

No. 725,314.

PATENTED APR. 14, 1903.

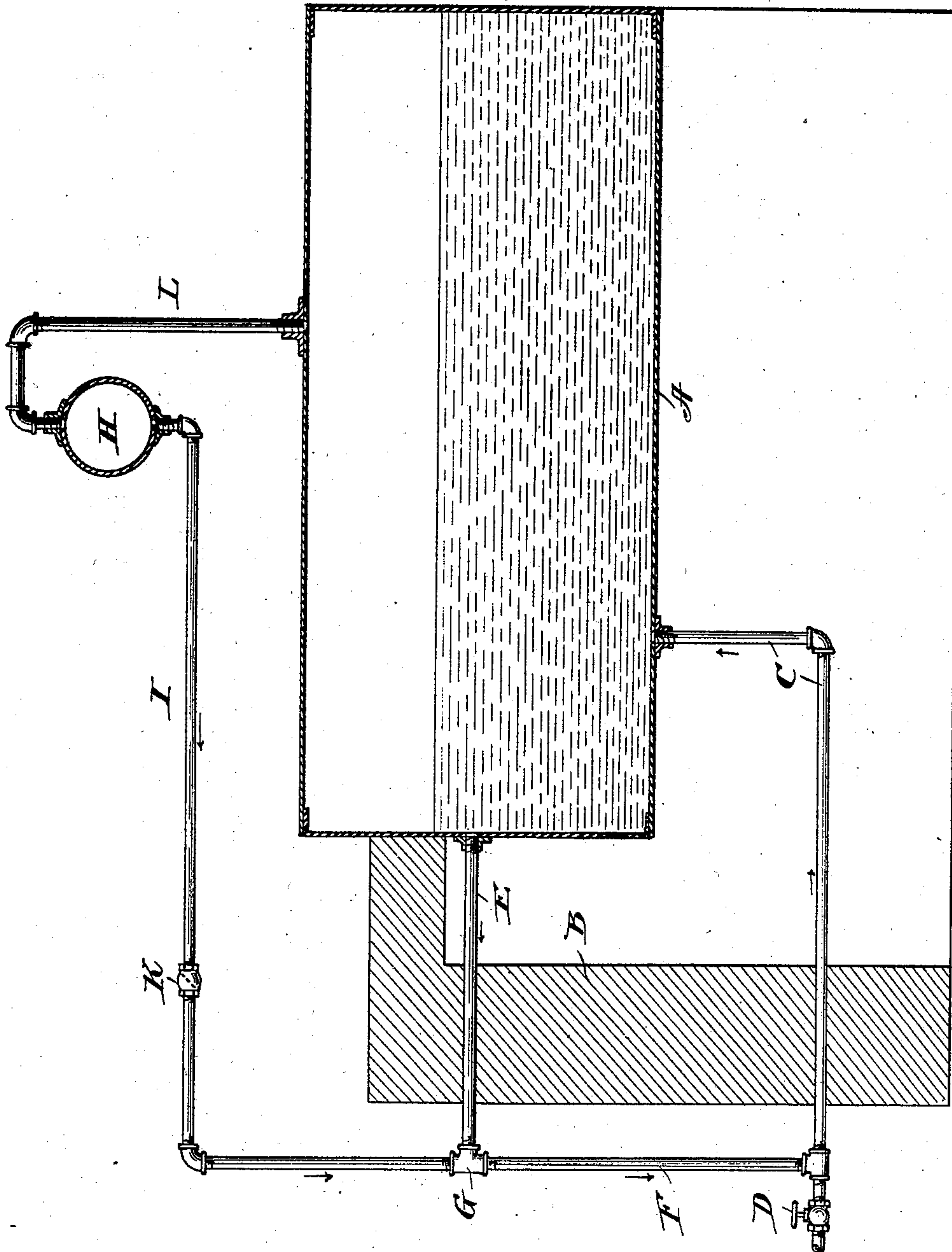
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RETURN WATER FEED FOR STEAM HEATING SYSTEMS.

APPLICATION FILED NOV. 21, 1900.

NO MODEL.



Witnesses,
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UNITED STATES PATENT OFFICE.

GILBERT F. BROWN, OF CLINTON, ILLINOIS; ALICE T. BROWN ADMINISTRATRIX OF SAID GILBERT F. BROWN, DECEASED.

RETURN WATER-FEED FOR STEAM-HEATING SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 725,314, dated April 14, 1903.

Application filed November 21, 1900. Serial No. 37,206. (No model.)

To all whom it may concern:

Be it known that I, GILBERT F. BROWN, of Clinton, county of Dewitt, and State of Illinois, have invented certain new and useful
5 Improvements in Steam-Heating Systems, of which the following is a specification.

This invention relates to systems of returning the water of condensation from steam-pipes, &c., to the steam boiler or generator;
10 and it has for its object to provide a simple and effective means for draining said steam-pipes of their water of condensation and returning the same to the boiler through the intervention of the usual water-circulation system employed in connection with the boiler
15 substantially in the manner and by the means hereinafter described.

It has been the practice in order to protect the blow-off pipes of steam-boilers to introduce a pipe below the water-line of the boiler,
20 extending the same through the boiler-setting, and connect the other end thereof to the blow-off pipe at some point behind the blow-off cock, thereby producing a complete pipe
25 connection between different points or sides of the boiler, through which a constant and strong circulation of water is maintained, thereby preventing the clogging and burning out of the blow-off. My present invention
30 contemplates the utilization of the water-circulation system thus described for the purpose of draining off and returning to the boiler the water of condensation which collects in the lowest parts of the steam-pipes or other
35 devices supplied by the boiler, and my preferred means for effecting this result are illustrated in the accompanying drawing, which is a vertical longitudinal section of a boiler and its setting, showing my invention applied
40 thereto.

Referring to the drawing in detail, A indicates the boiler, and B the boiler-setting, of a steam-generator of the ordinary or usual construction.

45 C is the usual blow-off pipe, tapping the boiler at its under side and passing through the setting B and terminating in a blow-off cock D.

50 E is a horizontally-disposed pipe tapping the boiler at a point slightly below the water-level therein, passing through the setting B,

and connected with a vertically-disposed pipe F, rising from the blow-off pipe C, by means of an ordinary T-union G. The pipes E and F, as they constitute practically a single pipe
55 connection from the boiler to the blow-off pipe, I term the "circulation-pipe," and the pipes E, F, and C, joined as shown, constitute, in effect, a complete water-circulation system for maintaining a constant circulation of the
60 water in the blow-off pipe.

H indicates a section of a steam-pipe which is supplied with steam from the boiler A by any suitable connection—as, for instance, the pipe L. From the lowest point of this steam-
65 pipe I extend a drain-pipe I to the water-circulation system E F C, preferably connecting the drain-pipe thereto at the T-union G in the manner plainly shown in the drawing.

K indicates an ordinary check-valve inter-
70 posed at any suitable point in the drain-pipe I.

Referring to the operation of the device, when the water in the boiler is highly heated and steam is being generated therefrom a
75 constant flow of water is automatically set up and maintained through the boiler and the pipe-circulation system E F C in the direction indicated by the arrows, as is well understood in devices of this character. Any
80 water of condensation which may collect in the bottom of steam-pipe H will flow through the drain-pipe I, past the check-valve K, and will join the circulating current of water in the pipes E F C at the union G, at which point
85 the circulation flow and the drain flow are both in the same vertical direction. Furthermore, the inductive action of the circulating water-current, on the principle of the Sprengel air-pump, aids the action of gravity
90 in effecting the draining of the steam-pipes. The presence of the check-valve K in the drain-pipe prevents at any time the water from the boiler backing up in the drain-pipe and getting into the steam-pipe or its connections.
95

It will be understood that the pipe H may represent any of the steam-circulation pipes of a steam power, heating, or other plant or any trap connected therewith and designed
100 to catch the water of condensation therefrom, and by connecting the drain-pipe I with the

lowest point of such steam pipe or trap the latter may be kept constantly drained and freed from such accumulations in the manner and by the means described.

5 I claim as my invention—

10 In a device of the character described, the combination with a boiler and a blow-off pipe connected to the lower side thereof, of a pipe tapping the boiler at a point below the water-level therein and having a vertical section which is connected to the blow-off pipe, said pipe and blow-off constituting a continuous water-circulation pipe, a steam-pipe or other

steam-receptacle located above the plane of the top of the boiler, a drain-pipe from said steam pipe or receptacle having a vertical section in line with and connected to the vertical section of the circulation-pipe, and a check-valve interposed in said drain-pipe, substantially as and for the purpose described. 15 20

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Witnesses:

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