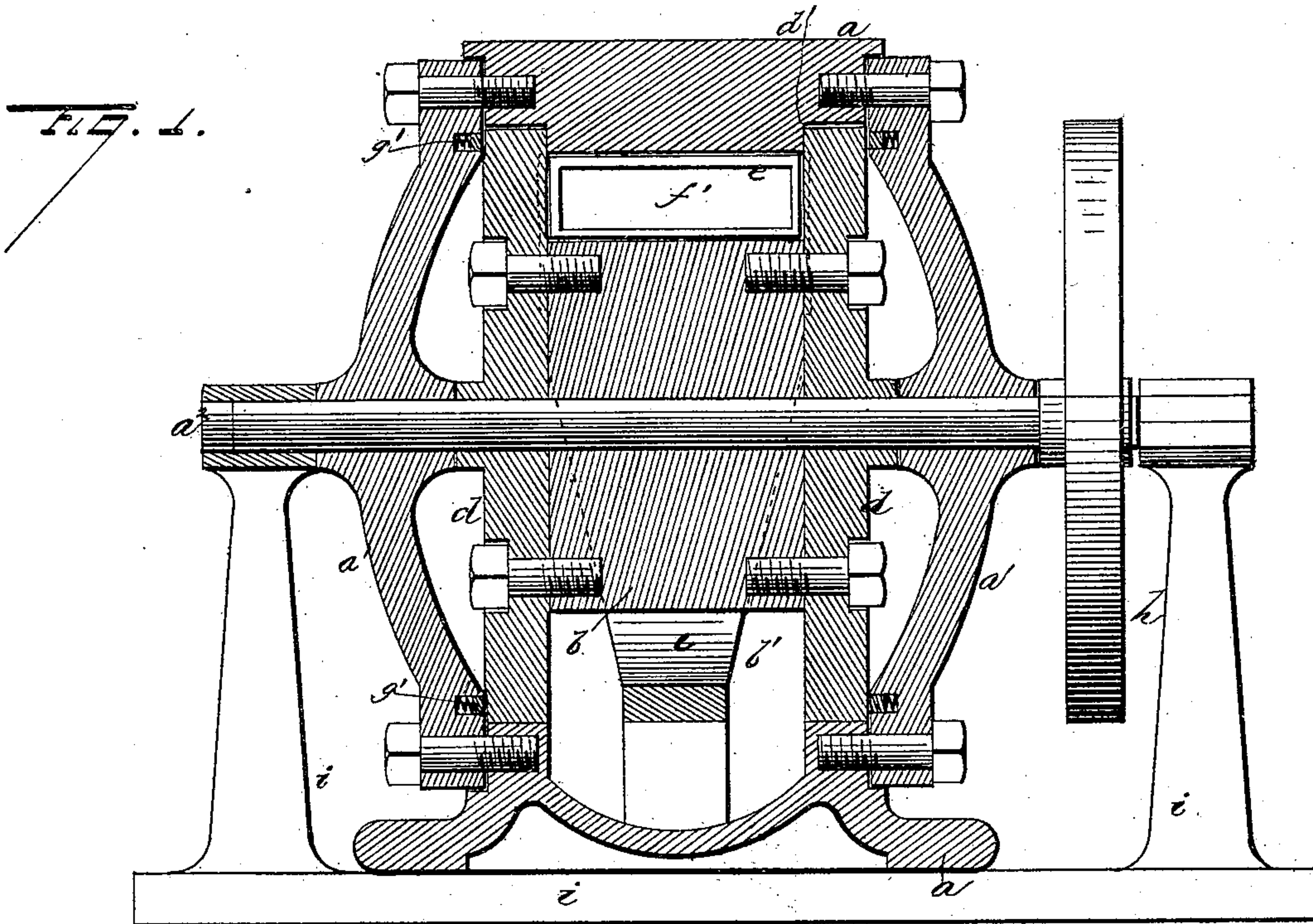
2 Sheets—Sheet 1.

E. VERSTRAETE.

ROTARY ENGINE.

No. 356,384.

Patented Jan. 18, 1887.



(No Model.)

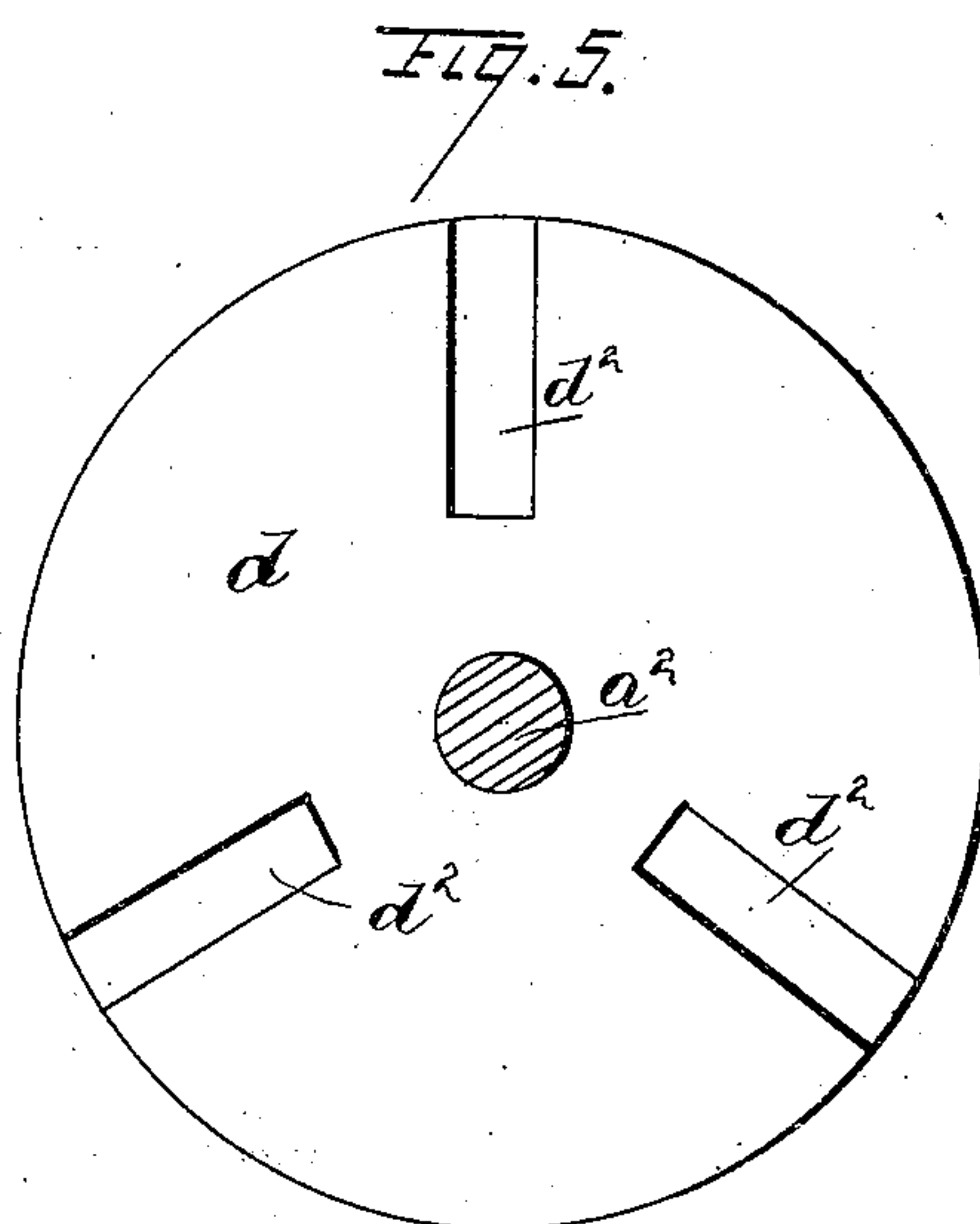
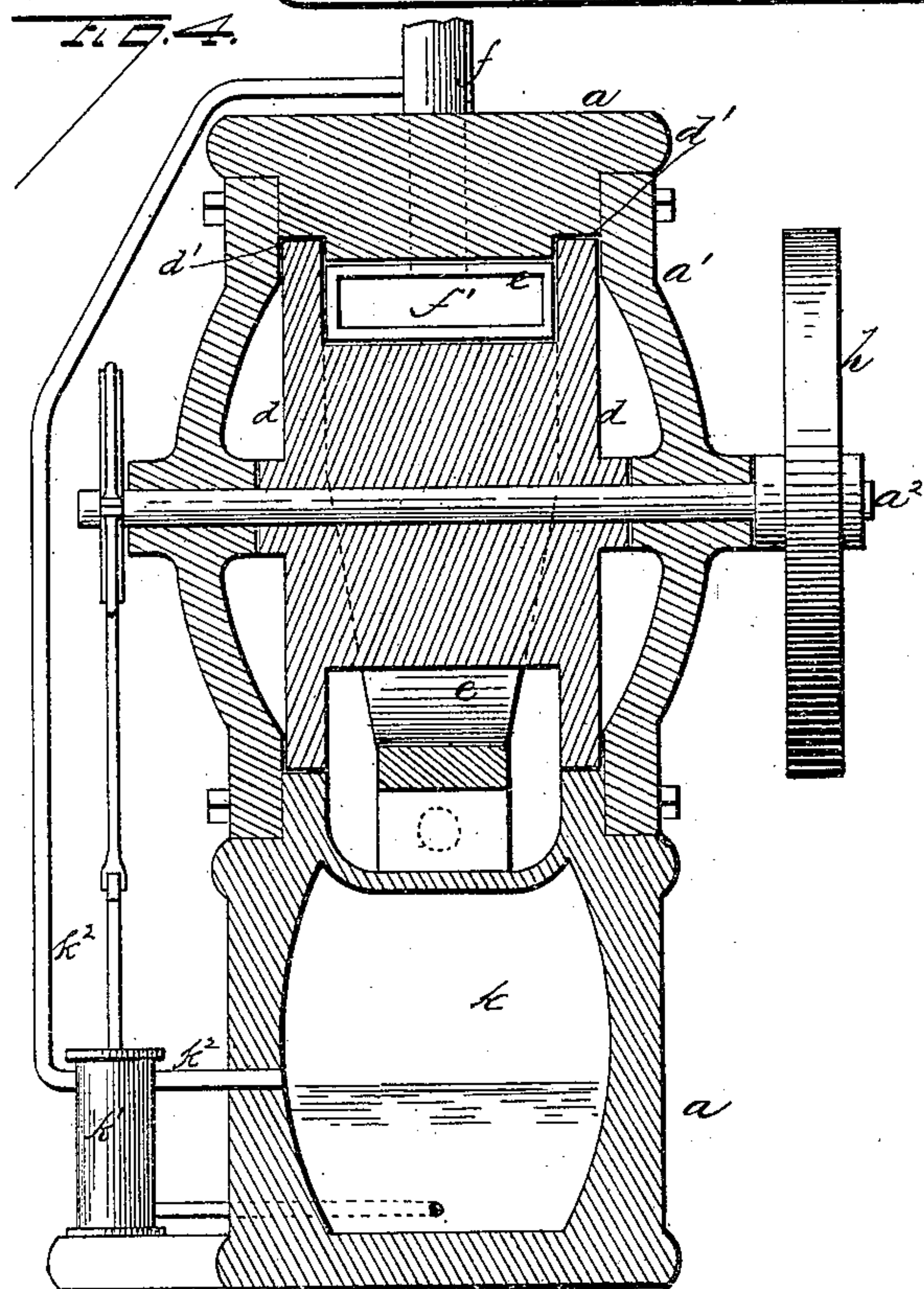
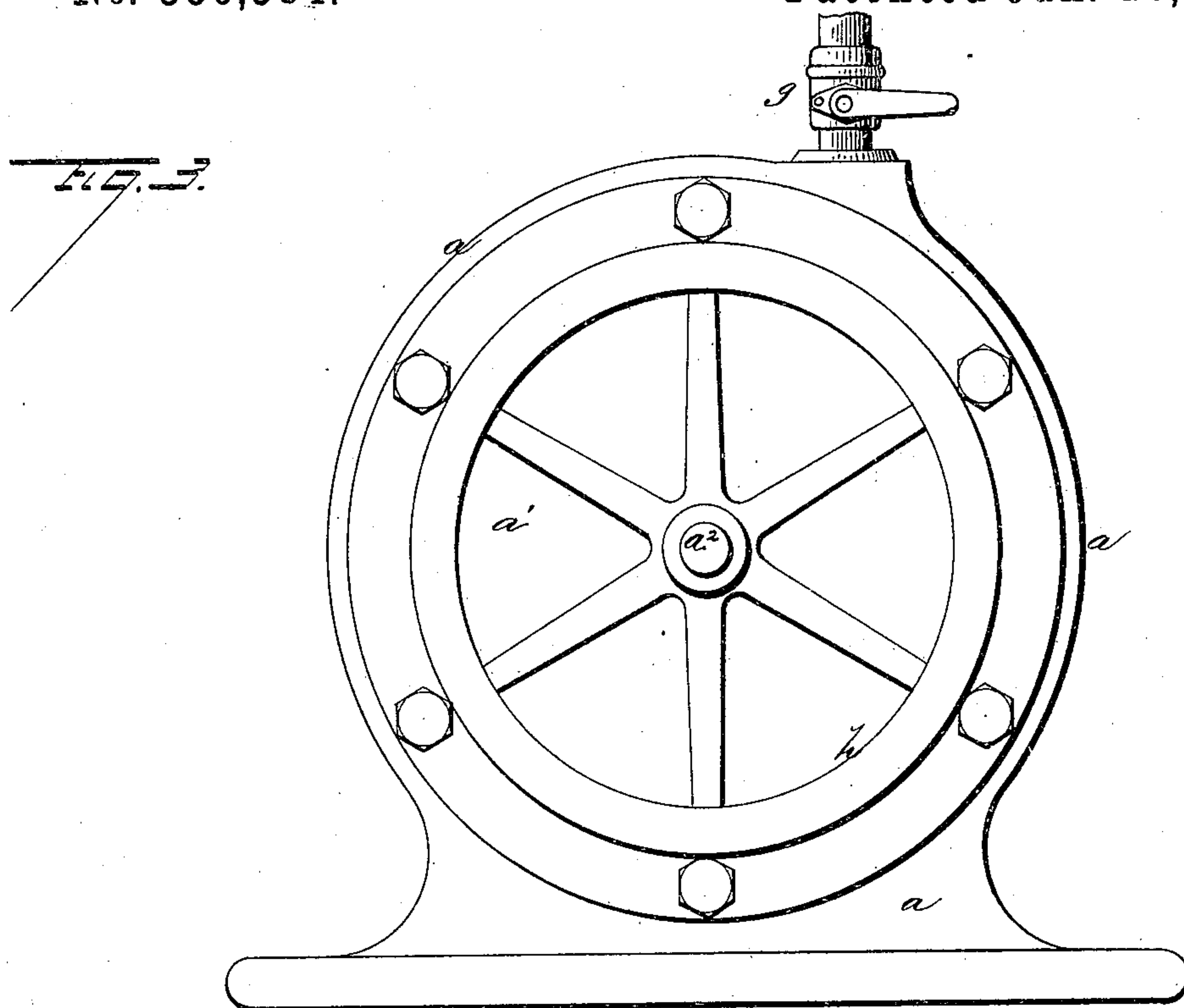
2 Sheets—Sheet 2.

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ROTARY ENGINE.

No. 356,384.

Patented Jan. 18, 1887.



Witnesses:
H. C. M. Arthur
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Inventor
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per
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Attorney.

UNITED STATES PATENT OFFICE.

EDMOND VERSTRAETE, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
JAMES H. ROWE, OF DETROIT, MICHIGAN.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 356,384, dated January 18, 1887.

Application filed April 8, 1886. Serial No. 198,228. (No model.)

To all whom it may concern:

Be it known that I, EDMOND VERSTRAETE, a subject of the King of Belgium, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification, to wit:

This invention relates to rotary engines; and it consists in certain peculiarities of the construction and arrangement of the same, substantially as will be hereinafter more fully set forth and claimed.

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

Figure 1 is a vertical transverse section, Fig. 2 a longitudinal section, and Fig. 3 a side elevation, of my engine arranged for steam, and Fig. 4 is a transverse section of the same arranged for gas or vapor. Fig. 5 is a view of the radially-grooved side plate.

a represents the base and circular ring or cylinder, which is provided on each side with a plate or head, a' , through which runs the main shaft a^2 , as shown. Within the cylinder is placed, upon the shaft, a circular casting, b , between which and the outer ring or frame is the passage b' for the steam. This casting b is formed with a series of radial sockets, b^2 , in which are placed the piston-heads b^3 , of a sufficient size and proper shape to entirely close the steam-passage when they are pressed out by the springs c behind them, and also by the steam, which enters the socket by means of a small steam-lead, c' , as in Fig. 2. The casting b is on each side provided with an annular plate, d , secured thereto, and having its edges lying in annular grooves d' in the cylindrical main frame. These plates are also formed with radial grooves d^2 , in which the edges of the piston-heads are guided and held.

Within the steam-passage b' , at one side, is an inclined or cam piece, e , one part of which is formed to entirely fill the steam-passage, and the other inclined, as in Fig. 2, so that the piston-heads are by it pushed into their sockets. The inlet-passage f through the shell connects with a similar one, f' , in the cam-piece e , and

is delivered through the end of the same to the piston. The exhaust f^2 is preferably taken out below, and it will be observed that the cam or incline e is narrowed up over this exhaust to give plenty of room for the passage of the steam, and the exhaust follows up the side of the shell to the point at which the piston-head is entirely drawn back.

The exhaust is led off in any desired direction, and the steam is admitted by means of a valve in the inlet-pipe, as at g , which is operated from the main shaft by any suitable mechanical arrangement, (not here shown,) as many are well known, and it forms no part of my present invention.

In operation steam is admitted to the passage b' , and at once passes into the socket behind the piston-head and forces it out; then, acting on the side of the piston, drives the casting b and main shaft around till the exhaust is reached, when the piston is gradually forced in by the cam-piece e and the operation repeated. It will be noticed that the side plates of the casting b are of sufficient size to overlap the sides of the main frame, and are grooved to receive the piston-heads. This construction enables me to retain a steam-tight joint and prevent the escape of steam after the engine has become somewhat worn, and no leakage is had, as the side plates or heads, a' , are provided with an annular packing-ring, g' , as shown in the drawings.

The main shaft is upon one end provided with a fly-wheel, h , and the other end of the shaft may be directly connected to the work; but if a belt-wheel is used on this end of the shaft I provide a base, i , on which the whole machine is mounted and provided with bearings i' for the main shaft, as in Fig. 1. This prevents the belt strain on one end of the shaft from causing a twist and unequal wear of the parts of the engine.

This engine is readily used with any liquid or vapor, whether steam, water, or gas. In the latter case I prefer to construct the base of the machine, as in Fig. 4, with a hollow chamber, k , which is to contain gasoline or similar gas-producing liquid. A pump, k' , is connected with the main shaft and with the bottom of the chamber, and supplies air thereto,

which in its passage through the gasoline becomes charged therewith, and is then by a pipe, k^2 , conducted to the inlet-port of the engine, where it is exploded by means well known and not necessary to herein describe.

The construction described is quite simple, and will be readily kept in proper condition and steam-tight.

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

1. In a rotary engine, the combination, with the outer shell and the piston-disk revolving therein and provided with the radially-sliding heads, of the filling-piece between the two, completely filling the steam-space at one end, and having the supply-port formed through it, and the other end inclined or cam-shaped

and formed narrow to permit the exhaust-steam to escape upon each side, substantially as and for the purpose set forth.

2. In a rotary engine, the combination, with the circular shell a , formed with the grooves d' , the inlet-port f , and the outlet-port f^2 , elongated as shown, of the piston-disk b , radially-sliding pistons b^3 , the radially-grooved plates d , and the cam-piece e , all constructed and arranged to operate substantially as and for the purpose set forth.

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

EDMOND VERSTRAETE.

Witnesses:

W. C. MCARTHUR,

W. S. MCARTHUR.