

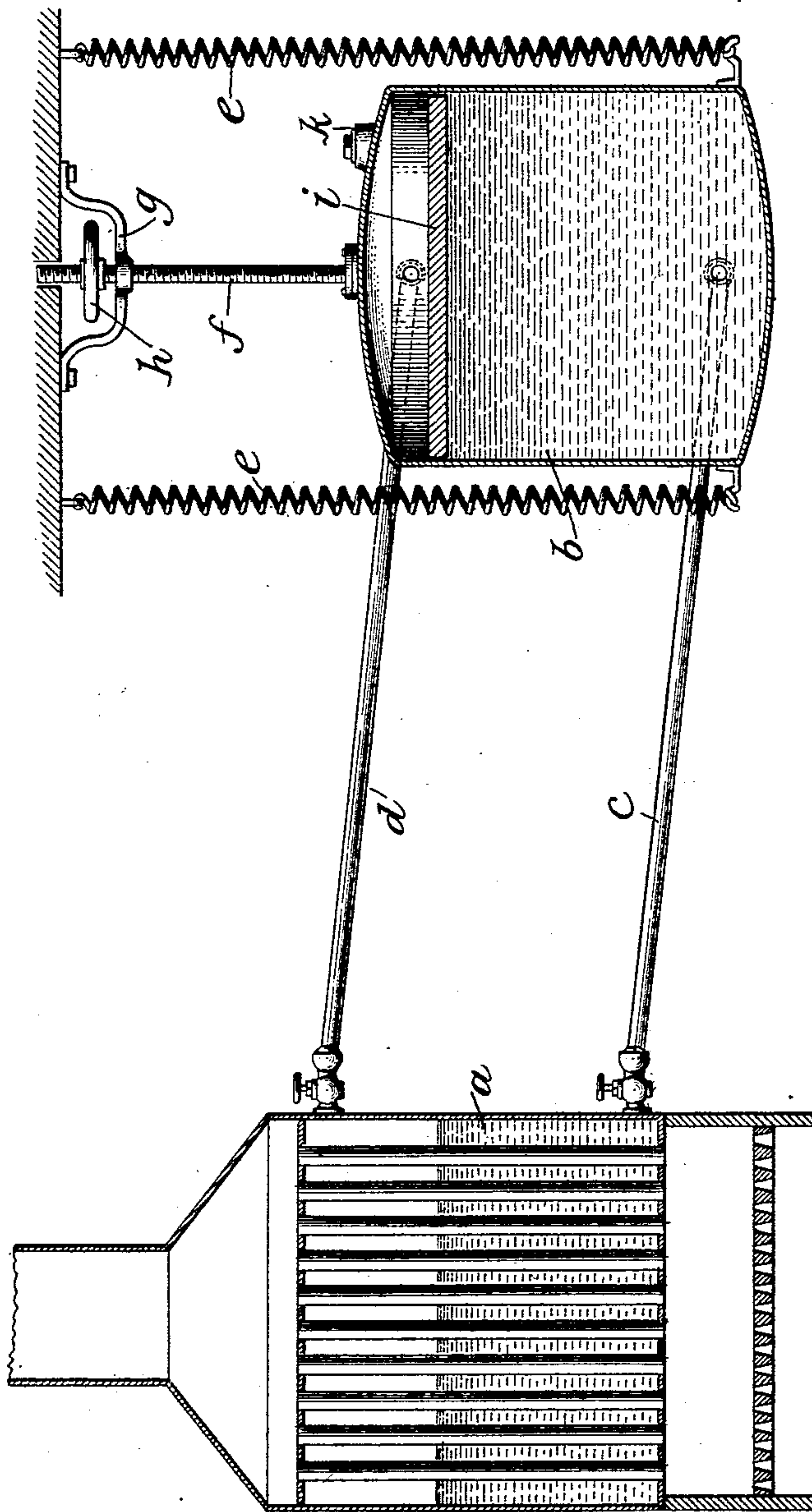
No. 684,257.

Patented Oct. 8, 1901.

C. W. HUNT.  
BOILER FEEDER.

(Application filed Apr. 14, 1900.)

(No Model.)



Witnesses:

*Geo. W. Taylor*  
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# UNITED STATES PATENT OFFICE.

CHARLES W. HUNT, OF WEST NEW BRIGHTON, NEW YORK.

## BOILER-FEEDER.

SPECIFICATION forming part of Letters Patent No. 684,257, dated October 8, 1901.

Application filed April 14, 1900. Serial No. 12,813. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES W. HUNT, a citizen of the United States, residing in West New Brighton, borough of Richmond, city of New York, State of New York, have invented certain new and useful Improvements in Boiler-Feeders, of which the following is a specification, reference being had to the accompanying drawing, forming a part hereof.

The object of this invention is to provide improved means whereby the level of water in a boiler can be maintained at the desired height without the use of a pump or injector. To this end a closed tank or reservoir of the proper capacity to contain a sufficient quantity of feed-water is so supported in proximity to the boiler that the one shall be movable vertically with respect to the other and is connected with the boiler by a feed-pipe and by a return-pipe. The tank is preferably supported by suitable springs, so that the tank shall rise as the volume of water therein is diminished, thereby automatically maintaining the level of the water in the boiler by the passage of water from the tank to the boiler. If the boiler is mounted upon a vehicle, an undesirable movement of the tank might be set up if it were supported by springs alone, and under such conditions, therefore, it will be desirable to add a controlling device of some form to prevent undesirable movement of the tank.

Other features of the invention will be referred to hereinafter in connection with the description of that embodiment of the invention which for purposes of explanation is illustrated in the accompanying drawing, in which a convenient embodiment of the invention is represented in vertical central section.

In the drawing, the boiler, which may be of any desired type, is represented at *a*, and the feed tank or reservoir, which may be of any desired form and may have any desired capacity, containing in itself a sufficient quantity of water to be fed to the boiler to compensate for loss by evaporation during a period of use, is represented at *b* as supported in proper proximity to the boiler. A feed-pipe *c* connects the lower part of the tank with the boiler, and a return-pipe *d* connects the upper part of the boiler with the tank, so

that an equilibrium of pressure is maintained on the surface of the water in the boiler and in the tank. The pipes *c* and *d* are sufficiently flexible or are so connected to the boiler and to the tank in any well-known manner or the boiler and tank are so supported as to permit the tank to move vertically with respect to the boiler.

The tank *b* is preferably so supported as to rise as the volume of water therein is diminished. To this end it may be suspended by springs *e e*, as shown in the drawing, or in any other convenient manner. The supporting devices are so related to the weight of the tank and of the supply of feed-water contained therein that when the tank is filled or nearly filled with water through a suitable inlet *k* it shall assume its lowest position, the water in the boiler then standing at the proper height. As the volume of water is diminished by vaporization or otherwise the relative level of the boiler and tank changes by reason of the diminished weight of the tank and its contents, while the level of the water in the boiler remains about the same, the passage of water from the tank to the boiler being unobstructed. If the boiler is used on a motor-vehicle or on any other moving support, it will be desirable to provide a controlling device in order to prevent the vertical oscillation of the tank which might be set up. The screw and nut in this instance do not serve to lift the tank. The raising of the tank, as when the screw and nut are not employed, is accomplished by the spring, the action of which is controlled by the screw and nut. With such a controlling device the nut should be turned from time to time to relieve the tension on the spring.

It is obvious that steam from the boiler will pass into the upper part of the tank. In getting up steam in the boiler the condensation over the whole surface of the water in the tank while the body of water is comparatively cool would interfere with the raising of the desired steam-pressure. To overcome this difficulty, a float *i*, of cork or other suitable non-conducting material, is provided in the tank, substantially covering the whole surface of the water in the tank. The condensation which takes place on the surface



of the float and around the edges thereof will not be sufficient to interfere materially with the raising of pressure.

It is to be noted that the tank or reservoir 5 *b* is not a part of means for controlling the delivery of water to a boiler by operating a cut-off valve in a water-supply pipe or in the steam-supply pipe of a pump, but itself constitutes a container for the volume of feed- 10 water which is depended upon during a given period of time to compensate for the loss of water in the boiler or reservoir. Furthermore, in a feed-controlling device of the character just referred to the water flows at times 15 from the boiler into the float, as well as from the float into the boiler, whereas in the present case the water flows only from the feed tank or reservoir to the boiler, a separate passage being provided for steam in order 20 that the pressure in the boiler and in the tank or reservoir may be equalized.

It will be understood that the invention is not to be restricted to the particular construction and arrangement of parts shown and described herein.

I claim as my invention—

The combination with a boiler, of a feed tank or reservoir, having a flexible feed-pipe connection, and a flexible return-pipe connection with the boiler, springs supporting 30 the tank and tending to lift the same as the volume of water in the tank and boiler diminishes, a threaded rod attached to the tank, a fixed guide, and a nut on said rod whereby the action of the springs is controlled, substantially as shown and described. 35

This specification signed and witnessed this 12th day of April, A. D. 1900.

CHARLES W. HUNT.

In presence of—

JOHN F. SMITH,  
W. H. VREELAND.