

No. 626,071.

Patented May 30, 1899.

J. MATTHEWS.  
STOP MECHANISM FOR ENGINES.

(Application filed Sept. 22, 1898.)

(No Model.)

FIG. 1.

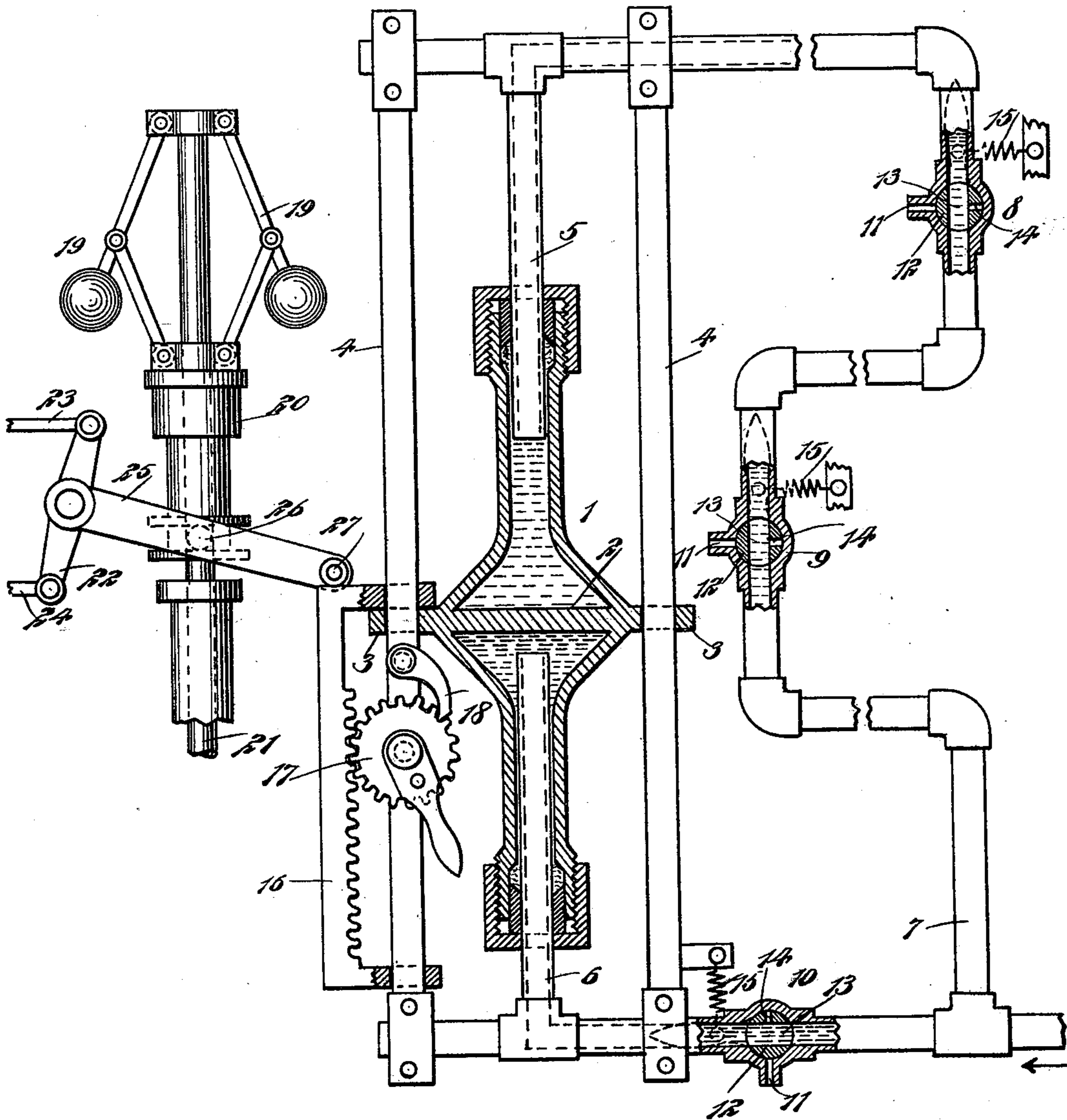
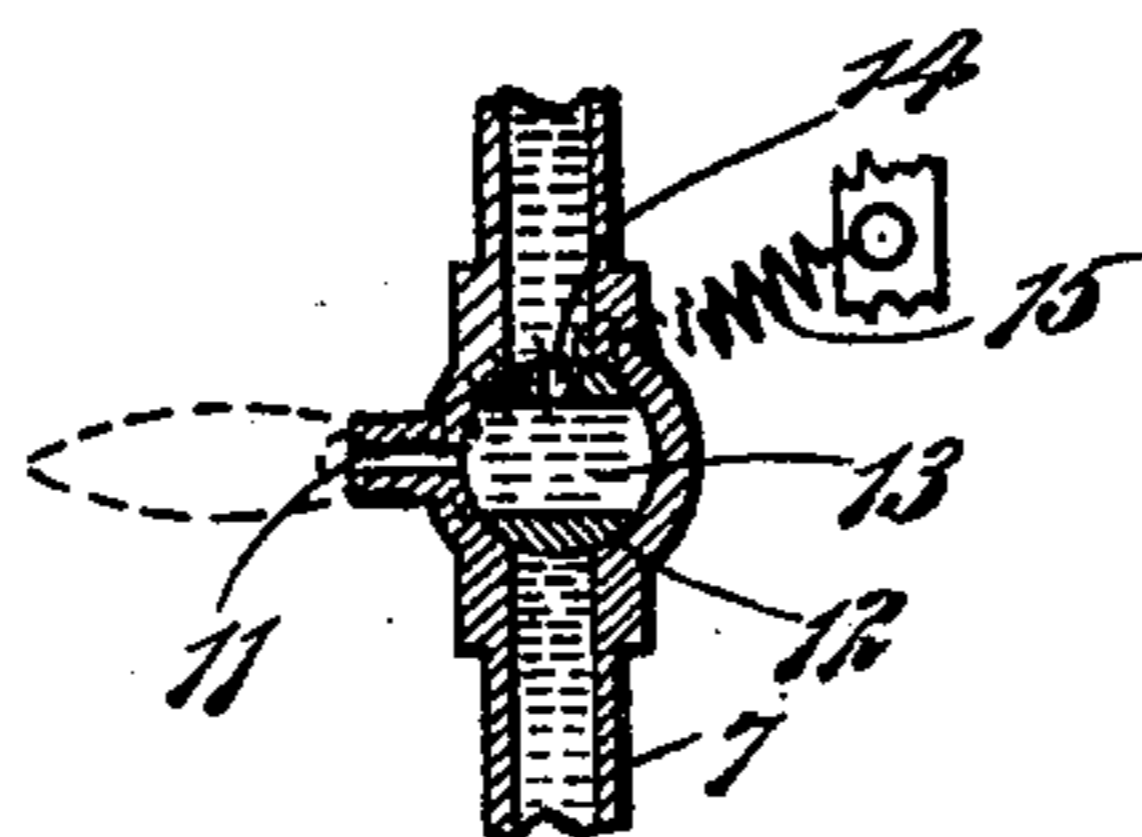


FIG. 2.



WITNESSES:

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# UNITED STATES PATENT OFFICE,

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## STOP MECHANISM FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 626,071, dated May 30, 1899.

Application filed September 22, 1898. Serial No. 691,625. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH MATTHEWS, of New Bedford, in the county of Bristol and State of Massachusetts, have invented a new and Improved Stop Mechanism for Engines, of which the following is a full, clear, and exact description.

This invention relates to improvements in stop mechanisms for steam, gas, air, or other engines or motors; and the object is to provide a simple mechanical means whereby the valve for controlling the motive agent may be caused to be closed from any part of a building or plant when it is desired to stop the engine on account of accident or other causes.

I will describe a stop mechanism for engines embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both views.

Figure 1 is a partial elevation and partial section of a stop mechanism embodying my invention, and Fig. 2 is a sectional view of one of the relief-valves employed in the pressure-pipe.

Referring to the drawings, 1 designates a cylinder separated at the center by means of a diaphragm 2. This cylinder has outwardly-extended arms 3, which engage with guides 4, upon which said cylinder moves. Entering the upper end of the cylinder is a pressure-pipe 5, and entering the lower end of the cylinder is a pressure-pipe 6. These pressure-pipes 5 and 6 communicate with a main pressure-pipe 7, which is designed to be extended through or around a room, building, or plant. The pressure-pipes 5 and 6 enter through suitable stuffing-boxes at the ends of the cylinder, and of course are designed to discharge the pressure agent (here indicated as water) against the upper and the lower sides of the diaphragm 2.

Arranged in the main pressure-pipe are a number of valves 8, 9, and 10. While I have shown but three valves, it is obvious that a greater number may be employed in practice. Each valve comprises a casing having an outlet 11 and a plug 12, having a main port 13 and a relief-port 14. As hereshown, the han-

dle of each valve is connected to one end of a spring 15, the other end of said spring being attached to a fixed support.

Mounted to move on one of the guides 4 is a rack 16, the upper portion of which bears loosely upon one of the arms 3 of the cylinder. For the purpose of holding the rack in its elevated position, as will be hereinafter described, I employ a detent in the form of a gear-wheel 17, engaging with the rack and pivoted to the guide 4 and having in engagement therewith a dog 18, which is also pivoted to the guide, the gear-wheel having a suitable handle, by means of which it may be turned.

I have here shown the device as arranged for operating the shut-off valve of a steam-engine, the said valve being also governed in the usual manner by the governor 19. The arms of the governor 19 are connected by links to a sleeve 20, movable upward on the governor-stem 21. From a rock-lever 22 the usual valve-rods 23 24 extend to the valve, which it is not deemed necessary to show. Extending also from the rock-shaft is a governor-arm 25, which has a roller 26 engaging in an annular groove formed in the sleeve 20, and at the extreme end of this arm 25 is a roller 27, which engages upon the upper end of the rack 16.

In operation when the engine is in motion the parts will be in the position indicated in the drawings—that is, in the main pressure-pipe all the valves will be open—so that there will be an equal pressure of water upon the upper and lower sides of the diaphragm 2. While the engine is running, the governor 19 will operate in the usual manner. Should it be desired to stop the engine from any part of the building or plant, it is only necessary to rotate one of the plugs 12—say the plug 12 in the valve 8—so that the valve portion of said plug closes the main pressure-pipe at the side of the main pressure. This will bring the main port 13 in line with the outlet 11 and the escape 14 in line with the main pipe at the side upon which it is designed to reduce the pressure, as indicated in Fig. 2. This pressure will be reduced by water passing out of the outlet 11. When the pressure is thus reduced on the upper side of the diaphragm 2, the pressure on its lower side will

cause the cylinder to move upward, and this of course will move the rack 16 upward, rotating the gear 17. This upward movement of the rack will move the end of the arm 25 upward, of course carrying with it the governor, and by rocking the rock-lever 22 will move the rods 23 24 to close the inlet-valve for the motive agent of the engine. The parts will be held in this position by means of the dog 18 until such time as it is desired to again start the engine. When it is desired to start the engine, the valve 8 is to be again opened, as indicated in the drawings, and the dog 18 released from the gear 17. Then the rack will move downward under the weight of the governor and open the controlling-valve, and of course as all the relief-valves are opened the pressure will be equalized on each side of the diaphragm.

Should the cylinder 1 be arranged in a horizontal position instead of in a vertical position, as indicated, to equalize the pressure, it will be necessary to close the valve 10, allowing a certain amount of water to pass through the outlet 11. The springs 15 will open the valves when the handles are released and will insure the fact that the several valves are held in their normal position.

Instead of water it is obvious that steam may be used to operate the cylinder 1, or, in fact, an air-pressure may be used.

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

1. A stop mechanism for an engine or motor, comprising a cylinder movable on guides and having a diaphragm extended across its interior, a main pressure-pipe communicating with the interior of the cylinder at opposite sides of the frame, relief-valves placed at various points in said pipe, and mechanism operated by the cylinder for controlling a valve, substantially as specified.

2. A stop mechanism for an engine, comprising a cylinder, guides upon which said

cylinder is movable, a diaphragm extended across the interior of said cylinder, a main pressure-pipe, pipes extended from the main pressure-pipes into the cylinder at opposite sides of the diaphragm, relief-valves placed at various points in said main pressure-pipe, and a governor-arm movable by a movement of said cylinder to operate a valve, substantially as specified.

3. A stop mechanism for an engine, comprising a cylinder having a central transverse diaphragm, guides upon which said cylinder is movable, a rack movable on one of the guides and having engagement with the cylinder, a retarding device for said rack, a main pressure-pipe, pressure-pipes extended from said main pressure-pipe into the cylinder at opposite sides of the diaphragm, and relief-valves in the main pressure-pipe, substantially as specified.

4. A stop mechanism for an engine, comprising a cylinder having a central transverse diaphragm, guides upon which said cylinder is movable, a main pressure-pipe, pressure-pipes communicating between said main pressure-pipe and the interior of the cylinder at opposite sides of the diaphragm, relief-valves in said main pressure-pipe, a rack movable on one of the guides, a gear-wheel meshing with said rack, and a dog for engaging with the gear-wheel, substantially as specified.

5. A stop mechanism for an engine, comprising a movable cylinder, means for applying pressure against opposite sides of a diaphragm in said cylinder, the pressure being normally equal on each side of the diaphragm, means for reducing pressure on one side of the diaphragm, and means operated by the cylinder for controlling a valve, substantially as specified.

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Witnesses:

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