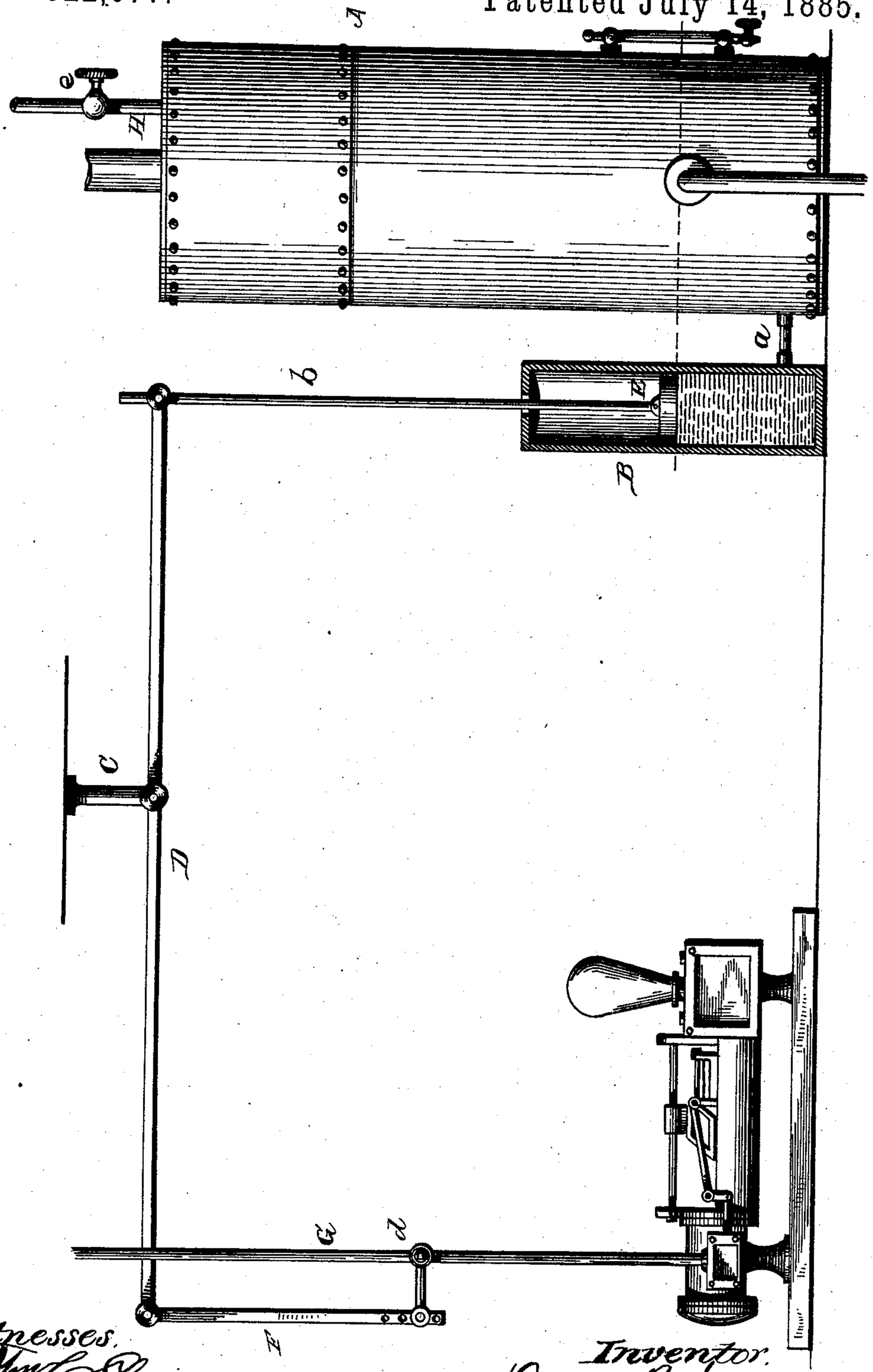
(No Model.)

D. R. STILES.

REGULATOR FOR STEAM PUMPS.

No. 322,077. Patented July 14, 1885.



Witnesses.
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UNITED STATES PATENT OFFICE.

DAVID ROYAL STILES, OF OTTAWA, KANSAS.

REGULATOR FOR STEAM-PUMPS.

SPECIFICATION forming part of Letters Patent No. 322,077, dated July 14, 1885.

Application filed April 24, 1885. (No model.)

To all whom it may concern:

Be it known that I, D. R. STILES, a citizen of the United States, residing at Ottawa, in the county of Franklin and State of Kansas, have invented certain new and useful Improvements in Regulators for Steam-Pumps; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to the letters and figures of reference marked thereon, which forms a part of this specification.

This invention has relation to improvements in apparatus for the regulation of steam-pumps as used in connection with steam boilers and heaters; and it consists in the construction, novel arrangement, and adaptation of devices, as will be hereinafter more fully set forth, and particularly pointed out in the appended claim.

The object of this invention is to provide a cheap and simple means for regulating the flow of steam to a steam-pump, so as to keep the water at a proper height in the heater and at a uniform temperature therein, so as to pass the same to the boiler in a higher-heated state than when the quantity of water is allowed to vary, consequently saving fuel and wear upon the mechanism employed.

In the accompanying drawing, illustrating my improvements by which these objects are accomplished without the objectionable use of springs or weights, is represented by a view of the various devices in a position for operation.

In the said drawing, A indicates a heater, which is used for purifying the water before it is forced into the boilers, and B indicates an open-top cylinder, which is vertically arranged at a suitable interval therefrom. The lower portion of this cylinder is connected with the lower portion of the heater A by means of a short horizontal pipe, *a*, which affords a communication between the said heater and cylinder, thereby causing water as it is fed into the heater to simultaneously and uniformly rise in the cylinder, which may be arranged adjacent thereto.

C indicates a fulcrum arranged between the engine and the heater. To the free end of this fulcrum is hinged or pivoted a horizontal beam, D, one end of which is connected by means of a rod, *b*, to a float, E, within the cylinder B, and the opposite end by means of a rod or lever, F, is connected to the stem or arm of the valve *d*, arranged within the steam-pipe G. The lower end of the vertical arm F is provided with a series of perforations, as shown, whereby the movement of the said arm may be adjusted with relation to the valve in the steam-pipe leading to the pump, and the flow of steam through the same regulated.

In the operation of this device it is only necessary for the attendant or operator to notice the heater, opening the valve *e* when it is desirable to let water therein. When water is let into the heater through the pipe H, as it rises it passes into the cylinder B through the pipe *a*, and rises to a height equal to that in the said heater. As the water rises in the cylinder it carries up the float, which imparts a tilting movement to the pivoted horizontal beam, thereby causing the arm F to descend and open the valve in the steam-pipe leading to the steam-chest of the engine. Thus it will be seen that, as the valve before mentioned is opened, the supply of steam to the engine will be turned on, thereby starting the movement of the pump. As the water diminishes in the heater, the water also diminishes in the cylinder communicating therewith, when the float will fall, bringing down the adjacent end of the pivoted beam, and, through the medium of the vertical arm F, partially closes the valve in the steam-pipe leading to the pump by which the motion or speed of the pump is slackened. Thus the water is kept at a uniform height in the heater.

It will also be perceived that by having the arm connecting the valve-stem in the steam-pipe with the pivoted beam provided with perforations the said valve will be opened according to the capacity of the heater-inlet, thereby regulating the stroke or movement of the pump with relation to the amount of water let into the said heater. This feature I consider of great importance, as a great saving is effected thereby in both fuel and mechanism. The water being pumped into the boiler slowly and uniformly it will heat more readily, and as the pump is controlled by the flow of water

into the heater the said pump will not be operated unnecessarily rapid, which would cause a wear upon the parts.

I attach importance to the fact that the vessel B is arranged parallel to and on the same horizontal plane as the steam-boiler and not supported thereby, and also to the employment of the vertical pivoted rod connected directly to the float and the horizontal pivoted beam. these parts being simple and durable, and not possessing the objectionable features experienced when pipes and valves are used for a similar purpose.

I am aware that it is not new to arrange a water-chamber in connection with a steam-boiler, the boiler being connected with a pump by means of a pipe, and the engine connected with the steam-dome. I am also aware that it is not new to provide a float in a boiler and connect the same with a pump for the purpose of regulating the feed-water, and therefore do not claim such devices, broadly; but,

Having thus described my invention, what I claim is—

The combination, with a steam-pump, of the vertical heater A, the vessel B, arranged on the same plane as the said heater, the pipe *a*, connecting the lower portion of the heater with the lower portion of the said vessel, the float E′, arranged therein, its vertical stem *b*, the horizontal pivoted beam D, connected at one end to the upper end of the vertical float-stem, the vertical arm F, pivoted at its upper end to the opposite end of the horizontal vibratory beam, and its lower end having perforations and connected with the valve *d*, and the pipe connecting the heater with the pump, substantially as specified.

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

DAVID ROYAL STILES.

Witnesses:

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