

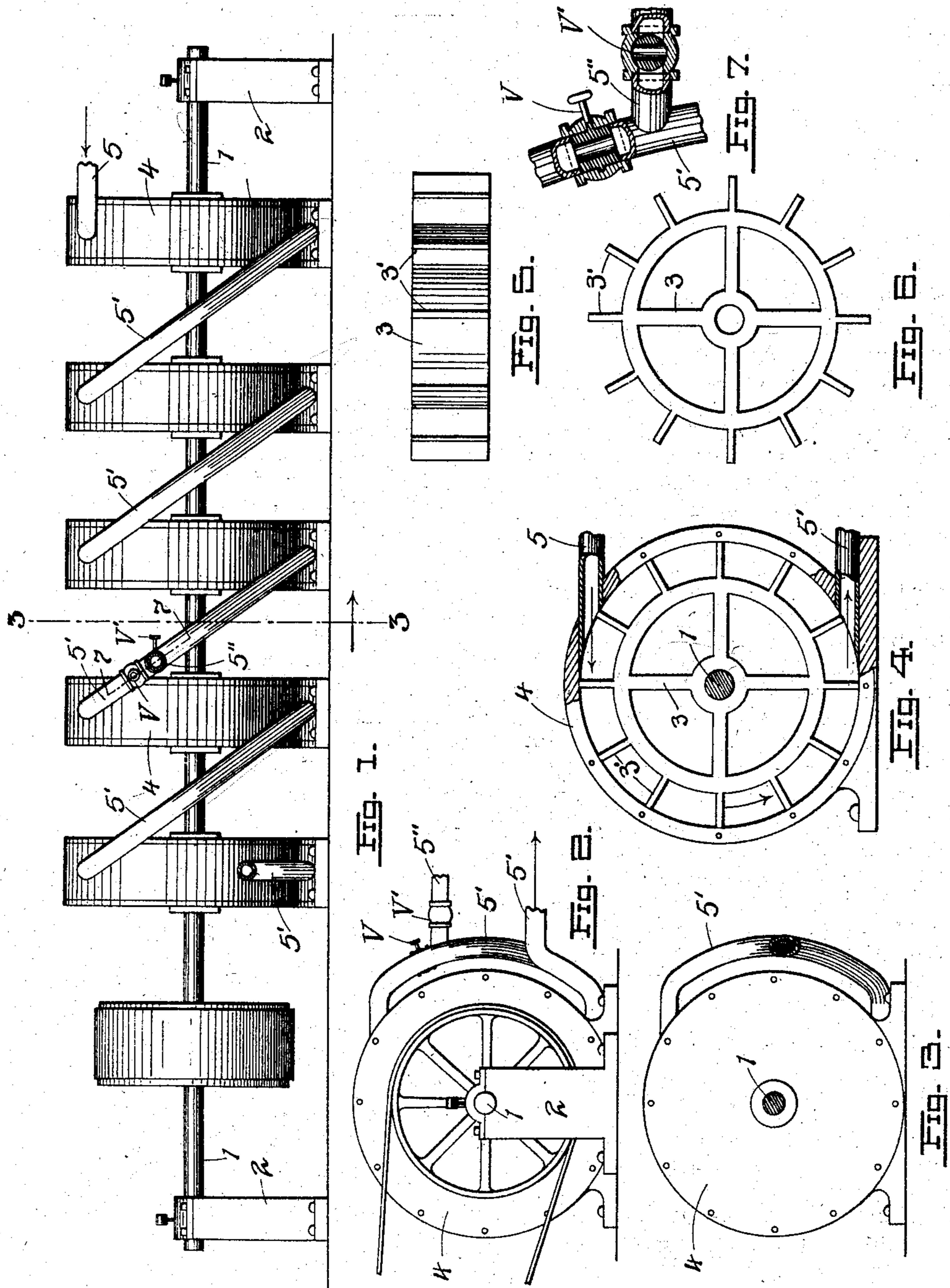
No. 772,868.

PATENTED OCT. 18, 1904.

E. BUCHANAN.
STEAM TURBINE.

APPLICATION FILED OCT. 22, 1902.

NO MODEL.



WITNESSES:

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ESAU BUCHANAN, OF DARWIN, VIRGINIA.

STEAM-TURBINE.

SPECIFICATION forming part of Letters Patent No. 772,868, dated October 18, 1904.

Application filed October 22, 1902. Serial No. 128,369. (No model.)

To all whom it may concern:

Be it known that I, ESAU BUCHANAN, a citizen of the United States, residing at Darwin, in the county of Dickenson and State of Virginia, have invented certain new and useful Improvements in Steam-Turbines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in steam-turbines; and it consists in the novel arrangement and combination of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a front elevation of my invention. Fig. 2 is an end view thereof. Fig. 3 is a transverse section on the line 3 3 of Fig. 1. Fig. 4 is a face elevation of one of the cylinders with the near wall removed. Fig. 5 is an edge view of one of the pistons. Fig. 6 is a face elevation of one of the pistons, and Fig. 7 is a detail of one of the steam-controlling valves.

The object of my invention is to construct a steam-turbine which shall utilize to the best advantage the expansive force of steam, retaining the latter within the cylinder for a maximum length of time, whereby it may exhaust only after its force has been fully expended.

In detail the invention may be described as follows:

Referring to the drawings, 1 represents a drive-shaft, mounted in suitable bearings 2, the shaft having mounted thereon a series of rotary pistons 3, each of which is confined within a cylinder 4, through the face-walls of which the shaft loosely passes. Leading through the peripheral wall of the first of the series of cylinders and discharging tangentially against the radial abutments 3' of the piston in said cylinder is a steam-pipe 5, each cylinder being provided at a point diametrically opposite the steam-inlet with a discharge-pipe 5', which in turn communicates similarly to the pipe 5 with the next adjacent cylinder, and so on till the end of the series, the last cylinder discharging at a point diametrically opposite the point of entry of the pipe leading from the cylinder immediately preceding.

Any of the pipes 5' may be provided with a shunt 5'', through which the steam may be allowed to exhaust before traversing the entire series of cylinders, this earlier discharge being accomplished by closing the two-way valve V, located in the pipe 5', and opening a corresponding controlling-valve V' in the shunt 5''. (See Fig. 7.)

By disposing the pipes 5 5' tangentially to the peripheral walls of the respective cylinders the steam encounters a minimum amount of friction, and at the same time impinges upon the abutments 3' at an angle which gives the best possible results. Again, by combining a series of cylinders in the manner indicated the expansive force of the motor fluid is not spent until the last cylinder has been traversed, so that my present arrangement produces a maximum efficiency and a corresponding increase in power over the ordinary form of engine.

I do not, of course, wish to be limited to the number of cylinders nor to the details herein shown, as these may in a measure be departed from without in any wise affecting the nature or spirit of my invention.

Having described my invention, what I claim is—

A steam-turbine comprising a single drive-shaft, a series of rotating pistons distributed along the length thereof, a cylinder for each piston, a steam-pipe communicating through the peripheral wall of the first cylinder with the interior thereof, a series of pipes connecting the several cylinders, the base of one being coupled to the upper end of the next adjacent cylinder, a shunt for one of said connecting-pipes, and controlling-valves in said pipes, the several pipes being disposed tangentially to the walls of the cylinders, and the last cylinder discharging at a point diametrically opposite the point of entry of the pipe leading from the cylinder immediately preceding, substantially as set forth.

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

ESAU BUCHANAN.

Witnesses:

FELIX SENTER,
N. P. VANOVER.