

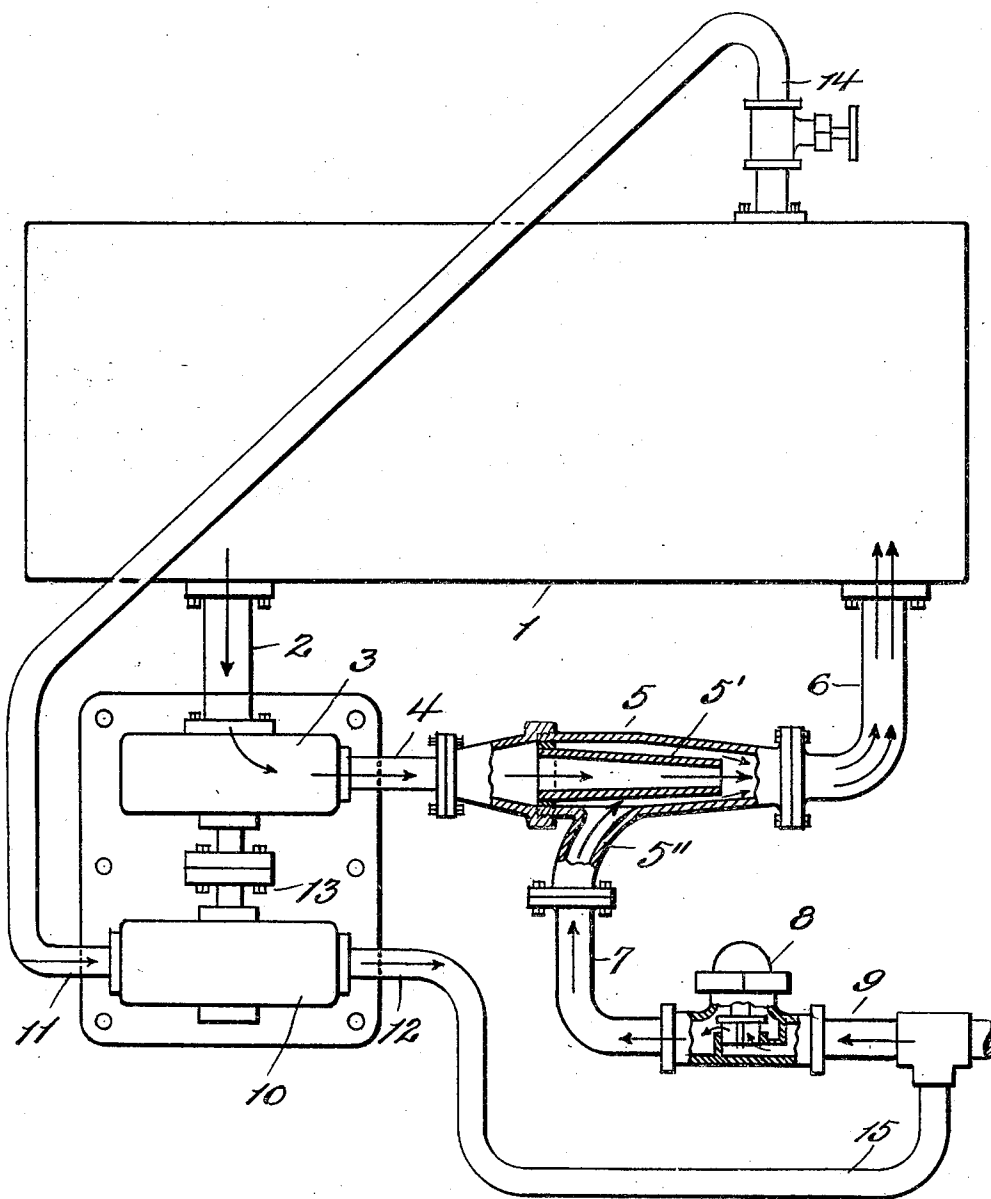
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FLUID INDUCTION DEVICE

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UNITED STATES PATENT OFFICE

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FLUID INDUCTION DEVICE

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My invention relates to improvements in fluid induction devices, and more particularly to fluid feeding means for containers, such as boilers.

5 Among the objects of my invention is to provide means for producing a rapid circulation in the fluid content of a container and to employ such circulation in the feeding of a supply fluid to the container.

10 A further object is to provide a fluid container with a fluid supply means comprising a fluid course defining means in open communication with the content of the container; means for promoting a rapid movement of the fluid in the course defining means, and an inductor connected with a source of fluid supply and located in the line of said course defining means whereby the feeding of a supply fluid is accomplished by movement of the content of the container.

20 A further object is to provide a means whereby the circulation of a normally equalized fluid pressure from a vessel through an inductor and back to the vessel again will induct fluids from various supply sources into the circulating fluid and thence into the vessel and thereby increase or maintain the pressure and volume of fluid in the vessel to be used for various supply purposes.

30 A further object is to provide a device of the above character whereby exhaust steam will be inducted into a boiler and thereby reclaim considerable heat units, by which, a great fuel economy will be affected and the generation of steam greatly enhanced.

35 A further object is to provide an appliance of the above nature whereby feed-water will be inducted into a boiler by the expenditure of the least amount of energy.

40 And a still further object is to provide a mechanism of the above nature whereby fluid will be inducted into a reservoir and thereby produce a volume and pressure of fluid in the reservoir without the necessity of external compression, by which means the excessive heat due to compression will be eliminated.

45 I attain these objects by the mechanism illustrated in the accompanying drawing, in which:—

The figure is a diagrammatical view of the entire apparatus with the inductor and check valve shown in section.

55 More specifically, 1 indicates a boiler or reservoir, 2 a lead pipe from the boiler, 3 a fluid circulating machine (centrifugal pump), 4 an intermediate pipe, 5 the inductor, 5' an inductor nozzle, 5'' an inductor intake, 6 a return pipe to boiler, 7 a pipe connecting a check valve with the inductor, 8 a check valve, 9 a supply pipe to the boiler, 10 an operating engine (turbine), 11 a fluid supply pipe to the operating engine, 12 an exhaust pipe from the operating engine, 13 a shaft connection between operating engine and pump, 14 a supply connection from the boiler.

60 In carrying out the feature of my invention a vessel 1 of any suitable character may be employed to which a lead pipe 2 connects the vessel with a centrifugal pump 3, intermediate pipe 4 connects the pump 3 with the inductor 5 and inductor 5 connects to vessel 1 by means of return pipe 6, which arrangement completes the circulating units. The turbine 10 operates the centrifugal pump 3. Check valve 8 is provided to prevent back flow of the fluid from the vessel when the circulation of the fluid through the inductor has been practically stopped.

80 The operation of the invention is as follows:—

85 Vessel 1 containing a fluid under any pressure freely admits the fluid to the centrifugal pump 3 through lead pipe 2, the turbine 10 operates the centrifugal pump 3 which forces the fluid from the vessel through the inductor 5 and nozzle 5' back into the boiler again through return pipe 6 thus forming a continuous circulation of fluid through said units. The centrifugal pump 3 will force the fluid from the vessel through the inductor nozzle 5' at high velocity which will produce sufficient vacuum in the inductor intake 5'' to affect induction therein, and thereby induct a fluid into the vessel from an extraneous source.

90 In the application of this invention any suitable type of circulating pump may be employed, such as the centrifugal pump 95 100

shown; and the circulating pump may be operated by any suitable operating mechanism, such as the steam turbine shown.

5 The intake 11 of the engine 10 is connected to the boiler as by pipe 14 whereby the fluid for operating the engine will be taken from the boiler. The exhaust pipe 12 from the operating engine is connected to the supply pipe 9 and the exhausted fluid from the op-
10 erating engine is inducted back into the boiler, as by pipe 15, through pipe 9, check valve 8, pipe 7, inductor 5 and pipe 6.

I claim:—

1. In a device of the character described,
15 the combination of a boiler, a fluid circulating pump having its intake communicating with said boiler, an inductor connecting with the discharge side of said pump and communicating with the boiler, a supply pipe
20 connecting with said inductor, a check valve in said pipe, a steam operated engine for actuating said pump, means for supplying steam from said boiler to said engine to actuate the latter, and means whereby the
25 exhaust steam from said engine may be returned to said boiler through said supply pipe, check valve and inductor.

2. In a device of the class described, comprising in combination, a boiler, a fluid
30 course defining means having its intake and outlet in communication with the boiler, a circulating pump connecting with said fluid course defining means, an inductor in said
35 fluid course defining means on the discharge side of said pump, communicating with a source of supply, an engine for operating said pump having an intake connecting with the steam zone of said boiler and an outlet communicating with said inductor.

40 In testimony whereof, I have affixed my signature.

GEORGE E. MAIER.

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