

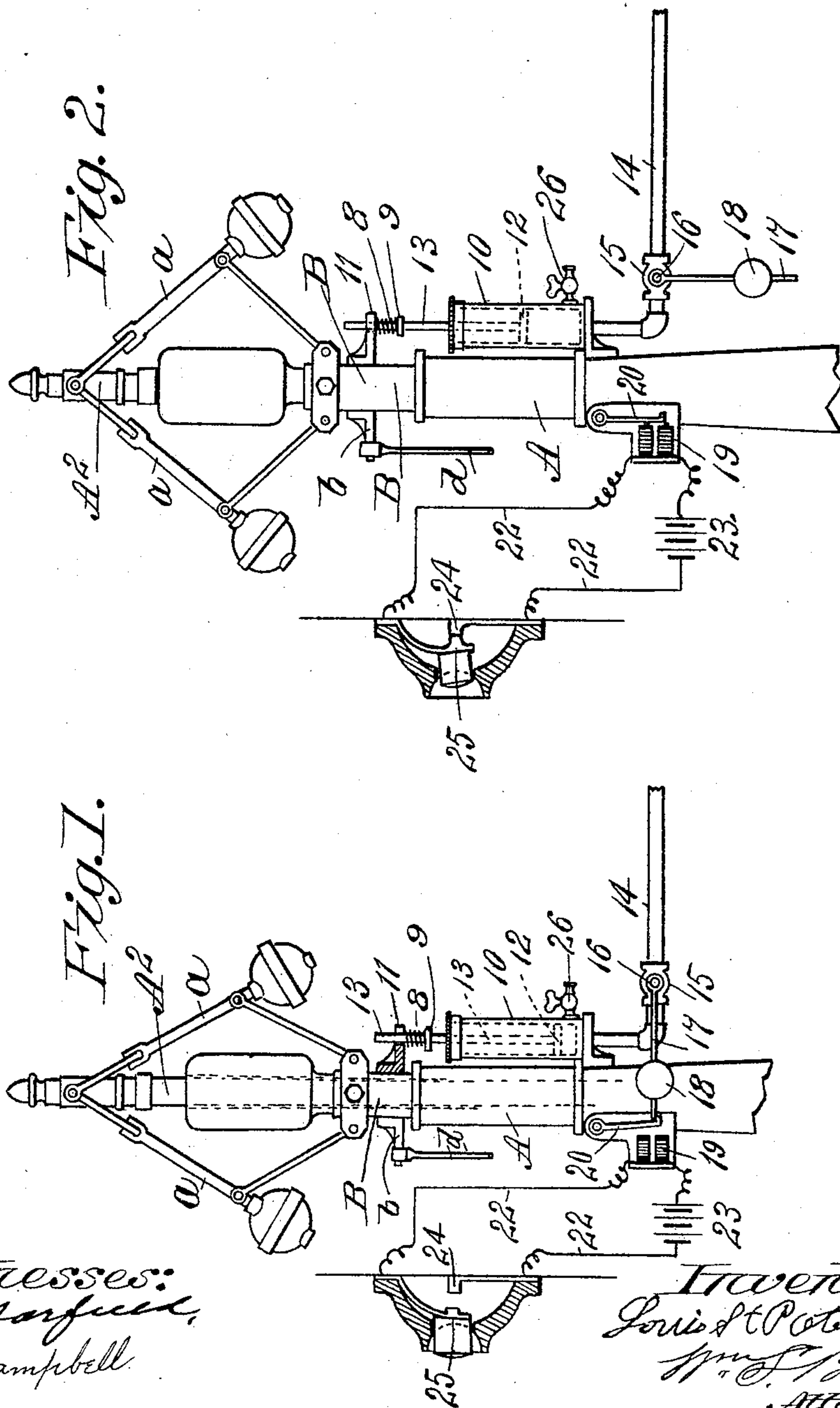
No. 633,090.

Patented Sept. 12, 1899.

L. ST. PETER.
ENGINE STOP MECHANISM.

(Application filed Feb. 17, 1899.)

(No Model.)



UNITED STATES PATENT OFFICE.

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ENGINE STOP MECHANISM.

SPECIFICATION forming part of Letters Patent No. 633,090, dated September 12, 1899.

Application filed February 17, 1899. Serial No. 705,808. (No model.)

To all whom it may concern:

Be it known that I, LOUIS ST. PETER, a subject of the Queen of Great Britain, and a resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Engine Stop Mechanism, of which the following is a full, clear, and exact description.

This invention relates to a class of stop mechanism for engines in which an electromagnetic force is utilized by the closing of the circuit at any suitably-distant point from the engine for causing, through the operation of the novel mechanism, an almost immediate stoppage of the running of the engine.

The invention contemplates the employment of a cylinder or chamber and a diaphragm or piston therein, a pipe for supplying steam or other fluid under pressure into said chamber or cylinder, and electromagnetic means for controlling the admission of the steam or piston-operating fluid into the cylinder, operative on the closing of an electric circuit, the said piston being made available to insure by its thrust the discontinuance of the running of the engine.

In the accompanying drawings I have illustrated an exemplification of the invention as carried out by an arrangement of the mechanism whereby the thrust of the piston causes an operation of the governor of the steam-engine in an extreme extent, it thus only remaining to be understood that this special extreme motion of the governor operates to stop the engine in any of the several ways, through intermediate connections, that governors ordinarily accomplish this result.

In the accompanying drawings, Figure 1 is an elevation illustrating a common and well-known form of steam-engine governor, and, in conjunction therewith, the chamber or cylinder, the diaphragm or piston therein, the conduit for a pressure-fluid entering the chamber below the piston, a valve for said conduit, and the electromagnetic means for controlling the valve, this view showing the circuit comprised in the electromagnetic means open and the said valve restrained in its closed position. Fig. 2 is a view in all respects like Fig. 1 excepting that the circuit is shown as closed and as insured thereby

that the valve is released and opened and the vertically movable sleeve of the governor in consequence thereof elevated in a considerable and efficient degree.

In the drawings, A represents the post or stationary upright of the governor, comprising as an upward extension thereof the post A², B representing the sleeve of the governor, vertically movable up and down on the post in the usual manner under the actions by centrifugal force and gravity of the weighted governor-arms *a a*, linked to the sleeve B.

Inasmuch as the governors of different types of engines have operative connections to different means and under different arrangements whereby the excessive movement of the movable member B of the governor operates to insure a discontinuance of the running of the engine, it is deemed unnecessary and inadvisable herein to illustrate and describe any particular one of the many well-known mechanisms through means of which the rising motion of the movable member B of the governor checks the engine. The accompanying drawings, however, show a transversely-projecting lug *b*, affixed on and extended from one side of the governor-sleeve, to which is secured the rod *d*, which constitutes a medium of connection between the governor-sleeve and the engine valve mechanism to secure from the sufficient elevation of the sleeve the operation of the valve mechanism of the engine, and it is needless to say that, so far as this invention is concerned, the upward thrust of the rod *d* may either directly operate on the throttle-valve or may operate upon the grab-hook mechanism to insure that the grab-hooks in their reciprocations will have their movements in paths so as to pass the cylinder-valves without operating them for the admission of steam into the engine-cylinder.

Proceeding now to describe my novel mechanism exactly as I have constructed it, represents an inclosed chamber comprised in a cylinder in which is a diaphragm or piston 12, having the upwardly-extending piston-rod 13.

14 represents a pipe understood as having connection with a suitable source of pressure fluid, such as the steam-boiler, this pipe en-

tering the chamber in the cylinder below the piston.

15 indicates a valve or cock in the pipe 14, of which 16 is the valve-stem, on which is the lever-arm 17, provided with the weight 18.

Suitably adjacent the valve-operating lever 17 is an electromagnet 19, coacting with which is the armature 20, the same being arranged so that normally and when removed from its position as drawn to the magnet it will serve as a latch or detent for restraining the lever 17 in the horizontal position indicated in Fig. 1. The electromagnet is wired in the circuit indicated at 22, such circuit comprising a local battery 23 and the contacts 24 and 25, which latter are normally separated, one being closed against the other by the push-button in the most ordinary manner of closing circuits for energizing electromagnets.

On the movable member or sleeve of the governor is secured the angle lug or projection 11, with which the piston-rod 13 has an engagement. This engagement is here indicated as made by constructing the lug 11, apertured or recessed for the passage therethrough of the upper extremity of the piston-rod, the latter having therebelow the shoulder 9, between which and the under side of the lug is interposed a spiral spring 8, which serves as a cushion between the piston and the movable member of the governor.

The cylinder is provided with a petcock 26 at its lower portion, below the piston, for withdrawing any accumulations of water in the chamber and for facilitating the lowering of the piston under certain circumstances.

With the conditions established for the desired running of the engine, the valve in the steam-pipe 14 being closed and the armature removed from the cores of the electromagnet holding the weighted lever 17 in the horizontal position, thus maintaining the valve at 15 closed, the piston being understood as lowered, it will be seen that the governor may have its ordinary reciprocatory movements as induced by the running speed without interfering with or with interference by the herein-described appliances; but in case of exigency, upon the pressure of the contact 25 against the one 24 closing the circuit the armature will be withdrawn from its position of detention relatively to the lever-operating rod, leaving the latter free to be swung by its weight downwardly to the pendulous position shown in Fig. 2, opening the valve at 15, permitting pressure in the chamber below the piston, and forcing the latter upwardly sufficiently far as to impart all necessary vertical sliding movement to the movable sleeve member B of the governor, thereupon through such movement to establish conditions for the immediate discontinuance of the driving or running of the engine.

In order to thereafter bring about conditions whereby the running of the engine, which may have been suspended, as ex-

plained, may be resumed, the valve-operating arm is swung to its position of engagement with the armature, and the pressure under the piston being relieved the latter will descend, and in order to relieve the piston-chamber, so that the piston may unobstructedly be lowered, the petcock 26 may momentarily be opened.

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

1. The combination with any engine-controlling mechanism as an ordinary governor, of an inclosed chamber having a diaphragm or piston therein which is operatively connected with the engine-controller, a conduit for leading the pressure fluid into said chamber, having a valve, a self-operating valve-opening device, an electric circuit normally open with means for closing it and comprising a source of electrical energy, an electromagnet and an armature, the latter being arranged to operate as a detent for the valve-opening device, for the purpose set forth.

2. The combination with a steam-engine governor having a movable reciprocatory member or sleeve-like part, of an inclosed chamber having the piston or diaphragm therein, and provided with a rod or stem adapted on a suitably-extended movement of the piston to engage and operate the movable member of the governor, independent of its ordinary automatic governing operation, a conduit for a pressure fluid leading to the cylinder having a valve and a valve-operating device, an electromagnet comprised in a suitable circuit normally open with means for purposely closing it, and having an armature arranged to coact as a detent for the valve-operating device, substantially as and for the purpose set forth.

3. In a stop mechanism for an engine, the combination with the movable member, of the governor having the transverse projection, a steam-cylinder mounted adjacent the governor, having therein a piston provided with an upwardly-projecting rod having a forcing engagement in an upward direction with said transverse projection, a steam-pipe leading into said cylinder below the piston, having a valve provided with a swinging valve-operating arm, the electromagnet and armature which engage the said swinging arm, and electric circuit connections for the electromagnet, substantially as described.

4. The combination with a movable member of an engine controller or governor, of a chamber having therein a movable diaphragm, arranged to engage said member of the governor, a conduit for conveying a pressure fluid into said chamber to act on the diaphragm, a valve for said conduit, and means for opening and closing it.

5. In an electric stop mechanism for an engine, the combination with the movable engine-controlling member as the part B of the governor, having the transverse projection 11

of the chambered cylinder having therein the piston provided with the upwardly-extended rod which has the shoulder 9, the spring between said shoulder and the projection, and
5 means for introducing at pleasure a pressure fluid into the cylinder-chamber, below the piston.

6. In a stop mechanism for a steam-engine, the combination with a governor having the
10 usual engine-controlling movable sleeve B, having the operating-rod *d* therewith connected, and provided with the transverse projection 11, of the vertical cylinder 10, located adjacent the governor having therein the pis-
15 ton with the upwardly-extending rod provided with an abutment for an elevating en-

gagement with the said transverse projection, the steam-pipe 14 having the valve 15, valve-stem and weighted lever-arm 17, the electro-
magnet 19 and its armature 20 located to op- 20
erate as a detent for said lever-arm, electric conductors constituting a normally-open circuit, comprising a battery therein, and a push-
button for closing the circuit, all substantially
as described. 25

Signed by me at Springfield, Massachusetts, this 15th day of February, 1899.

LOUIS ST. PETER.

Witnesses:

W. G. MEADE,
WM. S. BELLOWS.