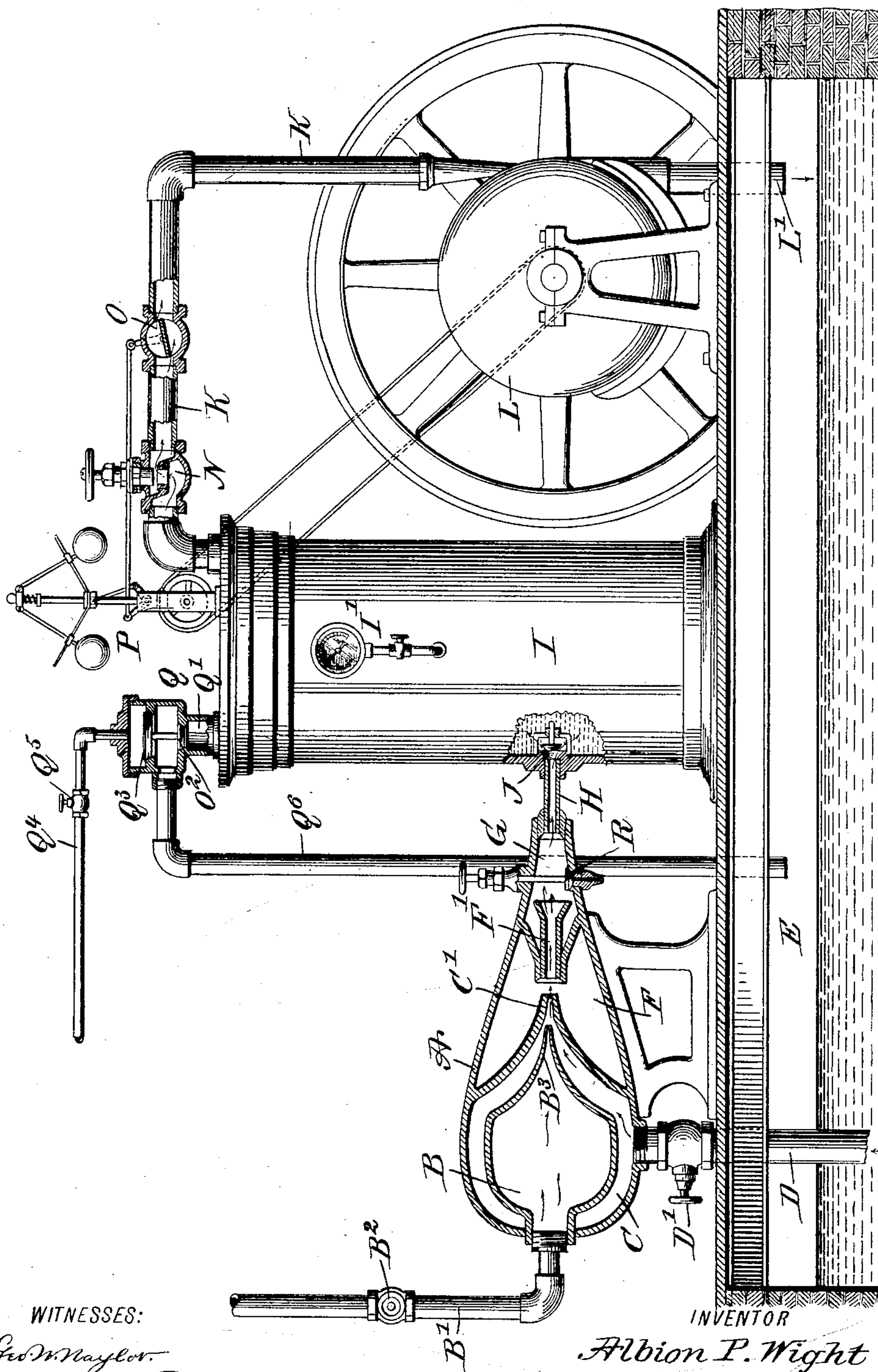


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A. P. WIGHT.
HYDRAULIC POWER GENERATOR.
APPLICATION FILED JULY 13, 1904.



WITNESSES:

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HYDRAULIC-POWER GENERATOR.

No. 803,317.

Specification of Letters Patent.

Patented Oct. 31, 1905.

Application filed July 13, 1904. Serial No. 216,393.

To all whom it may concern:

Be it known that I, ALBION P. WIGHT, a citizen of the United States, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Hydraulic-Power Generator, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved hydraulic-power generator which is simple and durable in construction and arranged to utilize steam under pressure for expanding water and using the expanded water under pressure as a motive agent for driving a hydraulic motor for actuating machinery of various kinds.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawing, forming a part of this specification, in which the figure is a sectional side elevation of the improvement, parts being in elevation.

Within a suitably-arranged casing A is formed or secured a steam-chamber B, connected by a pipe B', having a valve B², with a steam-boiler or other suitable source of steam-supply. The steam-chamber B is surrounded by a water-suction chamber C, connected at its bottom by a suction-pipe D, having a valve D', with a well E, containing water.

The chambers B and C are provided with aligned nozzles B³ C', of which the nozzle C' discharges into an expanding-chamber F, likewise arranged within the casing A. From the chamber F leads a delivery-tube F' into an outlet G, connected by a pipe H with a reservoir I for receiving the heated and expanded water under pressure. On the inner end of the pipe H is arranged a check-valve J for preventing a return flow of the water from the reservoir I into the pipe H.

The top of the reservoir I is connected by a pipe K with a water-motor L of any approved construction, and the discharge-pipe L' of this motor L leads to the well E, so that the water is returned to the latter or discharged as waste, if desired.

In the pipe K is arranged a manually-controlled valve N and a valve O, controlled by a suitable governor P, driven from the motor L, to regulate the amount of water passing from the reservoir I to the motor L, according to the latter's load. The reservoir I is provided

with a suitable gage I' for indicating the pressure.

On the top of the reservoir I is arranged a relief-valve Q, having a pipe Q' connected with the interior of the reservoir I, and the said relief-valve Q is provided with two connected valves Q² and Q³, of which the valve Q² is somewhat less in area than the valve Q³, and the valve Q² is exposed to pressure from the reservoir I, while the valve Q³ is under pressure of steam passing into the valve Q by a steam-pipe Q⁴, having a valve Q⁵. From the relief-valve Q leads an overflow-pipe Q⁶ to the well E or waste-pipe. Normally the valves Q² and Q³ are closed; but on an excess of pressure within the reservoir I the valves Q² and Q³ open, so that water from the reservoir I can pass by way of the relief-valve Q and overflow-pipe Q⁶ back into the well E. Normally the valves Q² Q³ are closed by the pressure of steam from the boiler, the valve Q³ having the larger area.

In the bottom of the outlet G of the casing A is arranged an air-escape valve R, opened at the beginning of the operation to allow the air within the casing A to escape, it being understood that as soon as the air has escaped the valve R is closed.

The operation is as follows: When steam is admitted into the steam-chamber B, then water is drawn up from the well E by way of the pipe D on account of the steam creating a suction in the chamber C, the steam and the water passing through the nozzle C' into the expanding-chamber F, in which the water is expanded and driven with great velocity through the delivery-tube F', outlet G, and pipe H into the reservoir I. When the expanded water in the reservoir I attains a sufficient pressure, then the valve N is opened to allow the water under pressure to flow into the motor L and actuate the same. The water discharged by the motor L is returned to the well E, or to any convenient place, or used over and over again without perceptible loss.

The water used is ordinary water containing air and other gases, and the force obtained is attributed to the expansion by the heat of the air, gases, &c., contained in the water. This expands or increases the volume of the water, provided the water is not heated up to 212° Fahrenheit.

The device may be used in connection with any form of water-wheel or motor for driving steam-carriages, steamboats, or furnishing

power in any way it may be required, and where steam-engines are now used. It is, however, expressly understood that the main feature of my invention is drawing water from
 5 any suitable source into a generator or other suitable device for the purpose of expanding it with a jet of steam to obtain a hydraulic pressure that is to form a motive agent consisting of expanded water under pressure.

10 The steam is employed to draw up the water from the well and to impart a velocity thereto in the pipe H of about 85.5 miles per hour, the steam-pipe B' having about one hundred pounds pressure. No steam passes into
 15 the reservoir; but the steam condenses between nozzle C' and pipe H, and at about one hundred pounds steam-pressure a pressure of about one hundred and twenty-five pounds is obtained in the reservoir I. When the steam
 20 is at about one hundred pounds pressure, the water in the reservoir I reaches about 134° Fahrenheit, while at about two hundred pounds steam-pressure the water reaches about 150° Fahrenheit. At the relief-valve
 25 Q the steam-pressure—say about one hundred pounds—(being the same as the pressure in pipe B') is overcome only when the pressure in the reservoir I reaches about one hundred and twenty-five pounds, this being due to the
 30 difference of areas of the valves Q² and Q³. In other words, the relief-valve opens at one hundred and twenty-five pounds pressure in the reservoir I to allow the water to pass back into the well. In operation, a regular working
 35 pressure of about one hundred and twenty-five pounds is maintained in the reservoir I.

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

1. A hydraulic-power generator, comprising
 40 a reservoir, means for drawing water from a suitable source, and for forcing the water into the reservoir, a connection from the reservoir to a motor to be driven under the propulsive velocity imparted to the water, and relief devices
 45 connecting with the reservoir and having connections with the water source and a steam source.

2. A hydraulic-power generator, comprising a reservoir, means for drawing water from
 50 a suitable source and expanding the same into the reservoir, and relief devices connecting with said reservoir embodying connected valves.

3. A hydraulic-power generator, comprising
 55 a reservoir, means for drawing water from a suitable source and expanding the same into the reservoir, and relief devices connecting with said reservoir, embodying connected valves of different areas.

60 4. A hydraulic-power generator, comprising a reservoir, means for drawing water from a suitable source, and for expanding the water into the reservoir, a connection from the reservoir to a motor to be driven under the pro-

pulsive velocity imparted to the water, and
 65 relief devices connecting with the reservoir and having connections with the water source and a steam source, said devices embodying connected valves of different areas.

5. A hydraulic-power generator, comprising
 70 a reservoir, means for drawing water from a suitable source, and for expanding the water into the reservoir, and a connection from the reservoir to a motor to be driven under the propulsive velocity imparted to the water,
 75 said connection being provided with a governor-controlled valve and a manually-operated valve.

6. A hydraulic-power generator, comprising
 80 a reservoir, means for drawing water from a suitable source, and for forcing the water into the reservoir, a connection from the reservoir to a motor to be driven under the propulsive velocity imparted to the water, and
 85 relief devices connecting with the reservoir and having connections with a water source and a steam source, said connection being provided with a valve regulated automatically by the pressure from the steam source.

7. A hydraulic-power generator comprising
 90 a reservoir means connected with a steam-supply for drawing water from a suitable source heating the same and forcing it into the reservoir, and a relief device connected with the reservoir and with the steam-supply,
 95 the said device including a valve adapted when opened to allow the water to escape from the reservoir, the valve being normally held closed by the steam-pressure, and opened by an excess of pressure within the reservoir. 100

8. A hydraulic-power generator, comprising
 105 a reservoir, means connected with a steam-supply for drawing water from a suitable source heating the same by the action of the steam and forcing the heated water under pressure into the reservoir, a valve for retaining the pressure in the reservoir, a connection from the reservoir to a motor, and a relief device connected with the reservoir and comprising a valve-casing provided with connect-
 110 ed valves, one of the valves being of less area than the other and exposed to pressure from the reservoir, a connection between the said valve-casing and the steam-supply to permit steam to pass into the casing to exert pres-
 115 sure on the other valve, to normally hold the valves closed, and a pipe leading from the valve-casing to permit water to flow from the reservoir when the valves are opened by an excess of pressure within the reservoir. 120

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALBION P. WIGHT.

Witnesses:

THEO. G. HOSTER,
 EVERARD BOLTON MARSHALL.