

(No Model.)

E. W. ERICKSON.
ENGINE GOVERNOR.

No. 592,529.

Patented Oct. 26, 1897.

Fig. 1.

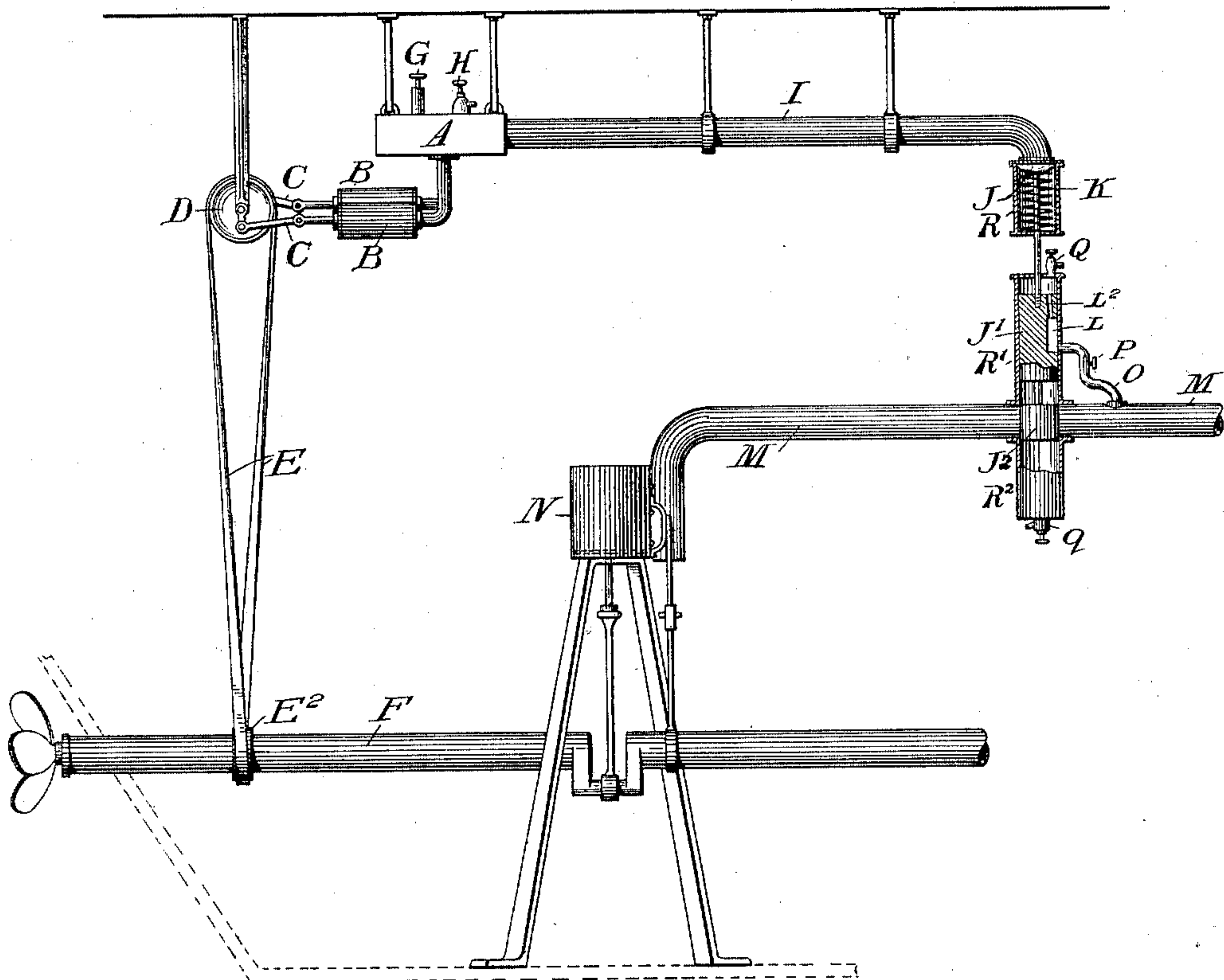


Fig. 2.

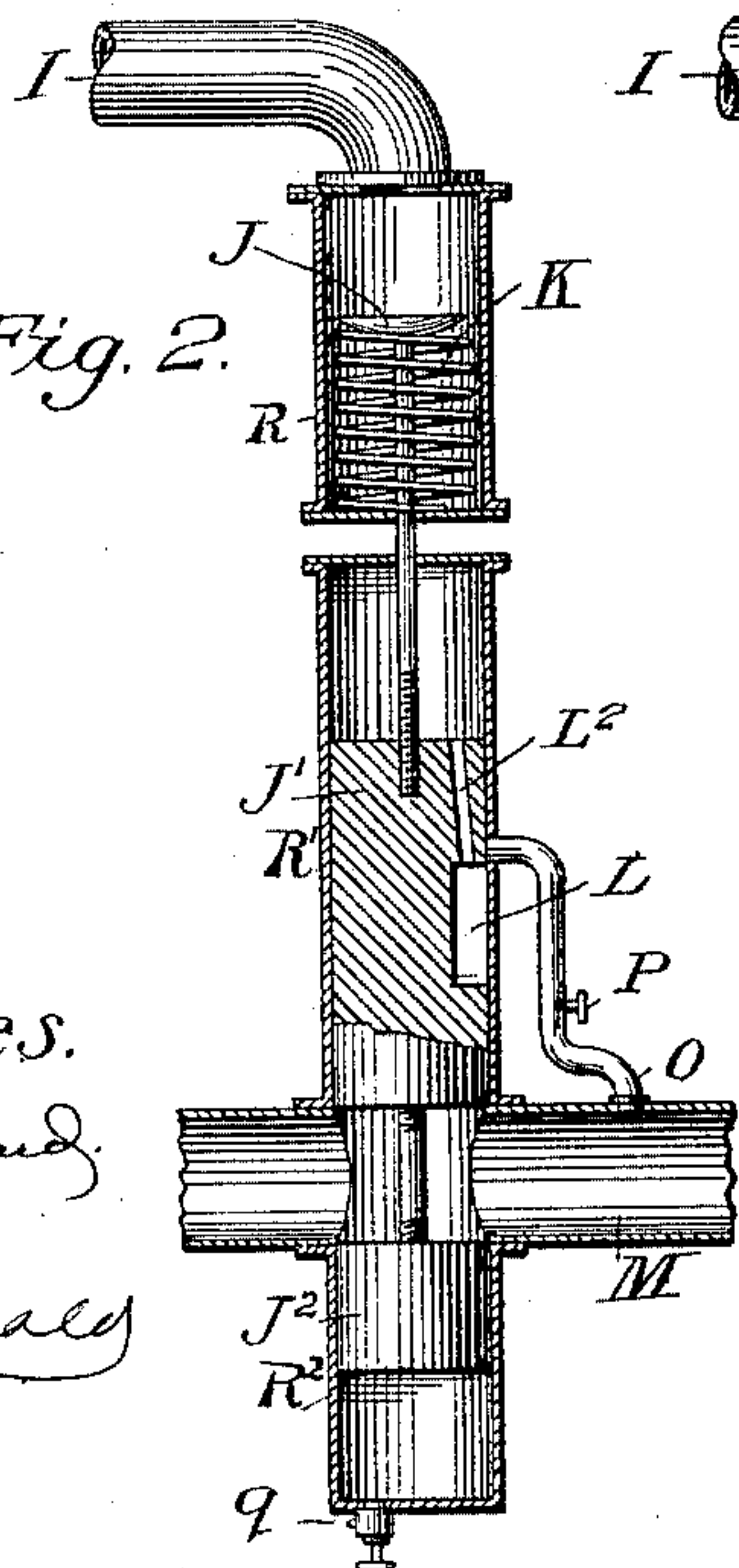
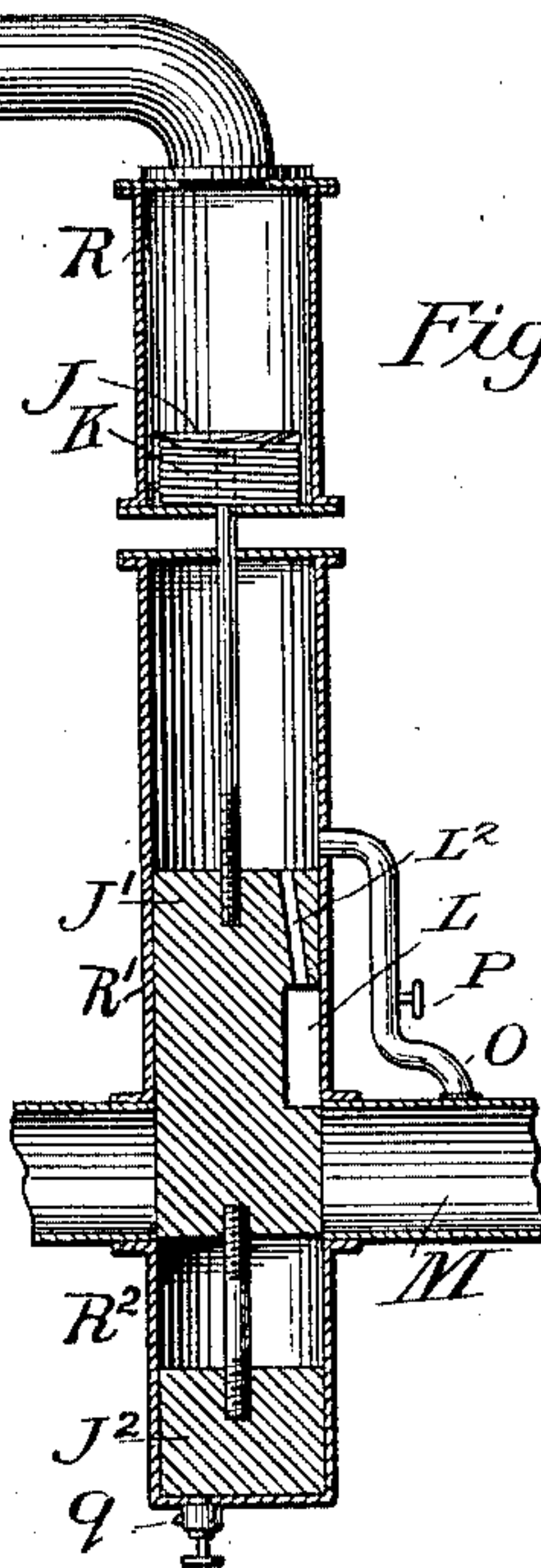


Fig. 3.



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ENGINE-GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 592,529, dated October 26, 1897.

Application filed September 29, 1896. Serial No. 607,369. (No model.)

To all whom it may concern:

Be it known that I, ERICK WILHELM ERICKSON, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Engine-Governors, of which the following is a specification.

My invention relates to the improvement of engine-governors whereby the rotation of the screw-shaft is kept at a certain and definite speed, whether entirely submerged or wholly or partially raised out of water, by automatically regulating the admission of steam into the steam-chest. It also shuts off steam in case of the breaking of the shaft or any part of the machinery interfering with the revolution of the shaft.

Reference is had to the annexed drawings, forming a part of my specification.

Similar letters refer to similar parts in the several drawings.

Figure 1 shows a central sectional elevation of the governor and its connection with the steam-pipe leading from the boilers to the steam-chest. Figs. 2 and 3 are vertical sectional views in larger size of the governor, comprising the valve in two of its positions and the valve-chamber connected to steam-pipe.

A is an iron receiver for holding compressed air; B B, the air-pumps for forcing air into the receiver; C C, the connecting-rods of the air-pumps; D, the wheel to which the rods are attached; E, an endless belt passing around wheel D and the pulley E² on screw-shaft F.

G is a safety-valve on the air-receiver.

H is a valve for keeping a steady pressure of air in the receiver, with the pumps working at a certain and set speed by regulating the outflow of air from the tank.

I is a pipe through which air is forced into the upper cylinder R, containing the piston J.

J' J² are the pistons of the sectional valve contained in the chambers R' R², connected to the steam-pipe.

K is a coiled spring upon which the head of the piston J in the upper valve-cylinder rests, L a recess in the upper valve-section of valve J', and L² a hole extending vertically through the upper part of this valve-section.

Fig. 1 represents the engine at rest, the

steam being shut off in the pipe M by the lower section of the valve J². To start the engine and set the screw-shaft revolving, steam is allowed to pass from the pipe M through the small pipe O, upon opening the valve P, into the chamber L up through the hole L² to the top of the valve-chamber, and the same forces the valve-sections J' J² downward until the mouth of the small pipe O is closed by the solid upper part of the valve-section J' and the lower section of valve J is forced below the steam-pipe M, as shown in Fig. 2. The valve P is now closed. As the screw-shaft revolves the air-pumps of the governor are set in motion and air is forced into receiver A. The regulating-valve H is set so as to create just sufficient pressure in pipe I to overcome the expansive power of the coiled spring K and to keep the piston J and valve-sections J' J² in the position shown in Fig. 2 so long as the shaft revolves at the desired speed. If the revolution of the shaft becomes accelerated by the screw being totally or partially lifted from the water, the pumps working faster increase the pressure in the receiver A, and pipe I forcing the piston J and valve-sections J' J² downward until the steam-pipe M is partially or wholly closed, as shown in Fig. 3, the effect of which is to lessen or cut off the steam passing to the engine and so retard or stop the rotation of the screw. As soon as the working of the engine is reduced to its normal speed and the air-pressure reduced by the valve H the spring K draws the piston J and valve-sections J' J² upward again in position shown in Fig. 2. Should the shaft stop revolving by a break or accident to it or to the engine, the pressure of air in the receiver A and pipe I becoming less than normal the spring K will draw the piston J and valve-sections J' J² back into the position shown in Fig. 1, entirely shutting off the steam. The small cock q is for letting out any accumulated water or steam which might interfere with the working of the valve-sections J' J².

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

1. The combination with an engine, its steam-supply pipe and a power-shaft rotated thereby, of an air-pump operated from said

shaft and an air-reservoir connected with and supplied from the pump, and air pipe and cylinder connected with the air-reservoir, a spring and air actuated piston in said cylinder, a chamber connected with the steam-supply pipe and a piston therein and means substantially as shown and described for actuating the same by the spring and air actuated piston, and also by steam, whereby the steam in the engine-pipe is shut off or its admission regulated at pleasure, substantially as set forth.

2. The combination with an engine, its steam-supply pipe and a power-shaft rotated thereby, of a chamber connected with the steam-pipe and connecting valve-sections J' J^2 therein, a piston and a cylinder therefor, a rod from said sections passing to said piston, a spring within said cylinder for moving the piston and valve-sections in one direction and means connected with said piston-cylinder and actuated by the power-shaft for supplying air to act upon the piston to move the same and the valve-sections in the other direction and means for supplying steam to act

upon the valve-sections, substantially as set forth.

3. In a steam-engine governor, the combination with the steam-pipe M and the chamber connected therewith, of a steam-pipe O having a cock P and connected respectively to the said steam pipe and chamber, the valve-sections J' J^2 within said chamber, the section J' having a recess L and a hole L^2 , an air-pipe I and piston-cylinder connected therewith and in line axially with the chamber of the valve-sections, a piston J and rod connecting the same with the valve-sections, a spring for actuating the parts in one direction and means actuated by the power-shaft for supplying air under pressure to actuate the piston J and parts connected therewith in the reverse direction, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 14th day of August, A. D. 1896.

ERICK WILHELM ERICKSON.

Witnesses:

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HOWARD CAMPBELL.